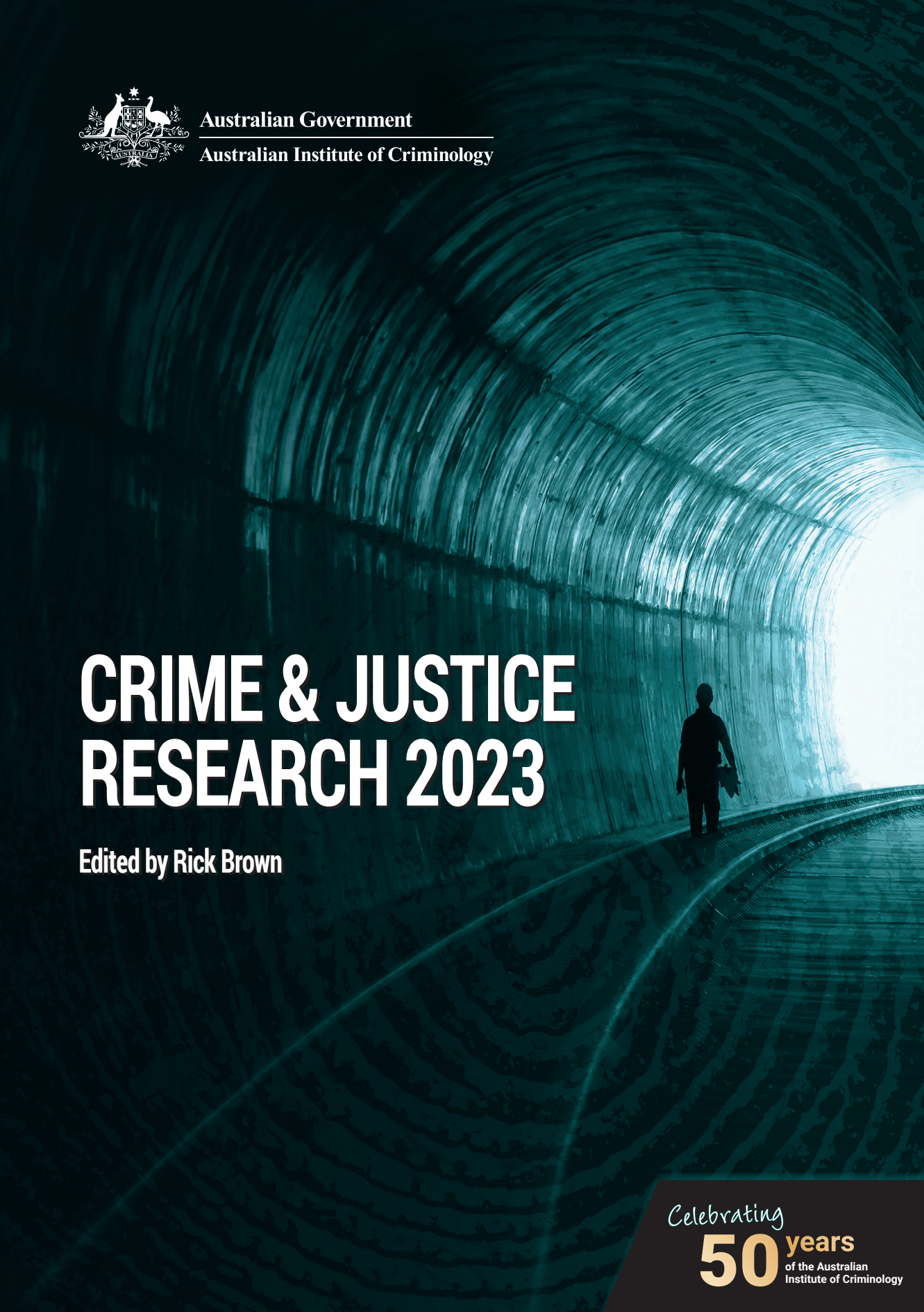

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Australian Institute of Criminology

CRIME & JUSTICE RESEARCH 2023

Edited by Rick Brown

Celebrating 50 years of the Australian Institute of Criminology

Australian Institute of Criminology

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About the editor

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Rick has been a criminologist for over 30 years and has worked extensively on issues associated with crime prevention, community safety and policing in Australia, the United Kingdom and Republic of Ireland. He was previously the Managing Director of a research consultancy that focused on crime and justice issues and worked as a Research Manager for the Home Office in London, where he ran programs of research on vehicle crime and domestic burglary.

Rick has published over 70 government reports, book chapters and journal articles on a range of topics including antisocial behaviour, arson, burglary, CCTV, community justice, crime prevention, domestic violence, drink-driving, drug use, identity crime, organised crime, policing and vehicle crime. Most recently he has worked on issues associated with child sexual abuse material, publishing a book with Routledge in 2022 titled *Eliminating online child sexual abuse material*. He is also on the editorial boards of the Journal of Community Safety, the Crime Prevention and Community Safety Journal and the Security Journal.

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Introduction

The Australian Institute of Criminology (AIC) has been undertaking policy-relevant crime and justice research for 50 years and has published reports on a wide range of topics. As in previous years, the Institute's current research program focuses on contemporary criminological concerns and aims to better understand them in order to promote justice and reduce crime among the Australian community.

The chapters of this year's *Crime & justice research* volume comprise 20 reports the AIC produced in the last year, with contributions from 48 researchers based in Australia and overseas. The reports cover six priority themes: Indigenous over-representation in the criminal justice system, transnational serious and organised crime, domestic and family violence, sexual violence, online sexual exploitation of children and cybercrime.

The AIC's work on Indigenous over-representation in the criminal justice system is focused on identifying the drivers and assessing effective approaches to reducing this longstanding problem. Two recent reports are featured in this section (part A). Chapter 1 examines intergenerational incarceration from the perspective of parental experiences of imprisonment among those currently in prison. While about 17 percent of adults in prison had a parent who had been incarcerated, this rose to 32 percent of First Nations adults in prison. The figures are even higher for young people in youth justice centres, highlighting the importance of supporting parents in prison and their at-risk children. Chapter 2 examines the content of pre-sentence reports for Aboriginal and Torres Strait Islander people and finds that risk-related words are more prevalent than words associated with strengths and culture. This is true of pre-sentence reports submitted to both the County Court and the Koori Court in Victoria.

Our research on transnational, serious and organised crime applies sophisticated quantitative methods to better understand offending by organised crime groups (part B). A study of the enablers of illicit drug trafficking by 587 organised crime groups finds that half of these groups are poly-drug traffickers (chapter 3). Groups suspected to have exploited or infiltrated air, sea or surface transport systems and those suspected of laundering money via real estate or gambling are more likely to be trafficking multiple drug types. Groups that rely on these enabling activities are also more likely to use professional facilitators.

Much of the research on organised crime groups focuses on the role of outlaw motorcycle gangs (OMCGs). An innovative study applying machine learning techniques, reported in chapter 4, demonstrates that it is possible to predict with a high degree of accuracy future offending by OMCG members. Importantly, the model can accurately identify offenders prior to the escalation in offending. Chapter 5 examines the effectiveness of a regulatory approach to preventing organised crime among OMCGs, showing that occupational restrictions reduce the harm caused by OMCG members by three to four percent per month. Chapter 6 demonstrates a relationship between OMCG membership and domestic violence. OMCG members are more likely to be proceeded against for a domestic violence offence than the average male offender but less likely to be found guilty. The authors suggest this may be a function of the difficulty of prosecuting OMCG members due to their propensity for violence and intimidation.

Part C of this volume presents AIC's recent research on domestic and family violence. Chapter 7 examines technology-facilitated domestic violence experienced by women living in regional, rural and remote Australia. It explores the range of ways in which perpetrators use technology against women and highlights the negative impacts on victim-survivors. Chapter 8 explores intimate partner femicide from the perspective of victims' family and friends. It discusses the physical violence and coercive control experienced by victims, who often failed to recognise it as such. Attempts to gain autonomy after years of violence and abuse (typically through separation) were often the trigger for perpetrators to kill their victims. Continuing the intimate partner homicide theme, chapter 9 explores the role played by depression, based on an analysis of sentencing remarks. The authors conclude that, while depression is common, it holds limited value in explaining intimate partner homicide and must be considered in the context of other co-occurring risk factors.

Part D presents AIC's growing research program on sexual violence. A significant output from this program is recent research on sexual violence associated with dating apps and websites. Chapter 10 examines the experiences of people who report dating app facilitated violence to the police, finding that satisfaction rates were generally high. However, non-heterosexual women generally experienced lower levels of satisfaction than other groups. Chapter 11 explores gender differences in bystander experiences of image-based abuse. It finds that, while witnessing image-based abuse is common, few respondents reported taking action to intervene. Women and men gave different reasons for not responding. Women said they did not feel comfortable, they were concerned that other people might harass the victim and they were concerned the perpetrator might verbally abuse the victim. Men reported not taking action because they believed the situation was harmless or because they were not concerned.

While last year's *Crime & justice* research volume was a special issue about online sexual exploitation of children, the AIC has continued to research ways to understand and address this problem. Part E includes an examination of the relationship between use of child sexual abuse material (CSAM), coercive control and domestic violence (chapter 12). CSAM offenders were found to use a range of mechanisms to control their partners and disguise their offending. Chapter 13 explores how end-to-end encryption enables the distribution of CSAM on social media, noting that social media companies' increased use of end-to-end encryption to strengthen privacy could inadvertently prevent them from identifying CSAM being distributed on their networks. Building on the groundbreaking research on violence associated with dating apps, chapter 14 explores how people use such apps to request sexual images of children. Twelve percent of dating app users reported receiving requests to facilitate the sexual exploitation of their own children or children they had access to. Requests included asking for sexual information about children or for sexual images or videos of children, asking to meet children in person or asking for children to perform sex acts over webcam.

Continuing earlier research on the development of a biometrics tool to assist with law enforcement investigations of seized CSAM videos, chapter 15 reports on the benefits of incorporating social network analysis into the tool. The authors demonstrate the tool's ability to rapidly pinpoint key media files associated with an investigation, without the need for an investigator to manually review and catalogue all files. Chapter 16 examines the range of ways in which online warning messages could be implemented to prevent people accessing CSAM. This includes measures that could be taken by account holders, operating system developers and vendors, browser developers and vendors, search engine operators, internet service providers, virtual private network providers, domain name service providers, Tor software developers and other third-party organisations. Continuing the AIC's work on the live streaming of child sexual abuse (CSA), chapter 17 analyses chat-log conversations between CSA live stream consumers and facilitators and shows the complex relationship with contact offending and CSAM possession. The authors show that live stream consumers may travel overseas to engage in in-person CSA and may also record this abuse.

Finally, part F explores the findings of our new research program on cybercrime. Following widely publicised data breaches in 2022, AIC researchers determined how data breaches increase the risk of subsequent cybercrime (chapter 18). The authors found that respondents who had been notified of a data breach were 34 percent more likely than others to have been a victim of identity crime in the past year. They were also more likely to have fallen victim to online scams or fraud and ransomware. Exploring ransomware in more detail, chapter 19 shows nearly three-quarters of ransomware victims sought help from at least one person or organisation. Nineteen percent of victims sought help from the police or the Australian Cyber Security Centre. The main reasons for not seeking help were that victims felt they could deal with the ransomware attack themselves, they did not think there was anything the authorities could do, they did not regard the incident as a serious offence or they did not know that reporting to these agencies was an option. Chapter 20 examines online behaviour, life stressors and profit-motivated cybercrime victimisation. It shows that, compared with non-victims, cybercrime victims spent more time online, more frequently engaged in recreational online activities and were more likely to employ higher-risk online practices. Respondents who experienced increases in financial stress and gambling and negative impacts on interpersonal relationships during the COVID-19 pandemic were also more likely to be a victim of cybercrime.

The 20 studies presented in this volume provide an insight into the cutting-edge, policy-relevant research currently being undertaken by the AIC. They demonstrate how the Institute remains faithful to its 50-year-old mission of promoting justice and reducing crime by undertaking criminological research and communicating the results. With crime in Australia rapidly evolving, that mission remains as relevant today as when the AIC was founded.

Dr Rick Brown
Deputy Director
Australian Institute of Criminology

A

Indigenous over-representation in the criminal justice system

1. Intergenerational incarceration in New South Wales: Characteristics of people in prison experiencing parental imprisonment

Marc Rémond, Reem Zeki, Kelly Austin, Julia Bowman, Jennifer Galouzis, Kelly-Anne Stewart and Elizabeth Sullivan

Introduction

Parents in the Australian criminal justice system

In the June quarter of 2021, the average daily number of people detained in prisons in Australia was 43,073 (Australian Bureau of Statistics 2021a). Many of these people in prison are parents; a recent report from the Australian Institute of Health and Welfare notes that two in five (38%) people entering prison in Australia have dependent children in the community, with this proportion being higher for women (54%) than men (36%; Australian Institute of Health and Welfare 2019). In addition, 85 percent of women entering Australian prisons reported that they had been pregnant at some stage and almost one in 50 was pregnant at the time of entering custody (Australian Institute of Health and Welfare 2019).

While data regarding the number of Australian children directly affected by parental incarceration are not routinely reported, in 2013 Dennison and colleagues estimated that approximately four percent of children in Queensland experienced paternal imprisonment in their lifetime (Dennison, Stewart & Freiberg 2013). They also reported that Aboriginal children were four times more likely to experience paternal imprisonment than non-Aboriginal children. A later study by Dowell and colleagues in Western Australia estimated that 18.8 percent of Aboriginal children and 0.7 percent of non-Aboriginal children born between 1992 and 1996 experienced their mother being imprisoned during their childhood (Dowell, Preen & Segal 2017).

Intergenerational incarceration

The incarceration of parents has the potential to significantly impact on the health and wellbeing of their children (Bartlett & Trotter 2019; Dennison & Besemer 2018; Tzoumakis et al. 2019; Whitten et al. 2019; Wildeman, Goldman & Turney 2018). Moreover, there is strong criminological evidence that criminal behaviour may be transmitted between generations of the same family (intergenerational offending; Besemer & Bui 2019; Dennison, Stewart & Freiberg 2013; Justice Health & Forensic Mental Health Network 2015; Troy et al. 2018) and that the imprisonment of parents can increase the risk of their children experiencing incarceration themselves (intergenerational incarceration; Beaver 2013; Farrington, Coid & Murray 2009; Frisell, Lichtenstein & Långström 2011; Tzoumakis et al. 2019).

These intergenerational linkages between offending of parents and their children are likely to be a result of complex processes and associated with a multitude of factors (Giordano & Copp 2015). These factors include:

- genetics (Frisell, Lichtenstein & Långström 2011);
- the gender of the parent and child (Frisell, Lichtenstein & Långström 2011);
- parental characteristics such as younger maternal age and marital status at birth (Wand et al. 2018);
- exposure to pro-criminal thinking and behaviour (role-modelling, normalisation and acceptance of antisocial behaviours; Hjalmarsson & Lindquist 2012);
- exposure to socio-economic disadvantage such as unemployment, systemic racism and financial stress (Farrington, Coid & Murray 2009);
- housing instability, lack of education, family instability, as well as interpersonal violence and trauma (Stinson, Quinn & Levenson 2016); and
- problematic gambling and drug and/or alcohol abuse (Australian Institute of Health and Welfare 2019; Jones & Crawford 2007).

Bias in policing and statutory responses to crime may compound these factors (Flynn 2013).

The specific mechanisms that underlie intergenerational offending and incarceration remain difficult to identify given the intersection between criminal offending and factors more generally associated with socio-economic disadvantage (Bartels 2020). This intersection is further complicated by other processes that have been suggested as being associated with intergenerational transmission of offending including social learning, criminogenic environments, biological proneness, and criminal justice bias (Besemer & Bui 2019). The Cambridge Study in Delinquent Development, which tracked 411 south London males from age 8 to age 48, revealed significant intergenerational transmission of convictions from fathers and mothers to their sons and from these sons to their own biological sons and daughters (Farrington, Coid & Murray 2009). However, in logistic regression modelling, the predictive efficiency of fathers' convictions on sons' convictions was reduced when controlling for socio-economic risk factors such as large family size and poor housing, family factors such as poor parental supervision and coming from a disrupted family, and individual factors such as low school attainment and high propensity for risk-taking (Farrington, Coid & Murray 2009). The authors conclude that while criminal parents still directly predicted convictions of their sons, it is possible that part of this intergenerational offending link is indirect and mediated through family and other risk factors (Farrington, Coid & Murray 2009).

A later study by Wildeman and Andersen (2017) aimed to determine the effect of parental incarceration on a child's future criminal behaviour, independent of other factors, by examining the impact on intergenerational incarceration of law reforms in Denmark that promoted the use of community service rather than incarceration for adults sentenced to less than a year for specific crimes. The authors conducted a 10-year follow up of young people (12–18 years old) whose fathers were eligible for a non-custodial sentence instead of incarceration under the reform and compared their risk of being charged with a criminal offence to that of matched children whose fathers were convicted of similar crimes but were ineligible for a non-custodial sentence (Wildeman, Goldman & Turney 2018). They reported that boys whose fathers received a non-custodial sentence under the reform were approximately 15 percent less likely to be charged with a crime in the next 10 years than boys whose fathers committed comparable crimes but who were incarcerated. This, they argue, suggests that the incarceration of fathers, over and above the impact of paternal criminality, has an independent effect on their sons' risk of having contact with the criminal justice system. That is, incarceration of fathers is a cause of criminality in their sons.

Nonetheless, other researchers have argued that the effects of parental incarceration on subsequent offending and incarceration of children must not be examined in isolation using statistical techniques to control for other co-occurring sources of disadvantage; rather, parental incarceration must be examined in the broader family context to better understand what causes intergenerational incarceration. For example, Giordano and colleagues (2019) argue that a parent's criminal behaviour is a specific kind of disadvantage that may have a greater impact on the risk of criminal offending in their children than any actual periods of parental incarceration. More specifically, they argue that 'ongoing conditions' of family life—such as parental antisocial behaviour, drug use and criminal behaviour, along with the impact of these on a child's social learning and development of network ties with, for example, peers and romantic partners—are critically important in a child's future risk of criminal involvement.

Aim

Despite this broad body of published research relating to intergenerational incarceration, there is limited published information regarding the prevalence of intergenerational incarceration in the NSW criminal justice system and the characteristics of people in NSW prisons who have experienced parental imprisonment. In 2015, the Justice Health and Forensic Mental Health Network (Justice Health NSW) and Juvenile Justice NSW conducted state-wide surveys of adults in prison in NSW correctional centres and young people in youth justice centres (Justice Health & Forensic Mental Health Network 2015; Justice Health & Forensic Mental Health Network and Juvenile Justice NSW 2015). The aim of this study was to analyse aggregate data from these surveys to describe the epidemiology of intergenerational incarceration in relation to adults in prison and young people in youth justice centres in New South Wales. A better understanding of the characteristics of adults in prison and young people in youth justice centres who have experienced parental incarceration may help inform future research and interventions to disrupt the intergenerational cycle of offending behaviour, thereby reducing the risk of children of incarcerated parents becoming incarcerated themselves.

Methods

Data sources

This analysis is based upon aggregate data provided by the custodians of primary data derived from two state-wide surveys conducted by the Justice Health and Forensic Mental Health Network and Juvenile Justice NSW in 2015:

- the NSW Network Patient Health Survey (NHPS; Justice Health & Forensic Mental Health Network 2015)—a large cross-sectional survey of a stratified random sample of all adults in prison in NSW correctional centres; and
- the Young People in Custody Health Survey (YPICHS; Justice Health & Forensic Mental Health Network and Juvenile Justice NSW 2015)—a cross-sectional survey of the NSW youth justice population.

These surveys included face-to-face interviews, physical measurements, pathology testing, access to medical records and linkage with other health and justice records held by the NSW Government. Participation was voluntary and participants were able to opt into part of the study only.

Results generated from the primary analysis of the data collected for the NPHS and YPICHS have previously been reported (Justice Health & Forensic Mental Health Network 2015; Justice Health & Forensic Mental Health Network and Juvenile Justice NSW 2015). For this study, the research team analysed secondary aggregate data obtained from the custodians of the NPHS and YPICHS primary data. To obtain this data, the research team provided empty table shells with pre-determined variables to the data custodians, who then interrogated their primary data and provided aggregate counts for each of these pre-defined variables, stratified by participant groups where appropriate. The research team for this study did not have permission to access or analyse the primary data from the NPHS and YPICHS.

Data management and analysis

For the purposes of this analysis, survey participants were defined as having had a parent in prison (ie to have experienced intergenerational incarceration) if at least one parent had been incarcerated in the past or was in prison at the time the participant completed the survey.

Aggregate data obtained from the NPHS related to sociodemographics of survey participants, prior incarceration in youth detention, most serious offence, and experience of out-of-home care (OOHC) before the age of 16 years. Analysis of this data involved weighting calculations, as the sampling methodology used in the NPHS deliberately over-represented women and Aboriginal peoples. As outlined in the NPHS report:

> The weighting ensures that findings in this report for the total population or for gender groups reflect all data gathered but avoid the potential for bias by disproportionate numbers of participants in specific demographic groups. (Justice Health & Forensic Mental Health Network 2015: 20)

That is, the weighting factors were used to ensure that the survey data were representative of the entire NSW prison population at the time of the survey. The weighting factors used for total population findings and gender findings were obtained from the NPHS report (see Justice Health & Forensic Mental Health Network 2015: p 20) while the weighting factor for ethnicity findings were calculated from the 2015 NSW prison population numbers and sample numbers provided in the NPHS report (Justice Health & Forensic Mental Health Network 2015: 20). These weighting factors are presented in Table A1. Descriptive statistics derived from analyses of NPHS data are presented as percentages only. Counts are not presented as weighting calculations provided a total number of weighted cases that did not equate to the number of cases in the sample. Hence, presenting counts could be misleading.

Aggregate data obtained from the YPICHS related to sociodemographics of survey participants, the number of times they had experienced youth detention, and experiences of trauma. Analysis of these data did not involve any weighting calculations. Descriptive statistics derived from YPICHS data are presented as counts and percentages as no weighting was used.

To describe the epidemiology of intergenerational incarceration in NSW prisons, we calculated the overall proportion of adults in prison and young people in youth justice centres who had experienced parental incarceration. To explore potential differences in intergenerational incarceration rates for different subgroups of participants, we stratified participants by sociodemographic factors (sex, age group, educational attainment, and Aboriginal status) and calculated the prevalence of intergenerational incarceration in each subgroup. We also explored potential differences in the sex of incarcerated parent(s) of participants who reported an imprisoned parent. Further analyses were performed to investigate potential associations between intergenerational incarceration and other variables including violent offending, previous experience of OOHC, and previous experiences of trauma.

Note that as the authors only had access to weighted aggregate data rather than the primary datasets, confidence intervals for the variables or outcomes presented in this report were not able to be calculated. Nor was statistical testing undertaken to test for differences between groups. Furthermore, to preserve the privacy of individuals, any findings with counts less than five are not reported (Centre for Epidemiology and Evidence 2015).

Ethical approvals

Ethical approval to conduct the NPHS was provided by the Justice Health Human Research Ethics Committee (Ref: G365/14), the Corrective Services NSW Ethics Committee (Ref: D15/227697), and the Aboriginal Health and Medical Research Council Ethics Committee (1080/15). Ethical approval to conduct the YPICHS was provided by the Justice Health Human Research Ethics Committee (Ref: G365/14), the Juvenile Justice NSW Research and Evaluation Steering Committee (Ref: 15/03200–17/01403), and the Aboriginal Health and Medical Research Council Ethics Committee (Ref: 1080/15). For this study, no further ethical approval was required as the participant information sheet and consent form for the initial surveys included provisions stating that participants agreed to allow future access to and linkage of their data, provided that the participants' confidentiality was maintained. The current study complied with these provisions as the aggregate data derived from the NPHS and YPICHS by the data custodians and provided to the authors was de-identified/anonymised.

Results

Data were available for 1,132 adults in prison who took part in the NPHS. Of these, 375 (33.1%) were female and 499 (44%) were Aboriginal. Data were available for 213 young people in youth justice centres who participated in the YPICHS. Of these, 19 (8.9%) were female and 119 (55.9%) were Aboriginal.

Prevalence of intergenerational incarceration

One in six (16.9%) adults reported that at least one of their parents had been imprisoned; 14.8 percent reported that their father had been in prison while 3.9 percent reported that their mother had been in prison (Table 1). Of those adults in prison with a previously imprisoned parent, the majority (76.8%) reported that only their father had been imprisoned, while 12.1 percent reported that only their mother had been imprisoned and 11.1 percent that both their parents had been imprisoned.

Just over half of young people in youth detention (112/213, 52.6%) reported that at least one of their parents had been imprisoned; 45.5 percent reported that their father had been in prison while 14.6 percent reported that their mother had been in prison (Table 1). Of those young people in youth detention with a previously imprisoned parent, the majority (81/112, 72.3%) reported that only their father had been imprisoned, while 15 (13.4%) reported that their mother had been imprisoned and 16 (14.3%) that both their parents had been imprisoned.

Table 1: History of parental imprisonment reported by adults in prison and young people in youth justice centres in NSW in 2015 (%)		
	Adults in prison	Young people in youth justice centres
Father only incarcerated	13.0	38.0
Mother only incarcerated	2.1	7.0
Father and mother incarcerated	1.9	7.5
Neither parent incarcerated	81.1	40.8
Not stated	2.0	6.6

Sex

Women in prison (21.0%) were more likely than men in prison (16.6%) to report that at least one of their parents had been imprisoned. Women in prison were also more likely to report that only their mother had been imprisoned than men in prison (4.9% vs 1.8%) or that both their parents had been imprisoned (3.7% vs 1.7%). Men in prison were more likely than women in prison to report that only their fathers had been imprisoned (13.0% vs 12.4%).

An analysis limited to those adults in prison with a previously incarcerated parent is presented in Table 2 and reveals more clearly this pattern in sex differences of previously incarcerated parents of women and men in prison. Almost double the proportion of women in prison with a previously incarcerated parent reported that their mother had been incarcerated compared to men in prison with a previously incarcerated parent. Similarly, a higher proportion of women in prison with a previously incarcerated parent reported that both their parents had been incarcerated than men in prison with a previously incarcerated parent.

Table 2: Adults in prison in NSW in 2015 with a history of parental incarceration, by sex of prisoner (%)		
	Women in prison with previously incarcerated parent	Men in prison with previously incarcerated parent
Mother (+ father) incarcerated[a]	41.1	21.5
Father (+ mother) incarcerated[b]	76.8	88.9
Both parents incarcerated	17.8	10.4
Mother only incarcerated	23.2	11.1
Father only incarcerated	58.9	78.5

a: This group comprises adults in prison who reported that only their mothers had been imprisoned or who reported that both their parents had been imprisoned

b: This group comprises adults in prison who reported that only their fathers had been imprisoned or who reported that both their parents had been imprisoned

A greater percentage of female than male young people in youth justice centres reported that at least one of their parents had been imprisoned (14/19, 73.7% vs 98/194, 50.5%). Female young people in youth justice centres were more likely than males to report that their mothers had been imprisoned (4/19, 21.1% vs 27/194, 13.9%) or that their fathers had been imprisoned (13/19, 68.4% vs 84/193, 43.3%).

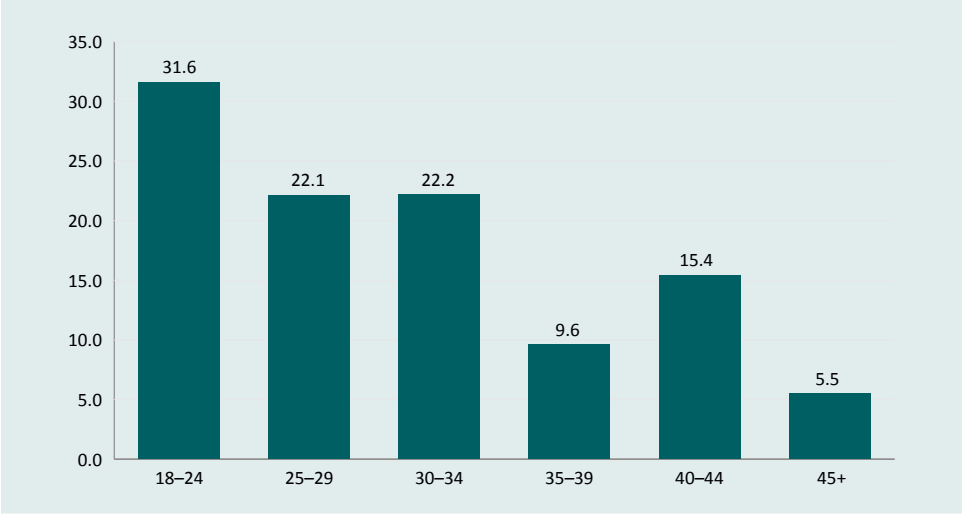
Aboriginal status

Aboriginal participants were more likely to report that a parent had been imprisoned than non-Aboriginal participants. For adults in prison, almost one-third (32.0%) of Aboriginal participants reported that a parent had previously been incarcerated, a proportion 2.5 times higher than that of non-Aboriginal adults (12.2%). Similarly, for young people in youth justice centres, Aboriginal participants were almost twice as likely as non-Aboriginal participants to have a previously incarcerated parent (66.4% vs 35.1%).

Age and schooling

Younger adults in prison were more likely than older adults to report that at least one of their parents had been imprisoned (Figure 1). For example, while 31.6 percent of adults in prison aged 18–24 years reported a previously imprisoned parent, this decreased to 22.2 percent for those aged 30–34 years and to only 5.5 percent for those aged 45 years or over.

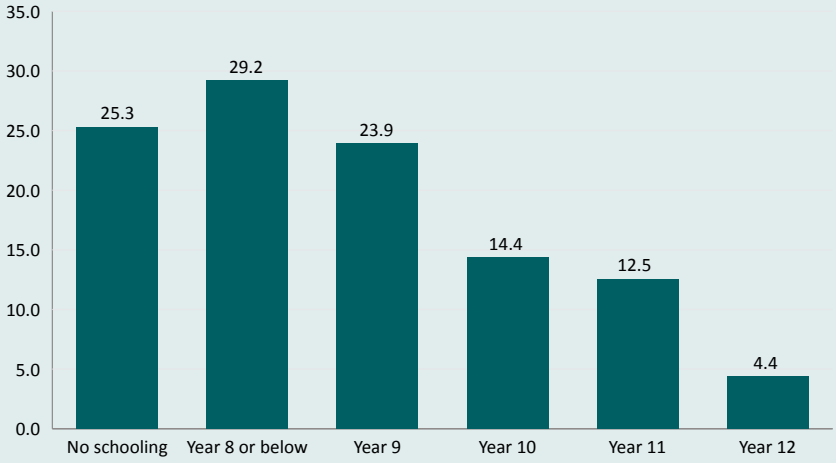
Figure 1: Intergenerational incarceration by age of adult in prison (%)



A similar trend was observed in young people in youth justice centres. Hence, while 66.7 percent (32/48) of those aged 14–15 years reported a previously imprisoned parent, this decreased to 52.4 percent (55/105) for those aged 16–17 years, and to 41.7 percent (25/60) for those aged 18–21 years.

This association between participant age and intergenerational incarceration status was reflected in findings relating to years of school completed. That is, there was a trend suggesting that adults in prison who had completed less schooling were more likely to have a previously incarcerated parent. Thus, 29.2 percent of adults in prison who had completed year 8 or below reported a previously incarcerated parent, compared to only 4.4 percent of adults in prison who had completed year 12 (Figure 2). Furthermore, those adults in prison who had completed year 10 (school leaving certificate) were much less likely to report that a parent had been imprisoned than those who finished schooling prior to year 10 (11.0% vs 26.5%).

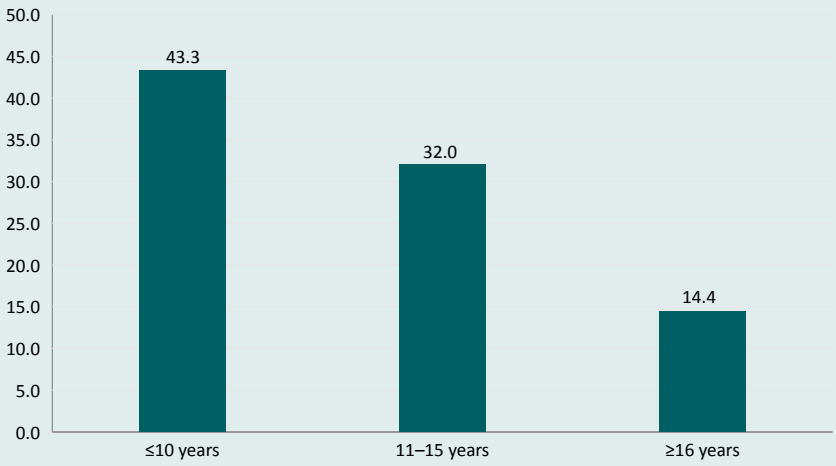
Figure 2: Intergenerational incarceration by highest year of schooling completed (%)



Experience of youth detention

Adults in prison who had previously been held in youth detention were more than twice as likely to report that at least one parent had been in prison compared to adults in prison who had never been in youth detention (27.0% vs 12.1%). Of those who had previously been in youth detention, the younger the age at first incarceration the more likely that they had a parent who had been in prison (Figure 3).

Figure 3: Intergenerational incarceration for adults in prison previously incarcerated in youth detention, by age at first incarceration (%)



An analysis of the number of times that young people in youth justice centres had previously been incarcerated revealed that those who reported a previously imprisoned parent were more likely than those whose parents had never been in prison to have been incarcerated multiple times in youth justice centres. Of the 19 participants in the YPICHS who had been detained on more than 10 separate occasions, 84.2 percent (*n*=16) reported that at least one of their parents had been imprisoned. In comparison, of the 147 participants who had previously been detained between two and 10 times, 53.1 percent (*n*=78) reported a previously incarcerated parent, while only 31.4 percent (*n*=11) of the 35 participants detained for the first time reported a previously incarcerated parent. When stratifying by which parent had been in prison, the most striking difference between the groups was that 31.6 percent of young people in youth justice centres who had been incarcerated more than 10 times reported that both parents had been in prison, compared to only 2.9 percent to 4.8 percent for the other groups.

Young people in youth justice centres who were first detained at a younger age were more likely to report that a parent had been imprisoned. Thus 59.1 percent of participants first detained at the age of 14 years or younger reported that a parent had been imprisoned, compared to 44.9 percent of participants first detained at the age of 15 years or over.

Violent offending

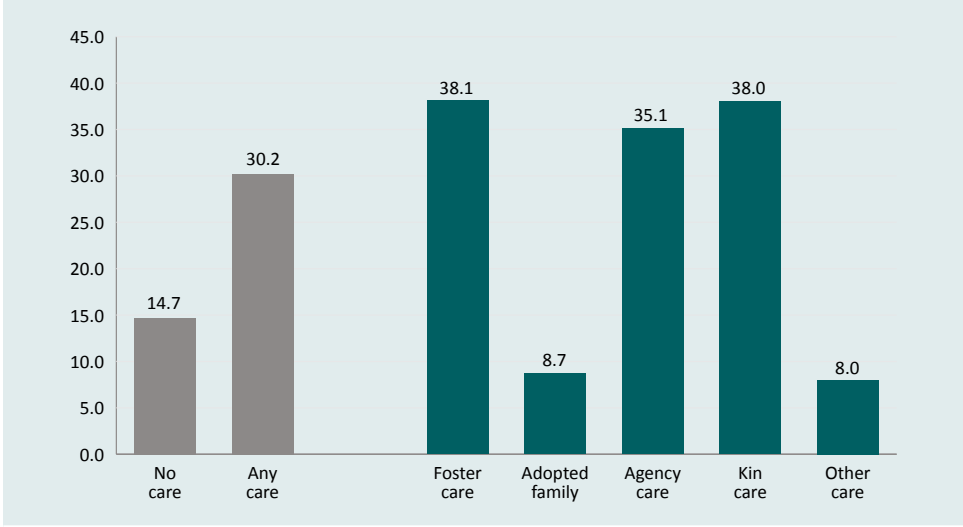
When adults in prison were stratified by the most serious offence they had committed, the groups least likely to have had an incarcerated parent were those convicted of non-violent crimes not necessarily directed against individual persons, including public order offences (1.4% had a previously incarcerated parent), illicit drug offences (7.1%), offences against government procedures/security/operations (5.8%), and traffic and vehicle regulatory offences (13.0%). An outlier to this trend was that only 5.1 percent of adults in prison convicted of a sexual offence reported a previously incarcerated parent.

Higher proportions of parental incarceration were reported by adults in prison convicted of violent crimes against others. Examples include those adults in prison convicted of abduction/harassment/other offences against the person (41.3% had a previously incarcerated parent), acts intended to cause injury (25.2%), robbery/extortion and related offences (24.6%), and prohibited and regulated weapons and explosives offences (24.0%). However, of adults in prison convicted of homicide or related offences, only 14.9 percent reported that a parent had been in prison.

Out-of-home care

Adults in prison who reported that they had been placed in any type of OOHC before the age of 16 years were twice as likely to report that at least one of their parents had been in prison compared to adults in prison who had not been placed in care before that age (30.2% vs 14.7%; Figure 4).

Figure 4: Intergenerational incarceration by care type received by participants before the age of 16 years (%)



When restricting our analysis to adults who had been in OOHC and who had a previously incarcerated parent, there were differences in sex ratios of incarcerated parents for female and male adult prisoners. Thus, of those women in prison who had been in OOHC and reported a previously incarcerated parent, almost half (47.0%) reported that their mother had been imprisoned. In contrast, only one-quarter (23.6%) of men in prison who had been in OOHC and reported a previously incarcerated parent reported that their mother had been in prison.

Experience of trauma

Young people in youth justice centres were asked whether they had ever experienced trauma in their lives. Those who had a least one parent who had been in prison were more likely to report that they had experienced trauma than those whose parents had not been in prison (51.8% vs 40.2%).

Discussion

Key findings

Intergenerational transmission of incarceration is occurring in New South Wales, with one in six (16.9%) adults in prison and just over half (52.6%) of young people in youth justice centres reporting at least one of their parents had previously been imprisoned. These findings are consistent with those of previous local and international studies (Beaver 2013; Farrington, Coid & Murray 2009; Frisell, Lichtenstein & Långström 2011; Tzoumakis et al. 2019) and are strongly suggestive of an association between the imprisonment of parents and the subsequent contact of their children with the criminal justice system. This association is particularly apparent among younger people in prisons and youth justice centres, and adults who had been placed in OOHC while children.

A common theme among Aboriginal peoples in prisons and youth justice centres revealed in this study is their collective experience of prior parental incarceration. This demonstrates the intergenerational impact of the over-representation of Aboriginal and Torres Strait Islander peoples in the Australian criminal justice system. Aboriginal and Torres Strait Islander peoples are currently being imprisoned at 10 times the Australian national rate (2,333/100,000 vs 208/100,000; Australian Bureau of Statistics 2021b). The burden of incarceration faced by Aboriginal and Torres Strait Islander peoples is one of the critical factors that must be structurally addressed to interrupt the current pipeline of intergenerational imprisonment.

Sex

Adult and young participants were more likely to report that their father had been in prison than that their mother had been in prison. This finding is partially explained by the current and historic gender disparity in the Australian prison population; in 2021, males comprised 92 percent and females eight percent of the Australian adult prison population, a ratio of 12 males to one female (Australian Bureau of Statistics 2021b). Nonetheless, this gendered effect was not fully reflected in our findings, as 14.8 percent of adults in prison reported paternal incarceration compared to 3.9 percent maternal, equating to a ratio of approximately 4:1. This may reflect the impact of maternal incarceration on family stability (Farrington, Coid & Murray 2009). Similarly, almost half of young people in youth detention centres in our study reported a history of paternal imprisonment compared to one in seven reporting maternal imprisonment, a ratio of approximately 3:1 (45.5%:14.6%). These findings suggest mother–child transmission of incarceration may be stronger than father–child transmission, which is of considerable concern given the rapid rise in the number of women (and therefore mothers) incarcerated in New South Wales over recent years (Ooi 2018).

Previous studies suggest that both paternal and maternal criminality are risk factors for the development of criminality among both male and female offspring, but the evidence is unclear whether paternal offending has a greater impact on offspring offending (Farrington, Coid & Murray 2009) or whether the risk conferred by fathers and mothers is similar (Beaver 2013). A recent Australian study by Tzoumakis and colleagues (2019) reported that both maternal and paternal offending were associated with adverse developmental outcomes in offspring and that associations between maternal and paternal offending and offspring aggression were similar in magnitude. Another Australian study (Wand et al. 2018) evaluated the individual- and population-level impact of a combination of factors, including certain maternal characteristics, on subsequent criminal conviction. The authors reported that young maternal age (<20 years), being a single parent, and multiparity (having had two or more previous pregnancies) had a significant impact on subsequent offending by their children (Wand et al. 2018).

Findings from our study of adults in prison indicate that there may be a stronger association between incarceration of mothers and the subsequent incarceration of their daughters than between mothers and sons. Thus, 8.6 percent of women in prison reported maternal incarceration compared to only 3.6 percent of men in prison. There was no such trend observed with paternal incarceration, as similar proportions of female (16.1%) and male (14.8%) adults in prison reported that their father had been incarcerated. When restricting analyses to adults in prison who did report parental incarceration, women in prison were almost twice as likely as men in prison to report that their mother had been incarcerated (41.1% vs 21.5%).

Published research suggests that maternal imprisonment is associated with a higher rate of family instability, including placing of the mother's children with a relative or in foster care (Tasca, Rodriguez & Zatz 2011). The incarceration of the primary caregiver has also been associated with a higher risk of delinquency in their offspring (Aaron & Dallaire 2010). Such findings may partly explain our finding that maternal incarceration appears to be associated with greater risk of intergenerational incarceration than paternal incarceration.

Of concern, our analysis of young people in youth justice centres found a stronger association between incarceration of either parent and subsequent incarceration of daughters compared to sons. Thus, 21.1 percent (4/19) of female young people in youth justice centres reported that their mother had been in prison compared to 13.9 percent (27/194) of male young people in youth justice centres, while 68.4 percent (13/19) of female young people in youth justice centres reported that their father had been in prison compared to 43.3 percent (84/194) of male young people in youth justice centres. Although these data are not conclusive and are limited by the small number of females in the survey of young people in youth justice centres, they raise critical policy questions around the changing demographic and feminisation of the prison population.

Age and schooling

We found that, for both adults in prison and young people in youth justice centres, younger participants were more likely to report parental incarceration than older participants. Similarly, there was a trend suggestive of an association between lower educational attainment and a previously incarcerated parent. Together these findings suggest that children of incarcerated parents may be at increased risk of leaving school early and/or having contact with the criminal justice system at a younger age. A number of possible mechanisms may explain this apparent association, with some studies suggesting that poor parent–child attachment, inappropriate parenting practices and inadequate parental supervision may be contributing factors (Hoeve et al. 2009; Leschied et al. 2008).

Previous research does indicate that parental incarceration is associated with poorer educational attainment in their children (Miller & Barnes 2015; Turney & Goodsell 2018). A review by Turney and Goodsell (2018) reported that older children of previously incarcerated fathers are absent more often from school, have lower educational attainment and poorer academic achievement than peers with no history of an incarcerated father. Jacobsen (2019) reported that children whose fathers were incarcerated after the child's first birthday but before first grade were at increased risk of being suspended or expelled from elementary school and were more likely to display behaviour problems and experience weakened social bonds than children whose fathers had not been imprisoned. Jacobsen also reported that this affected some subgroups more than others. African American and Hispanic children in the study cohort were more likely to be affected by paternal incarceration (54% and 41%) and to be suspended or expelled by nine years of age (29% and 10%) than white or other-race children (28% paternal incarceration, 6% suspension or expulsion).

In a study investigating the impact of 'mass imprisonment' in the United States on educational attainment, Hagan and Foster (2012) reported that, in schools with a high incidence of parental incarceration, the educational outcomes of all children, not just those with an incarcerated parent, are affected. They further reported that this finding persists even when controlling for both school- and individual-level mediating processes and extraneous or selective predispositions in their analyses. Hagan and Foster concluded that, in American schools with elevated levels of paternal imprisonment, the impact of that imprisonment 'spills over' from their children into the attainments of other students and leads to a negative association with college completion rates in all students.

The apparent association between parental incarceration and poorer educations outcomes is not universally reported in the literature. One study of youth in Pittsburgh, in the United States, reported that parental criminal behaviour was not associated with poor academic performance in their children (Murray, Loeber & Pardini 2012). A systematic review and meta-analysis by Murray and colleagues was more equivocal (Murray, Farrington & Sekol 2012). This meta-analysis of 13 relevant studies indicated that parental incarceration was significantly associated with poor educational performance in their children (odds ratio=1.4, 95% confidence interval=[1.1, 1.8]; Murray, Farrington & Sekol 2012). However, they also reported that many of the studies in this area were of poor methodological quality and that when they restricted their analysis to the most rigorous studies that controlled for covariates, the average effect size for educational performance showed almost zero association with parental incarceration. The apparent lack of consensus among these studies indicates that further rigorous research is required that focuses on children of incarcerated parents and that identifies differences between those children who do end up in custody and those who do not.

We found that 81.1 percent of adults in prison reported that neither of their parents had been imprisoned, compared to 40.8 percent of young people in youth justice centres. This suggests that a history of parental incarceration has more influence on young people's offending behaviour and subsequent incarceration than is the case for adults.

Out-of-home care

Adults in prison who had been placed in OOHC before the age of 16 years were more likely to report parental incarceration than those not placed in care at that age. The major exception to this trend was that adults in prison who had been adopted prior to the age of 16 were less likely than other adults in prison to report a previously incarcerated parent. These findings reflect the impact of parental incarceration on family cohesion, with imprisoned parents facing the prospect of losing custody of their child while incarcerated (Geller et al. 2009; Johnson & Waldfogel 2002; Tasca, Rodriguez & Zatz 2011). Research suggests that children in OOHC are at higher risk of involvement with the criminal justice system (DeGue & Spatz Widom 2009; Lindquist & Santavirta 2012; McFarlane 2017; Mendes & Baidawi 2012; Turpel-Lafond & Kendall 2009).

For example, McFarlane (2017) analysed a representative sample of 160 children who appeared on criminal charges before the NSW Children's Court at Parramatta between 2008 and 2010 and reported that 49.5 percent had spent time in OOHC. This constituted a gross over-representation, as only a very small number of children in New South Wales are in care (approximately 1% in 2009). McFarlane also reported that 44 percent of the OOHC group identified as Indigenous compared to only 14 percent of the non-care group, that the OOHC group was significantly younger than the non-care group, and that the OOHC group experienced significant additional disadvantage within the care environment (McFarlane 2017).

Youth detention

Adults in prison who had previously been held in youth detention were twice as likely as the other adults in prison to have a parent who had been in prison. This is unsurprising given that the proportion of young people in youth justice centres who reported having a previously incarcerated parent was over twice as high as the proportion of adults in prison who reported a previously incarcerated parent.

Violent offending

When adults in prison were grouped by the most serious offence they had committed, those convicted of violent crimes against others were more likely to have had an imprisoned parent than those convicted of non-violent crimes not necessarily directed against individual persons. These findings support previous research reporting that the intergenerational transmission of offending may be more pronounced for violent than non-violent crimes and that exposure to parental violence, including domestic violence (Murrell, Christoff & Henning 2007), may play an important role in the intergenerational transmission of violent offending (Frisell, Lichtenstein & Långström 2011; Van de Weijer, Bijleveld & Blokland 2014).

In a study published in 2014, Van de Weijer and colleagues reported that when sons are exposed during their childhood or adolescence to violent behaviour by their fathers, this increases the risk of intergenerational transmission of violent offending; however, paternal violent offending before a son's birth did not have a similar effect (Van de Weijer, Bijleveld & Blokland 2014). This latter finding, they argue, suggests that social learning is more important than hereditary factors in the intergenerational transmission of violent crime. This is further supported by their finding that violence is specifically transmitted from father to son, and not from grandfather to grandson.

In a later study, Van de Weijer and colleagues explored the effects of parental divorce on the intergenerational transmission of crime (Van de Weijer et al. 2015). In that study, the authors reported that parental divorce had a moderating influence on the intergenerational transmission of violent crime. That is, intergenerational transmission of violent crime occurred if a violent father remained married to the mother during the youth of the child, and violent offending was not transmitted if parental divorce occurred during the child's youth. The authors argue that, as children usually remain with their mother after parental divorce, it is likely that children of married parents are more exposed to the violent behaviour of their fathers than children of divorced parents. This finding further supports social learning theories in respect of the intergenerational transmission of violence.

While the trend observed in our cohort was that those convicted of violent crimes against others were more likely than those convicted of less serious crimes to have had an imprisoned parent, an outlier did not fit this trend. Specifically, relatively few adults in prison convicted of a sexual offence reported a previously incarcerated parent. This latter finding should be treated cautiously, as previous research suggests that sexual offending may involve familial clustering, with Långström and colleagues (2015) reporting strong familial aggregation of sexual crime among father–son dyads (odds ratio=3.7, 95% confidence interval=[3.2, 4.4]) in a 37-year nationwide study of sexual convictions in Sweden.

Age at first detention and number of times in youth detention

Young people who were first detained in youth justice centres aged 14 years or younger were more likely to report that their mother alone, or both parents, had been imprisoned than those first detained at 15 years or over. In contrast, there was no difference in the proportions of young people with incarcerated fathers. This provides further evidence that the imprisonment of mothers may have a greater impact on the likelihood of a child interacting with the youth justice system than paternal incarceration. It is consistent with the finding that those young people in youth justice centres who had been incarcerated numerous times were more likely to report that both their parents had been imprisoned.

Can intergenerational incarceration be prevented?

Perhaps the most pressing question in the context of intergenerational incarceration is whether, and to what extent, interventions can be designed and implemented to disrupt the intergenerational cycle of offending behaviour so as to reduce the risk of children of incarcerated parents themselves becoming involved in the criminal justice system (Thornberry 2020). Designing any such potential preventive measures is particularly challenging without a clear understanding of the specific mechanisms involved in the transmission of offending behaviour. Nonetheless, any such interventions will necessarily be multi-systemic given the intersection between multiple aspects of socio-economic disadvantage and interaction with the criminal justice system.

It has been argued that there is clear evidence of effective interventions to address the intersection between disadvantage and the criminal justice system. For example, Bartels (2020) highlights six interconnected means of addressing disadvantage that would improve criminal justice outcomes:

- addressing the over-representation of Indigenous peoples in the criminal justice system;
- investing in community-based rather than prison-based sentences;
- raising the minimum age of criminal responsibility from 10 to 14 years;
- supporting families to stay together;
- supporting and funding best-practice health, education and housing; and
- addressing family and sexual violence and the attitudes that underpin such violence.

The majority of these suggested interventions directly relate to factors highlighted in this study as being associated with intergenerational incarceration: Aboriginal status, OOHC, younger age and fewer years of completed schooling, and previous involvement in youth detention. It is therefore likely that effectively addressing such social disadvantage will reduce the cycle of intergenerational incarceration. In particular, the findings that a high percentage of young people in youth justice centres reported a previously incarcerated parent, that entering a youth justice centre at a younger age is associated with intergenerational incarceration, and that adults in prison who had previously been in youth justice centres were much more likely to have experienced parental imprisonment strongly suggest that increasing the age of criminal responsibility is a crucial step in breaking the cycle of intergenerational incarceration.

At the same time, our findings demonstrate the importance of intervening with children whose parents are incarcerated or at risk of incarceration. Any such interventions must be holistic and 'wraparound' in nature to encompass the broad social needs of children at risk of experiencing the cycle of intergenerational transmission of offending. Moreover, interventions should be tailored to the needs of individuals and specific communities. In particular, given the disproportionate impact of intergenerational incarceration on Australia's Aboriginal and Torres Strait Islander peoples, there is a pressing need for culturally appropriate programs developed and delivered in partnership with Aboriginal and Torres Strait Islander organisations and communities (Roettger, Lockwood & Dennison 2021).

While programs and interventions are required to address intergenerational incarceration, it has been noted that 'Locally and internationally, there is a lack of rigorous, long-term evaluations of policies or programs addressing the intergenerational impacts of incarceration' (Roettger, Lockwood & Dennison 2021: 2). Hence, rigorous monitoring and evaluation of existing and future interventions to address intergenerational offending is critical to improve the evidence base in respect of the effectiveness of such interventions (Roettger, Lockwood & Dennison 2021).

Limitations and caveats

In Australia, there are no comprehensive, population-wide data relating to the prevalence of parental incarceration and what proportion of children and young people who experience parental imprisonment do, or do not, go on to commit criminal offences or become incarcerated in prison or youth justice centres. Furthermore, as part of the NPHS and YPICHS there were no matched control groups of non-incarcerated individuals who may have experienced parental imprisonment. For these reasons, we were unable to compare results for participants in these surveys against the wider population or a control group. Hence, any suggestion based on the findings presented in this report that adult prisoners and young people in youth detention are more likely to have a previously incarcerated parent than adults or youth who have never been incarcerated should be treated with caution. Furthermore, given the small number of participants included in the YPICHS, particularly female participants, generalisation of results from this survey to a broader context should be avoided.

This is a descriptive report only. Confidence intervals for the variables/outcomes presented in this report were not able to be calculated, nor was statistical testing undertaken to compare outcomes by prisoners' parental history of incarceration, as the authors were not authorised to access primary data from the surveys. Rather, all presented findings were calculated based upon aggregate weighted counts for specific variables provided to the authors by the data custodians. For this reason, any findings suggestive of differences between subgroups of participants, as well as potential associations that are discussed, must be treated with caution and should be considered as hypotheses that require further testing. In addition, it should be noted that analyses were limited to data collected as part of the surveys and did not consider the impact of unreported external factors including environmental variables, peer influence, and family structure.

Conclusion

This epidemiological snapshot of intergenerational incarceration in NSW prisons and youth justice centres reveals that one-sixth of adults in prison and half of young people in youth justice centres are impacted by the previous incarceration of a parent. The prevalence of parental incarceration among these groups is likely to be far higher than the overall prevalence in the general population, suggesting that the incarceration of a parent is associated with an increased risk of intergenerational transmission of incarceration.

Findings from this report are consistent with those of published research revealing that intergenerational incarceration is associated with socio-economic disadvantage. This social disadvantage is characterised by leaving school at a younger age, unstable accommodation, placement in OOHC prior to the age of 16, and earlier contact with the justice system. There is some indication that incarceration of mothers may increase the risk of future incarceration more for their daughters than for their sons. Lastly, the excess burden on Aboriginal communities is evident, with Aboriginal peoples in prison and in youth detention reporting higher levels of parental incarceration than non-Indigenous people.

The direction of these findings suggests that parental incarceration, particularly of mothers with young children, opens a pipeline through which their children are often funnelled into the criminal justice system. Factors important in this process include the loss of parental support for children of incarcerated parents, experiences of OOHC, and lower educational attainment. As a starting point in addressing this issue, the findings of this report suggest that programs to support children with parents in prison or at risk of imprisonment should be a priority, with culturally safe programs developed in partnership with Aboriginal communities. It is also vital that in situations where mothers are incarcerated, they are supported in their mothering roles to provide the necessary care to their children (Breuer et al. 2021). More generally, further work is required to implement a whole-of-government approach to disrupt the cycle of intergenerational incarceration and develop policies and programs to address systemic disadvantage.

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Appendix

Table A1: Weighting factors used to calculate findings based on NPHS 2015 data

	% of 2015 NSW prison population	% of NPHS participants	Weighting for gender findings	Weighting for ethnicity findings	Weighting for total population findings
Aboriginal men	21.9	30.3	0.52	1.32	0.72
Non-Aboriginal men	71.2	36.6	1.40	1.43	1.95
Aboriginal women	2.4	13.9	0.81	0.31	0.17
Non-Aboriginal women	4.6	19.2	1.14	0.18	0.24

Note: NPHS=Network Patient Health Survey

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2. Pre-sentence reports for Aboriginal and Torres Strait Islander people: An analysis of language and sentiment

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Pre-sentence reports (PSRs), also known as 'sentencing assessment reports' or 'pre-sentence and suitability reports', are used in all jurisdictions to assist courts in determining appropriate sentences. They provide information to the courts about a person's engagement with programs and rehabilitative services, their family and housing arrangements, and their social, educational, health and employment history, and link this information to past offending, predictors of future offending and prospects for rehabilitation in the community. PSRs provide an assessment of eligibility for community-based orders. In drawing conclusions, PSRs usually rely on risk–need–responsivity assessment tools. The length of PSRs ranges from one paragraph to several pages. PSRs strongly influence sentence outcomes (see Anthony et al. 2017).

Scope of PSRs and capacity for cultural and systemic considerations

Aboriginal and Torres Strait Islander people comprise over 30 percent of Australia's prison population (Australian Bureau of Statistics 2021), while accounting for approximately 3.3 percent of its total population (Australian Bureau of Statistics 2016). One of the key factors put forward to explain this hyperincarceration is the dismissal of Indigenous knowledge and unique experiences by those working and researching in the criminal justice system (Cunneen & Tauri 2019). By taking into account Aboriginal and Torres Strait Islander people's experiences of culture, community and systemic factors, sentencing courts may be better placed to reduce the weight given to deterrence, to account for moral culpability and to identify relevant community-based options (Edwige & Gray 2021; *DPP v Snow (a pseudonym)* [2020] VSCA 67).

Legislation in Australia (see, for example, *Sentencing Act 1991* (Vic), s 8A) sets down circumstances in which PSRs may be ordered. However, the content is not prescribed by law. In Victoria, legislation does not require courts to consider an Aboriginal and/or Torres Strait Islander person's cultural or community background or experiences of racism in PSRs or as part of sentencing considerations. The Australian Capital Territory is the only jurisdiction to stipulate in legislation that cultural background is a pre-sentence matter (*Crimes (Sentencing) Act 2005* (ACT), s 40A(b)).

In relation to sentencing Aboriginal and Torres Strait Islander people, legislation in the Australian Capital Territory, Queensland and the Northern Territory states that culture is a sentencing consideration: *Crimes (Sentencing) Act 2005* (ACT), s 33(1)(m); *Penalties and Sentences Act 1992* (Qld), s 9(2)(p); *Sentencing Act 1995* (NT), s 104A. Legislation and guidelines also provide for Aboriginal and Torres Strait Islander sentencing courts in most Australian jurisdictions, such as the Koori Court Division in Victoria's County Court, Magistrates' Court and Children's Court. These courts provide a more culturally sensitive process for the sentence hearing. Provided that the Aboriginal and Torres Strait Islander sentencing court is within the court's jurisdiction and able to sentence the matter, the court is available for Aboriginal and/or Torres Strait Islander persons who plead guilty or have been found guilty and agree to be sentenced by the Aboriginal and Torres Strait Islander sentencing court. Elders and/or respected persons participate in the sentencing process and provide advice to the judicial officer (who still retains the power to sentence) in relation to the penalty imposed (Marchetti 2017).

Outside of formal legislation, community corrections and sentencing courts nonetheless have broad discretion to consider culture, including for the purpose of promoting individualised justice (Australian Law Reform Commission 2017). While PSR assessors in all Australian jurisdictions may include information pertaining to an Aboriginal and/or Torres Strait Islander person's cultural background and community circumstances (including strengths and supports), research indicates that these aspects do not feature largely or at all in PSRs (Anthony et al. 2017). Rather, PSRs tend to characterise people in accordance with risk criteria that refer to factors such as criminal history, antisocial behaviour, education, health and employment rather than a holistic account of the person's background (see Hannah-Moffat & Maurutto 2010).

In Canada, and more recently in Australia, the limitations of PSRs have given rise to reports that consider the person's First Nations background (ie Gladue reports in Canada and Aboriginal Community Justice Reports in Victoria). These reports consider the person's cultural background as well as the intergenerational and immediate impacts of colonisation and systemic racism on them, their family and their community (MacLennan & Shields 2013). They also pay attention to community-based options that are relevant and meaningful to First Nations people, including outside of institutional services (Murdocca 2021).

Risk assessment in PSRs

In Victoria, PSR assessors use a correctional risk assessment tool called the Level of Service/ Risk, Need, Responsivity (LS/RNR; Andrews, Bonta & Wormith 2008) to complete their reports. Risk instruments guide the assessor to consider salient risk factors associated with offending and other antisocial behaviour. Risk factors are divided into two types: static and dynamic. Static risk factors are those that cannot be changed through intervention—for example, age and criminal history (Andrews, Bonta & Wormith 2006). Dynamic risk factors, such as employment status and substance use, can change over time and through intervention (see Andrews & Bonta 2010) and thus provide treatment targets to reduce the risk of reoffending.

Scholars have raised concerns that reliance on risk instruments reduces sentencing to a group-based, data driven process, which may contravene the principle of context-based, individualised justice (Hannah-Moffat 2013). They also contend that risk instruments could promote unfair stereotypes or reproduce existing systemic biases that disproportionately impact vulnerable groups (Barabas et al. 2018; Hannah-Moffat 2013; Shepherd & Lewis-Fernandez 2016; Starr 2015). Moreover, the instruments are believed to encourage punitive rather than rehabilitative outcomes, given that they are framed with a focus on risk (Hannah-Moffat & Maurutto 2010; Harcourt 2006; Shepherd & Anthony 2018).

The present study

To our knowledge, this is the first study to examine PSRs prepared for Aboriginal and/or Torres Islander people in Australia. Given the hyperincarceration of Aboriginal and Torres Strait Islander people in Australia, there is an urgent need to transform criminalising processes.

We obtained PSRs submitted to the mainstream County Court of Victoria and the Koori Court Division of the County Court of Victoria (County Koori Court). First, we used text-mining and natural language processing techniques to compare the language and keywords of PSRs submitted to the County Koori Court to PSRs submitted to the mainstream County Court for Aboriginal and/or Torres Strait Islander people. We aimed to:

- identify differences in the sentiment of PSRs for Aboriginal and/or Torres Strait Islander people being sentenced in the mainstream County Court and County Koori Court; and
- evaluate the emphasis placed on issues of risk and reoffending in PSRs, as opposed to issues relevant to protective factors and strengths of cultural identity.

Method

Sample

We compared a sample of 32 PSRs written for Aboriginal and/or Torres Strait Islander people sentenced by the County Koori Court of Victoria to a sample of 31 PSRs written for Aboriginal and/or Torres Strait Islander people sentenced by the mainstream County Court of Victoria. All extended PSRs completed for Aboriginal and/or Torres Strait Islander people in our study period (1 July 2016 to 31 January 2019) were included (*n*=16). Corrections Victoria then randomly selected brief PSRs completed during this period to reach a sample size of 32 PSRs for each court. One person's PSR (from the mainstream County Court) was excluded as they had sexually offended and the County Koori Court cannot deal with sexual offences (*County Court Act 1958* (Vic), s 4E(b)(i)). See *Pre-sentence reports* below for differences between extended and brief PSRs. Table 1 presents the frequency counts of the PSRs, split by type (brief or extended), court type and gender.

The subjects of the reports for both the mainstream and County Koori courts were predominantly male (80.6% and 78.1% respectively), with the remaining people identified as female by Corrections Victoria.

Table 1: Number of pre-sentence reports by type, court and gender

Report type	County Koori Court		Mainstream County Court	
	Male	Female	Male	Female
	Male	Female	Male	Female
Brief	21	7	14	5
Extended	4	–	11	1

Note: County Koori Court=Koori Court Division of the County Court of Victoria. Mainstream County Court=County Court of Victoria

Measures and covariates

Courts

The PSRs we received were written for people sentenced by either the County Court of Victoria (mainstream court) or the County Koori Court. The County Court of Victoria is an intermediate court between the Magistrates' Court of Victoria and the Supreme Court of Victoria. It sentences people who are convicted of serious indictable offences.

Pre-sentence reports

PSRs are conducted in Victoria to provide information to the court when it is considering a community corrections order but may otherwise impose imprisonment. PSRs outline the accused person's eligibility for a community corrections order (taking into account their circumstances); the conditions attached to the order; and whether the necessary external facilities exist to enable conditions to be imposed (*Sentencing Act 1991* (Vic), s 8A(2)).

We collected both brief and extended PSRs. Brief PSRs are completed on or shortly after the day they are requested and are significantly shorter and less detailed than extended PSRs. To give sufficient time for an extended PSR to be completed, an adjournment of up to six weeks is usually required. The court decides whether to request a brief or extended PSR, but community corrections staff may advocate for an extended PSR to ensure that all appropriate issues are considered in detail.

Keyword dictionaries

For the purposes of text-mining and natural language processing analyses, we created lists of common keywords that fell into one of three categories: risk (eg 'criminal', 'theft', 'custody'), strength-based culture words (eg 'healing', 'cultural', 'spiritual'), or prosocial factors (eg 'support', 'respect', 'family'). We canvassed social and emotional wellbeing and culture-based rehabilitation literature to identify keywords for the culture dictionary. For the risk and prosocial dictionaries, we identified relevant keywords from forensic and correctional psychology literature. The number of keywords in each category differed (risk=73, culture=17, and prosocial=25). For details of the keyword dictionaries, see the full report (Coulter et al. 2022).

Procedure and plan of analysis

We employed natural language processing technology, a form of machine learning, to conduct high-level text mining and sentiment analysis of the PSRs.

Sentiment analysis

We conducted sentiment analyses for each of the PSRs. Sentiment analysis is widely used to identify emotions, opinions, sentiments or subjectivity from a text collection. It aims to identify words or phrases that characterise positive and negative sentiments from the underlying text collection. In this study, we applied sentiment analyses in the legal domain, which is relatively under-explored. More specifically, we focused on estimating sentiments from PSRs submitted to the County Koori Court and mainstream County Court.

We analysed the proportion of each PSR that our sentiment analyses classified as negative (eg 'bad', 'poorly') and positive (eg 'great', 'excellent'). After extracting these proportions, we conducted *t*-tests to evaluate whether the mean proportions of text classified as positive and negative differed significantly between and within each sample of PSRs.

Text-mining analysis

We analysed each PSR to determine the frequency counts of keywords from each of our keyword dictionaries for all PSRs. We also extracted the frequency counts of unique keywords (ie multiple instances of the same keyword were treated as one instance) in each PSR. For each PSR, we calculated the proportion of keywords belonging to each category (risk, culture, prosocial). Due to differing numbers of keywords in each category's dictionary, we also calculated normalised mean proportions.

Results

Text analysis of PSRs

Our results indicate that, of our three keyword categories, risk-related words were the most prevalent (County Court *M*=39.3 words per document; County Koori Court *M*=23.3), followed by prosocial (County Court *M*=21.7; County Koori Court *M*=13.7) and culture-related words (County Court *M*=1.2; County Koori Court *M*=1.2). Prosocial words were lower in incidence than risk characterisations but not as scarce as culture-related words. It is important to note that risk, prosocial and culture keywords comprised a small proportion of the overall number of words in a PSR, given that extended PSRs are generally over 1,500 words in length.

On average, risk-related words accounted for more than half of all extracted dictionary keywords in the County Court (60.3%) and County Koori Court (56.5%). After we adjusted our analyses to account for the number of keywords in each of our dictionary categories, prosocial keywords were the most common across both samples.

Table 2 presents the findings from our text-mining analyses for the County Koori Court sample and mainstream County Court sample.

Table 2: Mean frequencies and percentage of keywords by category and court type

Court	Risk			Prosocial			Culture		
	M (*SD*)	%	Normalised %	*M* (*SD*)	%	Normalised %	*M* (*SD*)	%	Normalised %
All keywords									
County Court	39.3 (41.4)	60.3	36.5	21.7 (19.0)	37.9	58.8	1.2 (2.1)	1.8	4.6
Koori Court	23.3 (34.5)	56.5	34.0	13.7 (17.2)	33.9	58.3	1.2 (2.5)	3.4	7.7
Unique keywords									
County Court	12.7 (9.2)	69.4	41.4	5.2 (4.1)	27.6	49.1	0.7 (1.3)	3.0	9.5
Koori Court	8.4 (7.4)	63.5	38.0	3.5 (3.5)	24.3	46.2	0.8 (1.4)	5.9	15.8

Note: Normalised=The unequal number of keywords in each of our predefined dictionaries was accounted for. All keywords=Every keyword contained in our predefined dictionaries that we extracted from the pre-sentence reports. Unique keywords=Repeat presentations of same keyword within a pre-sentence report were not included in analyses

Sentiment analysis

Table 3 presents the results of our sentiment analyses for the County Koori Court sample and mainstream County Court sample. We found that the language in the PSRs for Aboriginal and/or Torres Strait Islander people in both courts was generally neither positive nor negative in sentiment. However, PSRs from the mainstream County Court contained more negatively-worded text than those from the County Koori Court ($t(61)=2.58$, $p=0.01$, $d=0.65$). The mean proportion of positive text was similar across both courts' PSRs ($t(61)=0.31$, $p=0.76$, $d=0.08$).

Table 3: Average proportion of pre-sentence reports' text classified as positive or negative (%)

Report type	County Koori Court			Mainstream County Court		
	Positive	Negative	Neither	Positive	Negative	Neither
Brief	8.2	7.1	84.9	7.8	8.4	84.0
Extended	8.4	9.0	82.6	9.4	11.6	79.0
Total	8.1	7.3	84.6	8.4	9.6	82.0

Note: County Koori Court=Koori Court Division of the County Court of Victoria. Mainstream County Court=County Court of Victoria

We analysed brief and extended PSRs separately and found that extended PSRs had a higher mean proportion of negative text than brief PSRs in the mainstream County Court (Welch's $t(28)=2.99$, $p=0.01$, $g=1.01$). This difference was also found in the County Koori Court (Welch's $t(21)=2.41$, $p=0.03$, $g=1.82$). We did not detect any differences between brief and extended reports in the mean proportion of positively worded text in PSRs for the County Koori Court (Welch's $t(4)=0.18$, $p=0.87$, $g=0.10$), nor the mainstream County Court (Welch's $t(28)=1.68$, $p=0.10$, $g=0.54$).

Discussion

This study examined the language in PSRs prepared for Aboriginal and/or Torres Strait Islander people, and compared the PSRs of those sentenced in the mainstream County Court and the County Koori Court. Our results indicated that for both courts PSRs exhibited a higher incidence of risk-related words than prosocial factors and culture-related words. The text of PSRs for both samples was mostly neither positive nor negative in sentiment. However, the mean proportion of negative text in these reports was slightly higher for the mainstream County Court sample than the County Koori Court sample. Inversely, the proportion of positive text in County Koori Court PSRs was marginally higher than in the mainstream court PSRs.

The finding that PSRs were more negative in sentiment when written for the Aboriginal and/or Torres Strait Islander people sentenced through the mainstream County Court compared to the County Koori Court could reflect various factors. It may be that PSR assessors for the Koori Court are cognisant of the Koori Court dynamics, including the presence of Elders, who will seek more holistic information in preparing their advice. It could also be due to the fact that PSR assessors are encouraged to meet with Koori Court staff or liaison officers, which broadens their inquiry for the purpose of PSR preparation.

The higher incidence of risk keywords could be attributed to the use of the LS/RNR assessment tool, which is focused on risk factors. This could in turn influence the written content of the extended PSRs in Victoria. Many of the risk keywords in our dictionary mirror the risk factors included in the LS/RNR (eg antisocial behaviours). Given that PSRs are conducted to assess suitability for a community-based order, and community safety is a sentencing principle in Victoria, the focus on risk is not unexpected. The concern with a relatively high frequency of risk words is that the person is viewed through a single lens, perpetuating the punitive tropes of the criminal justice system.

The focus on risk in PSRs has implications for the way Aboriginal and/or Torres Strait Islander people are sentenced in Victoria. A higher incidence of risk words can affect the harshness of the sentence. Risk is an aggravating factor that can contribute to the hyperincarceration of Aboriginal and Torres Strait Islander people. It has been identified in Australian courts in other jurisdictions that reliance on PSRs may result in 'a custodial rather than a non-custodial sentence, or a longer term of imprisonment than would otherwise have been imposed, or a refusal to order eligibility for parole' (*'HAS' v The State of Western Australia* [2005] WASCA 29 [62]). Reflecting the influence of PSRs, judicial officers acknowledged in research evidence that they cannot deviate from PSRs' recommendations without strong evidence that counters the claims in the PSR (Anthony et al. 2017). Moreover, PSRs can have adverse implications for prison security classification.

Strength-based, culture-related words were the least commonly used keyword group in PSRs across both court samples. There were slight differences in the use of cultural words across the Koori Court and mainstream County Court PSRs, but overall report assessors used them very little. As discussed above, this may have implications for individualised justice. The limited discussion of strength-based cultural issues in the PSRs may be due to a number of factors. The PSR structure and risk tool do not lend themselves to a consideration of cultural identity and background. Furthermore, there are few Aboriginal and Torres Strait Islander staff available to conduct PSRs (Department of Justice and Community Safety 2020). This may inhibit the propensity for report assessors to comprehend the role of culture and experiences of racism in an individual's life. Alternatively, low rates of culture-related words across both courts could reflect individual's severed connections with families and communities.

The Australian Law Reform Commission (2017) recommended that Aboriginal Community Justice Reports (which it named Indigenous Experience Reports) be implemented in Australian courts prior to sentencing. The County Court of Victoria, as well as its Koori Court division, are currently piloting the use of these reports (Victorian Aboriginal Legal Service 2021). They are prepared by Aboriginal report writers within the Community Justice Program of the Victorian Aboriginal Legal Service. The writers provide a culturally safe space where the person can share their story over six to eight weeks. Like Gladue reports in Canada, they provide a deeper discussion of a person's background and the life circumstances that exist due to their Aboriginal and/or Torres Strait Islander identity. They also canvass systemic issues affecting the individual and their criminalisation, including the role of over-policing; colonial legacies in institutions involving the person and their family and community; the person's experiences of racism in the penal, health, housing and education systems; and the impacts of child removals on the person. They highlight the person's strengths and options for community-based supports that are culturally safe and, preferably, Aboriginal controlled.

Limitations and future directions

Further research is required to engage samples with a higher number of extended reports for the County Koori Court. This will ensure that there is no bias caused by the differences in proportions of extended and brief reports between the County Koori Court and the mainstream County Court.

While the sentiment analysis identifies specific words, it does not consider their context in either individual sentences or the report as a whole. A high prevalence of prosocial words, for instance, does not necessarily demonstrate a positive report if the overall theme of the report is that the person continues to be a threat through demonstrating antisocial behaviours.

Further research, of a qualitative nature, is required to understand why the tenor of assessments in Koori Courts is more favourable than for Aboriginal and/or Torres Strait Islander people in mainstream courts. In addition, research is required to understand the impact of the PSRs on sentencing remarks, outcomes and orders.

Conclusion

The present study has demonstrated that PSRs feature, on average, more risk related words than prosocial and especially strength-based cultural factors. Framing of PSRs with a focus on risk may engender a narrow characterisation of the person and contribute to negative carceral controls. Additional or alternative mechanisms for fashioning information on and with the person need to be considered. Aboriginal Community Justice Reports could be a meaningful addition to pre-sentence information and promote a holistic account of the person. These could encapsulate information on systemic factors that have inhibited the person's circumstances and could underscore the person's strengths.

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B

Transnational serious and organised crime

3. Enablers of illicit drug trafficking by organised crime groups

Anthony Morgan and Christopher Dowling

Organised crime comprises a diverse range of criminal activities across different illicit markets. A simple distinction can be drawn between primary and secondary activities (von Lampe 2016). Primary activities are those crimes that generate profit, such as the trafficking of illicit drugs and other commodities, trafficking in persons, and fraud. Secondary activities are those that assist with the commission of profit-making crime or which help protect the individuals involved and the profit they generate (Naylor 2003). It is widely acknowledged that these secondary activities, often referred to as the 'enablers' of organised crime, are key to the success of organised crime groups.

In its most recent organised crime report, the Australian Criminal Intelligence Commission (ACIC) identified several enablers of organised criminal activity. These included money laundering, corruption, violence, the use of technology and professional facilitators (ACIC 2017). Similar enablers are identified in the threat assessment reports of the ACIC's international counterparts, including the National Crime Agency (2020) and Europol (2021a). While the evidence on drug supply networks is substantial (see Bichler, Malm & Cooper 2017), building empirical evidence on the prevalence and relative importance of many of these enablers is often hampered by the clandestine nature of organised criminal activity (Global Initiative Against Transnational Organized Crime 2021).

Money laundering conceals the criminal origin of illicit funds and enables offenders to spend these profits in the legitimate economy. It ranges from simple activities (eg cash purchases and investments) through to complex schemes involving multiple actors (eg offshore bank accounts and 'shell' companies; Levi & Soudijn 2020). Professional facilitators—individuals with specialised skills or expertise such as lawyers, accountants, real estate agents, financial advisers and public officials—can be critical to executing the more complex money laundering schemes, and to expediting or concealing the trafficking of illicit commodities through the corrupt misuse of their positions (Levi 2021). More broadly, individuals with criminal expertise are attractive to criminal groups because of the skills, networks and services they offer, especially where it assists with navigating complex supply chains (Calderoni et al. 2022; Kleemans & de Poot 2008). Encrypted communications technologies, online illicit trading platforms, alternative online banking services and virtual currencies, along with individuals adept at using these technologies, have also made it easier for organised crime actors to conceal their communications and transactions (National Crime Agency 2020). Finally, violence is a mechanism through which some organised crime groups maintain their position or extend their share of illicit markets, enhance their reputation in the criminal milieu, or settle disputes (Europol 2021b).

Strategic approaches to organised crime in Australia now emphasise the importance of targeting the entire 'business model' of organised crime groups, including these enablers (ACIC 2017; Department of Home Affairs 2018). An important question—and one with implications for how law enforcement and regulatory entities target their efforts—is how to assess both the prevalence and relative importance of enabling activities. One option is to consider which enabling activities contribute to the harm organised crime groups cause by increasing their profitability, adaptability and resilience to disruption.

Illicit drug trafficking in Australia

Organised crime groups generate substantial profits from the production, distribution and sale of illicit drugs for the Australian market (ACIC 2021; Gong et al. 2012; McFadden et al. 2014). Australian data show a strong correlation between illicit drug supply and enabling offences, such as money laundering and corruption (Hughes, Chalmers & Klimoski 2018), reflecting the key role that these enabling activities play in the illicit drug trade. What is less clear, however, is the extent to which different enabling activities contribute to the profitability of organised crime groups. In this chapter we aim to measure the relative importance of different enabling activities by examining the relationship between enabling activities undertaken by criminal groups and more harmful criminal enterprises—namely, the trafficking of multiple drug types.

Organised crime groups that traffic multiple drug types (poly-drug trafficking groups) are important players in the Australian illicit drug market. The approach varies between groups—they may diversify in-house, collaborate with other groups or outsource to another syndicate—though research suggests the division of responsibility by drug type and an overarching management structure are commonplace (Hughes, Bright & Chalmers 2017). Trafficking different illicit drug types offers several advantages, including responsiveness to changes in market demands, maximisation of profit, and resilience to law enforcement interdiction efforts, especially with regard to maintaining adequate supply (Hughes et al. 2016; Rubin et al. 2013). Previous research has shown that up to one-third of commercial importations into Australia involve poly-drug trafficking (Hughes et al. 2016). This figure is similar to estimates from the United Kingdom (Matrix Knowledge Group 2007), the United States (Natarajan, Zanella & Yu 2015) and Canada (Malm & Bichler 2011). Further, poly-drug trafficking groups have been shown to be responsible for disproportionate quantities of drug importations, to have larger amounts of money seized, to operate for longer periods and to be more likely to have concurrent charges for other serious and organised crime offences, such as dealing in the proceeds of crime, firearm offences, fraud and corruption (Hughes, Chalmers & Bright 2020; Hughes et al. 2016). In short, they are responsible for a disproportionate level of harm.

Analysing the association of different enablers with poly-drug trafficking can provide insight into which enablers contribute to greater profitability, adaptability and resilience, and therefore harm, among organised crime groups. Those enablers associated with poly-drug trafficking may be particularly important targets for disruption and regulatory and enforcement activity.

Method

In this study we described the enablers of illicit drug trafficking among a large sample of organised crime groups of national significance identified and assessed by Australian law enforcement. We then examined which enablers were associated with a higher likelihood of poly-drug trafficking among these groups.

Data

The current study examined the characteristics of organised crime groups identified by Australian law enforcement agencies as posing a threat to Australia and which were added to the ACIC's National Criminal Target List (NCTL). The NCTL, which was recently decommissioned, held information on active and nationally significant serious and organised crime groups operating in or affecting Australia. The *Australian Crime Commission Act 2002* (Cth), which governs the operations of the ACIC (formerly the Australian Crime Commission), describes serious and organised crime as an offence that involves two or more offenders, that typically requires substantial planning and organisation and sophisticated methods and techniques, or that is one of several specified offences.

We also analysed data from a linked database, the National Police Reference System. This system holds information designed to assist operational police, including the criminal histories of offenders. Records from the two databases were matched using names and dates of birth (see Morgan & Payne (2021) for a detailed discussion of the matching procedures).

There were 927 organised crime groups in the sample provided by the ACIC; however, viable information was available for 779 of these groups (84.0%). A further 55 groups were excluded because there was only one known member on the NCTL. These are most likely significant facilitators who provide services to multiple serious and organised crime groups, or individuals identified in the course of investigating an organised crime group but whose associates were unknown. This left 724 organised crime groups with two or more members, which aligns with the ACIC's definition of serious and organised crime. The sample for this study is limited to the 587 (81.1%) groups involved in illicit drug trafficking.

Dependent and independent variables

The dependent variable in the multivariable analysis is whether an organised crime group is involved in poly-drug trafficking. We define poly-drug trafficking groups as those identified as importing, exporting, manufacturing or distributing more than one drug type. Each illicit drug and its precursors were coded as a single drug type, as we were interested in whether the groups were involved in different drug markets. Substances included in the 'other drug' category were counted individually for the purpose of coding the outcome variable. Importantly, our focus is on groups that traffic multiple drug types, rather than groups responsible for importing multiple drug types in a single seizure. This is a more expansive definition that allows for more detailed analyses of the characteristics, activity and enablers of groups operating across multiple drug markets. In addition to the type of drug that each group was suspected of trafficking, the role of that group in the supply chain (importation, manufacturing and/or distribution) was also recorded.

Our key independent (or explanatory) variables reflect enablers such as money laundering, corruption, violence, connections to professional facilitators and the criminal expertise of members. Groups were classified based on whether they were involved in violence, extortion and abduction or the criminal use of firearms. We categorised other criminal activities according to the sector that was identified as being targeted and whether the groups targeting these sectors were recorded as being involved in corruption (the exploitation and infiltration of different sectors) or money laundering. We note, however, that there may be some overlap—some sectors or industries may, for example, be infiltrated and exploited by organised crime groups for the purpose of laundering the illicit proceeds of crime. We grouped related sectors together for the purpose of analysis. Groups were also classified based on whether they included professional facilitators among their membership. Alongside the average age of group members, we measured the criminal expertise of each group. To do this, we used the linked apprehension histories for all known members to determine whether groups had members who, before being added to the NCTL, had a recorded history of commercial drug supply or violence and intimidation offences. Finally, we included variables on group size, based on the number of individuals identified as affiliates, and group presence overseas or across Australian jurisdictional boundaries.

Analytic approach

First, we examined the characteristics of organised crime groups involved in illicit drug trafficking, including the types of drugs, the role groups played in the supply chain, other criminal activities and the enablers of their organised criminal activity.

The next stage of the analysis involved estimating a logistic regression model predicting the likelihood of a group being involved in poly-drug trafficking (vs mono-drug trafficking)—our dependent variable. Regression analysis measures the relationship between each independent variable and the outcome variable while controlling for the potential confounding effect of other variables in the model. Statistically significant variables are those which we can be confident are associated with a change in the likelihood of the outcome being observed. In this case, that outcome is involvement in poly-drug trafficking rather than mono-drug trafficking.

We then re-estimated the model, limiting the sample to only those groups that were under investigation or had been investigated by law enforcement (*n*=281), to account for the possibility that enablers were only identified as a result of the investigation process. This excluded those groups that had not been investigated or were still at the target development stage. To illustrate the relationship between the main explanatory variables of interest and poly-drug trafficking, average predictive margins were estimated using this reduced model and the marginal standardisation method (Muller & MacLehose 2014).

Limitations

There are advantages to using law enforcement intelligence assessments as a source of data, given the clandestine nature of organised crime. Studies that rely on open-source data are likely to miss a significant number of groups because information about those groups is not in the public domain. Useful information may not appear in official data, or even in sentencing remarks, because it relates to the modus operandi of the group and individuals engaging in criminal activity and may not relate specifically to the offences for which members of a group have been charged.

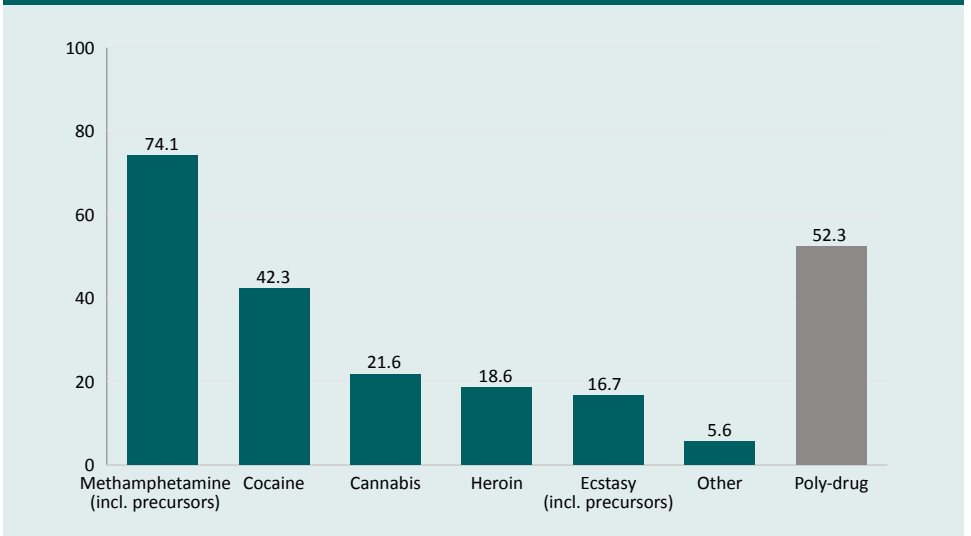
Nevertheless, we note the limitations associated with relying on intelligence data. For one, these data only capture information that is known by law enforcement agencies about individuals and groups suspected of being involved in organised criminal activity. Some groups may have been more closely targeted than others by law enforcement. We are also aware that the use of the NCTL varied between jurisdictions and over time, and has since been replaced as the source of contemporary information about priority organised crime targets.

Results

Characteristics of organised crime groups involved in illicit drug trafficking

Three-quarters of the groups (74.1%) in the sample were involved in the importation, manufacture or distribution of methamphetamine or its chemical precursors (Figure 1). The next most common drug type was cocaine (42.3%), followed by cannabis (21.6%), heroin (18.6%) and ecstasy and its chemical precursors (16.7%). A smaller proportion (5.6%) trafficked other drug types. Overall, 52.3 percent of groups trafficked more than one drug type (ie they were poly-drug trafficking groups).

Figure 1: Illicit drug types trafficked by organised crime groups (*n*=587) (%)



Source: AIC organised crime group and offender database [computer file]

The extent of organised crime involvement in different stages of the supply chain varied between drug types (Table 1). While it was more common for groups trafficking methamphetamine to import the drug or its precursors (45.5%), a substantial proportion also manufactured methamphetamine, reflecting domestic production (30.1%). Most groups were involved in the distribution stage (74.9%). Conversely, groups trafficking cocaine and heroin—which are necessarily internationally sourced—were much more likely to import the drug (59.3% and 56.9%, respectively). A significant proportion of groups were involved in multiple stages of the supply chain for one drug type, ranging from 23.3 percent of groups involved in cocaine trafficking, to 44.6 percent of groups involved in methamphetamine trafficking.

Overall, 58.3 percent of organised crime groups in the sample imported at least one drug type, 32.2 percent manufactured (or cultivated) an illicit substance, and 76.5 percent distributed a drug. More than half (54.0%) were involved in multiple stages of the drug supply chain (irrespective of the drug type).

Table 1: Illicit drug trafficking by organised crime groups, by drug type and role in supply chain (*n*=587) (%)

	Importation/ exportation	Manufacture/ cultivation[a]	Distribution	Unknown	More than one stage[b]
Methamphetamine[c]	45.5	30.1	74.9	2.5	44.6
Cocaine	59.3	0.4	60.1	3.2	23.3
Heroin	56.9	0.0	69.7	0.9	27.8
Ecstasy[c]	43.9	21.4	66.3	1.0	25.8
Cannabis	3.9	53.5	74.0	2.4	34.7
Other	42.4	3.0	69.7	12.1	–[d]
All drug types	58.3	32.2	76.5	1.9	54.0[e]

a: Manufacture refers to the manufacture of methamphetamine and ecstasy. Cultivation refers to cannabis

b: Proportion of groups suspected of involvement in trafficking that drug type

c: Includes precursors

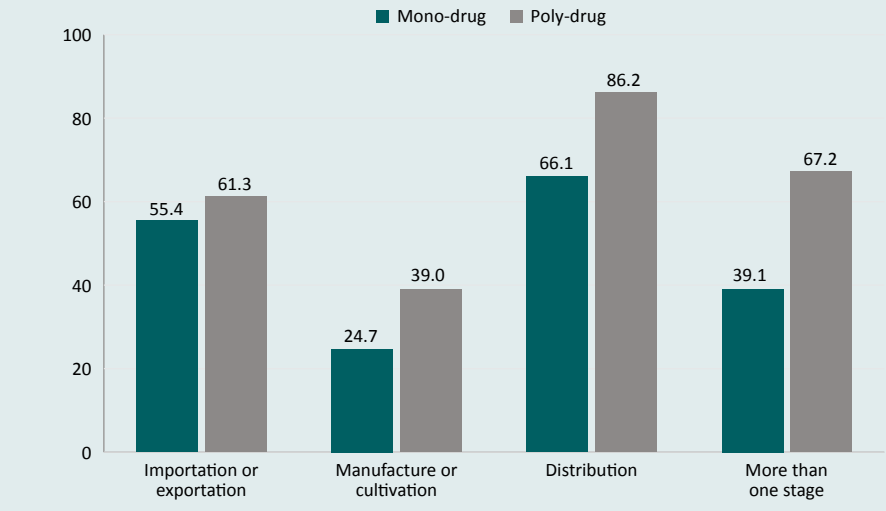
d: Not reported due to small number of individual drug types within the other category

e: Excludes 11 groups for which the supply chain involvement of all drug types was unknown

Source: AIC organised crime group and offender database [computer file]

As shown in Figure 2, poly-drug trafficking groups were significantly more likely than mono-drug traffickers to be involved in drug manufacture (39.0% vs 24.7%, $\chi^2(1)=13.41$, $p<0.001$) and distribution (86.2% vs 66.1%, $\chi^2(1)=32.73$, $p<0.001$) but not drug importation (61.3% vs 55.4%, $\chi^2(1)=2.10$, $p=0.147$). They were also significantly more likely to be involved in multiple stages of the supply chain (67.2% vs 39.1%, $\chi^2(1)=45.61$, $p<0.001$).

Figure 2: Role of organised crime groups in illicit drug supply chain, all drug types (*n*=576[a]) (%)

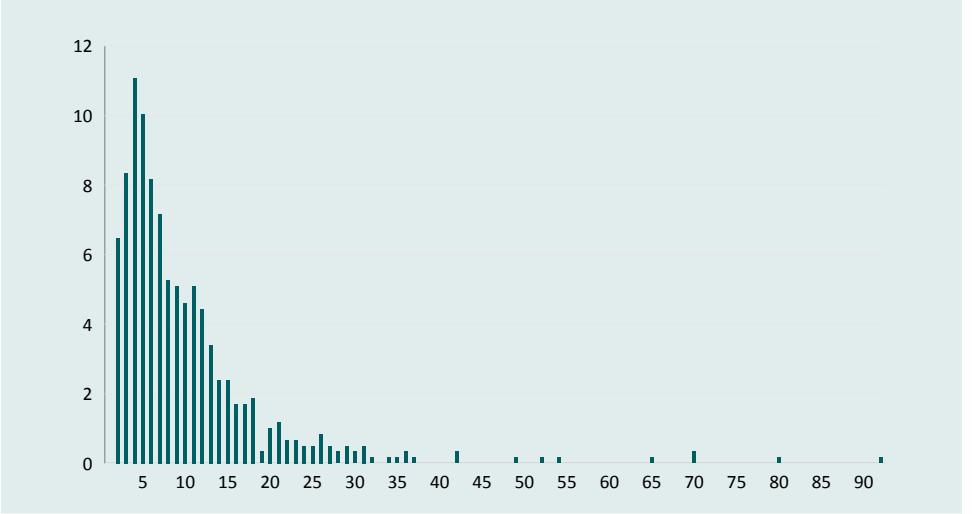


a: Excludes 11 groups for which the supply chain involvement of all drug types was unknown

Source: AIC organised crime group and offender database [computer file]

The size of each organised crime group in the sample is presented in Figure 3. The mean size of each group was 10.1 members (standard deviation=9.7); however, 35.9 percent of groups had five or fewer members, while 66.3 percent had 10 or fewer members.

Figure 3: Number of members in organised crime groups involved in illicit drug trafficking (*n*=587) (%)



Thirty-one percent of groups had at least one professional facilitator among their membership, while nearly one in five (18.7%) had two or more professional facilitators (Table 2). Overall, 73.1 percent of organised crime groups had a known presence in at least one overseas country, meaning they either originated offshore or have strong offshore links. More than one-third of groups (38.3%) had a presence in two or more overseas countries. It was also common for groups to operate across state and territory borders, with 48.2 percent having a presence in more than one Australian state or territory.

One in 10 groups (10.2%) trafficked illicit commodities other than illicit drugs, while it was less common for groups to be suspected of serious fraud offending (4.8%; importantly, a distinction is drawn between profit-motivated fraud and the fraud-related offending that may underpin money laundering or corruption activity). A significant proportion of groups had a reputation for violence, with 20.6 percent of groups suspected of engaging in violence, abduction or extortion, and six percent suspected of being involved in the criminal use of firearms.

Table 2: Characteristics of organised crime groups involved in illicit drug trafficking (*n*=587)		
	n	%
Group size, composition and reach		
Mean number of members (*SD*)	10.1 (9.7)	–
Professional facilitators		
None	405	69.0
One	72	12.3
Two or more	110	18.7
International presence		
No international presence	158	26.9
Presence in one overseas country	204	34.8
Presence in two or more overseas countries	225	38.3
Presence in multiple Australian states and territories	283	48.2
Concurrent criminal activities		
Other illicit commodities (besides drugs)	60	10.2
Fraud	28	4.8
Violence, extortion and abduction	121	20.6
Criminal use of firearms	35	6.0
Exploitation and infiltration		
Transport sector	64	10.9
Private or commercial industry	62	10.6
Public sector	26	4.4
Other sector	15	2.6
Money laundering		
Financial sector	125	21.3
Real estate	49	8.4
Gambling	54	9.2
Professional	32	5.5
Other	69	11.8
Criminal expertise		
Prior history of drug supply offending	384	65.4
Prior history of violent offending	394	67.1
Mean age of members (*SD*)	39.8 (7.6)	

Overall, 21.8 percent of groups were identified as having infiltrated or exploited at least one sector. This was most commonly the transport sector (10.9% of groups), which includes air, sea and surface transport. The majority of these groups had infiltrated or exploited the maritime transport sector (67.2%, or 7.3% of all groups), which is unsurprising given the reliance on shipping for large-scale importations (ACIC 2021). A further 10.6 percent of groups had infiltrated or exploited a private sector or commercial industry. Public sector corruption was less common (4.4%). Half of all groups were involved in money laundering (49.7%). This was most commonly carried out through the financial sector (21.3%). This included a range of methods but most often used the alternative remittance sector (44.8%, or 9.5% of all groups). Around one in 10 groups were suspected of laundering illicit profits through gambling services (9.2%) or through real estate (8.4%). A smaller proportion of groups were identified as operating as professional money laundering syndicates (5.5%).

Finally, the majority of groups had at least one member with a known history of either drug supply offending (65.4%) or violent offending (67.1%), meaning they had previously been subject to legal action by police. This suggests a high degree of relevant criminal expertise. Consistent with prior research into the criminal careers of organised crime groups (Morgan & Payne 2021), the average age of members was 39.8 years, which is much older than the age profile of other offender types.

Multivariable analysis of enabling activities and poly-drug trafficking

Next, we estimated a logistic regression model. In the model including all groups for which data were available (*n*=585), several variables were associated with the likelihood of being a poly-drug trafficking group (Table 3). In terms of group size, composition and reach, groups with more members (adjusted odds ratio (AOR)=1.04), groups with two or more members who were professional facilitators (AOR=1.82) and groups with a presence in more than one Australian state or territory (AOR=1.57) were each more likely to be poly-drug trafficking groups.

Groups with members who had a prior history of commercial drug supply offending (AOR=1.74) and violence and intimidation offending (AOR=1.89) were more likely to be involved in poly-drug trafficking, indicating the importance of criminal expertise. Most importantly, given our focus on enablers, groups which had infiltrated or exploited the transport sector (AOR=2.08), which were laundering funds through real estate (AOR=2.14) or which were laundering funds through gambling services (AOR=1.91) were all more likely to be trafficking multiple drug types. This was also true of groups laundering money through other sectors (AOR=1.83).

Table 3: Logistic regression model predicting likelihood of poly-drug trafficking among illicit drug trafficking groups

	All groups (*n*=585)[a]		Investigated groups only (*n*=281)[b]	
	AOR	95% CIs	AOR	95% CIs
Group size, composition and reach				
Number of members	1.04*	1.01 – 1.07	1.03†	1.00 – 1.07
Professional facilitators (vs none)				
One	1.10	0.62 – 1.94	0.84	0.34 – 2.07
Two or more	1.82*	1.09 – 3.02	1.59	0.71 – 3.55
International presence (vs no international presence)				
Presence in one overseas country	1.00	0.62 – 1.63	0.85	0.39 – 1.83

Table 3: Logistic regression model predicting likelihood of poly-drug trafficking among illicit drug trafficking groups

	All groups (*n*=585)[a]		Investigated groups only (*n*=281)[b]	
	AOR	95% CIs	AOR	95% CIs
Presence in two or more overseas countries	0.93	0.56 – 1.53	1.07	0.51 – 2.25
Presence in multiple Australian states and territories	1.57*	1.07 – 2.29	1.76ł	0.99 – 3.14
Concurrent criminal activities				
Other illicit commodities (besides illicit drugs)	0.93	0.47 – 1.84	1.50	0.47 – 4.78
Fraud	0.66	0.24 – 1.81	0.70	0.06 – 7.74
Violence, extortion and abduction	1.03	0.60 – 1.76	0.65	0.26 – 1.59
Use of firearms	1.39	0.59 – 3.26	1.69	0.53 – 5.44
Exploitation and infiltration				
Transport sector	2.08*	1.07 – 4.07	3.72*	1.18 – 11.73
Private or commercial industry	1.22	0.63 – 2.37	0.95	0.32 – 2.76
Public sector	1.58	0.49 – 5.06	2.40	0.41 – 1.41
Other sector	0.35	0.09 – 1.33	0.11*	0.01 – 0.89
Money laundering				
Financial sector	1.26	0.78 – 2.02	1.79	0.84 – 3.82
Real estate	2.14*	1.02 – 4.50	7.32**	1.85 – 28.91
Gambling	1.91*	1.00 – 3.65	3.01*	1.06 – 8.55
Professional	2.04†	0.92 – 4.54	2.52	0.80 – 7.95
Other	1.83*	1.02 – 3.30	2.08†	0.90 – 4.79
Criminal expertise				
Prior history of drug supply offending	1.74**	1.15 – 2.64	1.67	0.85 – 3.26
Prior history of violent offending	1.89**	1.26 – 2.83	2.37*	1.18 – 4.74
Average member age	0.99	0.96 – 1.01	0.98	0.94 – 1.02
Constant	0.31*	0.10 – 0.94	0.35	0.06 – 1.90

**statistically significant at $p<0.01$, *statistically significant at $p<0.05$. †$p<0.10$

a: Likelihood–ratio test $\chi^2(22)=99.97$, $p<0.001$; Hosmer–Lemeshow $\chi^2(8)=7.19$, $p=0.52$; AUROC=0.732; Nagelkerke $R^2=0.230$

b: Likelihood–ratio test $\chi^2(22)=51.63$, $p<0.001$; Hosmer–Lemeshow $\chi^2(8)=11.14$, $p=0.19$; AUROC=0.770; Nagelkerke $R^2=0.286$

Note: Two groups missing due to incomplete data

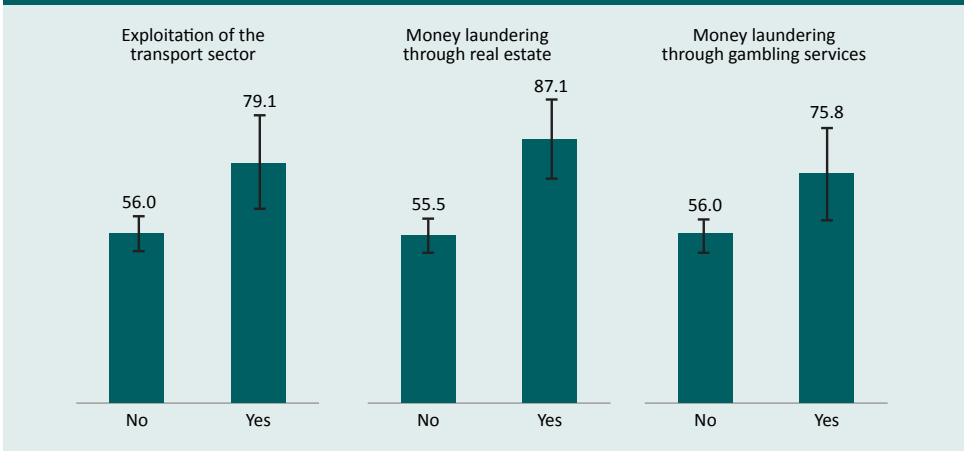
Source: AIC organised crime group and offender database [computer file]

Poly-drug trafficking groups on the NCTL were much more likely to have been investigated by law enforcement ($\chi^2(1)=6.8$, $p<0.01$). It is possible that the features that distinguish these groups from others were identified during the course of an investigation. Indeed, it is even possible that groups were only found to be trafficking multiple drugs through the course of an investigation. We therefore estimated a second logistic regression model that limited the sample to those groups that either were under investigation or had been recently investigated by law enforcement (n=281).

In this reduced model, groups which had infiltrated or exploited the transport sector (AOR=3.72), were laundering funds through real estate (AOR=7.32) or were laundering funds through gambling services (AOR=3.01) were more likely to be involved in poly-drug trafficking. This means we can be confident that these results represent real differences between poly- and mono-drug trafficking groups and are not an artefact of a different likelihood of being investigated by police.

Finally, we used the results of our regression model to estimate the predicted probability of an organised crime group being involved in poly-drug trafficking when these enabler activities are present and when they are not. The probability that an organised crime group is involved in poly-drug trafficking (rather than mono-drug trafficking) was 79 percent for groups exploiting the transport sector, 87 percent for groups laundering money through real estate, and 76 percent for groups laundering money through gambling services (Figure 4). These represent increases of 23, 32 and 20 percentage points in the estimated probabilities, respectively.

Figure 4: Predicted probability of poly-drug trafficking, by presence of enabling activities (%)



Source: AIC organised crime group and offender database [computer file]

These are all sectors that rely on some level of insider expertise. We therefore examined whether professional facilitators were more likely to be a member of the networks that relied on these enablers. We note that the role of professional facilitators in these networks—including the sector in which they were employed—was not specified. Nevertheless, in both the full and reduced samples, groups were significantly more likely to include professional facilitators if they were infiltrating or exploiting the transport sector (full sample (FS): 42.0% vs 29.6%, $\chi^2(1)=4.2$, $p<0.05$; reduced sample (RS): 48.4% vs 28.8 %, $\chi^2(1)=5.0$, $p<0.05$) or laundering money through gambling services (FS: 46.3% vs 29.5%, $\chi^2(1)=6.5$, $p<0.05$; RS: 50.0% vs 29.0%, $\chi^2(1)=4.9$, $p<0.05$). Professional facilitators were also more likely to be a member of networks involved in laundering through real estate, but the result was only statistically significant in the full sample (FS: 55.1% vs 28.8%, $\chi^2(1)=14.5$, $p<0.001$; RS: 42.9% vs 29.6%, $\chi^2(1)=2.1$, $p=0.15$).

Discussion

This research has examined the enablers of illicit drug trafficking by organised crime groups targeting Australia. From this study it is possible to make some general observations about groups involved in the illicit drug trade in the Australian context and how these findings compare to the international evidence.

Nearly three-quarters of illicit drug trafficking groups in this study had a presence in at least one overseas country, reflecting the transnational nature of the drug trade into Australia. The majority of groups had 10 or fewer members, which is consistent with the general view of contemporary organised crime groups as being mostly small, flexible groups which can exploit opportunities for profit and adapt to disruption or market changes (Bichler, Malm & Cooper 2017; Desroches 2007). The high proportion of groups with members who have relevant drug trafficking histories points to the importance of skills, knowledge and expertise—a key factor in recruitment into organised crime groups internationally (Calderoni et al. 2022). The diversity of concurrent criminal activity present among the groups generally—including one in 10 groups that had diversified into other illicit commodities—also points to the range of skills and expertise that must be present within illicit networks. Most groups had at least one member with a prior history of violent crime, while one in five groups had a reputation for violence, extortion and abduction, showing that—while the exact context and motives of this violence are unknown—some groups are willing to use violence in their pursuit of illicit profits (Europol 2021b).

Half the groups included in this study were suspected of money laundering activity. Professional money laundering was relatively rare, suggesting that most laundering was likely being done by opportunistic launderers or groups who launder money themselves (Malm & Bichler 2013), although this might reflect the focus of investigations (Soudijn 2014). Groups involved in money laundering were most likely to target the financial sector, particularly the alternative remittance sector, which continues to be vulnerable despite strict regulatory controls (Unger & den Hertog 2012). Around one in three groups included one or more professional facilitators within their membership, reflecting the significant but not universal role these individuals play in the illicit drug trade (Levi 2021). Of course, there may be other important enabling activities occurring which were not reflected in our data. For example, while many of these enabling activities are technology-facilitated, the specific role of technology was not captured in the NCTL. We know from UK data that use of encrypted communications by organised crime groups is now universal (National Crime Agency 2020). Further research into the role that technology plays, particularly among contemporary organised crime groups, is needed.

We focused on poly-drug trafficking because it can provide insight into the enabling activities that contribute to the harm caused by organised crime groups by increasing their profitability, adaptability and resilience to disruption (Hughes et al. 2016; Rubin et al. 2013). Our study builds on previous Australian research into poly-drug trafficking groups (Hughes et al. 2016; Hughes, Bright & Chalmers 2017; Hughes, Chalmers & Bright 2020). Fifty-two percent of drug trafficking groups were suspected of poly-drug trafficking, which is higher than previous estimates based on commercial seizures alone (Hughes et al. 2016). This may be due to our focus beyond the importation stage, which was a limitation of prior research; indeed, poly-drug trafficking groups were more likely to be involved in the manufacture and distribution stages of the supply chain, and multiple stages of the supply chain, than mono-drug trafficking groups.

Several enabling activities were associated with poly-drug trafficking. The first was the infiltration and exploitation of the transport sector, which can assist organised crime groups to move illicit commodities, which must be concealed from authorities while in transit (Basu 2013). The most common transport sector exploited by drug trafficking groups in this study was the maritime transport sector. This is consistent with research by Sergi (2020), who identified the important role that ports play in the illicit drug trade. Indeed, sea imports account for the largest proportion of Australian drug seizures (ACIC 2021). Poly-drug trafficking groups move larger quantities of illicit drugs (Hughes et al. 2016) and therefore have more to gain from infiltrating and exploiting the transport sector. While there may be financial costs, corrupting transport reduces the risk and non-monetary costs associated with trafficking (Basu 2014; Giommoni, Aziani & Berlusconi 2017). Unsurprisingly, groups that had infiltrated or exploited the transport sector were more likely to have professional facilitators within their membership. These have been a focus in recent years, with the introduction of additional safeguards such as more rigorous vetting of aviation and maritime employees.

Money laundering via the real estate market or via gambling services were both associated with poly-drug trafficking. Given the links between poly-drug trafficking and profitability, it makes sense that poly-drug trafficking groups would be more likely than mono-drug trafficking groups to target sectors with known vulnerabilities. While complex and sophisticated money laundering schemes are certainly used by drug trafficking groups to conceal the illegal origins of their revenue, the most common techniques are comparatively simple and include purchasing large assets and disguising revenue through the operation of legitimate businesses (Bichler, Malm & Cooper 2017). The vulnerability of the real estate market to money laundering has been well established, both here and overseas. The real estate market is characterised by high-value, non-transparent transactions, and large increases in value do legitimately occur, making it an attractive investment (Kruisbergen, Kleemans & Kouwenberg 2015; Unger & Ferwerda 2011). For this reason, recent inquiries have sought to address the vulnerability of real estate and the role of professional facilitators, which again featured prominently here (Cullen 2022; Legal and Constitutional Affairs References Committee 2022).

While gambling services, unlike the real estate sector, are a reporting entity under Australia's regulatory regime, they have nevertheless continued to attract considerable concern. Recent inquiries have drawn attention to the scale of money laundering activity associated with gambling services, particularly casinos (Bell 2022). That poly-drug syndicates are more likely than mono-drug trafficking groups to launder funds through gambling services reflects the attractiveness of the sector to groups which generate significant amounts of profit.

This study is an important step in advancing our knowledge of the role of enablers in Australian organised crime. By focusing on the enablers of organised crime groups, rather than the groups themselves, it is possible to identify regulatory or preventative measures that may reduce illicit drug trafficking. This may overcome the limitations of an over-reliance on efforts to reduce drug availability and related harm through arrest and seizures (Eggins et al. 2020). Further research is needed that can demonstrate whether restricting opportunities for corruption or laundering through high-risk sectors, primarily through regulatory measures, can have a measurable impact on organised crime offending and related harm. Evidence is growing of the benefit of certain methods outside of criminal prosecution, such as proceeds of crime action, in reducing subsequent criminal activity (McFadden et al. 2014). However, measures need to be directed further upstream (see Dowling & Morgan 2022 for an example), particularly to target the enablers of organised crime and reduce the profitability, adaptability and resilience of criminal groups.

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4. Predicting high-harm offending using machine learning: An application to outlaw motorcycle gangs

Timothy Cubitt and Anthony Morgan

Outlaw motorcycle gangs (OMCGs) are involved in both pervasive and distinctive criminal activity across Australia. While analogous to other types of gangs (Lauchs, Bain & Bell 2015), OMCGs appear to have become increasingly involved in organised criminal enterprise (Blokland et al. 2019; Dowling et al. 2021; Hughes, Chalmers & Bright 2020; Monterosso 2018; Morgan, Dowling & Voce 2020). There is increasing evidence that OMCGs engage in high-harm, organised and violent offending. This chapter outlines the development of a risk assessment tool for high-harm offending among OMCG members in New South Wales.

Concentration of offending among outlaw motorcycle gangs

Recent research employing law enforcement data has presented a clearer picture of OMCG offending. Data show that the majority of OMCG members have a criminal record (Blokland et al. 2019; Klement 2016). Research with a large sample of Australian OMCG offenders found that, in the five years prior to the analysis, more than one in five members had been apprehended for a violence or intimidation offence, and one in eight for an organised-crime type offence (Morgan, Dowling & Voce 2020). OMCG members were much more likely than the general population to have a recorded criminal history by their mid-30s.

Among criminal groups, criminal offending is concentrated within a relatively small subgroup (Ratcliffe & Kikushi 2019). This is also true of OMCGs, with serious offences, including violence and profit-motivated offences, heavily concentrated among a relatively small proportion of members and chapters (Morgan, Dowling & Voce 2020). The same is also true of geographically mobile OMCG members (Dowling & Morgan 2021). Voce, Dowling and Morgan (2021) showed an increasing trend towards violent crime, including weapons offences, among younger members, likely reflecting the changing culture of clubs (Dowling et al. 2021). While differences in offending between gangs has been observed in Australia and overseas (Blokland et al. 2019; Lauchs, Bain & Bell 2015; Morgan, Dowling & Voce 2020), there is evidence that certain individual and club-level factors are associated with a greater involvement in organised crime-type offences (Morgan, Dowling & Voce 2020).

Risk assessment and targeting of police resources

Risk assessment tools are used widely in the criminal justice response to serious offenders. Risk and threat assessments also feature in the response to organised crime (United Nations Office on Drugs & Crime 2010), though they rely much more heavily on the subjective assessment of law enforcement officers and analysts (Albanese 2008; Ratcliffe, Strang & Taylor 2014; Zoutendijk 2010).

Intelligence-led policing has been a cornerstone of the response to OMCGs, and most dedicated policing units are equipped with analyst capability to produce strategic and operational intelligence to inform law enforcement operations. This intelligence has been used to disrupt serious criminal activity by OMCGs (Bjørgo 2019), as was reported recently in the Federal Bureau of Investigation and Australian Federal Police-led Operation Ironside, which disrupted several planned murders, some allegedly involving OMCG members (Australian Federal Police 2021).

Given the significant resources directed to policing OMCGs, the number of potential targets and the potential consequences of focusing on the wrong target, there is good reason to explore the potential of structured risk assessment. At the same time, the highly secretive nature and culture of OMCGs (Dowling et al. 2021), and the context in which law enforcement disruption occurs, means that the collection of additional information to inform actuarial assessments (as is done for domestic violence or correctional risk assessments) is prohibitively difficult. Novel methods that exploit existing criminal justice data holdings are therefore required.

Using machine learning to improve criminal justice decision making

The use of machine learning analytics in the criminal justice system is a relatively recent phenomenon. Machine learning analytics have been used in recent years to interrogate policing data with considerable accuracy (Berk et al. 2009; Berk, Sorenson & Barnes 2016; Cubitt, Wooden & Roberts 2020). This type of analysis has been used to forecast domestic violence (Berk 2019; Berk, Sorensen & Barnes 2016; Grogger et al. 2021), improve judicial decision making (Berk & Bleich 2014), forecast high-harm offence types (Berk et al. 2009), and improve the accuracy of criminal justice risk assessments (Berk 2019). Machine learning offers a viable alternative to more traditional analytical methods, allowing data to be interrogated in a more granular fashion, often with greater accuracy than may be expected from, for example, generalised linear models.

That said, there have been criticisms of this approach. Important ethical and jurisprudential concerns have been identified (Berk et al. 2018; Coglianese & Lehr 2017), though often these are overstated or based on misconceptions (Berk 2021). Although there are additional concerns relating to the quality and type of data used to develop prediction models, such as the need to be discerning in training models (Bennett Moses & Chan 2018), this analytical method is increasingly applied to policing data and commonly outperforms traditional analytics (Couronné, Probst & Boulesteix 2018; Grogger et al. 2021). Transparency is important in model development (McKay 2019), while the risks associated with machine learning approaches and applications, including misclassification of individuals, blind adherence to model predictions (Ridgeway 2013) and ineffective implementation strategies (Stevenson & Doleac 2021), need to be considered.

The primary aim of this study was to develop a risk assessment tool for OMCG members using law enforcement data, with a focus on recorded high-harm offending. Given the concentration of offending—especially serious offending—among a small proportion of gang members, the focus on the most harmful offences has obvious benefits for reducing harm to the community and maximising the use of police resources. A secondary aim of this study was to examine whether a risk assessment tool that identifies and focuses disruption efforts on recorded high-harm offending, rather than any recorded offending, could address criticisms of machine learning being applied to OMCG members. These criticisms include the potential for the method to be biased by proactive policing efforts targeting OMCGs, particularly for low-level regulatory offences, such as speeding, and the potential for the over-policing of gangs or gang members that are not responsible for causing harm to the wider community.

Methodology

Data

The current study involved linking three datasets. Extracts were taken from the NSW Police Force's Gangs database and Computerised Operational Policing System (COPS). The Gangs database comprises data relating to gang membership, while the COPS extract provided offence data for individuals affiliated with OMCGs. Data received from COPS consisted of 143,497 offences committed between January 1998 and February 2020 by 5,512 individuals identified as being affiliated with an OMCG. These datasets were linked with additional data on the custodial episodes of these individuals, sourced from the NSW Bureau of Crime Statistics and Research's Reoffending Database. Individuals were matched using the unique number attributed to each individual in the Central Names Index.

To establish a dataset comprising the recorded criminal history of individuals, their custodial history, demographics and gang affiliation, individuals with missing or incomplete data were removed, and the remaining data were then aggregated by Central Names Index identifier and date of birth to remove or resolve any duplicate identities. Finally, deceased individuals were excluded from the dataset. After matching, aggregation and cleaning of data, a total of 3,542 members of various ranks and 1,970 associates, who had collectively been proceeded against for a total of 99,793 offences, were available for analysis. The analysis was restricted to members who were still active (*n*=2,246), meaning former members and associates were excluded from the modelling process.

Outcome of interest

The primary outcome of interest was recorded high-harm offending by OMCG members in the five-year period between January 2015 and December 2019 (the reference period). High-harm offences were defined as offences that featured in the top 10 percent of harm as defined by a modified version of the Western Australian Crime Harm Index (WACHI). The WACHI was developed by House and Neyroud (2018) to assign each offence type in the Australian and New Zealand Standard Offence Classification a harm index based on court penalties. This has previously been used to analyse police data on offences by OMCG members and adapted for this purpose (Morgan, Dowling & Voce 2020). High-harm offences were defined as offences that featured in the top 10 percent of harm as defined by the WACHI for which there were recorded incidents among this group (with WACHI scores ranging from 52 and above). These included:

- murder;
- attempted murder;
- manslaughter;
- aggravated sexual assault;
- import illicit substances;
- aggravated robbery;
- non-aggravated robbery;
- property damage by fire or explosion;
- deal commercial quantities of illicit substances; and
- serious assault causing injury.

The second outcome of interest was any recorded offence by OMCG members in the five-year reference period.

Explanatory variables

There were 130 explanatory variables included in this dataset, primarily relating to the criminal history of each individual, including the number of each type of prior offence, and characteristics of prior offending. A weighted prior harm variable, which was the aggregate harm from all prior recorded offences, adjusted for free time (ie time not spent in custody) was also included. Additional information, such as member rank and gang membership, was derived from the NSW Police Force's Gangs database.

Analytic approach

Given the size and complexity of these datasets, a novel approach was employed for analysis. The ability of machine learning to identify complex structures among data such as recorded offence histories is an important emerging feature of crime analysis (Berk 2013). The random forest algorithm is particularly good at predicting offending behaviours. In this research, a random forest model was used to determine which characteristics of OMCG members were most associated with recorded high-harm offending, and then any recorded offending, in the five-year reference period.

Data were randomised and partitioned into a 70 percent training set and a 30 percent test set. The training set was used to train the algorithm, and the test set was used to test the algorithm (Hyndman & Anthanasopoulos 2014). Modelling was performed through application of pre-process design matrices. Analysis was undertaken using the statistical analysis software R and the 'randomForest', 'dplyr', 'pRoc', 'pdp', and 'ggplot2' packages. The random forest model was trained on instances of high-harm offending before being exposed to the test set. This process was repeated for any recorded offending.

A receiver operating characteristic (ROC) curve was used to identify the predictive accuracy of each model, through the area under the receiver operating characteristic (AUROC) curve. The ROC curve identifies the true positive rate of classification (y-axis), compared with the false positive rate (x-axis) at any threshold value. The AUROC score, which we refer to in simple terms as the predictive accuracy of the model, represents the probability that a randomly selected individual with a recorded high-harm offence will receive a higher risk rating than a randomly selected individual who did not commit a high-harm offence. The AUROC is calculated for the model when applied to the test dataset.

The results of this random forest model are interpreted through mean decrease Gini (MDG; Hong, Xiaoling & Hua 2016). The Gini coefficient is a measure of statistical dispersion, whereby MDG are interpreted as a proportion of the overall random forest model, relative to the AUROC produced by ROC curve. In simple terms, the AUROC identifies how accurate the model's predictions are, while each variable is attributed an MDG coefficient identifying its importance in making the prediction.

To supplement these analyses, a confusion matrix was produced for the test set of both models. The confusion matrix measures the performance of the trained model on the test set for each group, providing a measure of how often the model successfully or unsuccessfully made predictions (Barnes & Hyatt 2012). Several calculations can be made using the confusion matrix, but we focus on the false positive and false negative rates. False positives, which occur when members are incorrectly classified as high-harm offenders when they are not, have potential resource implications in that they can lead police to target individuals not at risk of high-harm offending. Conversely, false negatives—when members are classified as not being high-harm offenders when they do go on to commit a high-harm offence—may result in missed opportunities to disrupt crime and prevent harm to victims.

While we were primarily interested in predicting high-harm offending, as a means of comparison, a separate analysis was computed using the same analytical method but with a different outcome variable. We attempted to predict which OMCG members would commit any criminal offence in the five-year period, and compared the overall predictive accuracy, false positive and false negative rates and variable importance for the two models to understand whether there was a substantial difference in variables that were predictive.

Partial dependence plots (PDPs) were employed as a post-hoc analysis. These help to illustrate the nature of the relationship between predictors in the model and offending, and where the risk of high-harm offending or any offending is greatest. Functionally, PDPs indicate the contribution of the variable to the probability of classification to the dependent variable (ie high-harm offence) at different points within the range of that variable. This value is relative to the MDG produced by the random forest model, controlling for the influence of other variables, and is represented on the y-axis of figures below as a value between 0 and 1. Put simply, PDPs show the relationship between individual variables and high-harm offending at different points within the range of important variables.

Limitations

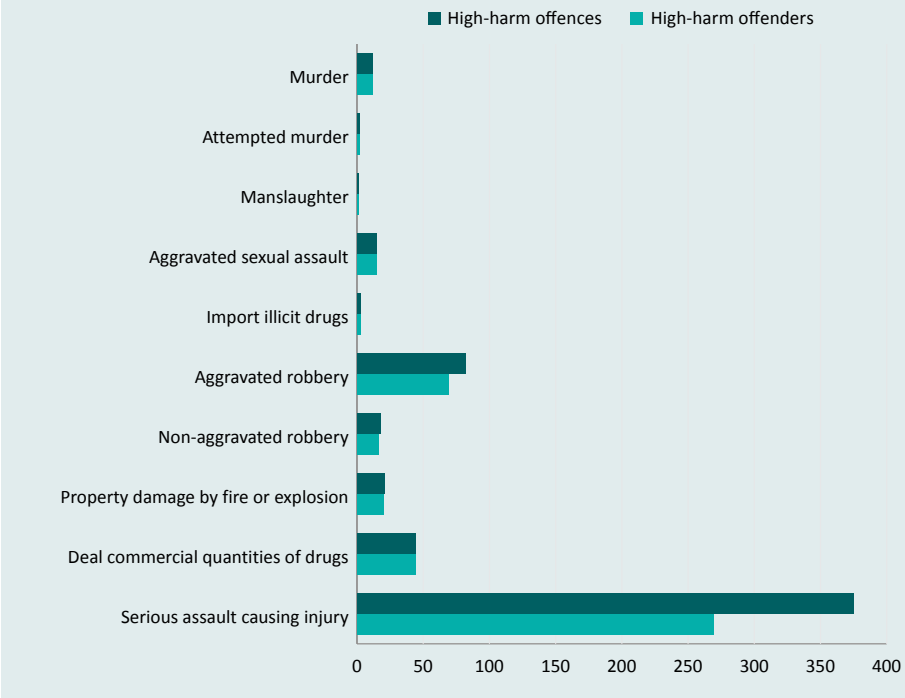
There are limitations to the model and the analysis and data that underpin it. The most obvious is the reliance on recorded offence data—namely, data on offences proceeded against by police. This model cannot account for offences that do not come to the attention of law enforcement (including prior offences or offences committed during the reference period). Conversely, there is a risk that the results are influenced by proactive enforcement and surveillance of OMCG members. However, the focus on high-harm offences likely mitigates this risk to an extent. This is reflected in differences between the models developed for high-harm offending and any offending, which suggest very different patterns of offending.

Further, though the random forest algorithm is uniquely placed to account for collinearity through bootstrap aggregation or bagging, the importance of specific variables can, on rare occasions, be impacted by collinearity (in which predictor variables are highly correlated). In addition, the model is derived from data that relate to patterns of offending among OMCG members at a particular point in time. A model which relies on historical offence data should ideally be regularly updated to reflect contemporary patterns of offending. Finally, the model was developed for OMCG members in New South Wales. The relevance of this model to other jurisdictions requires further examination. More importantly, the results presented in this chapter are not applicable to other offending populations, especially those that do not have such frequent contact with the criminal justice system (see Morgan, Dowling & Voce 2020).

Results

There were 2,246 OMCG members in the final dataset, 451 of whom committed a high-harm offence during the five-year reference period. Serious assault causing injury and aggravated robbery were the two most frequent high-harm offence types (Figure 1). This suggests that, among OMCG members, high-harm offending typically constituted violent offences. However, the next most common high-harm offence was dealing commercial quantities of drugs, reflecting OMCG involvement in drug supply.

Figure 1: Number of high-harm offences committed by OMCG members in the five-year reference period (*n*=2,246)

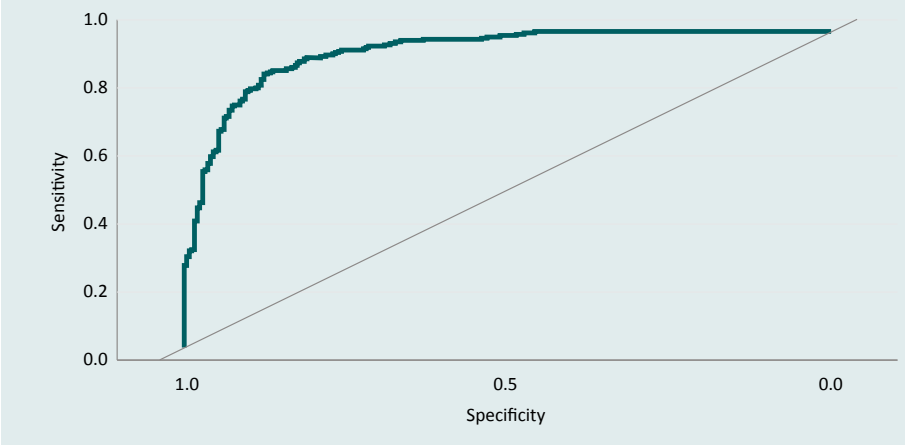


Source: NSW OMCG offending database [computer file]

Model predicting high-harm offending

The first model predicts high-harm offending among OMCG members in the five-year period between January 2015 and December 2019. This model featured a prediction accuracy of 91.4 percent, as demonstrated in Figure 2 (AUROC=0.914).

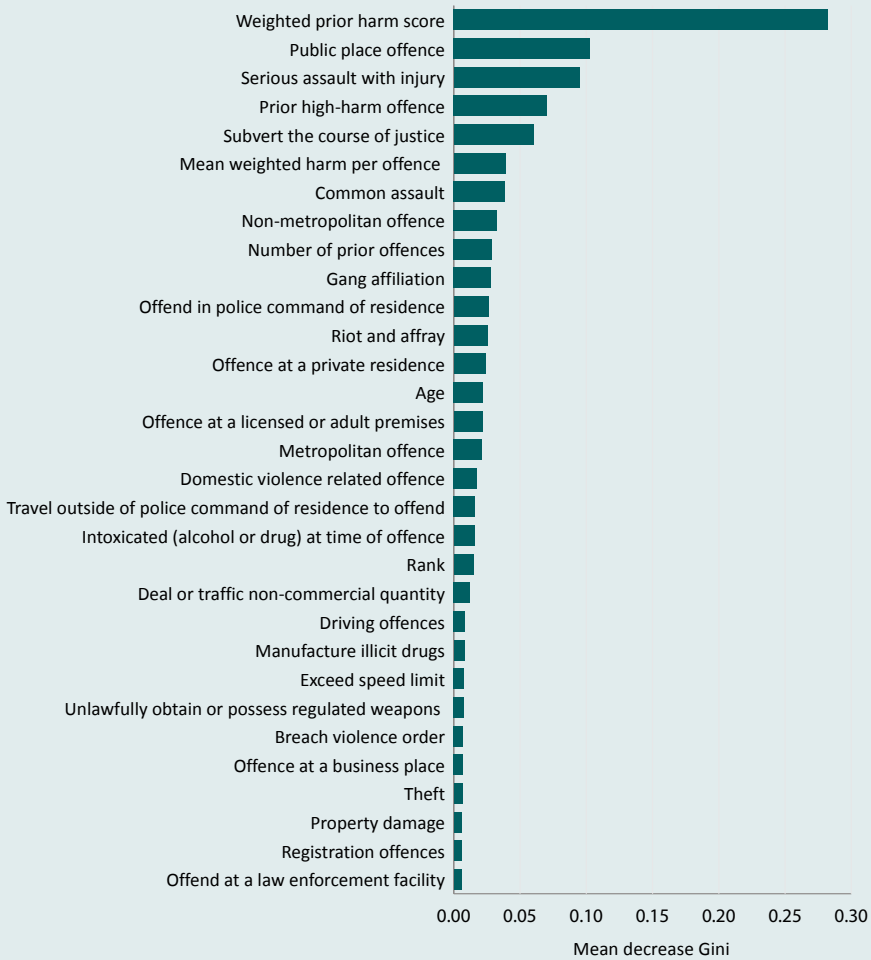
Figure 2: ROC curve for random forest model trained on high-harm offending by OMCG members



Source: NSW OMCG offending database [computer file]

Predictions about high-harm offending among OMCG members were based on the 130 variables included in this dataset, primarily relating to the criminal history of each individual. Thirty-four of these variables had no statistical interaction with the likelihood of a high-harm offence, leaving 96 variables with varying degrees of association with high-harm offending. Of these 96 variables, 31 accounted for 90.3 percent of the predictive power of the model, and the remaining 65 variables had little predictive power. Figure 3 identifies the 31 most predictive variables in this model and their importance in predicting high-harm offending.

Figure 3: Variable importance associated with high-harm offending among OMCG members



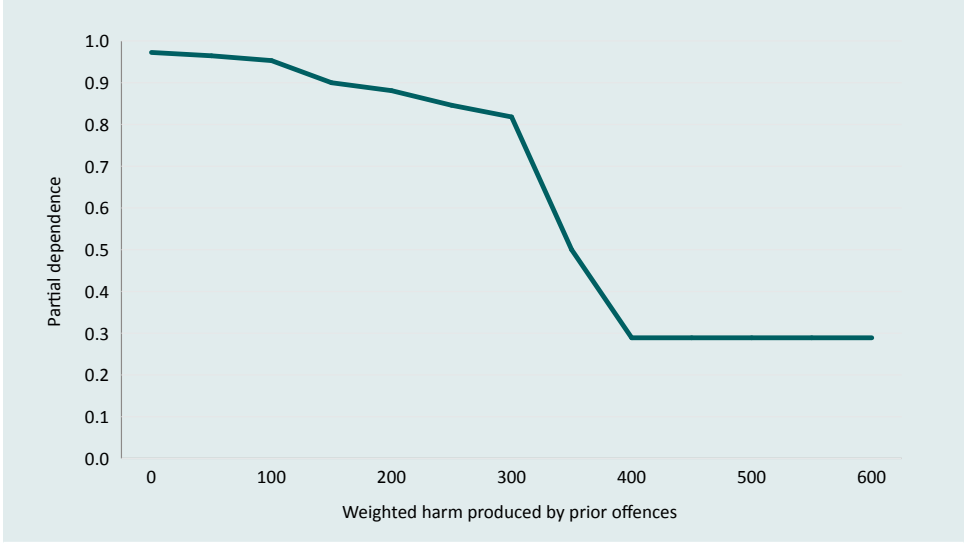
Note: The larger the mean decrease Gini coefficient, the stronger the association of that variable with high-harm offending

Source: NSW OMCG offending database [computer file]

Unsurprisingly, prior offending was an important predictor of high-harm offending. The weighted prior harm score was a particularly strong predictor of high-harm offences by OMCG members. This variable represents the total weighted harm of prior offences committed by an OMCG member, accounting for time spent in custody. The mean weighted harm per offence also emerged as important, as did prior violent offences.

Given its importance in the model, we examined the relationship between the weighted harm of prior offences and high-harm offending by inspecting the PDP (Figure 4). Risk of high-harm offending was highest where the aggregate weighted harm of prior offences was lower. In fact, though the relationship was not linear, the higher the total harm of prior offences, the lower the risk of further high-harm offending. The risk of high-harm offending was relatively stable up to an aggregate prior harm score of 300 (based on the WACHI), before a sharp decline. The relationship between the average weighted harm of prior offences and risk of high-harm offending (not shown) followed a similar pattern, as did the number of prior offences, suggesting that a history of relatively infrequent and most likely low- to medium-harm offences was more strongly associated with high-harm offending. The exception to this was serious assault resulting in injury, which—along with common assault—was an important predictor of high-harm offending. Given serious assault resulting in injury was classified as a high-harm offence, and the most frequently occurring high-harm offence, the results suggest that, as expected, prior violence was also an important predictor of future high-harm (violent) offending.

Figure 4: Risk of high-harm offence by aggregated weighted harm of prior offences



Note: Y-axis is the probability of classification to the dependent variable (ie high-harm offence) relative to the mean decrease Gini

Source: NSW OMCG offending database [computer file]

Table 1 shows where the model successfully predicted, and where it failed to identify, high-harm offending. This model was particularly good at identifying OMCG members who did not commit high-harm offences, which was important given they accounted for the majority of individuals in the test sample (*n*=538). Among OMCG members who did not commit high-harm offences during this time, the model incorrectly predicted high-harm offending in only 1.1 percent of cases. That is, the false positive rate was 1.1 percent (or a specificity of 98.9%). Conversely, the model had a false negative rate of 11.8 percent (or a sensitivity or 88.2%), meaning it incorrectly classified only 11.8 percent of members who did in fact go on to commit a high-harm offence. Overall, the misclassification rate for this model was just 3.3 percent.

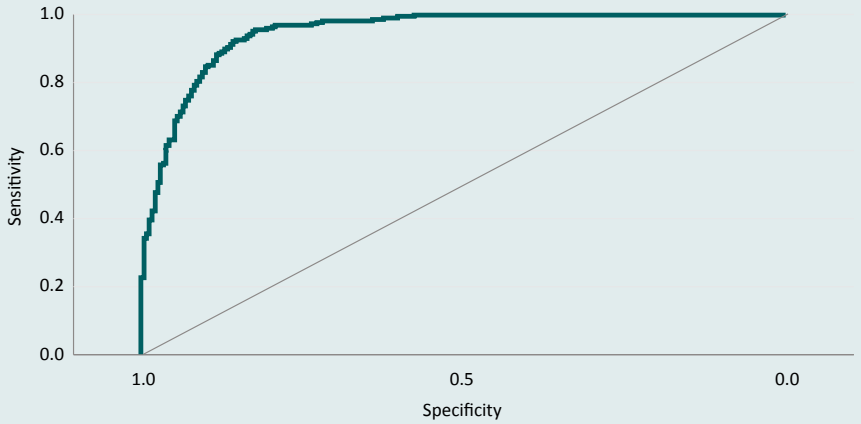
Table 1: Confusion matrix for predicting high-harm offences among OMCG members			
	True negative	True positive	Classification error
Predicted negative	532	16	2.91%
Predicted positive	6	120	4.76%
Classification error	1.11%	11.76%	674

Source: NSW OMCG offending database [computer file]

Model predicting any offending

Similar to the model developed for high-harm offending, the random forest analysis predicting any offending among OMCG members produced a robust model. This model featured prediction accuracy of 91.6 percent, as demonstrated by Figure 5 (AUROC=0.916).

Figure 5: ROC curve for random forest model trained on any offending by OMCG members



Source: NSW OMCG offending database [computer file]

Table 2 identifies where the model successfully predicted, and where it failed to predict, offending by OMCG members. This model was particularly good at identifying those who would commit any offence (which was the majority of OMCG members), correctly classifying 93.1 percent of members who offended within the five-year period (a false negative rate of 6.9%). This model was less accurate in predicting which individuals would not commit any offence within this time frame, with a false positive rate of 29.6 percent (or specificity of 70.4%). Overall, the misclassification rate for this model was 15.0 percent, which is higher than the misclassification rate of the high-harm offending model.

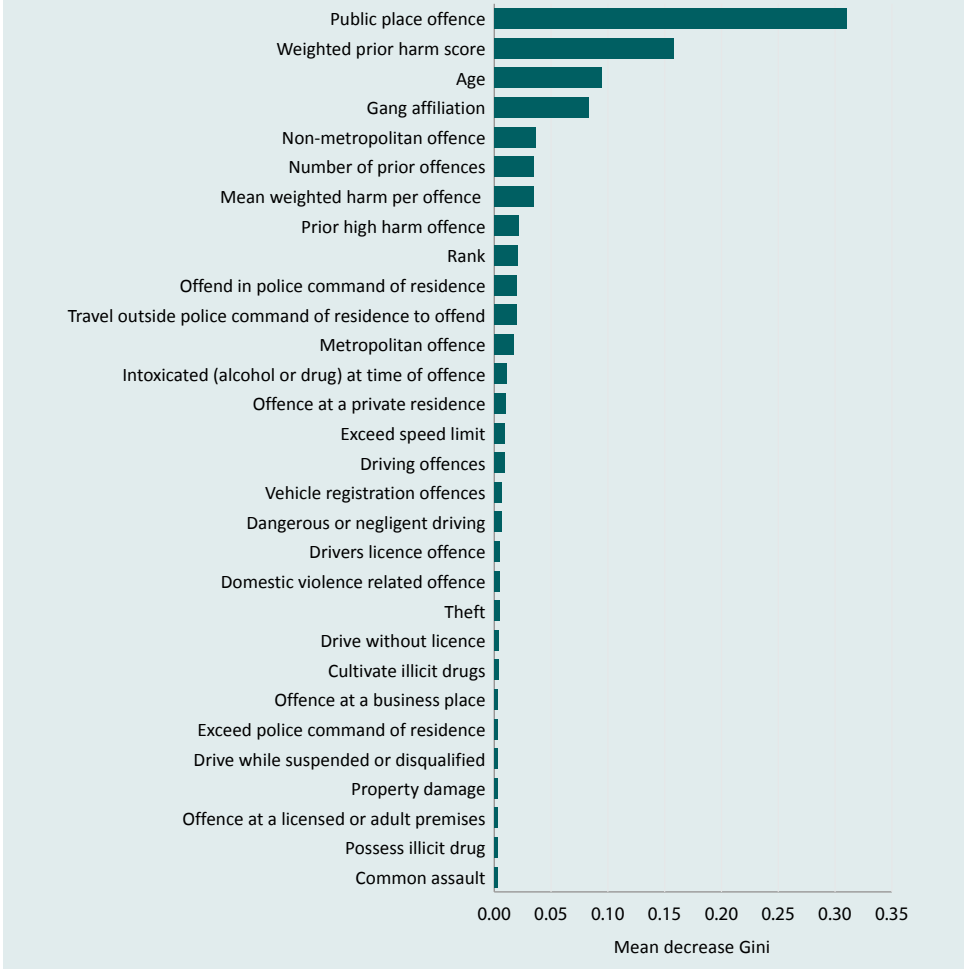
Table 2: Confusion matrix for predicting any offence among OMCG members			
	True negative	True positive	Classification error
Predicted negative	169	30	15.07%
Predicted positive	71	404	14.95%
Classification error	29.58%	6.91%	674

Source: NSW OMCG offending database [computer file]

Additionally, the variables that were most important in making these predictions were different to those in the model developed to predict high-harm offending. While the variables themselves were similar, their relative importance changed considerably (Figure 6). For example, the most important variable was not the weighted prior harm score but the number of recorded public place offences.

The age and gang affiliation of a member were also more important in predicting any offending than they were in predicting high-harm offending. The types of prior offences were less important in this model, while the prominence of driving offences among the list of variables was noted (although still comparatively unimportant). The finding regarding prior public place offences, and the similar effect sizes of different prior offence types, suggested a possible surveillance effect, whereby members who had committed higher numbers of offences in public places were more prone to further recorded offending, possibly as a function of proactive enforcement targeting these more visible offences.

Figure 6: Variable importance associated with any offending by OMCG members



Note: The larger the mean decrease Gini coefficient, the stronger the association of that variable with any offending

Source: NSW OMCG offending database [computer file]

Discussion

Recent evidence has suggested that OMCG members are prolific in violent and criminal enterprise offending (Morgan, Dowling & Voce 2020), but that recorded offending and related harm, as well as criminal mobility, is concentrated among a relatively small proportion of individuals and chapters, and among younger OMCG members (Dowling & Morgan 2021; Morgan, Dowling & Voce 2020; Voce, Morgan & Dowling 2021). Further, there are considerable differences between clubs. Some clubs have a much higher proportion than others of patched members—office bearing and not—with a history of serious offending, and some clubs have none at all (Morgan, Dowling & Voce 2020; Morgan & Payne 2021). These findings are not unique to Australian OMCGs (see von Lampe & Blokland 2020).

Given the high proportion of OMCG members involved in crime, including serious crime, predicting which members will commit high-harm offences offers significant potential benefits in terms of disruption. The model presented in this report was able to predict high-harm offending among OMCG members with a high degree of accuracy. Using custodial data to produce a weighted harm score for prior offending was important in the predictive accuracy of this model, as was the range of variables derived from these data for analysis. These findings suggest that high-harm offending among OMCG members was relatively predictable. More specifically, it was possible to predict high-harm offending using the police, custody and gangs data available for this study.

Further, the results suggest that the risk of high-harm offending by OMCG members was related to a history of repeated low-level or moderately harmful offences. Though it appears prior violence was still an important predictor of future high-harm offending (which includes further violence), the findings suggest that the model was relatively successful at identifying individuals prior to the point at which they escalated to more serious offences. It is possible that the findings here are influenced by police efforts targeting OMCG members. Once an offender has been detected for a high-harm offence, the tactics used by law enforcement may limit the likelihood of repeated high-harm offending. That is, OMCG members who commit high-harm offences become known to law enforcement, are subject to higher levels of surveillance and, as a result, have less opportunity to commit further high-harm offences. Nevertheless, the ability to accurately predict which OMCG members are most likely to commit future high-harm offences is an important finding.

There were two reasons for focusing this research on high-harm offending. First, the model is designed to help inform efforts to target and disrupt the offences—and OMCG members—that are most harmful to the community. These findings may be used to develop more accurate identification and disruption techniques for policing high-risk members of OMCGs. This model could be used by intelligence analysts to tailor disruption efforts and resource distribution among specialist units responsible for policing OMCGs. There are potential benefits in efficiently targeting the small proportion of OMCG members responsible for the most harmful crimes, but targeted strategies are also likely to be more effective. This study does not attempt to recommend disruption activities that may be suitable, but they may include efforts to encourage disaffiliation from gangs (see Boland et al. 2021), or enforcement or regulatory measures designed to reduce the opportunity for further offending.

The second reason for focusing on high-harm offending was to address potential criticisms of applying machine learning techniques to OMCG members or high-risk offenders more generally. There are important ethical implications to consider when applying risk assessment (McSherry 2013) and machine learning specifically (McKay 2019) in a real-world context. Both models had low misclassification rates and demonstrate the value of machine learning models—despite their relative infancy in criminology—in minimising the risk of false positives and false negatives, both of which have important ramifications in a criminal justice context. However, focusing on high-harm offending improved the accuracy of the model and, most importantly from an ethical perspective, reduced the rate of false positives.

Of course, risk assessment among groups of offenders is a complex task and, while this study produced a robust model, it should not be considered an absolute measure of whether an individual will or will not commit a high-harm offence. But, given this represents a smaller group of individuals than OMCG members who committed any offence over the five-year reference period, and high-harm offending by definition represents those offences that cause the greatest harm to victims and the wider community, this research points to the value of using machine learning methods and focusing on high-harm offending to make policing of OMCGs more efficient and effective.

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5. Regulatory approaches to preventing organised crime among outlaw motorcycle gangs

Christopher Dowling and Anthony Morgan

Australia's response to organised crime has relied on the criminal justice system, using strong enforcement and legal regimes to dismantle criminal groups, and deter or imprison offenders (Ayling 2017, 2014). Outlaw motorcycle gangs (OMCGs) have been the most visible target of these measures, given their prominence in Australia's organised crime landscape. Many Australian states and territories have adopted suites of laws which criminalise OMCGs and the association of their members. These laws have been introduced alongside dedicated police operations focused on disrupting the operation of OMCGs through high-intensity, low-tolerance enforcement activity.

Regulatory approaches rooted in civil and administrative law, meanwhile, are being increasingly used against organised crime in Europe (for a review, see Spapens, Peters & Van Daele 2015). These approaches focus on reducing opportunities for organised crime by blocking groups and offenders from elements of the legitimate economy that can enable it. This typically includes restrictions on the issuing of licences, permits, contracts, subsidies or grants, and the denial of real estate and other assets. Such measures can be critical to cutting off offenders from the funding streams, physical and technical infrastructure and mechanisms for concealing illicit revenue that facilitate organised crime.

Early examples of these approaches are evident in Italy (Calderoni & Di Stefano 2015; La Spina 2014) and Japan (Reilly 2014), which have long histories of private and public sector infiltration by mafia and yakuza crime organisations, respectively. More recently, the whole-of-government OMCG strategy introduced in the Netherlands best exemplifies the implementation of a regulatory approach to this offender population (van Ruitenburg 2020). Although it incorporates criminal justice measures as well, this strategy takes a broad view of disruption, with interventions coordinated across government targeting all of the conditions necessary for OMCGs to operate, including employment, finances and location.

There are recent examples of regulatory measures having been introduced in Australia, although they have typically been implemented within a broader criminal justice framework (Ayling 2017). Many Australian states and territories have now established regimes of judicial orders which restrict the activities of individuals with histories of organised crime related offending, including engagement in certain industries and financial activities. Recent changes to the *Transport Security Amendment (Serious Crime) Act 2021* aim to prevent exploitation of the aviation and maritime transport sectors—an enabler of organised crime—by introducing more stringent eligibility criteria for people applying for a card that would allow them to work in Australia's airports and seaports.

Regulatory approaches, used alongside criminal justice approaches, open up a wider variety of angles from which to target organised crime and particularly its enablers. Nevertheless, there is little local or international evidence to support the impact of these measures. Where research has been undertaken, it was often not able to completely disentangle specific regulatory interventions from other measures, making it difficult to infer the true source of any change. This is evident in a recent evaluation of the whole-of-government approach to OMCGs in the Netherlands (Klement & Blokland 2021). While results show that the introduction of this approach led to a gradual reduction in the rate of recorded organised crime offending by OMCG members, the wide range of criminal justice and regulatory measures incorporated make it challenging to identify the specific mechanisms at work.

Queensland context

In October 2013 the Queensland Government introduced a suite of measures to deal with OMCGs. Encompassing numerous acts and amendments, and two dedicated police task forces (Maxima and Takeback), these measures constituted a hardened approach to OMCGs, introducing new criminal offences and more severe penalties, increasing police powers and resources, and intensifying investigative and enforcement activity. Policing responses were further enhanced by the relocation of the Commonwealth's National Anti-Gangs Squad to Queensland to work alongside Taskforce Maxima. Implementation of these measures was facilitated by formally declaring 26 OMCGs as criminal organisations under the Criminal Code (Criminal Organisations) Regulation 2013 (Qld). These measures saw substantial increases in the arrest and charging of gang members (Goldsworthy 2015; Queensland Police Service (QPS) 2015, 2014; QPS Strategic Monitoring Team 2014).

This suite of measures included occupational licensing restrictions on members of OMCGs. This effectively prevented them from legally gaining employment in a range of industries, including but not limited to the tattoo, liquor, security, weapons and construction industries, with an aim of protecting these industries from criminal exploitation. Importantly, there is some empirical backing for these measures, despite the lack of research directly evaluating them. While employment can reduce offending among current and former prisoners (Apel & Horney 2017; Ramakers et al. 2017), and can be critical to maintaining desistence among former gang members (Tonks & Stephenson 2019), evidence also shows that employment comes with a range of illicit opportunities (van der Geest, van Koppen & Kleemans 2020; van Koppen, van der Geest & Kleemans 2020).

Unlike the criminal justice measures introduced in October 2013, which came into immediate effect, occupational restrictions commenced gradually between July 2014 and July 2016. A review of the 2013 laws by Queensland's Taskforce on Organised Crime Legislation (2016), which eventually contributed to their repeal and amendment in December 2016, criticised the inadequate review and appeal rights and the burdensome requirement that all licence applications be referred to the Commissioner of the Queensland Police Service. Nevertheless, this review found that, as of December 2015, around 25 licence applications pertaining to certain industries had been refused due to OMCG affiliations. These refusals have obvious direct implications for applicants but could also have disproportionately affected broader ongoing criminal enterprises. Refusing applications also has the potential to deter OMCG members from working in these industries and to deter employers and recruiters in these industries from employing OMCG members. The latter possibility was borne out in the findings of a recent study by Boland and colleagues (2021) examining former OMCG members in Queensland, a number of whom noted difficulties gaining employment due to their OMCG affiliations.

The legal environment regarding OMCGs in Queensland between October 2013 and December 2016, and particularly the staggered implementation of occupational restrictions nine months after the introduction of intensified criminal justice measures, offers a unique opportunity to empirically analyse a domestic regulatory approach to organised crime.

Aim and methods

This study examines the potential short-term impact of a regulatory approach to preventing organised crime in Australia. It addresses whether the regime of occupational restrictions for OMCG members implemented in Queensland from July 2014 was followed by a reduction in the harm associated with their organised crime activity.

Sample and data

Data on the criminal histories of Australian OMCG members were obtained by linking two Australian Criminal Intelligence Commission databases: the National Gangs List (NGL) and the National Police Reference System. Established in 2014, the NGL is a secure, validated and nationally agreed-upon list of OMCGs and their members in Australia. The National Police Reference System holds national police information on individuals, including their apprehension histories. (See Morgan, Dowling & Voce 2020 for further information on these databases.) The dataset codes offence descriptions using the Australian and New Zealand Standard Offence Classification (ANZSOC) scheme (Australian Bureau of Statistics 2011) and includes information on the month of each offence and the jurisdictions in which offences were committed. Both databases are used for operational and intelligence purposes and are updated regularly. Data from both databases were extracted by researchers in May 2019.

This study examined all organised crime related offending recorded in Queensland between January 2011 and December 2016 (inclusive) by men who were recorded on the NGL as members of an OMCG in Australia as of May 2019. Organised crime related offending consists of ANZSOC offence codes synonymous with an 'ongoing criminal enterprise', as defined by Quinn and Koch (2003) and operationalised by Morgan, Dowling and Voce (2020). Broadly, these offences include serious fraudulent activity, serious regulatory offences and the commercial production and supply of illicit drugs, unregistered firearms or other illicit commodities. The analysis was restricted to men who were added to the NGL in 2014 (its first year of operation) or 2015. It also excluded OMCG members who were born after 1992, leaving only those members who were 18 years or over at the beginning of the study period. Finally, since the dataset did not include those who were members during the study period but left their gangs and were removed from the NGL before data were extracted by researchers (May 2019), these former members were omitted from the study.

Analytic strategy

Measuring organised crime related harm

This study explored changes in the amount of harm related to OMCG members' organised crime activity following the introduction of occupational restrictions. Organised crime related offences, even among OMCGs, are rare occurrences in police administrative datasets, and small changes in the number of offences and offenders can mask significant changes in the extent and impact of organised crime.

The Western Australian Crime Harm Index (WACHI; House & Neyroud 2018) was used to measure organised crime related harm. The WACHI assigns a harm score to offences indicative of the estimated physical, psychological, interpersonal, economic and social damage they cause. In effect, each score represents the median prison sentence (in days) passed down to first-time perpetrators of an offence type in Western Australia between January 2010 and June 2017. There are many recent examples of equivalent harm indices being used to evaluate the impact of interventions to reduce crime harm (eg Bland et al. 2021).

WACHI scores were developed to align with offence codes used in Western Australia, which only partially correspond to ANZSOC offence codes. We addressed this issue by estimating a single harm score for all ANZSOC offence codes that were previously missing them or had more than one assigned. Harm scores were assigned to previously unscored offence codes based on scores assigned to closely related offences. Where more than one harm score was assigned to an ANZSOC offence code, the mean of these harm scores, weighted by the number of cases used to calculate the original harm score, was taken.

Based on this revised WACHI, the most harmful organised crime related offence in the dataset was the commercial supply of illicit drugs (178) and the lowest harm offence was illicit betting and gambling activities (3). Harm scores for all organised crime related offences committed in Queensland by OMCG members were summed for each month, generating a time series dataset for analysis. The highest harm organised crime related offence type originally classified by Morgan, Dowling and Voce (2020)—importing/exporting illicit drugs (1,309)—was not recorded at any point during the study period. Additionally, none of the new criminal offences created under the suite of legislation that commenced in Queensland in October 2013 were classified as organised crime related offences.

Interrupted time series analysis

This study undertook interrupted time series analysis to examine changes in the harm of OMCG members' organised crime activity following the introduction of occupational restrictions. Because the study period ran from January 2011 to December 2016 (inclusive), the analysis covered 42 months prior to the restrictions (January 2011 to June 2014) and 30 months after the restrictions were introduced (July 2014 to December 2016), or a total of 72 time points.

Interrupted time series analysis is an analytic approach to evaluating an intervention that tracks an outcome variable over multiple points in time before and after the intervention's introduction, accounting for underlying trends that are unrelated to it (Box et al. 2015; Hyndman & Athanasopoulos 2021). It was implemented in this study with auto regressive integrated moving average (ARIMA) modelling, which is well equipped to handle three common issues in time series data that can obscure an intervention's true impact:

- autocorrelation and partial autocorrelation, or the correlation of values in a time series with values at previous times;
- non-stationarity, or variation in the statistical properties of a time series dataset over time, including the means, variances and covariances; and
- seasonality, or the tendency for values in a time series to fluctuate systematically at seasonal intervals—usually every three, six or 12 months.

Interrupted time series ARIMA models incorporate covariates to account for these non-intervention related trends in order to detect changes in an outcome (in this case, organised crime related harm by OMCGs) that coincide with, and can reasonably be linked to, the timing of an intervention (in this case, the introduction of occupational restrictions). Generating an ARIMA model involves assessing whether data transformation is required to account for non-stationarity, and selecting covariates that best account for patterns of autocorrelation and partial autocorrelation. Where seasonality is detected, additional covariates are included in the model to account for it.

Model selection in this study was facilitated by an automatic search algorithm developed by Hyndman and Khandakar (2008) and implemented in the statistical software program R. This algorithm iteratively compares successive ARIMA models and identifies the best fitting model. Model selection was aided by visual inspection of the time series data and the autocorrelation and partial autocorrelation function plots, along with Augmented Dickey–Fuller and Kwiatkowski–Phillips–Schmidt–Shin testing for non-stationarity. Follow-up Ljung–Box testing was undertaken post-model estimation to ensure that there was no remaining autocorrelation in model residuals. Model fit was assessed through inspection of the corrected Akaike information criterion (AICc).

Limitations

This study relied on recorded apprehension data, which does not include offending that did not come to the attention of police. Additionally, information on time spent in custody, and by extension exposure time, could not be obtained. However, incapacitation was accounted for to some extent through the operationalisation of covariates to capture the impact of criminal justice measures introduced in October 2013 (outlined further in the next section).

The staggered introduction of Queensland's suite of responses to OMCGs in the mid-2010s offers a unique opportunity for evaluation, and the analytic strategy minimises many sources of bias in examining the impact of occupational restrictions. However, there are a lack of suitable control jurisdictions against which to compare Queensland due to the sporadic introduction of a wide variety of OMCG-specific measures across Australia's other states and territories during the study period (Bartels, Henshaw & Taylor 2021). This limits the internal validity of findings and the potential for causal inferences.

While the NGL is a comprehensive and authoritative census of Australian OMCG membership used by law enforcement agencies across the country, it does not retain information on former members. Additionally, the dates on which men are added to the NGL do not align with the dates they joined an OMCG, which are rarely known. Because of this, the dataset used in this study approximates OMCG membership during the study period, again limiting the generalisability of findings.

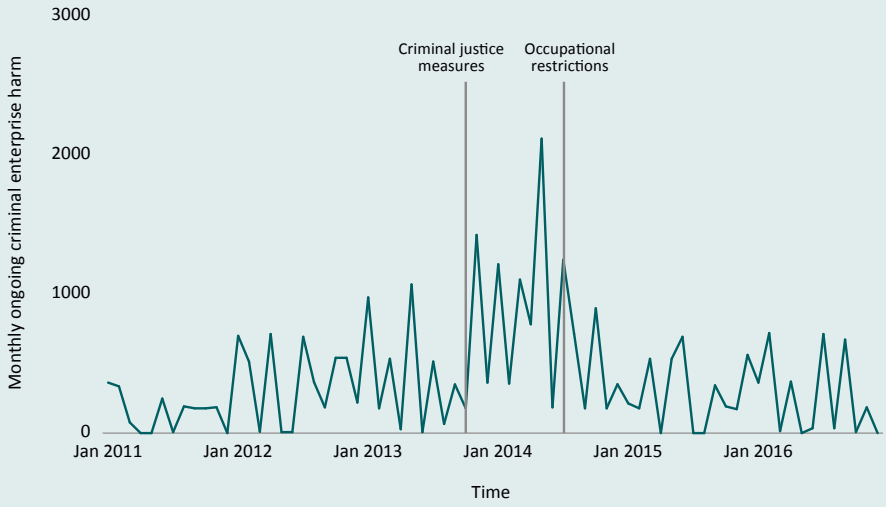
Finally, Queensland's Taskforce on Organised Crime Legislation (2016) concluded that the resources devoted to implementing occupational restrictions were disproportionate to the risks posed by OMCGs. Given the absence of data appropriate for costing, this study was not able to examine the economic viability of Queensland's occupational restrictions, and no conclusions are drawn as to whether the impacts justify the costs. Rather, this study aims to fill a gap in the knowledge base by examining whether there was likely to have been any crime reduction impact in the first place.

Results

Descriptive analysis and model development

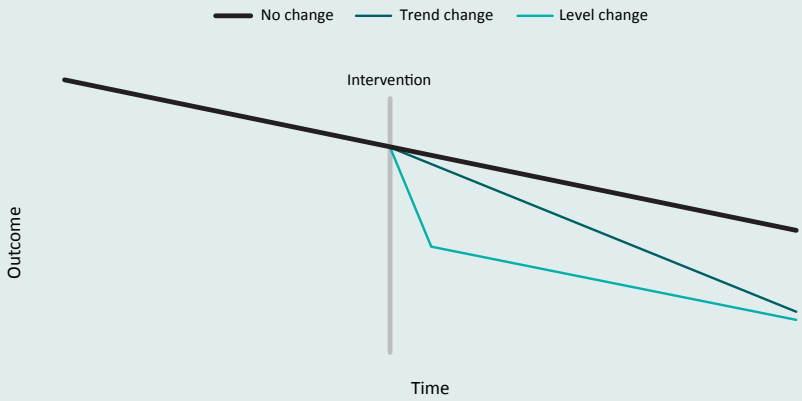
Figure 1 plots the raw monthly organised crime related harm associated with recorded offences by OMCG members in Queensland between January 2011 and December 2016. Given the gradual implementation of Queensland's occupational restrictions, it was expected that any change in organised crime related harm would also occur gradually, appearing graphically as a downward trend as opposed to an immediate drop in the level of harm. These changes are diagrammed for illustrative purposes in Figure 2, with a comparison showing no change. To test for this downward trend change, occupational restrictions were operationalised into an intervention variable, coded as zero up to July 2014 and increased by one for every subsequent month, for inclusion in the ARIMA model.

Figure 1: Monthly organised crime related harm, as measured by the WACHI, by outlaw motorcycle gang members in Queensland, 2011–2016



Source: OMCG criminal history dataset [2019]

Figure 2: Illustration of post-intervention trend and level reductions in an outcome measure



Importantly, Figure 1 shows a sharp, short-term increase in harm following the introduction of the criminal justice measures in October 2013. This likely reflects a surveillance or detection effect, as police increasingly targeted OMCG members and identified more organised crime activity (Goldsworthy 2015; QPS 2015, 2014; QPS Strategic Monitoring Team 2014). There is an equally notable decay in this short-term spike around the time occupational restrictions were introduced. Much of this decay could reflect the incapacitation of OMCG members—through imprisonment, remand, community sentences or bail conditions—for offences detected in the months after October 2013, the delayed deterrent effect of criminal justice measures, a tapering off in the intensity of these measures, or some combination. Failing to account for this spike in harm, and its subsequent decay, risks greatly overestimating the impact of occupational restrictions. The challenge was to identify any reduction in harm within this broader decay that could reasonably be linked to occupational restrictions.

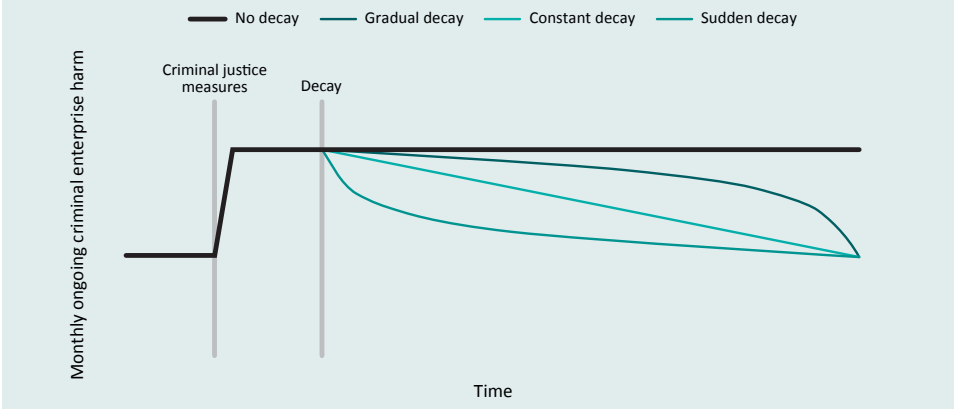
This required the inclusion of an additional covariate in the ARIMA model that captured both the immediate increase in harm following the introduction of the criminal justice measures and its decay. The immediate increase was operationalised as a level change, coded as zero before October 2013 and one from October 2013 up to the point of decay. Because it was unclear when this spike started to decay, a data-driven approach was used to determine its point of onset. This was achieved with changepoint analysis, which is a family of methods for inductively identifying points in a time series dataset at which there are meaningful changes in one or more of its statistical properties (Aue & Horváth 2013). A level change in monthly harm after the introduction of criminal justice measures was identified with a segment neighbourhood approach (Auger & Lawrence 1989). This approach was implemented in the statistical software program R using the 'changepoint' package (Killick & Eckley 2014). The search was constrained to one changepoint, with an Akaike information criterion penalty applied to prevent overfitting.

Changepoint analysis indicated a level drop in monthly harm at May 2014. This was taken as the onset point for decay in all criminal justice covariates. Since the rate of decay was also unknown, we decided to examine Queensland's occupational restrictions with multiple ARIMA models, each incorporating a different criminal justice covariate, operationalising decay as sudden (exponential), constant (linear), gradual (reverse exponential) or non-existent. These are diagrammed for illustrative purposes in Figure 3.

Prior to the main analyses, each model was run as an ordinary least squares regression and the resulting collinearity diagnostics were used to determine whether the criminal justice and occupational restriction covariates were too highly correlated. Tolerance values less than 0.1 were taken as indicative of collinearity. Based on this threshold, there was no evidence of collinearity across any of the models.

Importantly, while ARIMA models included covariates for the criminal justice measures introduced in Queensland in late 2013, it must be emphasised that the aim of this study was not to evaluate these measures, and conclusions about their effectiveness cannot be drawn from the results. These measures encompassed multiple enforcement, investigative, intelligence and legal responses, all implemented at around the same time to achieve various outcomes.

Figure 3: Illustration of different operationalisations of the criminal justice elements of Queensland's 2013 suite of outlaw motorcycle gang measures



Note: Variables operationalising decay in the spike in monthly ongoing criminal enterprise harm between the introduction of criminal justice measures *(CJ)*
and decay onset *(D)* are coded over time *(t)* in relation to occupational restrictions *(OC)* as follows. No decay: 0 if $t < CJ$ and 1 if $t \geq CJ$. Gradual decay: 0 if $t < CJ$, 1 if $t \geq CJ$ and $< OC$, and $1+\log_{100}((t-72)/((OC-1)-72))$ if $t \geq D$. Constant decay: 0 if $t < CJ$, 1 if $t \geq CJ$ and $< OC$, and $(72-t)/(72-(OC-1))$ if $t \geq D$. Sudden decay: 0 if $t < CJ$, 1 if $t \geq CJ$ and $< OC$, and $1\times\log_{100}((72-(t-(OC-1))/(72-OC)))$ if $t \geq D$

Results of Augmented Dickey–Fuller and Kwiatkowski–Phillips–Schmidt–Shin testing indicated significant non-stationarity in the variance of the data. Monthly harm totals were logarithmically transformed to induce stationarity before further analysis. For each ARIMA model, the automatic search algorithm was programmed to search across seasonal and non-seasonal models. However, seasonal differencing was not induced with the specification of a differencing term, as autocorrelation function and partial autocorrelation function plots of the transformed data showed no statistically significant autocorrelations at lags suggestive of seasonality (ie lags of 3, 6 or 12 months).

Was the introduction of occupational restrictions followed by a reduction in harm?

Table 1 summarises the results of the final ARIMA models examining changes in the organised crime related harm caused by OMCG members following the introduction of Queensland's occupational restrictions, controlling for different operationalisations of its criminal justice measures. There was no evidence of autocorrelation in the residuals of any models up to 24 lags, as indicated by non-significant Ljung–Box tests.

Table 1: ARIMA models examining changes in the organised crime related harm of OMCG members following the introduction of Queensland's occupational restrictions

	Model 1: No decay	Model 2: Gradual decay	Model 3: Constant decay	Model 4: Sudden decay
Covariate coefficients (95% confidence interval)[a] and effect size measures				
Occupational restrictions	−0.091 (−0.150, −0.033)*	−0.062 (−0.110, −0.014)*	−0.038 (−0.074, −0.003)*	−0.028 (−0.064, 0.008)
Estimated monthly post-intervention change attributable to occupational restrictions[b]	↓8.7%	↓6.0%	↓3.7%	↓2.8%
Criminal justice measures	1.522 (0.411, 2.632)***	1.455 (0.414, 2.495)***	1.585 (0.437, 2.732)***	1.962 (0.536, 3.387)***
Model statistics				
AICc	302.7	302.4	302.4	302.6
Log likelihood	−147.0	−146.9	−146.9	−147.0
Ljung–Box χ^2	11.2	11.7	11.1	10.5

***statistically significant at $p<0.001$, *statistically significant at $p<0.05$

a: Coefficients and 95% confidence intervals reflect log-transformed data

b: The estimated monthly change post-intervention reflects the trend change in monthly harm totals between July 2014 (the month in which occupational restrictions were introduced) and December 2016 (the end of the study period), and was calculated as follows: $(1 - exp_{\beta 1}) \times 100$, where β1 = occupational restrictions coefficient

Note: AICc=Akaike information criterion (corrected)

Source: OMCG criminal history dataset [2019]

There was a four- to seven-fold increase in the level of organised crime related harm with the introduction of the criminal justice measures. Statistically significant trend reductions in organised crime related harm were found after the introduction of occupational restrictions in all but the ARIMA model assuming sudden decay (model 4). Under the unlikely scenario of no decay (model 1) results suggest that organised crime related harm decreased by nine percent per month after the introduction of occupational restrictions. Where gradual decay was assumed (model 2), results suggest a six percent monthly reduction, and where constant decay was assumed (model 3), results suggest a reduction of less than four percent monthly.

While the actual rate of decay cannot be confirmed, a constant rate of decay is, in the authors' view, the most plausible. Model 3, which examines occupational restrictions under the scenario of constant decay, was (along with model 2—gradual decay) the best-fitting model (ie an AICc closest to zero). For sudden decay to be plausible, it would need to be explained by an intervention such as the arrest or incapacitation of a large number of OMCG members, or a sudden cessation of policing activity, and the interruption would have to be similar in magnitude to the suite of OMCG measures introduced in October 2013. There is no evidence for either scenario in the material documenting police activity against OMCGs in Queensland during the study period (Goldsworthy 2015; QPS 2015, 2014; QPS Strategic Monitoring Team 2014; Taskforce on Organised Crime Legislation 2016). Meanwhile, assuming anything less than constant decay results in a questionably large effect size for an intervention that targeted only a small subset of organised crime methodologies and that could only be expected to have a small impact on organised crime activity among OMCGs.

Further sensitivity analyses were undertaken using the model 3 scenario of constant decay. Models were run incorporating artificial occupational restriction covariates which operationalised their commencement three months (April 2014), two months (May 2014) and one month (June 2014) prior to their actual commencement. The fit of these models, as measured by the AICc, was compared with that of model 3 in the main analysis to determine whether the trend reduction detected in the main analysis predated the introduction of occupational restrictions in July 2014. Across all three models, the AICc was slightly higher than that of model 3 in the main analysis (302.4), indicating poorer model fit (Table 2). This further supports the notion that a small and gradual trend reduction in the organised crime related harm caused by OMCG members in Queensland coincided with the introduction of occupational restrictions.

Table 2: Sensitivity analyses with ARIMA models examining artificial occupational restriction covariates at different points of onset prior to actual implementation in July 2014

	April 2014, constant decay	May 2014, constant decay	June 2014, sudden decay
Coefficients (95% confidence interval)[a] and effect size measures			
Occupational restrictions	−0.035 (−0.072, −0.002)*	−0.036 (−0.072, −0.003)*	−0.037 (−0.073, −0.003)*
Criminal justice measures	1.645 (0.498, 2.792)***	1.624 (0.477, 2.770)***	1.604 (0.457, 2.750)***
Model statistics			
AICc	302.6	302.5	302.5
Log likelihood	−147.0	−146.9	−147.0
Ljung–Box χ^2	11.0	11.0	11.0

***statistically significant at $p<0.001$, *statistically significant at $p<0.05$

a: Coefficients and 95% confidence intervals reflect log-transformed data

Note: AICc=Akaike information criterion (corrected)

Source: OMCG criminal history dataset [2019]

Discussion

Findings from this study suggest that the introduction of occupational restrictions on OMCG members in Queensland from July 2014—part of a suite of measures implemented by the Queensland Government to combat OMCGs—was followed by a small and gradual reduction in their organised crime related harm. Estimates vary according to the assumptions used in the modelling, with results ranging from no significant reduction to a reduction of almost nine percent per month in organised crime related harm. The most plausible outcome is that these restrictions were followed by a three to four percent monthly reduction in organised crime related harm. This study offers the first Australian evidence for the potential impact of occupational restrictions on organised crime and, more broadly, for the potential effectiveness of regulatory approaches to organised crime.

Occupational restrictions, like most regulatory measures, are a form of opportunity reduction in that they prevent would-be offenders from exploiting elements of the legitimate economy to engage in organised crime. However, it is difficult to discern from these results whether this is likely to have been achieved through the actual refusal of jobs to OMCG members or through wider deterrence. While the final report of Queensland's Taskforce on Organised Crime Legislation (2016) notes only a small number of licence refusals under this regime, research has hinted at the widespread difficulties many men with OMCG affiliations in Queensland experienced gaining employment during this period (Boland et al. 2021), suggesting at least some deterrent effect. Nevertheless, the principal mechanism by which occupational restrictions are likely to have reduced organised crime is unknown.

Critically, it should be remembered that occupational restrictions were applied solely on the basis of an individual being affiliated with an OMCG, whether or not they had an accompanying police record of serious or organised crime. This highly controversial approach has since given way, in Queensland and elsewhere, to individually targeted judicial orders that set a stricter threshold for applying restrictions and that can only be issued by courts post-conviction. Queensland's Taskforce on Organised Crime Legislation (2016) also proposed a number of other mechanisms by which restrictions could be applied, including a 'blue card' system similar to that regulating occupations that involve working with children in Queensland, which also relies on prior convictions.

The decision to examine the occupational restrictions implemented in Queensland between 2014 and 2016 was made purely to take advantage of a unique opportunity for evaluation. Considered from an empirical perspective, the individual targeting of regulatory measures based on higher legal thresholds might reduce their effectiveness by limiting the pool of individuals to whom they apply. Conversely, regulatory measures might increase in efficacy if they extend beyond the formal membership of 'declared' organisations, taking account of the fluid structures of many organised crime groups and networks, in which people constantly move into and out of them (Bouchard & Morselli 2014; Morselli 2009).

It is also worth noting that these results have emerged alongside those highlighting the important role employment can play in disengagement from criminal lifestyles (Apel & Horney 2017; Ramakers et al. 2017; Tonks & Stephenson 2019). The former OMCG members interviewed in Boland and colleagues' (2021) research highlighted employment as a critical source of material and social support, and important to helping them stay disengaged from their gangs. Occupational restrictions, and regulatory approaches more broadly, must balance a concern for preventing exploitation of the legitimate economy with the need to provide access to this economy in support of offender desistence (Douglas & Smith 2018).

Although promising, and with significant implications for policy, these findings highlight the pressing need for further research to build the evidence base on whether and how regulatory approaches can reduce organised crime. It is also important to read these findings against the limitations discussed. Most notably, the ability to make definitive causal claims about the impact of occupational restrictions is somewhat limited by the complicated legislative and policing environment in which they were introduced, and uncertainty regarding the true impact of other measures introduced to combat OMCGs. While a number of methods were used to disentangle occupational restrictions from other measures introduced at around the same time, it is not possible to infer a causal impact with complete confidence. More than many other interventions, the evidence base for regulatory approaches would benefit from further research that evaluates them across multiple locations and contexts.

This study attempted to measure the possible short-term impact of a regulatory approach to organised crime by OMCG members in Australia. Findings highlight the potential utility of measures outside the criminal justice system in preventing this form of crime. Measures like these should be subjected to more rigorous studies, including prospective studies, to build an evidence base of alternative strategies to reduce the significant burden of organised crime to the Australian community.

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6. Outlaw motorcycle gangs and domestic violence

Anthony Morgan, Timothy Cubitt and Christopher Dowling

Outlaw motorcycle gangs (OMCGs), as they are most often known in Australia, have come to embody principles of camaraderie, discipline and loyalty, while exhibiting aggression, machismo and recklessness. This subculture is underpinned by hyper-masculine attitudes (Quinn 2001), which are receiving increasing attention following recent high-profile cases of violence against the partners of OMCG members (Kos & Howells 2017; Utting 2022).

A defining feature of OMCGs is their exclusively male membership (Lauchs, Bain & Bell 2015). Women have been refused membership of clubs since the 1960s, when they were first excluded from the Hells Angels (Barker 2015), though female-only clubs have, at times, existed in Australia (Veno 2012). While some clubs have promoted themselves as being family friendly and inclusive of partners (Boland et al. 2021), research has shown that women can be treated by members as property who can be sexualised, objectified and subjected to acts of sexual degradation and violence (Cooper 2004; Cooper & Bowden 2006; Hopper & Moore 1990; Veno 2012), though this varies according to their position and social status within the club (Robinson & Bain 2017).

The involvement of women in OMCGs, including as victims of domestic violence perpetrated by club members, has received very little scholarly attention (Cooper 2004; Robinson & Bain 2017). This is despite clear evidence of high rates of violence among OMCG members generally, including evidence that these rates are increasing among younger members (Blokland et al. 2019; Morgan, Dowling & Voce 2020; Voce, Morgan & Dowling 2021). While some of this violence is associated with intra- and inter-club conflict, resulting from territorial disputes or the 'patching over' of members, it is also a feature of the outlaw lifestyle that characterises OMCGs.

Traditional gender norms—which promote male dominance, aggression, strength and competitiveness—and violence supportive attitudes are reflected in the OMCG lifestyle (Lauchs, Bain & Bell 2015; Wolf 1991). These norms are well established as key determinants of violence against women (McCarthy, Mehta & Haberland 2018). The strong group identity within OMCGs may reinforce and encourage these attitudes and norms. As well as leading to the objectification of women by OMCG members during club gatherings, these attitudes and norms potentially influence OMCG members' behaviour with women outside of these settings, including in their intimate relationships.

There is some evidence from Queensland that partners of OMCG members are significantly more likely than the partners of other men to be a victim of domestic violence, including strangulation offences (Queensland Police Service 2021). Victims of OMCG-related domestic violence have also been shown to be present in samples of women receiving assistance from specialist support services (Cooper 2004). A recent study by Van Deuren et al. (2021) found that members of Dutch OMCGs were significantly more likely to perpetrate domestic violence compared with other Dutch citizens, including after taking into account differences in age profiles, ethnicity, income, educational level and work status. The violence perpetrated by OMCGs is likely also qualitatively different from domestic violence in other contexts, including in the use of gang affiliates to carry out acts of violence and control against a member's intimate partner (see Coroners Court of Queensland 2021 for an example).

The reputation of OMCGs for their culture of secrecy and intimidation of victims and witnesses also presents challenges in holding OMCG members accountable for domestic violence offending. Certainly, there are unique circumstances associated with OMCG-related domestic violence. Partners who seek help from police about domestic violence can be at increased risk of retaliation, not only because of the domestic violence report but because they may be perceived to be acting as an informant, telling police about other club-related activities (Cooper & Bowden 2006). This can make it difficult for victim-survivors to provide evidence, so due consideration must be given to these circumstances (Coroners Court of Queensland 2021). There may also be negative perceptions of victim-survivors of OMCG-related domestic violence among criminal justice agencies because of their affiliation with OMCGs and, potentially, involvement in gang-related criminal activity (Cooper, Anaf & Bowden 2008).

Though it is somewhat intuitive that high rates of violence among OMCGs generally would include violence towards intimate partners, developing a better understanding of the nature of domestic violence among OMCG members can inform the approach of police, including those working in gang units, specialist domestic violence units and general duties officers. This can also help identify the support needs of victim-survivors of domestic violence by OMCG members. In this chapter we aim to better understand the characteristics of recorded domestic violence offending among OMCG members in one Australian state and compare them with the domestic violence offending of other male offenders.

Methods

This chapter presents the results from two related studies. The first examined patterns of domestic violence offending among OMCG members, while the second compared a subset of OMCG offenders with other offenders who committed their first recorded offence in the same year. In these two studies, we address the following research questions:

- How common is recorded domestic violence offending among OMCG members?
- How does the prevalence, frequency and persistence of recorded domestic violence among OMCG members with an offending history differ from that of non-OMCG offenders?
- How does the severity of domestic violence among OMCG members differ from that of non-OMCG offenders?
- Are there differences in the outcomes of domestic violence charges for OMCG members and non-OMCG offenders who are proceeded against by police?

Data for Study 1

Study 1 measured the prevalence and characteristics of recent recorded domestic violence offending among all known OMCG members in New South Wales with a recorded history of offending. This involved linking data from the NSW Police Force's (NSWPF) Gangs database on 5,512 individuals who had been identified by NSWPF as a member or associate of an OMCG, data from the Computerised Operational Policing System (COPS) on their recorded criminal histories, and data on their custodial episodes sourced from the Reoffending Database managed by the NSW Bureau of Crime Statistics and Research (BOCSAR). Individuals with missing or incomplete data or who were deceased were removed, and duplicated identities were resolved. After matching, aggregation and cleaning of data, 3,542 members were available for analysis. The analysis was restricted to members who were still active at the time of data extraction (February 2020; *n*=2,246), meaning they were still actively involved as members of a club and had at least one recorded criminal offence. We hereafter refer to these individuals as 'OMCG members'. Associates (*n*=1,970), broadly defined as individuals with a known affiliation to an OMCG but who do not hold an official status within the club, were excluded.

Data for Study 2

Study 2 compared OMCG members with a recorded history of offending with non-OMCG offenders. The sample, originally examined in Dowling, Boxall and Morgan (2021), was selected on the basis that they committed their first recorded offence in the same year. Data were provided by BOCSAR on the recorded criminal and custodial histories of a sample of 12,001 offenders born in or after 1984 who committed their first offence between March 2008 and February 2009—more specifically, their entire offending history in the 10 years after this first offence. These selection criteria were necessary to ensure the availability of the full recorded criminal history of each person (which may not be available for offenders born prior to 1984 due to the limits of historical data), and to ensure the accuracy of data on involvement in domestic violence for the 10-year observation period (hence selecting offenders who first offended in 2008–09). BOCSAR was also responsible for linking data on the identities of OMCG members, which were provided by NSWPF from their Gangs database (the same list used in Study 1), and information on finalised charges, which are charges that have been fully determined by the court and for which no further court proceedings are required. Within the sample of 12,001 offenders who met the selection criteria, 135 were known affiliates of OMCGs.

Analytic strategy

In Study 1, we analysed the recorded criminal histories of OMCG members for the 10 years prior to data extraction (May 2020). In Study 2, we measured offending in the 10 years after each offender's first recorded offence in 2008–09. We used consistent offence categories in both studies (namely, domestic violence offending and violent non-domestic offending), as well as focusing on the same criminal history characteristics.

Domestic violence offences included both violent and non-violent offences occurring during the observation period that were flagged in the NSWPF COPS as domestic violence related (ie committed against a current or former intimate partner). We also considered violent non-domestic offences, to determine whether the differences between OMCG members and non-OMCG offenders in relation to domestic violence reflect differences in violent offending more generally. Violent non-domestic offences included offences against individuals other than a former or current intimate partner, such as homicide, manslaughter, physical assault, stalking, threats, kidnapping or deprivation of liberty, and robbery offences.

Following the approach taken by Dowling, Boxall and Morgan (2021), we analysed the recorded criminal histories across several dimensions:

- onset, which refers to the age at which an individual committed their first recorded offence;
- frequency, which is the total number of offences an offender was recorded as having committed within the observation period; and
- persistence, which refers to the total number of times an offender was proceeded against by police, resulting in a finalised matter (ie where all charges are finalised and no further court proceedings are required).

The latter measure—persistence—was used to determine whether an individual had reoffended after having been proceeded against by police and their matter being finalised in court. Each finalised matter could involve multiple offences spanning multiple criminal events.

Offence harm was measured using a modified version of the Western Australian Crime Harm Index, which assigns each offence a harm index based on the court penalties imposed on first-time offenders (House & Neyroud 2018). This method has previously been applied to analysing the criminal offending of OMCGs (Morgan, Dowling & Voce 2020). Its value lies not in providing a meaningful estimate of the amount of harm caused by each offence but in measuring the relative harm of offending by two or more offenders or groups.

In Study 2 we analysed outcomes of finalised matters. We focused on whether an offender was found guilty of at least one of the domestic violence or violent non-domestic offences for which they had been proceeded against. While we compared OMCG members and non-OMCG offenders based on whether they had ever been found guilty, we needed to account for the fact one group may have more finalised matters than the other (thereby increasing the likelihood of at least one guilty outcome). We therefore also compared outcomes for the first finalised matter.

Even so, there may still be observable and unobservable differences between OMCG members and non-OMCG offenders, and particularly the characteristics of the index matter, which may be related to the likelihood of a guilty outcome. Given the small sample of OMCG members with a domestic violence offence (*n*=50) we used a statistical technique called nearest neighbour matching (see Abadie & Imbens 2006) to account for observable differences between the two groups. An advantage of nearest neighbour matching is that it allows for exact matches for variables that are not well balanced between the two groups of interest. Matching variables included the age of onset for domestic violence offending, the number of concurrent domestic violence charges, whether any of the domestic violence offences involved physical violence, and the geographic remoteness and socio-economic conditions of the offender's residence at the time of being proceeded against, as measured using the Socio Economic Index for Area (SEIFA). Nearest neighbour matching using 'teffects' in Stata was carried out to estimate the potential outcome for each case in the OMCG and non-OMCG group, and a coefficient of difference was calculated by taking the difference between the actual and estimated outcomes (Abadie & Imbens 2006). We repeated this process for violent non-domestic offences.

Limitations

There are obvious limitations to relying upon recorded criminal histories to measure domestic violence offending, given the relatively low rates of reporting to police (Morgan, Boxall & Payne 2022). This issue is likely to be amplified among OMCG members and their partners, given the culture of secrecy that exists within these clubs (Van Deuren et al. 2022). In the absence of alternative sources of data, the analysis presented here provides at least a partial picture of the extent and characteristics of offending among OMCG members, relative to other offending cohorts. Relatedly, we note the limitations of relying on incident-level data, especially when there is growing evidence and recognition of coercive control as a key facet of domestic violence which is under-represented in criminal justice data (Stark & Hester 2019). Given what we know about OMCG culture and the population of domestic violence victims in recorded crime data, we assumed most of the victims of domestic violence offences perpetrated by OMCG members were female; however, the gender of victims was not available in the data used for this study.

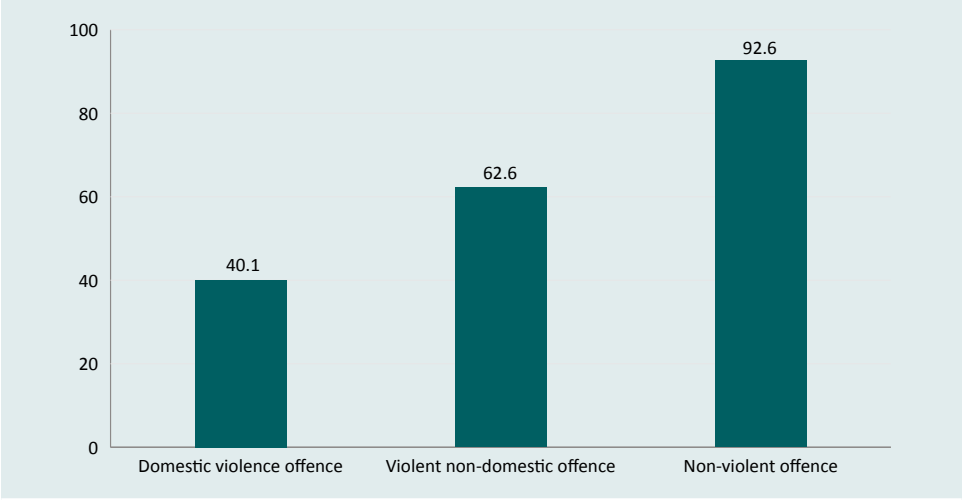
The sample of OMCG members in Study 2 was relatively small when compared to the larger sample of OMCG members in Study 1. Further, we know that a significant proportion of OMCG members are older than the sample used in Study 2 (see Morgan, Dowling & Voce 2020). While the rates of domestic violence offending were relatively similar in both the full sample and smaller subsample of OMCG members, we need to be cautious about generalising results from this study to the wider OMCG population. We also do not have data on when individuals joined an OMCG. The offending represented here was perpetrated by individuals who are known OMCG members, but the offences did not necessarily occur while they were members of an OMCG. This is especially true when we focus on early career offending, and the first finalised matter, in Study 2. Finally, there are limitations associated with the use of matching techniques to account for non-random assignment, most notably the inability to account for unobserved differences between the two groups being compared. We are cautious with regard to our conclusions about the differences between OMCG members and non-OMCG offenders for this reason.

Results

Study 1: How common is domestic violence offending among outlaw motorcycle gang members?

The prevalence of domestic violence, violent non-domestic offending and non-violent offending by OMCG members in the prior 10 years is presented in Figure 1. Overall, two in five OMCG members (40.1%) had been proceeded against for at least one domestic violence offence in the previous 10 years. Three in five (62.2%) had been proceeded against for a violent non-domestic offence, while nine in 10 (92.6%) had at least one recorded non-violent offence of any kind in the previous 10 years. A majority of domestic violence offences were assault offences (acts intended to cause injury; 74.1%).

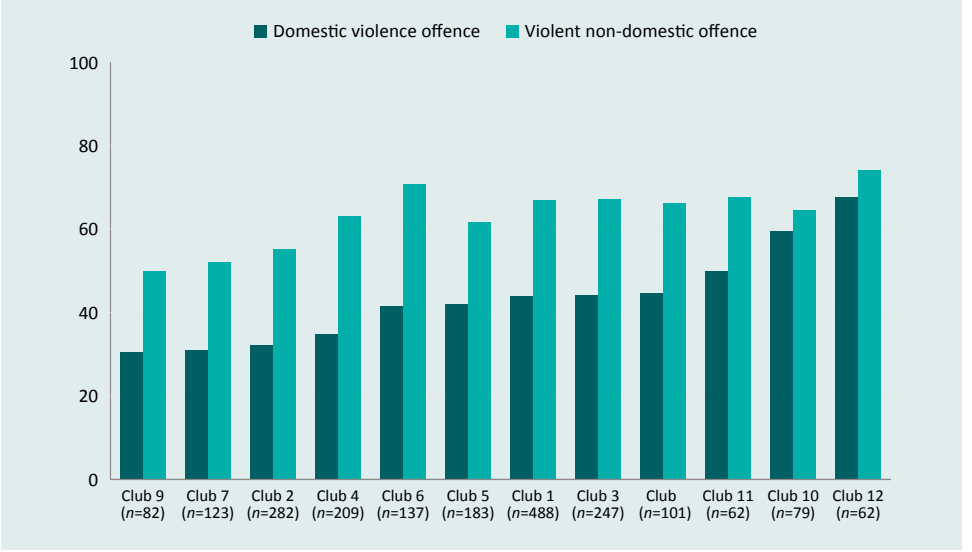
Figure 1: Prevalence of domestic violence offending, violent non-domestic offending and non-violent offending in the previous 10 years among OMCG members in NSW (%) (*n*=2,246)



Source: NSW BOCSAR; NSWPF [dataset]

Next, the prevalence of domestic violence and violent non-domestic offending among OMCG members was analysed by club affiliation (Figure 2). This was limited to the 12 clubs with at least 50 active members. There appeared to be more variation between clubs in domestic violence offending than in violent non-domestic offending. The prevalence of domestic violence offending ranged from 30.5 percent of members in Club 9 to 67.7 percent of members in Club 12. Even among the four largest clubs—those with more than 200 members—the prevalence of domestic violence offending ranged from 32.3 percent of members to 44.1 percent of members. This means that, even in clubs with the lowest rate of domestic violence offending, one in three members had a recorded history of domestic violence.

Figure 2: Prevalence of domestic violence and violent non-domestic offending among OMCG members in NSW, by club (%)



Source: NSW BOCSAR; NSWPF [dataset]

Study 2: How do outlaw motorcycle gang members compare to other offenders?

Characteristics of OMCG members and non-OMCG offenders in the sample of offenders who committed their first offence in 2008–09 are presented in Table 1. Eighty-two percent of OMCG members in the sample resided in a major city at their first police proceeding, a significantly higher proportion than among non-OMCG offenders (64.2%; $\chi^2(1)=18.1$, $p<0.001$). Similarly, OMCG members were much more likely to rank in the lowest socio-economic quartile at their first police proceeding (60.2% vs 32.9%), and much less likely to rank in the highest SEIFA quartile (1.5% vs 16.5%; ($\chi^2(3)=51.6$, $p<0.001$).

Turning to criminal history characteristics, the age of onset for any offending was slightly lower among OMCG members than non-OMCG offenders (16.5 years vs 17.0 years; $t=2.32$, $p<0.05$). OMCG members offended more frequently over the 10-year observation period, with nearly three times as many offences on average (20.6 vs 7.2 offences; $t=-13.0$, $p<0.001$). Similarly, they were more likely to be proceeded against multiple times (91.1% vs 61.3%; $\chi^2(1)=50.1$, $p<0.001$), resulting in a higher number of finalised matters (7.8 vs 3.4 police proceedings; $t=-14.3$, $p<0.001$), indicating they were more persistent in their offending. Unsurprisingly, in light of these differences in recorded offending, OMCG members were substantially more likely to have been imprisoned on at least one occasion within the 10-year observation period (50.4% vs 10.0%; $\chi^2(1)=232.3$, $p<0.001$). This means that any difference in offending between the two groups is likely to be an underestimate, since the amount of time in the community during the 10-year observation period will be, on average, lower for OMCG members.

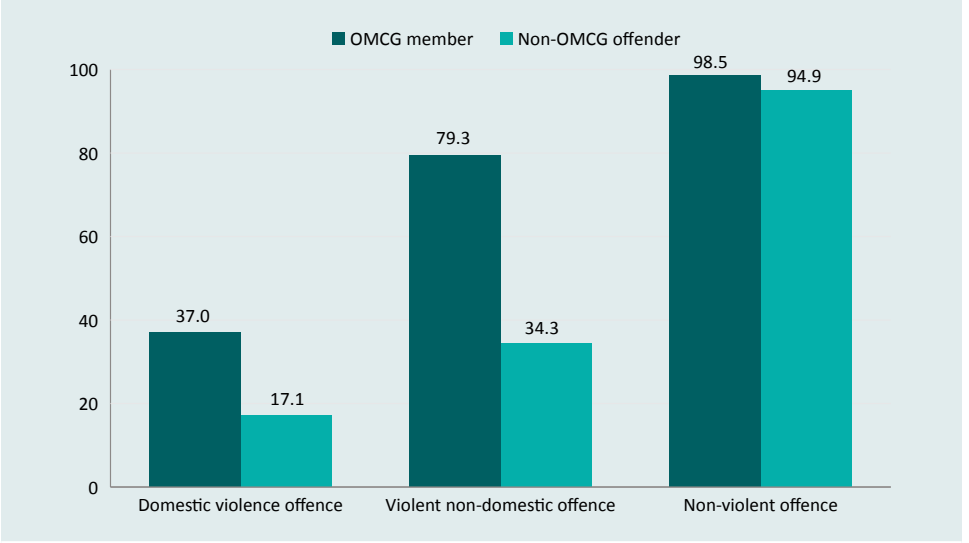
Table 1: Sample characteristics, by OMCG membership			
		OMCG members (*n*=135)	Non-OMCG offenders (*n*=11,866)
Sample characteristics			
Usual place of residence	Major city (%)	82.0	64.2
	Regional or remote (%)	18.0	35.8
SEIFA index	Quartile 1 (%)	60.2	32.9
	Quartile 2 (%)	23.3	29.0
	Quartile 3 (%)	15.0	21.6
	Quartile 4 (%)	1.5	16.5
Overall offending characteristics			
Age of onset[a]	Mean (*SD*)	16.5 (2.1)	17.0 (2.3)
Frequency	Mean (*SD*)	20.6 (17.4)	7.2 (11.9)
Persistence	Mean (*SD*)	7.8 (4.9)	3.4 (3.5)
	%	91.1	61.3
Versatility	Mean diversity index (*SD*)	0.7 (0.2)	0.4 (0.4)
Ever imprisoned	%	50.4	10.0

a: Age of onset missing for five non-OMCG offenders

Source: NSW BOCSAR; NSWPF [dataset]

As shown in Figure 3, OMCG members in the sample were significantly more likely than non-OMCG offenders to have a recorded history of domestic violence offending (37.0% vs 17.1%, $\chi^2(1)=37.2$, $p<0.001$). They were also significantly more likely to have a recorded history of non-domestic violent offending (79.3% vs 34.3%, $\chi^2(1)=118.7$, $p<0.001$). Most offenders in both samples had a history of non-violent offending (98.5% and 94.9%). Importantly, OMCG members accounted for a very small proportion of domestic violence offenders (2.4%) among the sample of offenders selected on the basis of the timing of their first offence.

Figure 3: Prevalence of domestic violence offending, violent non-domestic offending and non-violent offending, by OMCG membership (%)



Source: NSW BOCSAR; NSWPF [dataset]

We present characteristics of the domestic violence and violent non-domestic offending histories for both OMCG members and non-OMCG offenders (Table 2). There was no difference in the age of onset for domestic violence offending between the two groups (20.4 years for OMCG members and 20.2 for non-OMCG offenders; t=−0.49, p=0.63). OMCG members had, on average, a higher number of domestic violence offences (5.4 offences vs 3.7 offences; t=−2.9, p<0.01). There was no statistically significant difference in the proportion of OMCG members and non-members proceeded against for domestic violence offending on more than one occasion (48.0% vs 41.4%; $\chi^2(1)$=0.9, p=0.35). There was no difference between OMCG members and non-OMCG offenders in the median harm associated with individual offences (10.0 vs 8.0; z=−1.38, p=0.17); however, the median total harm associated with each finalised matter was significantly higher for OMCG members (22.0 vs 14.4; z=−2.40, p<0.05).

Similar patterns were observed for violent non-domestic offending, with no difference in the average age of onset between OMCG members and non-OMCG offenders (17.9 years vs 18.0 years; t=0.46, p=0.65), but more frequent (4.6 offences vs 2.7 offences; t=−7.1, p<0.001) and persistent offending (64.5% vs 40.0%; $\chi^2(1)$=25.8, p<0.001) among OMCG members. The median harm associated with each offence (52.0 vs 30.0; z=−2.85, p<0.01) and each finalised matter (52.0 vs 42.7; z=−3.10, p<0.01) was also significantly higher for OMCG members.

Table 2: Characteristics of violent offending histories, by OMCG membership					
		Domestic violence		Non-domestic violence	
		OMCG members (*n*=50)	Non-OMCG offenders (*n*=2,026)	OMCG members (*n*=107)	Non-OMCG offenders (*n*=4,074)
Age of onset	Mean (*SD*)	20.4 (3.7)	20.2 (3.5)	17.9 (2.8)	18.0 (3.0)
Frequency	Mean (*SD*)	5.4 (5.4)	3.7 (4.0)	4.6 (4.4)	2.7 (2.7)
Persistence	Mean (*SD*)	2.2 (1.6)	1.9 (1.4)	2.7 (2.0)	1.8 (1.3)
	%	48.0	41.4	64.5	40.0
Harm per offence	Median	10.0	8.0	52.0	30.0
Harm per finalised matter	Median	22.0	14.4	52.0	42.7

Source: NSW BOCSAR; NSWPF [dataset]

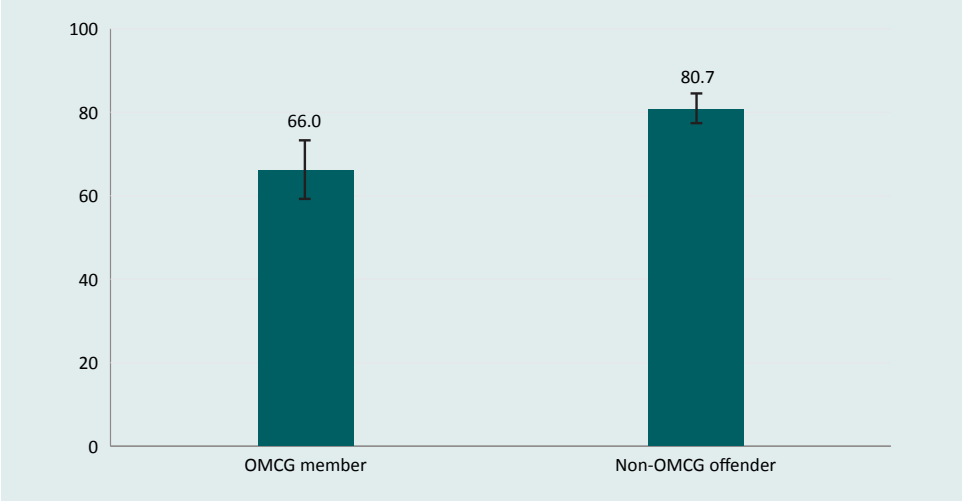
Next, we examined the outcomes of finalised matters involving at least one domestic violence offence or at least one violent non-domestic offence (Table 3). There was no difference between OMCG members and non-OMCG offenders in the likelihood of being found guilty of at least one domestic violence offence (78.0% vs 83.3%; $\chi^2(1)=0.97$, $p=0.33$). There was, however, a significant relationship between OMCG membership and guilty outcomes for violent non-domestic offending (86.0% vs 73.1%; $\chi^2(1)=8.84$, $p<0.01$), with OMCG members more likely to have been found guilty of at least one violent non-domestic offence. This does not take into account differences in the number of times an individual has been proceeded against for the relevant offence—the more times a person has been proceeded against, the more likely they will be found guilty on at least one occasion. When we limited the analysis to the outcome of the first finalised matter, a lower proportion of OMCG members had been found guilty of a domestic violence offence (66.0% vs 76.0%), but this difference was not statistically significant ($\chi^2(1)=2.63$, $p=0.11$). There was no difference between the groups for violent non-domestic offending (56.1% vs 57.2%; $\chi^2(1)=0.05$, $p=0.82$).

Table 3: Outcomes of finalised matters for violent offences, by OMCG membership (%)				
	Domestic violence		Non-domestic violence	
	OMCG members (*n*=50)	Non-OMCG offenders (*n*=2,026)	OMCG members (*n*=107)	Non-OMCG offenders (*n*=4,074)
Any guilty outcome	78.0	83.3	86.0	73.1
Guilty outcome on first finalised matter	66.0	76.0	56.1	57.2

Source: NSW BOCSAR; NSWPF [dataset]

Finally, we compared the predicted guilty outcomes for the first finalised matter involving one or more domestic violence offences for a matched sample of OMCG members and non-OMCG offenders. This attempts to account for observable differences in the characteristics of matters between the two groups that may have influenced the likelihood of a guilty outcome. The coefficient of difference was 0.15 (−0.29, −0.01), which was statistically significant (p<0.05). Put differently, as shown in Figure 4, the predicted average guilty rate for OMCG members for their first finalised matter involving at least one domestic violence offence was 66.0 percent, compared with 80.7 percent for non-OMCG members, a difference of 14.7 percentage points. When we repeated the same matching procedure for the first finalised matter involving one or more violent non-domestic offences, there was no difference between OMCG members and non-OMCG offenders in the likelihood of a guilty outcome (coefficient of difference=−0.03, p=0.59). This offers tentative evidence of differential outcomes for OMCG members and non-OMCG offenders proceeded against for domestic violence offences while accounting for observed differences between groups.

Figure 4: Comparison of predicted guilty outcomes for finalised domestic violence matters among OMCG members and non-OMCG offenders (%, 95% confidence intervals)



Note: n=50 OMCG members. Nearest neighbour matching was repeated with between one and five matches per case, with all iterations falling below the threshold for statistical significance. One-to-one matching was chosen to minimise standardised differences between groups (for variables that were not exact matches). Standardised differences between matched groups did not exceed 0.06, well within the acceptable range (Apel & Sweeten 2010; Rosenbaum & Rubin 1985). We allowed for replacement, which means the same case in the non-OMCG group could be matched to multiple OMCG members. Average treatment effect on the treated was calculated

Source: NSW BOCSAR; NSWPF [dataset]

Discussion

In this chapter we explored the prevalence and patterns of recorded domestic violence offending among OMCG members in New South Wales, and then compared these with other male offenders. This involved two distinct but related studies. The first analysed data on the recorded criminal history of all active OMCG members known to NSWPF. The second compared a subsample of these individuals with male offenders who were not affiliated with an OMCG, using the recorded criminal history of all male offenders in New South Wales born in or after 1984 who committed their first offence in 2008–09.

Results from both studies revealed a high rate of recorded domestic violence offending among OMCG members. Overall, 40.1 percent of members had a recorded history of domestic violence offending in the past 10 years. The prevalence and frequency of domestic violence offending among OMCG members was also higher than among the general male offending population. In fact, OMCG members were more than twice as likely as other offenders to have had at least one domestic violence offence. Domestic violence offending by OMCG members was also, on average, more harmful than the offences perpetrated by other male offenders, once multiple related offences were considered. Similar differences emerged in relation to the prevalence, frequency and harm of violent non-domestic offences. At the same time, OMCG members accounted for a minority of the domestic violence offenders in the sample.

The reliance on recorded crime data undoubtedly underestimates the true extent of OMCG-related domestic violence. Likewise, limiting our comparison to OMCG members and other men with a recorded criminal history likely narrows the difference in rates of domestic violence offending, given OMCG members are nearly three times more likely than the general male population to come into contact with the criminal justice system (Morgan, Dowling & Voce 2020). Further, given OMCG members were also five times as likely to have been imprisoned on at least one occasion, the rate of offending during free time is also probably higher again for OMCG members. Nevertheless, this research shows that the partners of OMCG members are at an elevated risk of domestic violence. The findings from these studies are consistent with high-profile reports of serious acts of violence perpetrated by known OMCG members, and with emerging Australian (Cooper 2004; Queensland Police Service 2021) and international (Van Deuren et al. 2021) research. This may be due to the hyper-masculine culture that characterises OMCGs and the fact that members are known to hold attitudes that adhere to traditional gender norms, which are associated with violence against women (McCarthy, Mehta & Haberland 2018). Risk factors for gang involvement (and violence), such as substance use, exposure to violence and associated trauma, and adverse childhood experiences (Boland et al. 2021), along with a more general individual propensity for violence among many OMCG members (Lauchs, Bain and Bell 2015), likely also play a role.

Other studies have shown that the rate of offending among OMCG members varies significantly between clubs (Blokland et al. 2019; Morgan, Dowling & Voce 2020). We find similar evidence in this study. While there is a common identity related to OMCG membership, there are variations between clubs and chapters in their internal culture, which influences recruitment practices and the profile and conduct of members (Dowling et al. 2021). This extends to the propensity of members to perpetrate violence towards their intimate partners. That said, among clubs with at least 50 members, no fewer than one in three members had a recorded history of domestic violence.

We present tentative evidence here of differences in the outcomes of finalised matters between OMCG members and non-OMCG offenders with respect to their likelihood of being found guilty of domestic violence offences. While we note the limitations of our analysis—namely, that we cannot account for unobserved differences between these two groups—there are different explanations for this finding. The first is that police may be more likely to prosecute OMCG members for domestic violence cases because of their gang membership or perceived risk to the victim. However, there was no difference in the likelihood of a guilty outcome for the first finalised matter involving violent non-domestic offences, which suggests this might not be the cause. Another explanation is that OMCGs may be more difficult to prosecute for domestic violence cases because victims may be less likely to cooperate due to intimidation or fear of repercussions from their partner or other club members, especially given the propensity of OMCG members to use violence to protect the image and reputation of their club and its members. Fear of the perpetrator has been shown to be one of the reasons that victims do not support legal action being taken (Birdsey & Snowball 2013; Voce & Boxall 2018). Even in the context of pro-charge policies, this fear may reduce victim cooperation with the legal process and the prospect of a guilty outcome (Dowling et al. 2018). Victim-survivors of OMCG-related domestic violence may experience isolation, trauma and shame as a consequence of their involvement in gangs and the acts of violence perpetrated against them (Cooper 2004), which is also predictive of less criminal justice engagement (Birdsey & Snowball 2013). Further, they may also encounter barriers to justice due to negative perceptions of their involvement in gang-related activity, including crime, and stigma associated with relationships with gang members. Police perceptions of victim-survivors are an important factor in access to justice (Segrave, Wilson & Fitz-Gibbon 2018).

This has important implications for protecting the safety of victim-survivors of domestic violence perpetrated by OMCG members. Inquiries have repeatedly identified that the perceived deficiencies in the criminal justice response to domestic violence reduce the willingness of victim-survivors to seek assistance (State of Victoria 2016; Women's Safety and Justice Taskforce 2021), which inhibits efforts to hold perpetrators accountable. Victim-survivors of OMCG-related domestic violence who are dissatisfied with the criminal justice process may be reluctant to seek help, placing them at risk of further, potentially escalating, violence.

These findings highlight the importance of partnerships between units and task forces responsible for policing OMCGs and specialist units responsible for policing domestic violence. These partnerships would assist with efforts to respond most effectively to incidents of domestic violence and increase access to support services for victim-survivors (Cooper, Anaf & Bowden 2008). There may be scope to raise awareness and understanding of domestic violence and the supports available to victim-survivors among these gang units and officers responding to victims of gang member-related interpersonal violence through training, education and policy reform. Training could be provided to specialist domestic violence units and support services on the unique features of OMCGs which may influence how best to provide tailored support to victim-survivors immersed in OMCG milieus.

There is an intense focus on police reform in relation to how they respond to domestic violence at present. The findings in this chapter suggest the response to victims of OMCG-related domestic violence should be one focus of these reforms.

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C

Domestic and family violence

7. Spaceless violence: Women's experiences of technology-facilitated domestic violence in regional, rural and remote areas

Bridget Harris and Delanie Woodlock

Digital media and devices are increasingly used by perpetrators of interpersonal and domestic violence to enact harm, coerce and control. The ways that technology is used by perpetrators, victim-survivors, support services and justice agencies have received growing attention in recent years. Work has been produced by advocates and academics in the United States (see Dimond, Fiesler & Bruckman 2011; Fraser et al. 2010; Mason & Magnet 2012; Southworth et al. 2005) and in Australia (Hand, Chung & Peters 2009; Woodlock 2017). There has been no examination of differences in the way harms manifest and are responded to in urban and non-urban (regional, rural and remote) landscapes (Harris 2016). This is a significant deficit, given the barriers encountered by victim-survivors beyond the cityscape when seeking assistance and responding to violence (Neilson & Renou 2015; Special Taskforce on Domestic and Family Violence in Queensland 2015; State of Victoria 2016).

The relationship between spaceless violence, place and space was the focus of this study, which grew out of our previous work in this field. Woodlock's (2013) SmartSafe project was one of the first studies internationally to survey victim-survivors and support workers about technology-facilitated abuse in intimate relationships. She found perpetrators used technology to control, intimidate and isolate women. George and Harris's (2014) study on rural victim-survivor experiences was the first to consider socio-spatial impacts of spaceless violence, finding that technology-facilitated abuse and stalking had particular implications for the wellbeing of and risk to women in non-urban areas. They noted too that rurality shaped experiences of abuse and opportunities for connecting with supports and practitioners (Harris 2016).

Seeking to provide insight into the role of technology beyond the cityscape, this study engaged with female victim-survivors subjected to spaceless technology-facilitated abuse in the context of domestic violence in regional, rural and remote areas of eastern Australia (New South Wales, Victoria and Queensland). Alongside our examination of how technology could be used by perpetrators, we also explored potential applications that could protect and empower women experiencing domestic violence.

Naming and framing violence

In Australia and internationally, a range of terms are used to identify and refer to violence enacted by men against women (see, for instance, DeKeseredy, Dragiewicz & Schwartz 2017; Dragiewicz et al. 2018). Certain words refer to the parties involved (eg 'intimate partner violence', as opposed to that occurring within a broader family system; 'family violence') or view the abuse through a gendered lens ('violence against women' or 'woman abuse'). While appreciating that there are other persons and networks that engage in and can be impacted by harm, our work centred on harms inflicted by current or former intimate partners and we use the term 'domestic violence' in this chapter. We adopt an intersectional lens and recognise that anyone can be a victim-survivor or perpetrator of violence (and that more attention on LGBTIQ experiences is needed), but emphasise that victim-survivors are overwhelmingly women and perpetrators mostly men.

Locating violence

The private and hidden nature of domestic violence contributes to under-reporting, under-recording and difficulties in measuring abuse and related offences (Ferrante et al. 1996; Harris 2016). Features of rurality such as geographic and social isolation can further limit data availability (George & Harris 2014; Wendt 2009). Complicating the issue, there are a variety of measurement systems used and regionality, rurality and remoteness are not uniformly defined. Consequently, and because non-urban places are not homogeneous, we cannot say categorically that violence is higher outside of the cityscape. Yet Australian academic and grey literature has found that rates of domestic violence are higher in some regional, rural and remote locations (Crime Research Centre 1998; Grech & Burgess 2011; Women's Health Grampians 2012). Indeed, some studies have indicated that, overall, where comparable figures are available, rates of victimisation are higher in regional, rural and remote areas than in metropolitan locations (Dillon 2015; Dillon, Hussain & Loxton 2015; WESNET 2000).

Non-urban women are located greater distances from channels of assistance (formal and informal supports and emergency services) than urban women. Public transport networks, where they exist, can be fragmented and limited. At best, ride-sharing and other private transport options are likely absent or expensive and abusers may limit access to vehicles (see also Coorey 1988; George & Harris 2014; Meyer & Stambe 2020; Wendt 2009). Social isolation is another impediment which can arise from constructs of gender which women have referred to as 'traditional' or 'conservative'. Ideologies and community structures can, in these settings, support the subjugation of women and facilitate violence against women (as noted in Alston 1997; Bagshaw et al. 2000; Harris 2016; Hogg & Carrington 2006; Meyer & Stambe 2020).

Frameworks and methodology

A feminist, intersectional approach guided this research. Historically, a feminist perspective has been excluded from social and legal understandings of domestic violence (Hunter 2006), although it has been recently adopted in Australia (State of Victoria 2016). This lens emphasises the input and experiences of victim-survivors and maintains that domestic violence must be understood as gendered and sexed and sustained by cultural and societal discrimination against women (Dobash & Dobash 1980; Laing, Humphreys & Cavanagh 2013; Pizzey 1979). An intersectional lens (see Crenshaw 2010) must be prioritised, as the violence women experience and opportunities for help-seeking are influenced by intersecting forms of oppression, such as disability (Woodlock, Western & Bailey 2014), Aboriginal and Torres Strait Islander identity (Al-Yaman, Van Doeland & Wallis 2006) and cultural and linguistic diversity (Vaughan et al. 2016).

Sandberg (2013) argues that rural women should be included in intersectional studies of violence against women, but 'rurality' should not be viewed as a form of intersecting oppression, such as race and class, as women are not oppressed by rurality. She suggests instead that rurality imposes 'particular kinds of vulnerability to individuals' (Sandberg 2013: 361). Importantly, while 'difference' is explored, these differences are by no means homogeneous categories or communities. Regionality in Australia is frequently measured using factors such as distance to service centres and population size. However, rurality is more than geographic, demographic and economic. There is a human factor with ideological and symbolic meanings and categorisations ascribed by those who live in non-urban places (Harris & Harkness 2016). Thus, in selecting our locations we considered all of these elements, being guided by common measures such as the Accessibility/Remoteness Index of Australia Plus (ARIA+) and the Australian Statistical Geography Standard as well as by services and victim-survivors self-identifying as rural.

The project was granted ethics approval from Queensland University of Technology's Human Research Ethics Committee (QUT Ethics Approval Number 1800000036). Semi-structured interviews and focus groups were conducted with victim-survivors to allow for in-depth exploration of their experiences. Participants were located and selected based on their connection to domestic violence support services. This ensured that the women were able to discuss the project, risks and procedures with support workers prior to engaging with the researchers. There are limitations to this approach, as not all victim-survivors access support services. Additionally, the recruitment process relied on support services, which are overburdened and under-resourced. Numerous agencies offered assistance but were not always able to be involved, due to workload pressures. There were challenges in recruitment, but data saturation was achieved through the interviews and focus groups we conducted with 13 victim-survivors.

Interviews and focus groups took place either at support service offices or over the phone and were recorded and transcribed. Interviews were conducted over the phone only if the service had verified that this was a safe form of communication. We then reached out to the potential participant and confirmed this before progressing with the research. The women were provided with an honorarium and services were given a donation in recognition of their time and effort. Specific recruitment sites have not been named, some identifying features have been changed and pseudonyms have been used to refer to participants, to ensure victim-survivor anonymity is upheld.

Thematic analysis was used to categorise the findings, with the coding guided by our research question: how is digital technology impacting women's experiences of domestic and family violence in rural, regional and remote Victoria, New South Wales and Queensland? NVivo was used to code the interviews, first descriptively, then using interpretive coding. Double-coding provided oversight in this process (see King & Horrocks 2010; Saldaña 2012).

Results

Sample demographics

The average age of participants was 33—older than participants in much of the literature on electronic dating violence, which focuses on school and university cohorts. We contend that this focus has contributed to a false assumption that digital harms are experienced only by young people (Harris & Woodlock 2019; Woodlock 2013). The majority (*n*=9) of participants identified as Australian and, of this group, one identified as Aboriginal. Of those born overseas (*n*=4), two were from New Zealand, one was South American and one Asian.

Perpetrators and use of technology

Participants indicated that perpetrators used technology as part of their control and intimidation tactics. All the women identified a male perpetrator (a former intimate partner). Participants reported that digital violence continued (and often escalated) post separation and some said it involved others in the perpetrator's offline (real world) or online networks, who were commissioned or elected to engage in abuse. Children were impacted by, subjected to and also coopted into perpetration—issues which have been largely undocumented in the literature. All victim-survivors had experienced multiple forms of offline abuse (such as psychological, financial, sexual and physical abuse and in-person stalking) alongside online abuse. Additionally, technology could be used to facilitate, extend or exacerbate offline abuse. Some behaviours identified by victim-survivors in our study (and by the support workers they engaged) were readily identified or problematised, such as the use of technology to:

- send or post abusive messages or communications;
- stalk (to monitor the activities, movements or communications of) a victim-survivor;
- dox (publish private and identifying information);
- publish sexual content without consent;
- impersonate or steal another person's identity;
- gain unauthorised access or restrict access to a device, digital account or profile;
- interfere with a victim-survivor's device; or
- make and/or share audio or visual recordings of a survivor (whether recorded overtly or covertly).

Participants reported that technological abuse occurred in relationships and that it continued and often escalated post separation. These harms could be enacted using physical devices (phones, computers, tablets, GPS trackers), virtual or electronic accounts (such as social media profiles, email accounts, consumer accounts or institutional or employment portals) or software or platforms. We found that access to these channels may be achieved through force, coercion, deception or stealth.

Impacts on victim-survivors

Our participants emphasised that the technology-facilitated abuse to which they were subjected profoundly affected their wellbeing. Fears about technology-facilitated abuse loomed large. Participants felt a sense of unease about what perpetrators were or could be doing using devices and digital media. The spacelessness of technological abuse meant the women worried that they could encounter harm anytime and anywhere they used technologies and made perpetrators seem omnipresent and omnipotent. Consequently, victim-survivors felt that technological abuse (and perpetrators, by extension) were inescapable. Women's self-esteem and confidence were destabilised and their ability to exercise their freedoms and opportunities to use technology (for instance, to seek assistance or for leisure, education or employment) were hindered.

Many participants were concerned that the perpetrator was using surveillance and tracking strategies and channels that were undetected. They described feeling burdened by the need to constantly check for and try to prevent perpetrator access to them. Health impacts were extensive too. Women identified myriad ways that their mental health was affected, noting it could cause or contribute to feelings of paranoia, depression or anxiety. Technological abuse could also lead to trauma and a proclivity to self-harm. Furthermore, participants outlined physical effects such as stress-induced seizures.

Spacelessness and place

Technological abuse is spaceless, but it was evident that place matters in shaping and understanding experiences of and responses to harm. Victim-survivors in non-urban areas described geographic and social isolation as significant barriers to help-seeking and exiting violent relationships. For those who were located great distances from domestic violence services, friends and families, it was hard to make contact, particularly when they were under the watchful eye of perpetrators. In small, close-knit and conservative communities, and where the perpetrator was well known, liked or in a position of power, disclosing domestic violence face-to-face could also be confronting and challenging. Technology, in these circumstances, could help overcome geographic and social isolation, by providing pathways to information and support. However, when technology was weaponised, the women did not always feel safe or comfortable using digital channels.

Criminal justice responses

Victim-survivors in our study had positive experiences with support services. While this speaks to the expertise and training of support workers, this is not a surprising finding given we recruited participants through domestic violence agencies. Interactions with police were more mixed, tending towards being more negative overall. These women found courts to be distressing places because they were required to 'go public' with accounts of what is often said to be 'private violence', but also because court hearings required contact with perpetrators. Unfortunately, many participants felt that police and magistrates frequently did not recognise technological abuse as constituting domestic violence or take seriously the danger it posed or the effect it had on them. Consequently, victim-survivors believed that technological abuse was sometimes dismissed, minimised or overlooked.

Discussion

Age and intersectionality

Much literature has centred on youth reports of online harassment and harms within dating relationships. While this is a key cohort for education and prevention initiatives, our research has contributed to a growing body of work highlighting that older age groups are by no means immune to technological abuse (Woodlock 2013). We contend that criminal justice responses to domestic violence must recognise that technology is commonly part of a victim-survivor's experience of domestic violence, regardless of their demographic characteristics. The diversity of our cohort points to the need for intersectional approaches to technological abuse, culturally safe services and, ultimately, adequate resourcing of specialist agencies assisting First Nations and culturally and linguistically diverse victim-survivors.

Offline and online peer support networks

Intimate partners were identified as primary perpetrators in this study, but our finding that perpetrators' offline and online social networks provided assistance and intel to them warrants further attention. As others have argued (DeKeseredy 1990; DeKeseredy & Schwartz 1993), such networks are not forged in a vacuum but are reliant on and reinforced by patriarchal ideologies and structural imbalances. Their work has established that abusive men may have like-minded allies who formulate, share and reinforce ideologies and values, and provide resources and guidance that endorse, enable, excuse or defend abuse. We must recognise what these structures might look like in rural places.

In non-urban settings, where gender roles can be more traditional, with smaller and sometimes conservative communities, some participants contended that their abuser had established a reputation as a 'good guy' and found allies that assisted him and endorsed, excused, denied or minimised his actions (George & Harris 2014; National Rural Crime Network 2019; Neilson & Renou 2015). We heard of various associations that perpetrators drew on in their communities, through their leisure activities, religious affiliations and work affiliations (such as with police officers). Social media proved to be one area where abuser allies (from both real world and online networks) assisted perpetrators in their attacks on women. The women in our study were all too aware that these networks provided intel about their movements, activities and communication, which helped abusers stalk them, both online and offline. Complicating the issue, children were manipulated and coopted into engaging in the technological abuse of their mothers, as well as being directly targeted by perpetrators.

There has been no real examination to date of how online peer support networks might function (and even flourish) in the context of domestic violence. In our study it seemed that digital allies were largely drawn from a perpetrator's social media contacts, the social media contacts of victim-survivors and other real-world associations. We suggest that future studies seek to gain further insight into how networks may be forged online where there is no offline relationship with the perpetrator. In rural areas, where a perpetrator's real-world network can be limited in size, technology-facilitated contacts can potentially expand their reach and the number of people causing harm.

Digital coercive control

Technological abuse may present in different ways, but essentially perpetrators use digital media and devices to coerce and control their targets. This study revealed a range of perpetrator behaviours and strategies, but we stress that this should not be regarded as a complete list of harms and vulnerabilities. As new technologies emerge, so too will other types of intrusion and harm. Victim-survivors emphasised how individualised and targeted attacks were and said that some examples they recounted may appear innocuous to an outsider but read as disconcerting or threatening to them because of their past experiences or perceptions. The instances of technological abuse women recounted were not isolated but part of a campaign of abuse which evoked fear and eroded their freedoms.

Given the context in which abuse is enacted, we propose that technological abuse be classified as 'digital coercive control', a term that emphasises the method used by perpetrators (digital), their intent (coercion), the effect on a victim-survivor (control) as well as the setting in which it is enacted (the gender inequality that these men seek to maintain and reinforce; see Harris & Woodlock 2019). Here, we draw on Stark's (2007: 208) concept of 'coercive control' to classify the 'spatially diffuse' channels, strategies and techniques (such as isolation, intimidation, threats, shaming, gaslighting, surveillance, stalking and degradation). The term encapsulates some behaviours that are obviously serious as well as some that are often overlooked. These relate to the patterns and dynamics of behaviour and the frequency with which women are subjected to harm.

Classifying technological abuse as digital coercive control means we capture behaviours which might be normalised or accepted by others, or which may also occur in non-abusive relationships (see Dragiewicz et al. 2019). Women described how perpetrators would, for instance, send messages at particular times, use particular words or make references that they knew would trigger trauma or evoke fear or distress. Additionally, actions that may be viewed as unremarkable in a non-abusive relationship could be viewed as dangerous or problematic to a particular woman due to her history of abuse. For example, encouraging children to turn on video functions of devices might be common for some families, but where a woman has relocated this can represent an attempt to locate her new address.

Weaponising and harnessing technology in rural Australia

Digital coercive control is not a separate form of abuse but part of the domestic violence to which victim-survivors are subjected. Technology is, in essence, another tool of perpetrators seeking to coerce, control and restrict their targets. However, there are unique manifestations and effects of digital coercive control that should be recognised (Harris & Woodlock 2019). As well as enabling new forms of intrusions and attacks, technology can enable financial, sexual and psychological abuse and erode the already tenuous boundary between offline and online harm. This means that domestic violence is by no means confined to a particular place but can infiltrate every part of a victim-survivor's life. We maintain that a spatial framework is key in examining digital coercive control. It is important to recognise the effects of spacelessness but also that the place (geographic location) and space (geographic and ideological features of locations, such as conservative values) will shape both experiences of and responses to harm.

The spacelessness of digital coercive control has devastating and dangerous effects on a victim-survivor's health, wellbeing and sense of security. As Hand, Chung and Peters (2009: 3) note, 'the concept of "feeling safe" from an abuser no longer has the same geographic and spatial boundaries as it once did' (see also Harris 2018; Mason & Magnet 2012). This can deter women from disclosing violence or seeking help (Dimond, Fiesler & Bruckman 2011; Fraser et al. 2010; George & Harris 2014). There are particular consequences for regional, rural and remote women who are geographically and socially isolated, and these are not distinct but intertwined concepts. Numerous women referred to their houses as isolated; some suggested that perpetrators intentionally sought geographically isolated properties during the relationship, to weaken social networks, extend their control and 'hide' violence. In small areas with close-knit communities, abusers took advantage of how geography works to limit social networks.

Some perpetrators sought to discredit women and gather allies, accusing the survivors of being 'crazy' and, when doing so, relied on and exploited their reputations as 'good guys' or 'heroes'. They mounted these campaigns both offline and online and others affirmed their allegiance on social media and by participating in technology-facilitated abuse and stalking. In these circumstances, 'traditional' and rural constructs of masculinities and 'boys clubs' functioned to silence and exclude women. This was heightened for victim-survivors in our study who identified as Indigenous, culturally or linguistically diverse, or criminalised women, who spoke about feeling particularly visible in small communities while also being isolated.

Women in our study spoke about how the impacts of digital coercive control, the way that perpetrators used technology and the barriers to help seeking encountered in regional, rural and remote places limited their autonomy and 'space for action' (Farhall, Harris & Woodlock 2020). 'Space for action' refers to how perpetrators of domestic violence narrow women's life choices, constraining their freedom (Kelly 2003). Technology was a vital channel for victim-survivors seeking support and assistance, but when perpetrators controlled access to technology and used technology to enact digital violence women's space for action (using technology) was jeopardised. Knowing that perpetrators and their allies were using technology to track and monitor them post separation made some women feel it was not safe to use.

Risk and responses

It is important to recognise that it is not only barriers to help-seeking but also the risk to victim-survivors which is elevated in rural areas. In addition to higher levels of domestic violence, rural locations have been documented in international literature as having higher rates of domestic homicide (Harris 2016). This can likely be attributed largely to the greater distances to emergency supports and front-line responders in non-urban areas. We emphasise that recognised homicide flags—stalking, coercive control, obsessive behaviours, threats to kill and self-harm—were present in the digital coercive control reported by our cohort. Additionally, other homicide flags (such as strangulation) were reported by many victim-survivors. Yet these women felt that police and magistrates frequently minimised or overlooked the digital coercive control they experienced and how it could signify risk to their lives.

Conclusion and future directions

There is, we believe, an urgent need to enhance justice practitioners' understanding of the dynamics of domestic violence, how digital coercive control manifests, that it is typically now part of women's experience of abuse, and the effects of these harms. Given women's perceptions of police and magistrates were mixed, at best, and the dangers rural women face, we stress that there is an opportunity to bolster police and judicial training in this area. Digital coercive control can give police intelligence on and evidence of the abuse experienced by and risk to victim-survivors, their children, friends and family, online and offline. It must not be viewed in isolation or overlooked, including in investigation and risk assessment processes and in reviewing digital breaches of protection orders.

Technology can be weaponised but also harnessed. Victim-survivors can find information about domestic violence services using technology, and remote and anonymous portals could be attractive to non-urban women. Responding to violence is confronting for women in rural and remote communities, who are more likely to be known to those they contact when seeking help and disclosing violence. Given our cohort had strong relationships with real world services, we cannot comment on those who only engaged with virtual portals, but it is an area of enquiry to pursue. To advance this, non-government agencies require further and ongoing government funding.

There are, admittedly, limitations to what technology currently provides. Criminal justice services, for instance, operate predominantly 'in person'. However, technology can provide pathways and capabilities for women to exit violent relationships, gain independence and extend their space for action. Compared to urban areas, rural areas have fewer opportunities for employment, education, and civic or social engagement. These avenues might be accessed using digital media. Addressing the digital divide in rural areas and empowering women to safely use technology is an essential goal to pursue and would benefit women experiencing violence. This requires investment by social media companies, industry and government.

The use of technology by perpetrators of domestic violence is now commonplace, but responses have yet to catch up with this new form of abuse, which has a significant impact on victim-survivors. This study focused on the challenges for 13 women experiencing what we have termed digital coercive control in rural, regional and remote Victoria, New South Wales and Queensland. The participants detailed the way that technology was incorporated into perpetrators' control and intimidation tactics, often extending and exacerbating the abuse these women experienced. When women separated from the perpetrator, his use of technology often escalated. As opportunities to engage in physical abuse were limited, technology enabled the perpetrator to still reach into the victim's private sphere. While digital coercive control is spaceless, the space in which the woman and the perpetrator are physically located matters. The participants in this research emphasised that rural, remote and regional locations shaped both the manifestations and impacts of abuse, as well as the barriers they experienced when seeking help.

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8. Giving voice to the silenced victims: A qualitative study of intimate partner femicide

Li Eriksson, Paul Mazerolle and Samara McPhedran

Women are much more likely than men to be killed by an intimate partner (Bricknell & Doherty 2021; Mouzos 1999; Stöckl et al. 2013), making this form of lethal violence an unquestionably gendered crime. Intimate partner femicide (IPF), defined as the gender-based killing of a female victim by a current or former male intimate partner (see, for example, Walklate et al. 2020), has significant adverse impacts on individuals, families and communities. A growing body of literature examines the emotional, legal and financial impacts on families affected by homicide (Armour 2002; Hardesty et al. 2008). In cases where children are involved, the loss of their mother is often coupled with the imprisonment of their father, resulting in significant disruptions to their care, schooling and socialisation (Lewandowski et al. 2004). Though the rate of IPF has steadily declined in Australia over the past 30 years, it remains high (Bricknell & Doherty 2021). Thus, research needs to identify clear prevention strategies focused on reducing this form of extreme violence against women.

A large and growing body of research has identified key risk factors for IPF. These include offender violent criminal history (including intimate partner violence perpetration in past or current relationships), offender coercive and controlling behaviour (such as stalking, intimidation and jealousy), relationship separation, and the use of weapons and/or strangulation (Caman et al. 2017; Campbell et al. 2007; Dobash & Dobash 2015; Johnson et al. 2019; Matias et al. 2020; Monckton Smith 2020; Tyson 2020; Websdale 1999).

While informative, most IPF studies are based on either administrative data (such as police reports) or self-report data from interviews with men who have killed their intimate partner. This stands in stark contrast to studies examining non-lethal intimate partner violence, which emphasise the importance of examining the lived experiences of women who have been exposed to intimate partner violence, particularly emphasising the importance of qualitative narratives (Myhill & Kelly 2021; Tarzia, Humphreys & Hegarty 2017). Lived experience research has, for example, illustrated how men's coercive and controlling behaviour entraps women in abusive relationships through violence, subjugation and surveillance, thereby limiting their freedom and reducing their 'space for action', namely their perceived ability to make decisions and be in control of their own lives (Sharp-Jeffs, Kelly & Klein 2017; Stark 2007; Westmarland & Kelly 2013). Such research has also illustrated how fear for their own and their children's safety can act as an impetus for women's active help-seeking behaviour (Meyer 2010), or how ending a relationship does not necessarily result in an end to intimate partner violence and control (Douglas 2018; Humphreys & Thiara 2003b). Findings such as these highlight the importance of listening to the voices of victim-survivors.

For obvious reasons, however, information cannot be obtained directly from women who have been killed by their intimate partners. One alternative is to turn to those close to the victim, who may be able to paint a picture of what was going on in the relationship. Of course, those close to the victim, such as family members and friends, are often brought into the court to give testimony or provide victim impact statements. However, the information provided in such dealings with the legal system is by no means a full account of their intimate knowledge of the victim's situation. Interviewing family and friends of the victim sometimes forms part of death review processes (eg Home Office 2016) and has been used in a small number of pioneering studies into IPF

victimisation, mainly based in the United States (Bailey et al. 1997; Block 2000; Campbell et al. 2003). Such research can provide invaluable information about the relationships of IPF victims, as well as the coping mechanisms and experiences of those who lose a loved one to IPF. The current study uses an Australian dataset to contribute to the body of international research by drawing attention to the experiences of Australian victims. The aim of the study is to add to the current evidence base around IPF victimisation by focusing attention on the nature of the relationship and the woman's attempts at help-seeking, as told by their loved ones.

Methodology

Data were collected between 2017 and 2019 through funding from a Criminology Research Grant (CRG 11/16–17) and with ethics clearance from Griffith University's Human Research Ethics Committee. The project examined the backgrounds and contexts of IPF through interviews with eight family members and friends of IPF victims, referred to as informants in this chapter. Consultations by the research team with homicide victim support groups suggested self-identification to be the most sensitive means of approaching potential informants for this study. A call for informants was issued via social media and community outlets (eg newsletters/Facebook, organisations working with families of homicide victims). Informants had to be aged 18 years or over and be able to give informed consent to participate in the project.

In-depth interviews were conducted with informants whose loved one had been killed in Queensland or New South Wales. Interviews were conducted by clinical interviewers over the phone or in person, depending on the wishes of the informant and the logistics involved. The interview schedule included questions about the victim's experiences in the relationship (eg coercive control, past intimate partner violence, jealousy), and the victim's behaviours (eg help-seeking efforts) and psychological experiences (eg distress). The interviews were recorded. Once transcribed, the data were entered into NVivo. The data were analysed for key patterns and themes using the guidelines provided by Braun and Clarke (2006). Given the small sample, the themes presented are illustrative only and caution must be exercised in interpreting or generalising the results.

Table 1 provides an overview of the victims and their informants. Given the focus on IPF, all victims were female. At the time of their deaths, the victims were aged between 22 and 45. Three of the victims had children and a further two were pregnant, and the perpetrator was the biological father in all cases except one. Four of the victims were killed by an ex-partner, with whom they previously had a dating relationship. Four of the victims were killed by a current partner (some married and some dating). The informants, all but one of whom were female, were the sisters, mothers, daughters, cousins, in-laws and close friends of the victims.

Table 1: Characteristics of victims and informants						
Victim	Victim gender	Victim age	Victim children (and/or pregnant)	Perpetrator	Informant	Informance gender
1	Female	20–29	Yes	Ex-partner	Cousin	Female
2	Female	20–29	Yes	Current partner	Mother	Female
3	Female	30–39	No	Ex-partner	Friend	Female
4	Female	20–29	No	Ex-partner	Mother	Female
5	Female	40–49	Yes	Current partner	Daughter	Female
6	Female	20–29	Yes	Current partner	Sister	Female
7	Female	40–49	Yes	Current partner	Brother-in-law	Male
8	Female	30–39	No	Ex-partner	Sister	Female

Findings

Physical intimate partner violence

Six of the eight informants reported that there had been past physical intimate partner violence in the victim's relationship with the man who killed her. One of these informants reported ongoing severe forms of intimate partner violence, as evidenced by the bruising and black eyes inflicted more than weekly by the partner, and even strangulation. The other informants (*n*=5) whose loved ones had been subjected to physical intimate partner violence reported violence that was somewhat less frequent (ranging from once in the relationship to approximately monthly) and resulted in less severe injuries.

What became clear in the interviews was that the informants and the victims themselves often did not conceptualise the behaviours experienced by the victim as 'violence' or 'abuse'. This may indicate that perpetrator behaviour must reach a certain threshold before it is seen as abusive. As one informant stated, '…it wasn't that traditional stuff with a black eye every day' (Brother-in-law, Victim 7). Here the woman's experiences of intimate partner violence appear to conflict with the image of a *typical* domestic violence victim as someone who experiences high levels of ongoing harm (see, for example, Loseke 2003).

Contemplating why their loved one had not left the violent relationship she was in, another informant stated: '…I don't think he was violent enough for her to call it abuse. And when I say "violent enough" I shouldn't say it like that, because violence is violence, but…' (Friend, Victim 3). Ultimately, the difficulty of identifying the intimate partner violence for what it was made it difficult for some of the victims and those close to them to understand that they were in an abusive relationship, as one informant pointed out:

> I don't for one second believe that she perceived herself to be in a domestic violence situation, I really don't. I don't for one second believe that she knew what was coming or had any inkling or indication that he would do what he did. (Sister, Victim 6)

Accounts such as these may be indicative of how abusers shift the boundaries of what is normal and acceptable in relationships, to the point where their victims are no longer able to recognise the behaviour as abusive (Lundgren et al. 2002).

Nevertheless, some women did express being fearful of their partners and the extent to which they might display their violent tendencies. One informant recalled an incident where their loved one had expressed directly that she was afraid her partner was going to 'do something' to her. This informant noted that, at the time, they were not able to fully perceive and understand the danger in which this woman found herself: 'That's a very clear reference to violence, and I still kind of thought that it seemed so remote. That stuff happens in movies…' (Daughter, Victim 5). Research highlights the challenges bystanders face in balancing the need to take action with the need to provide emotional support and simply 'be there' in response to disclosures of abuse (McKenzie et al. 2020).

Two of the women actively sought help to escape from the intimate partner violence by turning to the police. Nevertheless, as the informants noted, the police were unable to protect them. Their informants noted that often this was because of a lack of evidence. As one informant stated:

> She…went to the police to get a restraining order against him, only a week or so before her death, and it was denied. There wasn't enough evidence of violence to get a restraining order. (Cousin, Victim 1)

When asked about the criminal justice system and the evidence needed for interventions such as restraining orders, one informant noted that their loved one's partner had been violent in past relationships, but none of those prior victims reported his violent behaviour to the police, for fear of retaliatory violence. This highlights the importance of thinking of intimate partner violence as a pattern of behaviour, as opposed to a series of separate incidents (see, for example, Stark 2007).

Patterns of coercive control

While not all homicides were preceded by physical intimate partner violence, coercive control was a common theme in all of the informants' narratives (*n*=8). Much of this coercive control was in the form of verbal and emotional abuse, seeking to belittle the victim and diminish her self-confidence and independence, such as by calling her fat, making her feel ashamed of her clothing choices, and acting in a menacing or dominant way. Such expressions of abuse challenge women's self-perceptions and destabilise their idea of what is normal and acceptable in romantic relationships (Lempert 1996; Lundgren et al. 2002; Stark 2009). Indeed, two informants noted that this abusive behaviour affected the victims' ability to make their own choices and led them to constantly second-guess themselves and whether their choices were 'good enough' for their partners. As such, their space for action was reduced. For example, one of the informants reported that after years of exposure to controlling behaviour, the victim started to question every decision she made, including whether or not he would approve of the make-up she wore.

Six of the eight informants reported signs of romantic jealousy, a common precursor to IPF (Dobash & Dobash 2015; Johnson et al. 2019; Monckton Smith 2020). For example, one informant stated: 'He always thought she was having affairs. From day dot, he assumed she was having affairs with every second man that walked past' (Sister, Victim 8). Another informant stated that the perpetrator would say to the victim: 'who you looking at; what are you doing; you want to go be with someone else?' (Friend, Victim 3). But, as one informant poignantly pointed out, such suspicions of infidelity were not grounded in reality. In fact, the limited opportunities the victim had to leave the house or spend time with others outside of the relationship made it virtually impossible for her to have an affair: 'he couldn't possibly truly suspect she was having an affair because he knew where she was every minute of the day' (Sister, Victim 6).

The partners' jealousy was not, however, limited to romantic relationships but extended to the victim's activities and friendships outside of the relationship. For example, as one informant stated: 'He'd even get jealous if she was here spending time with us…because that was taking time away from him' (Sister, Victim 8). The partners' behaviour included stalking their victims and/or the victims' families and paying the victims 'surprise visits' on the rare occasion that they were out at a social gathering without him. Some informants reported that the partner restricted the victim's movements such that she was not able to leave the house without him. For example, one informant stated: 'he didn't let her do anything, he would drop her off to work and be there to pick her up 10 minutes before knock-off time. Even at lunch, he would just show up' (Sister, Victim 6). Another informant reported that the victim was not allowed to leave the house without leaving one of the children at home with him. As such, the children became a pawn in the partner's manipulation of the victim (see Child and Youth Protection Services 2020).

Such restrictions on the victim's activities and associations with friends and family caused the social sphere around her to decrease. One informant reported that the victim used to be surrounded by friends, but 'that number was being whittled down' (Brother-in-law, Victim 7). While friends and family members tried to stay connected, many found themselves shut out by the partner. One informant stated that the partner would answer the victim's phone and tell whoever was calling that the victim did not want to speak to them. Such strategies of social isolation are common and serve to limit the woman's point of reference and, ultimately, render the abuse invisible to the outside world (Lempert 1996).

Victims were sometimes acutely aware of the controlling nature of the partner, according to the informants. One informant stated that their loved one had expressed that she was in a 'controlling relationship' and that her partner was 'gaslighting' her (Daughter, Victim 5). Nevertheless, few of the victims equated the controlling behaviour with domestic violence or risk of serious harm. For example, one informant noted, 'I don't think she would have said she was in a domestically violent relationship' (Friend, Victim 3), despite the victim enduring years of jealousy, stalking and manipulative behaviour at the hands of her partner.

(Re-)establishing autonomy as a trigger

A common theme across all cases was that the victims were trying their best to maintain or regain their autonomy, despite months or years of physical and/or emotional abuse. The most concrete example of this was considering or actually separating from their partner. Such withdrawal of commitment has been linked to increased use of violence in an attempt to re-establish control (Johnson & Hotton 2003; Wilson & Daly 1993) and, if the loss is perceived as irretrievable, motivation or decision to kill (Monckton Smith 2020).

Four of the victims had formally separated from their partners at the time of their deaths. A further two victims had previously separated from their partners, but had since reunited and were in a relationship with them at the time of their deaths. The informant of one of these victims reported that once they were back together after the first separation, the partner had whispered in the victim's ear: 'if you ever try to leave me like that again I'll fucking kill you' (Brother-in-law, Victim 7). Despite such threats, this victim had reached a 'point of desperation', as the informant put it, and was about to leave the house (as well as the relationship) when her partner killed her.

The last two victims were also in the process of separating from their partners. One of these women had been considering, and even talking about, separation for over a decade, and had reached the point where she had asked her partner to pack his things and leave. As the informant in this case stated, however, 'I don't think he would have ever agreed, properly, to separate' (Daughter, Victim 5).

But (re)gaining autonomy was not only about separating from their partners. Instead, it appeared to be the final step in a long process of rediscovering their self-worth and placing boundaries around what was acceptable and not acceptable in the relationship. One of the informants talked about how the victim resisted her partner's control: 'as he tried to tighten, she'd try to pull away' (Friend, Victim 3). Another said that her loved one noticed the adverse effect the dysfunctional relationship was having on their children, and that this realisation made her enter a 'protective mummy mode' where she was 'getting a bit brave and maybe speaking up a bit' (Sister, Victim 6). These examples challenge the common assumption that abused women lack autonomy by illustrating their persistent efforts at maintaining self-worth and agency even within the structural conditions of men's violence (see also Lempert 1996; Meyer 2012).

Many discussed how this strength and resilience had always been present within these women, but that it had been temporarily silenced by their partners. Others noted that external validation, from people outside of the relationship, made the victims feel stronger and more confident. As one informant stated, such validation made their loved one come to the realisation that 'she wasn't as worthless as she thought she was' (Mother, Victim 4). Another informant noted how the friends and colleagues the victim gained through her education and work made her feel valued to a much greater extent than she was used to:

> She used the word 'valued' all the time. I think throughout all her different jobs, she felt there was a very big difference in that value—the way that people value each other—almost to the point that she thought it was fascinating how kind or what positive feedback you would get outside of the house, compared to what she was used to. (Daughter, Victim 5)

Discussion

Scholars highlight the importance of asking victim-survivors of intimate partner violence directly about their lived experiences (Myhill & Kelly 2021; Tarzia, Humphreys & Hegarty 2017). In cases where the victim is killed, however, those voices are silenced. This study used qualitative interview data from eight friends and family members (referred to as informants) of IPF victims. The qualitative nature of the study supplements the existing and growing evidence base generated using survey methodologies with larger samples (Myhill & Kelly 2021). Nevertheless, given the small sample size, caution must be exercised in interpreting and generalising the results.

The interviews revealed that although six out of the eight women had experienced some form of physical intimate partner violence, it appears some were hesitant to label that violence as 'abuse'. This seems to suggest, in the current sample at least, that perceptions of what does and does not constitute abuse vary considerably, and that for some individuals the *traditional* idea of abuse as serious physical intimate partner violence shaped their conceptualisations of what was occurring (see Loseke 2003). This is an injury threshold that not all women experiencing intimate partner violence reach. It also seems to suggest that the victims (and the informants) may have internalised the 'calculus of harm' approach often observed in the legal system, whereby the seriousness of violence is assessed by the level of harm afflicted (Bishop 2016; Stark 2009; Tyson 2020).

It is frequently argued that 'naming' such behaviours will not only make victims more able to identify what is happening to them but provide impetus and empowerment to seek help, whether that is informal, such as from friends or family, or formal, such as through the justice system (Douglas & Godden 2003; Humphreys & Thiara 2003a). As Lempert (1996: 275) poignantly states: 'Naming is how the unknown becomes known'. We agree with McKenzie et al. (2020) about the need for interventions specifically educating family members and friends about how to offer support and guidance to women experiencing intimate partner violence, including education about the normalisation of violence. Of course, it is important to stress that there is no way of knowing whether, for the victims whose loved ones participated in this study, overtly identifying and labelling the behaviours they were experiencing as abusive would have led to any change in the outcome, or would have altered victims' perceptions about the level of danger that the perpetrator posed to them.

The interviews further revealed that all of the women had experienced some form of coercive control, and in two cases this occurred in the absence of physical intimate partner violence. Scholars continue to argue for the importance of examining 'non-violent coercive control' (Crossman, Hardesty, & Raffaelli 2016; Kirkwood 1993; Stark 2007). It is important that due recognition is given to such forms of abusive behaviour, which may not otherwise fit within existing social and legislative definitions (Lempert 1996; Williamson 2010). One of the informants expressed clear discontent with how the legal proceedings emphasised the absence of physical intimate partner violence and downplayed the years of controlling and belittling behaviour to which her loved one had been exposed. Constructing intimate partner violence as 'abusive' only when it involves physical violence serves to advance a 'crime of passion' framework whereby violence is viewed as spontaneous incidents preceded by victim precipitation (Monckton Smith 2020).

While calls have been made in Australia for the criminalisation of coercive control, similar to the legislation introduced in England and Wales, scholars have called for a carefully considered approach before the introduction of such laws (Tolmie 2018; Tyson 2020; Walklate & Fitz-Gibbon 2019). While coercive control is receiving increasing attention from scholars and policymakers, translating better knowledge about coercive control into practical and genuinely effective means of identifying and responding to those behaviours remains a significant challenge.

Coercive control entraps women in relationships by reducing their space for action and, as such, is often referred to as a 'liberty crime' (Bishop 2016; Sharp-Jeffs, Kelly & Klein 2017; Stark 2007; Tyson 2020). The interviews with informants revealed that the women were all in the process of regaining some level of autonomy and self-worth. These efforts can be seen as ways of 'stretching' their space for action (Westmarland & Kelly 2013) and exercising agency despite significant constraints on their autonomy (Bruton & Tyson 2017; Lempert 1996; Stark 2007). Relationship separation might be the most concrete example of such stretching of space and exercising of agency. As Sharp-Jeffs, Kelly and Klein (2017: 165) point out, however, 'the cost of such assertions of autonomy is often high'. Abusive men perceive separation as a threat to their authority and power within relationships, and post-separation violence has been seen as an effort by abusive men to regain control over what they believe to be rightfully theirs (Johnson & Hotton 2003; Monckton Smith 2020; Sev'er 1997; Wilson & Daly 1993). However, not all of the women had left their partners. Some were considering leaving to attempt to extricate themselves from the violence, and some had previously separated but had since gotten back together. Given much research highlights the precariousness of the separation process for victims of intimate partner violence, it is clear why actual, intended or perceived separation is one of the most well known risk factors for IPF (Johnson & Hotton 2003; Wilson & Daly 1993). The results from the current study, albeit from a small sample, highlight the importance of further understanding the relationship between physical intimate partner violence, coercive control and relationship separation.

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9. The role of depression in intimate partner homicide perpetrated by men against women: An analysis of sentencing remarks

Siobhan Lawler, Hayley Boxall and Christopher Dowling

Introduction

Intimate partner homicide (IPH) is the most common form of homicide in Australia (Bricknell & Doherty 2021). Intimate partner violence is typically characterised by a pattern of physical violence and non-physical coercive and controlling behaviours that aim to intimidate, dominate, undermine or isolate an intimate partner. While there is no one 'type' of intimate partner violence or IPH offender, persons who use violence to control their partners often share common characteristics and psychological vulnerabilities (Boxall et al. 2022; Carney et al. 2023).

Research has identified depression as an important factor in cases of violence against women, with estimates that men with the condition are over-represented among male perpetrators of IPH (Australian Bureau of Statistics 2022; Cheng & Jaffe 2021; Kivisto 2015). Depression is an illness characterised by emotional and physical symptoms including sadness and hopelessness, loss of interest in things previously enjoyed, guilt or low self-worth, changes in appetite and sleep, and difficulty concentrating (American Psychiatric Association 2013). One of the most common mental health disorders, depression can range from mild symptomology and minimal impact on day-to-day functioning, to chronic and severe disablement. Globally, it is estimated that 17 to 56 percent of men who kill their intimate partners have depression (Kivisto 2015).

Intimate partner violence perpetrators who have depression are more likely to use serious physical violence against their partners compared to perpetrators who do not have depression (Danielson et al. 1998), and perpetrators who have other mental illnesses (eg schizophrenia; Yu et al. 2019). Reviews of the research have consistently found a moderate association between mood disorders (including depression) and IPH. Despite the high rates of depression among IPH perpetrators, the link between depression and IPH is not well understood (Elbogen & Johnson 2009; Fazel et al. 2015). Prior research has focused on recording the prevalence of depression among perpetrators of IPH rather than exploring the lived experience of these offenders and the contextual factors underpinning the relationship.

Sentencing remarks provide an opportunity to enrich our understanding of the relationship between perpetrator depression and IPH using case studies. Sentencing is a critical and complex stage in the criminal justice process, balancing recognition of harm done to victims and the protection of the community with the punishment, deterrence, denunciation and rehabilitation of offenders. Unsurprisingly, these aims frequently clash (Walvisch, Carroll & Marsh 2022). For example, when an offender has a mental health problem, their mental impairment may reduce their moral culpability (suggesting the need for a lesser sentence) yet it may also indicate they pose a higher risk of reoffending, emphasising the need to prioritise community safety, such as through a longer sentence (Walvisch, Carroll & Marsh 2022). In cases where there is evidence that an offender's mental impairment contributed to their offending but did not constitute an excuse, their moral culpability (*mens rea,* intent) may be reduced. For this finding to be made, the mental condition must be causally connected to the offending and the impairment in mental functioning must be involuntary (National Judicial College of Australia 2020).

To ensure the right balance between these concerns, sentencing remarks typically incorporate a thorough examination of information drawn from a wide variety of reliable sources (eg police and psychiatric reports). This is largely why sentencing remarks have been used in legal, criminological and psychological research examining mental health and offending (eg Bright, Hughes & Chalmers 2012; Sullivan 2017). In the landmark case of *R v Verdins & Ors* [2007] VSCA 102, the Victorian Court of Appeal outlined a number of principles for sentencing offenders with mental health problems which have since been adopted by all Australian jurisdictions as well as New Zealand. These include additional considerations regarding reduced moral culpability, the nature and conditions of the sentence, the diminished need for general or specific deterrence, how the sentence may weigh more heavily on the offender than on a person in good health, and how imprisonment may adversely affect their mental health.

Prior Australian research has described the different factors that judges take into consideration when sentencing offenders, including perpetrators of IPH and other sexual and violent offenders (Hall, Whittle & Field 2016; Lawler et al. 2020). Research analysing sentencing remarks in cases of IPH has found that judges' evaluation of information regarding an offender's psychological state in the lead-up to and at time of the lethal incident is often extensive (Hall, Whittle & Field 2016). Further, judges frequently refer to the offenders' experiences of depression, psychological distress and suicidality or self-harm in explaining their behaviour—more so than any other mental health problem (Hall, Whittle & Field 2016).

Previous research shows that sentencing remarks are a useful resource for examining the role of mental health problems such as depression in offending behaviour. By analysing the thematic content of judges' sentencing remarks about male IPH perpetrators with a history of depression, the current study aims to examine the role of depression in IPH offending. This will add depth to current understanding of the relationship between IPH and depression.

Method

Data

This research used sentencing remarks collected as part of the Pathways to Intimate Partner Homicide (PIPH) project. It involved analysing 199 cases of IPH in Australia during the period 2007–2018 (see Boxall et al. 2022 for further details). Sampling was reflective of the Australian population distribution as well as proportionate to the number of IPH incidents in each jurisdiction and the Indigenous status of the offender.

IPH was defined as any criminal matter where a male offender was charged with the homicide of his female partner, where 'partner' included a wife, de facto, girlfriend or casual dating partner. The PIPH sample included cases where offenders were found guilty of murder, manslaughter or equivalent offences. Judges' sentencing remarks included in the PIPH study dataset were drawn from publicly accessible databases or formally requested where necessary. The final sample of IPH cases included in the current study was limited to those involving an offender with a history of diagnosed or undiagnosed depression prior to the lethal incident. These cases were identified through keyword searches of the sentencing remarks (eg 'depress') as well as through secondary analysis of the PIPH dataset.

Analysis

As discussed, sentencing remarks typically contain careful analyses of cases, drawing on a wide range of information from various sources. This study used the reasoning and analysis of judges as a vehicle for understanding the association of depression and IPH. Thematic analysis was applied to these remarks to examine the role of perpetrator depression in IPH. The approach applied inductive analysis techniques to extract relevant information from sentencing remarks. The research team read the sentencing remarks, assigning codes and then grouping codes into larger themes based on recurring words, ideas and meanings. In line with the emerging narrative of the remarks, perpetrator experiences of depression were assembled according to the three overall themes:

- onset and causes of depression among IPH perpetrators;
- the role of the offender's depression in the lethal violence; and
- mechanisms used to explain the association between depression and IPH.

This flexible analytical framework is suitable for conducting exploratory data analysis where little is known about a construct or relationship of interest (Thomas 2006). The terms 'offender' and 'perpetrator' are used interchangeably throughout in reference to the men who killed their female partners and who are the subjects of this work.

Limitations

In examining sentencing remarks, this study relies on the analysis of IPH cases and perpetrators undertaken by others. While it is reasonable to treat these analyses as sound, given judges' significant qualifications and experience, it must be noted that no independent verification of their analyses or conclusions is possible. The data analysed here are not representative, as they were compiled to support legal proceedings rather than for the purposes of research. Therefore, there is some inconsistency in the information provided and in the factors deemed most relevant to the specifics of each case. There is jurisdictional variability in the level of information provided by judges in their remarks, with some judges giving very detailed accounts of an offender's mental health and others providing scant to no comment on this. The absence of this information is not evidence of absence, and the information discussed is not necessarily indicative of the breadth of evidence considered or available for each case.

Results

The sentencing remarks for 70 cases identified the offender as having a history of depressive symptoms, accounting for over one-third (35%) of the PIPH sample. Among cases where depression was not discussed, in 25 the perpetrator had a mental health problem other than depression (eg post-traumatic stress disorder, a psychotic disorder), and in 12 it was explicitly reported that the offender did not have a mental health problem (depression or otherwise) in the lead-up to the lethal incident. Four offenders who were reported as experiencing depression after the offence were excluded. In the remaining 88 cases, the offender's mental health was not discussed.

IPH perpetrators with a history of depression had a mean age of 41.8 years (*SD*=11.4). Half were born in Australia (*n*=34, 49%) and most (*n*=55, 79%) were non-Indigenous. The majority were charged with murder (*n*=62, 89%) and the remainder were charged with manslaughter (*n*=8, 11%).

Onset and causes of depression among perpetrators of IPH

Among offenders in the sample, a history of depression was identified either as a reported or suspected diagnosis, or as symptomology experienced in the context of another health condition. In some cases, the onset of depression was linked to situational factors occurring after the offence

(eg detainment and remorse associated with the offence; Cases 117, 142 and 174). However, in the majority of cases, depression was described as having commenced prior to the offence.

While for some offenders the onset of depression occurred in the lead-up to the lethal incident, other offenders had experienced multiple episodes of depression over a number of years prior to it. Where depression was reported earlier in a perpetrator's life, it was frequently related to traumatic experiences including child sexual abuse and neglect (eg Cases 144 and 146), or the onset of other mental health problems such as psychosis and bipolar disorder (eg Cases 125 and 151). In a number of cases, offenders were described as engaging in self-harming and suicidal behaviours during adolescence and young adulthood:

> …he had felt depressed and hopeless in his teens and early 20's and that there were self-harming and suicide attempts… (Case 156)

In some cases, the cause of depression was associated with the chronic illness or death of a loved one. For example, in Case 165 the offender was described as having symptoms of depression and trauma associated with his brother's terminal health condition. Another offender (Case 164) also had a history of depression and post-traumatic stress disorder stemming from his caring responsibilities towards his wife. Where the death of a significant person occurred, the grief was often reported to exacerbate depression and stress associated with other situational factors, such as the perpetrator's own physical or mental illness:

> … [the offender's] general distress appears to have taken on extra dimensions in the wake of his father's death, evolving into what might be regarded as an Acute Stress Reaction and culminating in an explosive fit of rage at the time he killed his wife. (Case 112)

Other significant life events that judges described as being linked to the onset or exacerbation of depression among offenders included physical injuries, health problems, relationship stress, separation and incarceration. In particular, a common narrative that emerged from the sentencing remarks was that, prior to the lethal incident, the offender sustained an injury at work, rendering him incapable of working. This, coupled with chronic pain, resulted in depression:

> …you had a workplace accident… The principal diagnosis immediately after, through extensive testing, was concussion. You subsequently had pain, blurred vision and headaches. You ceased to be able to work. The medical evidence supports a finding that you suffer from depression which arose from the workplace injury… (Case 36)

> During the course of that employment he suffered a significant back injury and was unable to continue working as a labourer. I'm told by [the offender] that the chronic pain resulting from that injury led him to be unable to work, as he had done for most of his life, and support his family and that led to depression. (Case 58)

Intimate partner relationship breakdown and separation were also common themes in remarks about the onset of offenders' depression, which for some offenders contributed to emotional distress and feelings of vulnerability, anger and betrayal:

> The offender said that the day before the murder, he saw his general practitioner and said that he was feeling angry and depressed about his marriage. (Case 151)

> He felt "pushed" by her apparent "betrayal" and her actions in taking out an ADVO [apprehended domestic violence order]. (Case 156)

A number of related situational stressors coincided with relationship breakdown and separation, which in turn appeared to contribute to the onset or exacerbation of depression. These were

primarily related to civil legal proceedings, and the anticipated or actual impacts of these proceedings (as perceived by offenders) on their financial position or access to shared children:

> …The offender had for weeks been showing by his words and his actions that he was depressed at the breakdown of the marriage, concerned about legal proceedings and the consequences for the joint matrimonial property, including the assets of his business, and the custody of the children, and that he was jealous of the man whom the deceased was seeing. (Case 200)

The role of depression in lethal violence

Judges frequently provided detailed descriptions of their process for determining whether an offender's mental state, including depression, was related to the homicide incident and, in turn, their moral culpability. The conclusions judges reached regarding the severity of depression and its relationship to the offender's use of lethal violence ranged from no role at all, to some non-causal association, up to a causal link.

Depression as unrelated to the lethal violence

In a small proportion of cases, judges determined that the offender's depression had little connection to his lethal violence and did not mitigate his culpability. In explaining their decision-making process, judges referred to the high prevalence of depression in the wider community, describing the condition as a common and ordinary mental health problem. This minimised the extent to which judges ascribed the lethal violence to the offender's depression:

> I accept that the offender's depressed state led him to take a bleak view of events and to feel pessimistic about his life and circumstances. I do not, however, regard the evidence as to his depressive state as being capable of significantly mitigating the offender's moral culpability. Depression is a relatively common illness. The offender, in common with many other Australians, suffered and continues to suffer from it. It cannot however, in the circumstances of this case, provide some answer for the offender's crimes. It provides context, but can do little to mitigate these offences. (Case 22)

Judges' decisions regarding the potential role of depression in the lethal incidents were also influenced by an offender's subsequent level of impairment, which appeared to be perceived as synonymous with the severity of their mental illness. In cases where the offender's depression was described as not having a role in the lethal incident, judges typically used the following types of evidence to support their conclusion:

- the absence of a formal diagnosis and treatment;
- the offender providing conflicting accounts of what happened; and
- the offender's efforts to avoid taking responsibility and lack of remorse after the incident.

The last point is evidenced below:

> …the offender's conscious and deliberate misrepresentation of his marriage since his conviction demonstrates a willingness to go to considerable lengths to avoid responsibility for his offence… it tends to undermine the proposition that his depression was at the root of his violent outburst towards his wife. (Case 194)

Some judges described the link between the offender's depression and use of violence as tenuous because the evidence suggested that it had not appeared to impact his decision-making at the time of the offence. Evidence about the offender's behaviour in the immediate lead-up to the lethal violence was considered by judges to determine the extent of their impairment. This included evidence of planning the crime and their ability to engage in 'normal' and routine activities the day of the incident:

> [His conduct] was coldly rational, and in no way indicative of a disordered or chaotic mind. The account of events he gave to police soon after murdering his wife was comprehensive and does not demonstrate mental impairment. It is not enough to establish the existence of a mental disorder to claim a diminution in moral culpability, a reduction in the relevance of general deterrence, and thus a reduced sentence. (Case 151)

> I think a substantial impairment would mean that he would really not be able to think at all well about that situation, not be able [to] contemplate what actions he should take, whereas in this case, he was able to think about the situation to some extent, he was able to plan and talk to friends about it, to plan what was going to happen to his house if he went to [jail], what would happen to his dogs and his horses and make arrangements for that… (Case 102)

Similarly, in Case 183 the offender made comments to police after the offence that indicated he knew what he had done was wrong. In such matters, judges took evidence about the offender's behaviour after the offence to indicate a level of understanding and awareness of his actions and to contest any claim he made that he was suffering a substantial impairment at the time of the homicide.

Depression as related to but not a cause of the lethal violence

In most cases where an offender had depression, judges found that his experience of depression was related to his offending but could not be considered to have caused the lethal violence. Even where there was evidence that the offender's depression had an impact on his cognitive functioning and decision-making, in some cases judges did not believe that the impairment was enough to mitigate responsibility. In these cases, judges pointed to evidence of other motivations for the lethal violence besides disordered thinking:

> Although his depression and unstable personality disorder probably contributed to his anger and offending behaviour, non-psychotic motivations of anger, jealousy, feeling dishonoured and revenge were probably more relevant in terms of his motivations and moral culpability. (Case 156)

In other cases, judges determined that, while the offender's depression was related to his use of lethal violence, it did not reduce culpability. Some judges generally accepted the evidence that depressive symptomology could make people more prone to acting aggressively or behaving in certain ways (see next section), but they argued that it did not *cause* them to do this:

> Although you may have suffered from some degree of depression for some years, it is very difficult to separate that condition from your underlying difficulties and it does not appear to have contributed to your offending. (Case 134)

In cases where depression co-occurred with other underlying mental and physical health issues, as well as distressing life events, judges experienced difficulty disentangling the relative impact of depression on the lethal violence. This in turn made determinations of causation difficult. This was particularly notable in cases where the offender had a substance use disorder. Interestingly, in these cases it was often implied that the offender's decision to 'self-medicate' through the use alcohol and other drugs represented a 'choice' not to pursue traditional and appropriate treatment, reducing the potential mitigatory impact of depression on sentencing:

> [The offender] describes a history of depression although does not appear to have sought formal treatment for this and rather relied upon self-medication or substance use. It cannot be determined whether mood disorder was a consequence of ongoing substance use or was a causative factor in his drug and alcohol use. (Case 134)

Depression as severe, disabling and causally linked with the lethal violence

In a minority of cases judges determined that the offender's moral culpability was significantly reduced because of his depression. In these cases, the offender's depression was described as being linked to the homicide either directly (causally) or indirectly (eg depression led to other co-occurring health problems which in turn led to the lethal violence). In these cases, judges determined that it was unlikely that the lethal incident would have happened if it had not been for the offender's depression:

> At the relevant time, the combination of mental health conditions outlined above, would have severely affected his ability to control his emotions, to think clearly, to make calm reasoned decisions or to make appropriate judgments. In the absence of these conditions, there is nothing to suggest that [the offender] would have been motivated to act as he did. I therefore conclude that his mental health conditions were major causal factors in his offending. (Case 123)

When the offender's mental impairment was assessed to be substantial, his depression usually coincided with a range of other mental health issues, along with a history of complex trauma:

> The offender was of Aboriginal descent and came from an impoverished background. His family often went without basic necessities. (Case 146)

> [The offender] could be described in summary as an extremely psychologically vulnerable individual – an emotional cripple, a victim of a most tragic set of negative circumstances, deprivations and events. (Case 144)

As noted previously, judges' decisions regarding the moral culpability of offenders with depression were influenced in part by the severity of the mental illness. An important indicator judges used to assess the severity of depression was whether the offender had been referred for treatment. However, in cases where the offender had a history of engaging with support services for depression but not complying with recommended treatment plans, some judges believed this increased the offender's culpability for the crime, or at least countered any mitigatory impact of the depression (and other co-occurring health problems) on his moral culpability. In particular, it was suggested that by engaging with treatment providers, the offender had been provided with the necessary support and space to recognise that there was a relationship between his mental health problems and his violent behaviour. By making a choice to not accept support, or to not comply with treatment regimes, these offenders were described as being indifferent to or ignoring the potential risk that they posed to themselves or others:

> Although [the offender's] ability to control himself was significantly impaired, this was principally because he had refused to recommence his anti-depressant medication even though he was well aware that he had become more irritable and had been asked to do so by the deceased. Instead he sought to medicate himself with alcohol and cannabis even though he must have known from past experience that there was a relationship between his use of those substances and his uncontrollable anger. (Case 198)

> …it is inconceivable that the offender was unaware of the link between his alcohol consumption and his violent behaviour. I am satisfied that his decision to become as intoxicated as he was on the night of the offending was clearly reckless, and that this further aggravates the offending. (Case 146)

In these examples, judges describe the intersections between depression, substance use, choice and personal responsibility in offenders' reasoning processes. The offender had knowledge that alcohol would likely make him violent, as it had in the past, and he had been given a chance to interrupt the cycle of violence related to his depression (such as by engaging in treatment). Therefore, his culpability was not reduced. In these cases, the recklessness of the offender is highlighted as he was seen to be actively and deliberately avoiding taking responsibility for his actions.

Mechanisms explaining the link between depression and lethal violence

In assessing the role of depression in the homicide, judges frequently described the mechanism by which an offender's depression contributed to his use of lethal violence. The primary mechanisms identified by judges were certain elements of the symptomology of depression (most notably cognitive and decision-making deficits), co-occurring risk factors such as drug and alcohol use, and certain pre-existing personality traits that exacerbated, or were exacerbated by, the offender's depression. As explained below, these mechanisms are not mutually exclusive, and interact in complicated ways with other individual and contextual factors in cases of IPH.

Depression symptomology

Judges spent considerable time describing the symptoms of depression that were reportedly experienced by offenders. Offenders were often in contact with health and support services as a result of their severe mental health problems and self-harming behaviours, with a quarter of cases involving a history of self-harming and suicidal behaviours (*n*=17, 24%). This occasionally led to them receiving in-patient mental health care (eg Case 125). Other symptoms of depression that impacted on the day-to-day functioning of some offenders were impairments to sleep, appetite, energy and motivation:

> …his lack of sleep and his interrupted sleep, together with his loss of appetite, his significant weight loss, his constant rumination on negative themes, and his impaired mental performance, were all demonstrative of a significant depressive illness. (Case 158)

> He reported an ongoing depressed mood, feelings of hopelessness, a lack of enjoyment of life, and poor sleep over some months. (Case 160)

However, judges often spent the most time considering the impact of depression on an offender's cognitive and decision-making capacity. The symptoms primarily described by judges when discussing cognitive impacts related to executive dysfunction, such as difficulty concentrating, problem-solving and decision-making; and impaired ability to exercise appropriate judgement and control impulses and emotions:

> [The expert] considered it likely that [the offender's] depression was, at least in part, causally associated with the offence, and resulted in impairment of judgment and a reduced capacity to think clearly and make calm and rational choices. In my view, this is a factor that reduces [the offender's] moral culpability, but only by a very modest degree. (Case 116)

Taken together, judges outlined these symptoms to describe how the experience of depression reduced an offender's ability to manage and resolve negative emotions, particularly those that emerged in the context of acute environmental stressors such as relationship conflict and breakdown, illnesses and deaths in the family.

Concurrent alcohol and substance use

Another prominent mechanism described by judges was the co-occurrence of depression with alcohol and substance use disorders. In a high proportion of cases (*n*=40, 57%) the offender had a history of alcohol and other drug problems. It was suggested that offenders used alcohol and other drugs to manage their feelings of distress and other symptoms associated with their depression (ie depression led to alcohol and substance use), and/or to cope with other significant challenges in their lives (ie depression and alcohol/drug use were attributable to the same underlying risk factors). For example, as noted previously, some IPH offenders with a history of depression were also managing long-term health conditions including chronic pain, which may have involved the abuse of prescription medications:

> Since the accident, you have developed problems with anger, mood and substance abuse, primarily benzodiazepine. (Case 142)

Both judges and offenders commented on how an offender's use of alcohol and other drugs had a negative impact on him, exacerbating the symptoms of his depression and affecting cognitive processing capacity and emotional regulation skills:

> [The expert] went on to say that persons suffering from depression have pervasive alterations of mood so that they perceive events in a negative light, out of proportion to the situation. Their judgment may be compromised by their mood state so that they are less able to understand a situation correctly and to act appropriately. The use of alcohol compounds the situation and may lead to impairment of the ability to behave in an appropriate and mature manner. (Case 176)

Despite offenders' efforts to use alcohol and other drugs to self-medicate symptoms of depression and other health problems, judges noted that this behaviour only intensified their problems, contributing to their deterioration and to the lethal violence occurring.

Personality characteristics

The final mechanism identified by judges was the co-occurrence of depression and personality disorders or personality-related risk factors for interpersonal violence. It is difficult to examine the interactions between personality traits, depression and IPH with these data, and in particular to ascertain whether these traits made depression more likely (particularly in response to certain events or experiences) or whether an offender's depression exacerbated these traits in some way. It is clear that, in many cases, offenders were described as having a fear of abandonment and as being jealous, possessive, paranoid, irritable, impulsive, rigid, avoidant and distrustful of others:

> It was [the expert's] opinion that you have shown evidence of an emotionally dysregulated temperament for most of your life, which has manifested in the expression of depressed mood, anxiety, frustration intolerance and anger… Fear of rejection transitioned into interpersonal suspiciousness and paranoia… you interpret ambiguous events or behaviours directed at you through an overly negative or hostile lens. (Case 1)

Relationship jealousy was frequently associated with the onset, persistence and exacerbation of depressive symptoms. Offenders with depression were often described as having a 'possessive nature' and as having 'unravelled' in response to perceived rejection by a partner. This rejection was often attributed to the victim's decision to leave the offender or re-partner with someone else, or the offender's belief that she was planning to do so. Judges often remarked that accusations about the victim's infidelity were not supported by evidence but rather demonstrated the offender's own paranoia and delusional belief system (eg Case 44).

In reference to the presence of both a controlling personality style and depressive symptoms among IPH offenders, some judges expressed difficulty determining whether the motivation for the crime related to an offender's stable personality characteristics and worldview, or to symptoms of mental health problems such as depression:

> Your personality, [the expert] opines, is vulnerable to stressors and you are prone to low mood in response to adverse life events. (Case 135)

> People who are depressed have a view of the world that is pervasively negative… Inflexible thinking arising from [the offender's] unusual personality contributed to the severity of the impairment in his reasoning he experienced at the time of the offence. (Case 186)

Some offenders with depression were described as becoming more and more fixated on the victim's perceived infidelity, which then led to obsessive thoughts and feelings of hopelessness:

> [The expert] referred to what he described as your "fixated" belief that your wife and children had conspired to ruin you financially and also that your wife had been unfaithful to you. It is this fixation that has resulted in this terrible tragedy. (Case 128)

Offenders who had depressive symptoms combined with jealousy and obsession with the perceived infidelity of the victim were often diagnosed as having adjustment disorder with depressed mood. Adjustment disorders were commonly diagnosed when the offender experienced a significant, excessive or disproportionate response to separating from their partner prior to the homicide (eg Case 123).

Discussion

This study examined the experience of depression among IPH perpetrators and its association with IPH, as reported by judges in sentencing remarks. In the first instance, we found that over one-third of offenders in the sample experienced symptoms of depression. This is in line with previous research showing IPH perpetrators experience depression at disproportionate rates compared to the general population (Australian Bureau of Statistics 2022; Cheng and Jaffe 2021; Kivisto 2015).

The role of depression in lethal violence perpetrated by men against their female partners varied significantly across cases. Differing assessments regarding the impact of depression on perpetrators reflect the illness's continuum of severity. In a minority of cases, judges determined either that the perpetrator's depression was unrelated to his violent behaviour and so did not mitigate responsibility for the offence, or that the offender's depression was so severe and disabling that it was inextricably and causally linked with the lethal violence. It was most common for judges to report that the perpetrator's depression was modestly, but not causally, related to IPH.

A key factor in determining culpability was the level of impairment the offender experienced in the lead-up to and during the incident. For example, evidence of planning or efforts to evade detection post-offence were taken as indicators of reasoned decision-making and limited impairment. In other cases, offenders had been offered professional support and had not accepted or not complied with recommended treatment, or they had dismissed suggestions from those close to them that they seek help. Judges often assessed these as deliberate attempts to avoid taking responsibility for their behaviour, which increased their moral culpability. In other words, severity of impairment was in some cases mitigated by the offender's level of knowledge about their mental illness and by their conscious refusal to address their depressive symptoms.

In explaining the link between depression and lethal violence, many judges reported on the cognitive symptoms associated with depression, including poor impulse control and impaired cognitive function. This reflects an understanding that people with poor executive function can be prone to aggression due to their limited problem-solving capacity, which can be compounded by the use of alcohol (Hoaken, Shaughnessy & Pihl 2003; Øverup et al. 2015). Indeed, many of the offenders in this study also had serious alcohol use problems and had been using alcohol heavily in the lead-up to the homicide incident to cope with their depressive symptoms. Hostility and alcohol dependence are associated with depression among men (Cavanagh et al. 2017) and interviews with men who use violence against women highlight anger and shame, alcohol use, and poor communication and emotional regulation skills as important treatment needs (Curtis et al. 2021). These findings are consistent with evidence that individualised treatment focusing on common co-occurring problems (ie mental health and substance use) is current best practice (Butters et al. 2021).

A number of IPH perpetrators with depression demonstrated personality traits such as jealousy, possessiveness, paranoia, irritability, impulsivity, rigidity, low trust in others and avoidance, in line with past research (Kivisto 2015). Depression and personality disorders commonly co-occur and meta-analyses show poorer recovery outcomes for people with comorbid depression and personality disorders than for those with depression alone (Newton-Howes, Tyrer & Johnson 2006). Importantly, the data analysed here do not allow us to disaggregate the effects of mental health and personality traits on offending. However, the study highlights that depression in the context of personality risk factors is a common experience among IPH perpetrators. Future research should investigate the interaction further to inform intervention and prevention efforts.

Service providers and health practitioners are important points of intervention to identify individuals who are having difficulty coping with their circumstances, who are expressing depressive, suicidal or homicidal thoughts, and who may be at high risk of harming themselves or their partners. However, this sample of IPH offenders with depression was characterised by intersecting experiences of unresolved trauma, substance use, and physical illness and disability, demonstrating the importance of holistic, multi-systemic responses. As this study shows, violence is not attributable to a single cause and intervention should be implemented across health, school, justice and community settings more broadly.

Conclusion

This research highlights the importance of qualitative examinations of perpetrator experiences of depression in IPH offender samples. While depression is common among IPH perpetrators, on its own it appears to have limited explanatory value and must be understood in the context of other co-occurring risk factors.

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D

Sexual violence

10. Reporting of dating app facilitated sexual violence to the police: Victim-survivor experiences and outcomes

Siobhan Lawler and Hayley Boxall

Introduction

Sexual harassment, aggression and violence victimisation is common among users of dating apps and websites (Wolbers et al. 2022). Recent research has found that within a sample of almost 10,000 people living in Australia who had used a mobile dating app or website in the last five years, nearly three-quarters (72.3%) had been subjected to online sexual harassment, aggression or violence by someone they had connected with through an online dating platform during this period (Wolbers et al. 2022). Behaviours reported by respondents ranged from being continually contacted by someone after they told them they were not interested (47.2%), through to being threatened (18.9%), and having images or videos taken of them without their consent (12.7%). Further, over a third of respondents (34.0%) said they had been subjected to sexual harassment, aggression and violence in the 'real-world' by someone they had met through an online dating platform.

Wolbers and colleagues' (2022) research reinforces the small body of literature which has explored the use of online dating platforms to facilitate sexual harassment and violence. For example, Choi, Wong and Fong's (2018) survey of 600 university students in Hong Kong found that dating app users were over twice as likely as non-users to have been subjected to sexual assault in the last 12 months. Further, in their analysis of case files obtained from an Australian metropolitan forensic medicine service, Rowse, Bolt and Gaya (2020) found that 14 percent of reported sexual assaults involved an offender who the victim-survivor had met on a dating app.

The majority of people who experience sexual assault and harassment in Australia do not report it to police (Australian Human Rights Commission 2012; Heywood et al. 2022). According to the Australian Bureau of Statistics (2021), only 13 percent (*n*=86,000) of the 639,000 women who were sexually assaulted by a male perpetrator in the last 12 months reported the incident to police during the same period. Reasons for not reporting sexual violence to the police have been well documented in research, including victim-survivor fears that they will not be taken seriously or will not be believed by the police, as well as feelings of shame, fear and humiliation associated with their victimisation (Australian Bureau of Statistics 2021; Orchowski et al. 2022; Weiss 2011). Some groups, such as LGB+ communities, disproportionately experience sexual violence yet are also less likely to report it to police due to a lack of trust, fear of the consequences of reporting, or because they do not expect to be treated fairly or respectfully (Miles-Johnson 2013).

Many of the barriers to reporting sexual violence described above are likely to be exacerbated in situations where the incident was facilitated by technology such as dating apps and websites. While there is evidence that image-based sexual abuse (IBSA; the non-consensual sharing of intimate images) is increasingly being treated seriously by police, barriers to reporting remain, including gaps in legislation, limited resources for investigation and victim-blaming attitudes among the public and police officers (Henry, Flynn & Powell 2018). Minimising victim-survivors' experiences of online forms of sexual violence, including stalking, harassment and abuse, reflects a 'fixation on corporeal or bodily forms of harm, as opposed to harms that are structural, social, emotional or psychological' (Powell & Henry 2018: 301). In other words, the police and others are likely to view physical harms as more serious than non-physical harms.

There are ongoing debates in Australia and internationally about the justice needs of victim-survivors of sexual violence and whether criminal justice systems and processes are equipped to meet these often-diverse needs. Research examining the views and attitudes of victim-survivors who do make a formal report is essential for informing these debates, as well as improving police responses to victim-survivors of technology-facilitated sexual violence (TFSV) who choose to engage with the criminal justice system. Improving police responses to victim-survivors of dating app and technology-facilitated sexual violence is an important policy goal for several reasons, including the current absence of alternative justice pathways available in Australia (eg restorative justice), the role of police agencies in connecting victim-survivors with support services, and the increasing numbers of people who use dating apps and websites and who may be subjected to abuse on these platforms.

Method

The current study aimed to answer the following research questions:

- What proportion of people who experience online and in-person sexual harassment, aggression and violence facilitated by online dating platforms report these experiences to the police?
- Are victim-survivors more likely to report online or in-person sexual violence facilitated by online dating platforms to the police?
- How satisfied are victim-survivors who make a report to the police?

The study draws on the same database used by Wolbers and colleagues (2022) in their examination of the prevalence and nature of online and in-person dating app facilitated sexual violence (DAFSV) among a sample of nearly 10,000 people living in Australia who had used a mobile dating app or website in the last five years. These data were collected via an online survey conducted by Roy Morgan Research Solutions between 23 June and 9 August 2021 using their Single Source panel and panels managed by PureProfile and Dynata. The survey was sent to members of these online panels aged 18 years and over.

Proportional quota sampling, a non-probability sampling method, was used to recruit respondents. Quotas were based on the Australian adult population stratified by sex, age and usual place of residence, derived from data from the Australian Bureau of Statistics. The Single Source survey, which is recruited through a rigorous cluster-sampled, face-to-face survey approach, was conducted first and was used to calibrate the quotas for the external panels to account for age- and gender-related propensity for having used an online dating platform in the last five years. What this means is that the sample reflects the spread of people living in Australia (18 years and over) who use online dating platforms.

Respondents were asked a series of questions about their sociodemographic characteristics, their experiences of online and in-person DAFSV, and their reporting behaviours (see Table 1). For a complete copy of the survey tool, and information about how the survey was developed, please see Wolbers and colleagues (2022).

The overall completion rate for the survey—the proportion of total invitations (*n*=185,840) sent to panel members that resulted in completed surveys—was 5.4 percent (*n*=9,987). However, 75.5 percent of respondents who opened the invitation, passed the screening process and read the consent form went on to complete the survey.

Sample characteristics

Approximately half of the final sample identified as male (50%, *n*=4,992) and half as female (49.3%, *n*=4,924), with less than one percent identifying as non-binary (0.7%, *n*=71). The majority of respondents identified as heterosexual (heterosexual men: 42%, *n*=4,014; heterosexual women: 40.2%, *n*=4,194) and 16.2 percent (*n*=1,613) self-identified as LGB+ (LGB+ men: 7.2%, *n*=719; LGB+ women: 8.4%, *n*=839). The largest proportion of participants were 25–34 years old (34.8%, *n*=3,471) with 78 percent of the sample under 44 years old.

Four out of five participants lived in a major city at the time of completing the survey (80.2%, *n*=8,008), and the rest were living in regional and remote areas of Australia (19.8%, *n*=1,979). Nearly eight percent (7.8%, *n*=778) of the sample identified as Aboriginal and/or Torres Strait Islander. Nearly one in three respondents reported having a disability, defined as having a long-term restrictive health condition that impacted on their day-to-day life (29.7%, *n*=2,962). A small proportion of the sample were on a temporary visa at the time of completing the survey (8.4%, *n*=835).

Measures of sexual harassment, aggression and violence facilitated by online dating platforms

Sexual violence is defined here as non-consensual sexual behaviours that aim to coerce, dominate and maintain power inequalities (Armstrong, Gleckman-Krut & Johnson 2018). TFSV encompasses behaviours where technology is used to facilitate both online (virtual) and in-person (face-to-face) sexual harms (Henry & Powell 2018). DAFSV comes under this definition, and includes behaviours where online dating platforms are used to facilitate online and in-person sexual harms, including sexual and gender-based harassment, stalking, IBSA, coercion and assault (Henry & Powell 2018; Woerner 2022).

To measure their experiences of being subjected to DAFSV, respondents were asked whether any of the behaviours listed in Table 1 had been perpetrated against them by someone they had met on an online dating platform in the last five years. The majority of the respondents had experienced at least one type of online DAFSV (72.3%, *n*=7,224), and a third of the sample reported experiencing at least one in-person form of DAFSV (34.0%, *n*=3,394) after meeting with someone they met on an online dating platform in the real world. See Wolbers et al. (2022) for a detailed overview of the prevalence and nature of online and in-person DAFSV within the sample.

Table 1: Online and in-person sexual harassment, aggression and violence behaviours	
Online DAFSV Online sexual harassment	**In-person DAFSV** Sexual assault and coercion
Continued to contact the respondent even after they told them they were not interested in having a relationship with them	Pressured the respondent verbally to perform unwanted sexual acts (eg making promises, lying, repeatedly asking or insisting etc)
Sent the respondent an unwanted sexually explicit message	Attempted to engage in a sexual act with the respondent when they could not consent
Sent the respondent an unwanted sexually explicit photo or video of themselves	Used, or threatened to use, physical force to force the respondent to perform unwanted sexual acts
Pressured the respondent to send them a sexually explicit message	Spiked the respondent's drink to try and coerce them into performing a sexual act
Pressured the respondent to send them a sexually explicit photo or video of themselves	Took off their condom during intercourse without the respondent's consent or refused to wear a condom
Pressured the respondent to meet them in person when they did not want to	Lied about their sexual health status (eg whether they had a sexually transmitted disease like herpes)
Insulted the respondent, called them names or used abusive language that made the respondent feel uncomfortable	Took photos or videotaped the respondent engaging in sexual acts without their knowledge or consent
Posted offensive comments about the respondent online that other people could see (eg on their social media accounts)	Loitered around, followed the respondent or showed up inappropriately at their home, school, or workplace
Threatened the respondent in any way	
Threatened to share a sexually explicit image or video of the respondent without their consent	
Took a non-consensual photo or video of the respondent which was sexually explicit in nature (eg via webcam)	
Shared a sexually explicit photo of the respondent with others without their consent	
Pressured the respondent to give them information about their location or their schedule	
Logged into one of the respondent's mobile dating app/website accounts without their permission	

Measures of reporting

Respondents subjected to online and/or in-person DAFSV were asked whether they had disclosed an experience of victimisation to anyone in the last five years. Reporting included both formal reporting (eg to police) and informal reporting (eg to family and friends). Respondents who said they had made a report to the police at least once in the last five years were then asked a series of follow-up questions about their most recent experience reporting online and/or in-person DAFSV. These questions focused on:

- the reporting outcome (ie commencement of an investigation);
- satisfaction with investigation processes;
- perceptions that the police took the incident seriously;
- provision of information about other sexual assault services; and
- intentions to report again.

Analysis

In recognition of previous research that LGB+ communities are more likely than heterosexual persons to experience sexual violence (eg Anderson, Vogels & Turner 2020; Wolbers et al. 2022), the sample was disaggregated by respondent gender and sexual identity. LGB+ respondents were those who said they were not heterosexual (eg lesbian, gay, bisexual, pansexual). This definition also includes individuals who said they did not know what their sexual identity was (ie questioning).

Statistical relationships between reporting experiences and the gender and sexual identities of respondents were assessed using chi-square tests of association. Because there were multiple respondent groups in the analysis, post-hoc tests of residual differences with a Bonferroni correction were also conducted.

Limitations

There are several limitations associated with the current study that need to be acknowledged. First, the results presented here do not reflect all experiences of reporting to police among respondents, only their most recent experience. Further, respondents were not asked about the specific nature of the sexual offence that they had reported to the police, only whether it occurred online or in person. This means we cannot comment on which offence types are more or less likely to be reported to
the police.

Finally, the data for this study were collected during the COVID-19 pandemic, which may have affected the survey findings in unknown ways. For example, it has been reported that use of mobile dating apps and websites increased during different phases of the pandemic, which could have in turn increased victimisation rates. The pandemic may have also negatively impacted the likelihood of victim-survivors reporting sexual violence to the police, which appeared to be the case for intimate partner violence (Morgan, Boxall & Payne 2022). However, this is simply a hypothesis, as there is no research to the authors' knowledge that has examined the impact of the pandemic on reporting of sexual violence specifically.

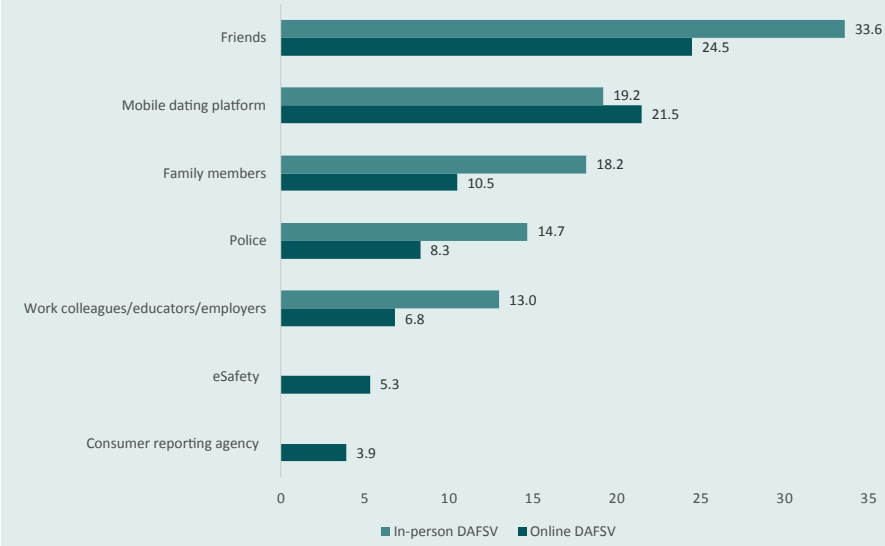
Results

Prevalence of reporting to the police

As outlined in Figure 1 below, nearly half (44.4%, *n*=3,208) of respondents who had been subjected to online DAFSV in the last five years disclosed to at least one source, with one in five (21.6%, *n*=1,562) reporting to multiple sources. A slightly higher proportion of people who experienced in-person DAFSV disclosed to at least one source (56.8%, *n*=1,926) and over a quarter (27.6%, *n*=935) reported the incident to multiple sources.

Reporting to the police was less common than reporting to other entities and individuals. Only one in seven respondents who had been subjected to in-person DAFSV (14.7%, *n*=500), and one in 13 (8.3%, *n*=600) who had been subjected to online DAFSV, said they reported to the police. It was more common for respondents to say they disclosed online (24.5%, *n*=1,139) and in-person DAFSV (33.6%, *n*=1,772) to their friends, to the online dating platform (online DAFSV: 21.5%, *n*=1,555; in-person DAFSV: 19.2%, *n*=652) or to family members (online DAFSV: 10.5%, *n*=755; in-person DAFSV: 18.2%, *n*=617). Only a small proportion of respondents subjected to online DAFSV said they had made a report to the eSafety Commissioner (5.3%, *n*=384) or another reporting agency such as ReportCyber (3.9%, *n*=283).

Figure 1: Reporting of dating app facilitated sexual violence, by type of DAFSV and reporting entity (%)



Note: Respondents who were subjected to in-person DAFSV were not asked questions about reporting to eSafety or consumer reporting agencies

Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

The likelihood of reporting online DAFSV to the police appeared to be influenced by the sexual and gender identity of respondents ($\chi^2(5)=77.48$, $p<0.001$, Cramér's $V=0.10$). Analysis of the adjusted residuals identified that the proportion of heterosexual men who reported to the police was higher than anticipated (11.0%, *n*=283), and the corresponding proportion of heterosexual women was lower than expected (6.2%, *n*=197; see Table 2). Similar trends were identified for in-person DAFSV ($\chi^2(5)=74.56$, $p<0.001$, Cramér's $V=0.15$). Again, analysis of adjusted residuals identified that the proportion of heterosexual men who reported an incident of in-person DAFSV was higher than anticipated (18.1%, *n*=202), and the proportions of heterosexual women (12.0%, *n*=172) and LGB+ women (10.2%, *n*=41) were lower than expected.

Table 2: Prevalence of reporting online and in-person DAFSV to the police, by respondent gender and sexual identity

	Online DAFSV		In-person DAFSV	
	n	%	*n*	%
Heterosexual men[a]	283	11.0	202	18.1
LGB+ men[b]	42	7.7	43	13.7
Heterosexual women[c]	197	6.2	172	12.0
LGB+ women[d]	46	6.6	41	10.2
Non-binary[e]	8	7.6	8	15.1

a: Denominators include 55 respondents who said they did not know/would rather not say if they had experienced online DAFSV, and 709 respondents who said they did not know if they had experienced in-person DAFSV

b: Denominators include 2 respondents who said they did not know/would rather not say if they had experienced online DAFSV, and 56 respondents who said they did not know if they had experienced in-person DAFSV

c: Denominators include 30 respondents who said they did not know/would rather not say if they had experienced online DAFSV, and 622 respondents who said they did not know if they had experienced in-person DAFSV

d: Denominators include 1 respondent who said they did not know/would rather not say if they had experienced online DAFSV, and 109 respondents who said they did not know if they had experienced in-person DAFSV

e: Denominators include 2 respondents who said they did not know/would rather not say if they had experienced online DAFSV, and 30 respondents who said they did not know if they had experienced in-person DAFSV

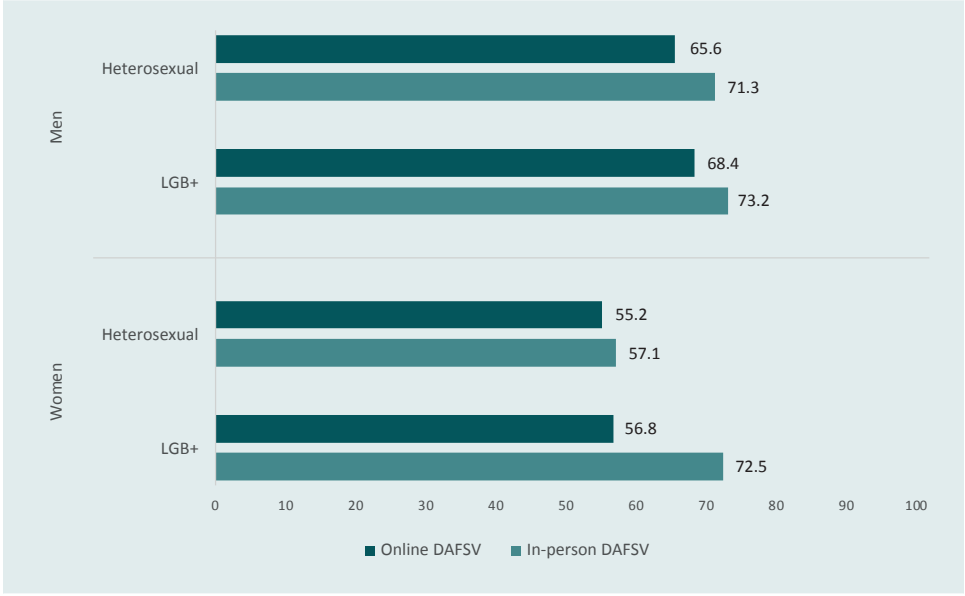
Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Experiences of victim-survivors who reported to the police

Reports resulting in an investigation

Approximately two-thirds of respondents said that their most recent report of DAFSV victimisation had been investigated by police (online DAFSV: 61.0%, *n*=366; in-person DAFSV: 66.8%, *n*=334). The likelihood of respondents saying that their report of online DAFSV had been investigated did not differ by the gender or sexual identity of respondents ($\chi^2(3)=6.44$, $p=0.092$; Figure 2). However, there was a relationship between the sexual and gender identity of respondents and police investigation of in-person DAFSV reports. Approximately 70 percent of heterosexual men (71.3%, *n*=144), LGB+ men (73.2%, *n*=30) and LGB+ women (72.5%, *n*=29) said that their report of in-person DAFSV had been investigated by the police. This decreased significantly to 57.1 percent for heterosexual women (*n*=96; $\chi^2(3)=10.11$, $p<0.05$, Cramér's $V=0.15$). Analysis of the adjusted residuals identified that the proportion of reports of in-person DAFSV investigated by police was higher than expected for heterosexual men, and lower than expected for heterosexual women.

Figure 2: Reports of DAFSV investigated by police, by respondent gender and sexual identity and DAFSV type (%)



Note: Sample limited to respondents who had experienced online or in-person DAFSV and reported to the police. Non-binary respondents were excluded from the analysis due to small sample size

Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Satisfaction with police investigation processes and outcomes

Respondents who said their report of online or in-person DAFSV had been investigated by the police were asked to indicate their level of agreement with a series of statements about the investigation process (where 1=strongly disagree and 5=strongly agree). Specifically, they were asked to rate their agreement with the following:

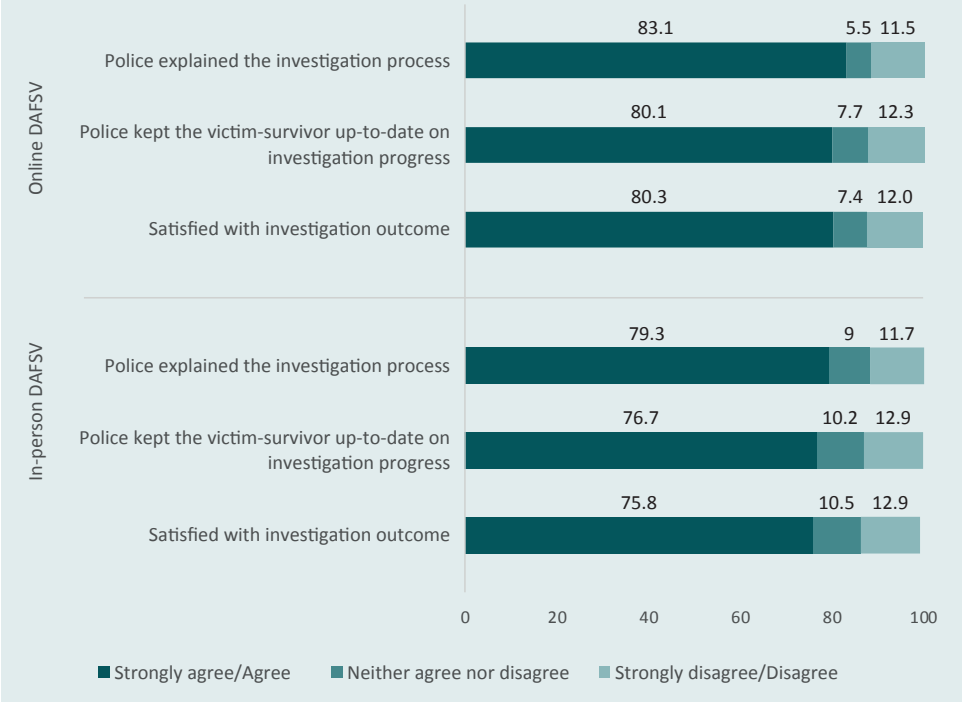
- the police explained the process for investigating the incident to me;
- the police kept me up-to-date on the progress of the investigation; and
- I was satisfied with the outcome of the investigation.

The analysis identified high levels of agreement with the above statements. Four in five respondents whose report was investigated by the police strongly agreed or agreed that:

- the police explained the process for investigating the incident to them (online DAFSV: 83.1%, *n*=304; in-person DAFSV: 79.3%, *n*=265);
- the police kept them up-to-date on the progress of the investigation (online DAFSV: 80.1%, *n*=293;
  in-person DAFSV: 76.7%, *n*=256); and
- they were satisfied with the outcome of the investigation (online DAFSV: 80.3%, *n*=294; in-person DAFSV: 75.8%, *n*=253).

However, as shown in Figure 3, approximately one in 10 respondents strongly disagreed or disagreed with these statements.

Figure 3: Victim-survivor satisfaction with police investigation processes, by type of DAFSV (%)



Note: Sample limited to respondents who made a report to police and said the report had been investigated. Percentage totals may not equal 100 due to rounding

Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Although the sample sizes were too small to conduct tests of significance, there were some differences across the sample regarding the gender and sexual identity of respondents and their satisfaction with police investigative processes and outcomes that are worth noting (see Table 3). In particular, for both online and in-person forms of DAFSV, a large proportion of heterosexual women reported dissatisfaction with police investigation processes. Further, the proportions of heterosexual and LGB+ women and LGB+ men who said they were not satisfied with the outcome of the investigation were much higher than the proportion of heterosexual men.

Table 3: Victim-survivor satisfaction with police investigation processes, by respondent gender and sexual identity and type of DAFSV (%)

	Police explained investigation process		Police kept the victim-survivor up-to-date on investigation progress		Satisfied with investigation outcome	
	Strongly agree/ Agree	Strongly disagree/ Disagree	Strongly agree/ Agree	Strongly disagree/ Disagree	Strongly agree/ Agree	Strongly disagree/ Disagree
Online DAFSV						
Heterosexual men	85.8	9.3	80.9	10.4	85.2	7.7
LGB+ men	84.6	11.5	84.6	11.5	80.8	11.5
Heterosexual women	75.7	16.8	75.7	15.9	73.8	18.7
LGB+ women	88.0	12.0	76.0	20.0	64.0	24.0
In-person DAFSV						
Heterosexual men	81.9	9.0	79.2	7.6	80.6	9.0
LGB+ men	76.7	16.7	76.7	20.0	70.0	20.0
Heterosexual women	72.9	17.7	72.9	17.7	73.7	17.9
LGB+ women	72.4	10.3	67.9	21.4	57.1	21.4

Note: Sample limited to respondents who made a report to the police and said that the report had been investigated. Non-binary respondents were excluded from the analysis due to small sample size

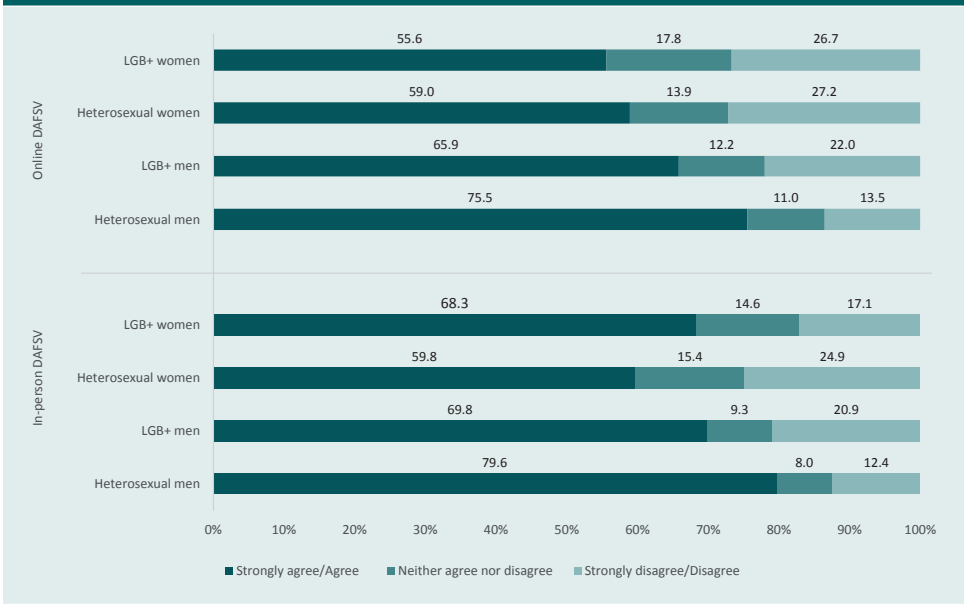
Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Perceptions that police took the incident seriously

Regardless of whether the police investigated their report of online or in-person DAFSV, respondents were asked whether they believed that the police had taken the incident seriously. Approximately two-thirds of respondents strongly agreed or agreed that the police had taken the incident seriously, and this was consistent for both online (68.0%, *n*=405) and in-person DAFSV (71.8%, *n*=356). However, one in five respondents strongly disagreed or disagreed, meaning that they did not believe the police took the incident seriously (online DAFSV: 19.7%, *n*=117; in-person DAFSV: 17.1%, *n*=85).

Overall, there was a statistically significant relationship between the gender and sexual identity of respondents and perceptions that the police took the incident seriously (online DAFSV: $\chi^2(6)=19.71$, $p<0.01$, Cramér's $V=0.13$; in-person DAFSV: $\chi^2(6)=18.07$, $p<0.01$, Cramér's $V=0.14$). Specifically, analysis of the adjusted residuals found that the observed proportion of respondents who strongly agreed or agreed that the police took the incident seriously was higher than anticipated for heterosexual men (online DAFSV: 75.5%, *n*=213; in-person DAFSV: 79.6%, *n*=196), and lower than anticipated for heterosexual women (online DAFSV: 59.0%, *n*=115; in-person DAFSV: 59.8%, *n*=101; Figure 4).

Figure 4: Victim-survivor level of agreement with the statement 'The police took the incident seriously', by respondent gender and sexual identity and DAFSV type (%)



Note: Non-binary respondents were excluded from the analysis due to small sample size

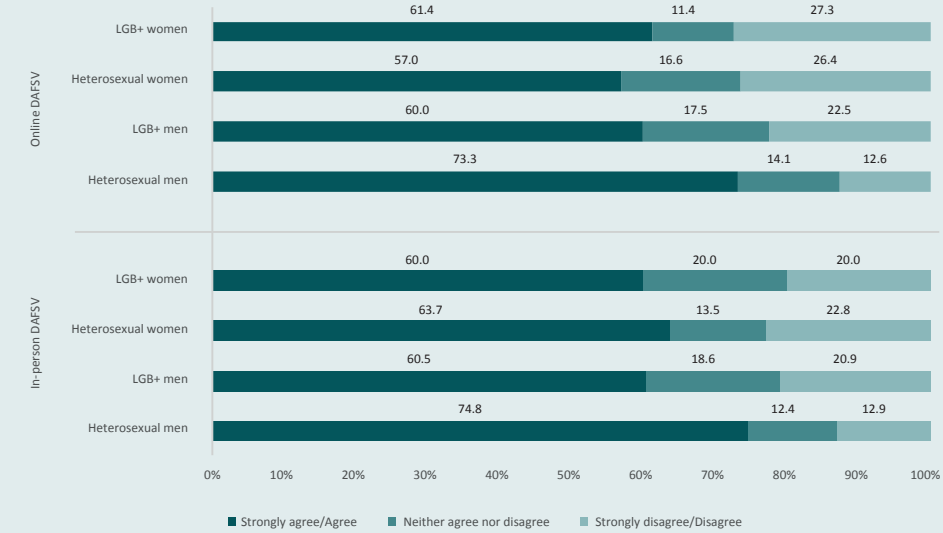
Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Information about support services

Among respondents who reported DAFSV victimisation to the police, two-thirds strongly agreed or agreed that police provided them with information about support services. This was consistent for both online (64.7%, *n*=388) and in-person DAFSV (68.8%, *n*=344). However, again around one in five respondents reported that they were not provided with information about support services after reporting to the police (online DAFSV: 18.7%, *n*=112; in-person DAFSV: 17.2%, *n*=86).

While nearly three-quarters of heterosexual men said the police provided them with information about support services after reporting online DAFSV (73.3%, *n*=203), significantly fewer heterosexual (57.0%, *n*=110) and LGB+ women (61.4%, *n*=27) said the same ($\chi^2(8)=23.6$, $p<0.01$, Cramér's *V*=0.14). However, for in-person DAFSV, there was no relationship between respondents' gender or sexual identity and their likelihood of receiving information about support services after reporting to police ($\chi^2(8)=12$, $p=0.150$, Cramér's *V*=0.11; see Figure 5).

Figure 5: Victim-survivor level of agreement with the statement 'The police provided me with information about other services that could assist me', by respondent gender and sexual identity and DAFSV type (%)



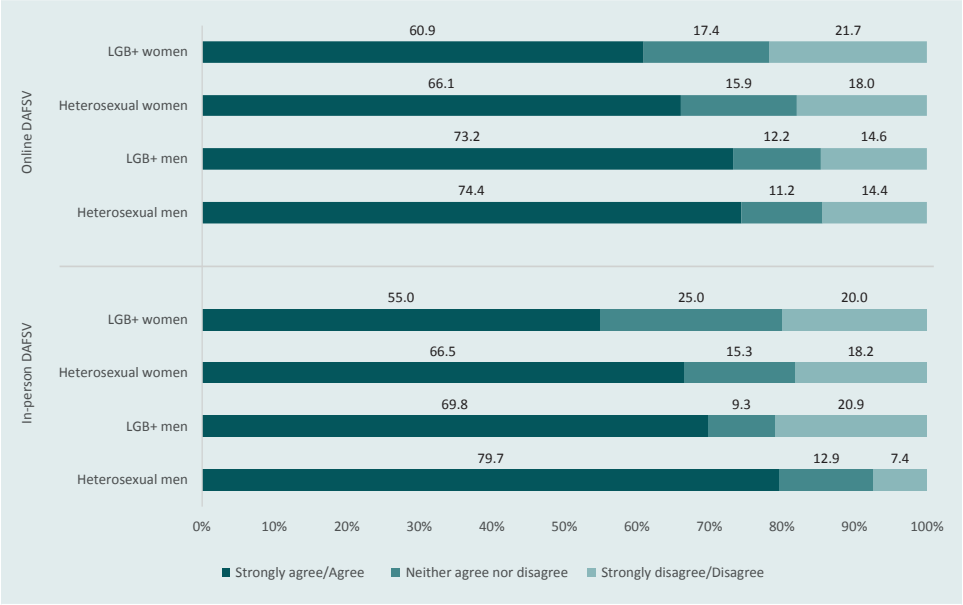
Note: Non-binary respondents were excluded from the analysis due to small sample size

Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Intention to report again

Around 70 percent of respondents who reported to the police said they would report to the police again (online DAFSV: 69.0%, *n*=414; in-person DAFSV: 71.6%, *n*=358). While there was no relationship between the gender or sexual identity of respondents and self-reported intentions to report online DAFSV again in the future ($\chi^2(6)=6.04$, $p=0.419$, Cramér's *V*=0.07), the analysis identified statistically significant differences for in-person DAFSV. Specifically, the number of people who strongly agreed or agreed that they would report again was higher than anticipated for heterosexual men, and lower than anticipated for heterosexual and LGB+ women (Figure 6).

Figure 6: Victim-survivor level of agreement with the statement 'I would report to the police again', by respondent gender and sexual identity and DAFSV type (%)



Note: Non-binary respondents were excluded from the analysis due to small sample size

Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Discussion

These findings make a valuable contribution to our understanding of the experiences of victim-survivors who report DAFSV to the police. In line with research showing victim-survivors are most likely to disclose sexual violence victimisation to informal networks (Dunn, Vail-Smith & Knight 1999), respondents in the current study were more likely to report incidents of online or in-person DAFSV to family, friends or the online dating platform than to police. This reinforces the need for community-based education programs that can assist community members to provide appropriate support to friends and family members who may disclose victimisation experiences to them.

Interestingly, among respondents who did report to police, it was more common that they reported in-person DAFSV than online DAFSV (14.7% vs 8.3% respectively). Further, a higher proportion of respondents who reported in-person DAFSV said that the police took the incident seriously compared to victim-survivors of online DAFSV. This provides further evidence that community members and law enforcement may minimise the harms caused by online sexual violence compared to in-person sexual violence (Powell & Henry 2018).

Around two-thirds of DAFSV incidents reported to police were investigated and in the majority of these situations the investigation process and outcome was viewed positively by victim-survivors. In particular, four in five respondents said the police had explained the investigation process to them, had kept them up-to-date with the progress of the investigation, and had provided them with information about support services that could assist them. Future research could expand on this study to investigate what information is provided and what services are being recommended by police and accessed by victim-survivors with diverse experiences.

Crucially, regardless of whether their report was investigated, approximately four in five respondents said that the police had treated the incident they reported seriously. The reason this is such an important finding is that, when asked what they want from a criminal or alternative justice response, many victim-survivors say that being listened to, having the incident treated seriously and having its impacts acknowledged is important to them (Daly 2017; Henninger et al. 2020; Powell & Cauchi 2013). This would suggest that in many situations the police are succeeding in achieving these justice goals for victim-survivors of DAFSV.

The findings described above are encouraging, considering the large body of research that has demonstrated the positive impacts of procedurally fair and just processes on people impacted by crime, including sexual violence. This includes mitigating the negative psychological impacts of the crime itself, satisfaction with the outcomes of the report, and intentions to report again (Elliott, Thomas & Ogloff 2014; Murphy & Barkworth 2014). While this study did not examine the factors associated with intentions to report again, it is worth noting that the vast majority of respondents who reported positive experiences with police also expressed intentions to report again.

However, it is important that we do not lose sight of the finding that one in five respondents in the sample had adverse experiences when they reported an incident of DAFSV to the police. Also, one in three respondents said they would not report to the police again if they were revictimised. This means that, for these victim-survivors, the criminal justice system did not meet their response needs. This finding is in line with research showing that some victim-survivors of sexual violence experience secondary victimisation after reporting to police (Lorenz, Kirkner & Ullman 2017). Negative reporting experiences can legitimise and reinforce beliefs that victim-survivors will be blamed, stigmatised or not believed, and that engagement with the criminal justice system can be harmful and retraumatising (Moschella, Potter & Moynihan 2020).

In line with previous research (Henry & Powell 2018), we found that reporting experiences were not consistent across the sample. Heterosexual men not only reported DAFSV to police at higher rates, they were most likely to say that their claim was investigated, that it was taken seriously, and that they would report to police again. In comparison, LGB+ respondents and heterosexual women reported more negative experiences reporting to police, especially after reporting online DAFSV. In particular, it is concerning that over a quarter of LGB+ and heterosexual women who reported online DAFSV felt that police did not take their report seriously. In light of this, it is not surprising that LGB+ and heterosexual women were the least likely to say they would report DAFSV to the police again.

The finding that heterosexual men were more likely to report online DAFSV and have positive experiences dealing with the police could be attributable to differences in the nature of the offences that were being reported by this cohort (Murphy & Barkworth 2014). For example, legislative change in Australia over the past decade has resulted in IBSA being taken more seriously by police (Henry, Flynn & Powell 2018; Flynn & Henry 2021) and previous research has suggested that men are significantly more likely than women to report IBSA victimisation (Powell & Henry 2019). In contrast, legislative and police responses to gender-based hate speech and harassment are limited (Richardson-Self 2021; Weston-Scheuber 2013) and this form of TFSV is disproportionately experienced by LGB+ persons (Powell & Henry 2019). Future research should examine which types of DAFSV and TFSV are most likely to be reported to police and whether police respond differently depending on the nature of the offences reported.

Conclusion

In Australia and internationally, there have been important conversations about how criminal justice systems can be improved to provide a more appropriate response to victim-survivors of sexual violence. Consistent with previous research, the findings from this study highlight the importance of challenging the beliefs of the police, victim-survivors and the community more broadly that online forms of sexual violence are less serious or severe than in-person sexual violence. Not only were victim-survivors of these crimes less likely to report them to the police, they were less satisfied with the response they received when they did.

Further, there is a need to understand in more detail the experiences of LGB+ persons who report sexual violence to the police. The history of police engagement with LGB+ communities has been fraught and the findings from this study demonstrate that we still have a way to go. More research and consultation with LGB+ communities are essential for developing more appropriate policing responses that will in turn increase satisfaction among these communities, as well as re-reporting. Certainly, identifying victim-survivor justice needs and tailoring responses accordingly is critical for improving police responses to DAFSV, TFSV and sexual violence more broadly.

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11. Image-based abuse: Gender differences in bystander experiences and responses

Asher Flynn, Elena Cama and Adrian J Scott

Introduction

Although digital technologies have had benefits socially and culturally, they have also facilitated harmful and abusive behaviours such as image-based abuse (IBA), sexual harassment, and domestic and family violence (Dragiewicz et al. 2019; Flynn & Henry 2021; Harris & Woodlock 2019; Henry et al. 2021; Powell et al. 2019). Sometimes referred to as 'image-based sexual abuse' (Flynn & Henry 2019; Henry, Flynn & Powell 2019), 'revenge pornography' (Bond & Tyrrell 2021) and 'non-consensual pornography' (Franks 2017), IBA consists of three main behaviours:

- the non-consensual taking or creation of nude or sexual images (hereafter referred to as taking/creating);
- the non-consensual sharing or distribution of nude or sexual images (sharing/distributing); and/or
- the threat to share or distribute nude or sexual images (threatening).

In 2016, research found that one in five Australians aged 16–49 years reported experiencing IBA (Henry, Flynn & Powell 2019). Comparative research across Australia (*n*=2,054), New Zealand (*n*=2,027) and the United Kingdom (*n*=2,028) conducted in 2019 found these rates to be increasing, with 38 percent of respondents reporting having experienced at least one form of IBA (Australia, 35%; New Zealand, 39%; UK, 39%; Powell et al. 2020). These studies also found that younger people, gender and sexuality diverse people, people living with a disability and Aboriginal and Torres Strait Islander people were disproportionately likely to experience IBA (Henry et al. 2021; Henry, Flynn & Powell 2019; Powell et al. 2020; Scott et al. 2022).

Research suggests that people who witness abusive behaviours can reduce the extent and impacts of the resultant harm (Barlińska, Szuster & Winiewski 2013; Brochado, Soares & Fraga 2017; Kowalski et al. 2014; Rebollo-Catalan & Mayor-Buzon 2020; Song & Oh 2018). However, many people report that they do not intervene when witnessing harmful behaviour. In the United States, a 2017 survey of 4,278 adults showed that 66 percent of respondents reported witnessing online harassment directed at other people, yet only 30 percent reported intervening (Pew Research Center 2017). Engaging bystanders to recognise and respond to abusive behaviours—known as bystander intervention—can be an effective prevention tool (Darley & Latané 1968; Dovidio et al. 2006; Gordon-Messer et al. 2013; Latané & Darley 1970). Over several decades, researchers have sought to better understand bystander attitudes, capacity and willingness to intervene, including how their attitudes and behaviours are influenced by others, barriers and facilitators for intervention, and programs that promote intervention by building bystanders' confidence and skills to intervene. Despite extensive literature on bystanders and bystander intervention in the context of sexual violence (see Mainwaring, Gabbert & Scott 2022), there is limited research on this in relation to IBA.

This chapter draws from a multi-methods study published as *Preventing image-based abuse in Australia: The role of bystanders* (Flynn, Cama & Scott 2022), which was funded by a Criminology Research Grant (CRG 02/18–19). The project sought to build on existing research around 'silent' and 'passive' bystanders versus 'prosocial' or 'active' bystanders and sexual violence prevention campaigns (Darley & Latané 1968; Latané & Darley 1970; see also Clarke 2003; Dovidio et al. 2006; Flynn 2015) to better understand bystander intervention in IBA cases across four Australian jurisdictions—the Australian Capital Territory, New South Wales, South Australia and Victoria. It examined bystanders' attitudes towards IBA, their willingness and capacity to intervene when witnessing IBA, and barriers to and facilitators of intervention. This chapter reports on gender differences in bystanders' experiences of witnessing and responding to IBA. Further findings from the study are available in the final report (Flynn, Cama & Scott 2022).

Literature review

Recent research suggests that both engaging in and experiencing IBA are common (Powell et al. 2022). As outlined above, 38 percent of respondents in Powell et al.'s (2020) study across the United Kingdom, New Zealand and Australia reported having experienced at least one form of IBA. In terms of perpetration, Henry et al.'s (2021) study found that 18 percent of respondents (*n*=1,070 of 6,109) reported perpetrating IBA across three countries (Australia, 16%; New Zealand, 20%; UK, 17%). There was also a clear gendered, sexuality and age pattern among the perpetration findings, with 22 percent of men, 23 percent of respondents aged 16–39 years and 29 percent of gender and sexuality diverse respondents reporting having engaged in one or more perpetration behaviours, compared with 13 percent of women, 11 percent of respondents aged 40–64 years and 16 percent of heterosexual respondents (Henry et al. 2021; see also Powell et al. 2022).

Perpetrators of IBA include intimate partners, family members, friends, acquaintances and persons unknown to the victim (Powell et al. 2019). IBA occurs in a range of relationship contexts (Powell, Henry & Flynn 2018; Powell et al. 2019), and motivations underpinning acts of IBA are diverse (Powell et al. 2019). In their study, Powell et al. (2020) found that the most common motivation reported by perpetrators was to have 'fun', to 'flirt' or to be 'sexy' (61%, taking/creating; 58%, sharing/distributing; 56%, threatening). Other key motivations included wanting to impress friends, trade images, control the person depicted in the image, and embarrass or get back at the person depicted in the image. Overall, perpetrators in Powell et al.'s (2020) study commonly reported having shared/distributed nude or sexual images on social media (26%, Facebook; 18%, Instagram) and via email (19%), mobile messaging or chat applications (18%) and SMS messages (16%).

Bystanders and intervention

Research suggests that engaging bystanders to intervene when they witness violence or discrimination could be an effective prevention tool (Darley & Latané 1968; Dovidio et al. 2006; Gordon-Messer et al. 2013; Latané & Darley 1970). A bystander is a person who witnesses or is aware of an emergency or critical event, such as a harmful act against another person (Taket & Crisp 2017). Bystander action or intervention therefore refers to the actions that are taken by those who witness the critical event to prevent, disrupt or respond to it. Research in this field has largely focused on how bystanders respond in emergency situations, how their behaviours are influenced by the actions of others, barriers to and facilitators of intervention, and programs that encourage intervention.

In their seminal work, Darley and Latané (1968) conceptualised the bystander effect, whereby a person's likelihood of intervening when witnessing a critical event decreases if other bystanders are present and do not intervene. They proposed three elements that influence the bystander effect:

- diffusion of responsibility, whereby feelings of personal responsibility to intervene decrease as the number of other bystanders increases;
- evaluation apprehension, which refers to fears of being judged negatively by others (eg for intervening when others do not believe intervention is warranted or taking inappropriate steps to intervene); and
- social influence, which refers to reliance on others' reactions to critical events.

Latané and Darley's (1970) work culminated in the development of the situational model of bystander intervention, which posits five steps bystanders move through when deciding whether to intervene:

1. notice the critical event;
2. interpret the event as an emergency;
3. develop feelings of personal responsibility;
4. believe that they have the appropriate skills and confidence to intervene successfully; and
5. reach a conscious decision to help.

At each stage, a situational barrier may arise that prevents the bystander from intervening. Piliavin et al. (1981) have since proposed that bystanders will be more motivated to intervene if a situation arouses an emotional response, such as the desire to relieve others of distress. Such a decision requires an assessment of the potential rewards of intervening (eg praise or compensation) weighed against the potential costs (eg risk of personal harm, or feelings of guilt for not intervening; Dovidio et al. 2006; Piliavin et al. 1981; Wang 2021).

Barriers and facilitators for bystander intervention

There are a range of factors that may encourage or impede people's willingness and capacity to intervene. Banyard's (2011) ecological model expands on Latané and Darley's (1970) work by exploring intrapersonal and contextual factors that could promote or prevent intervention. Intrapersonal factors include prosocial tendencies, which are linked to increased self-reported helping behaviours (Bennett, Banyard & Garnhart 2013). Contextual factors include bystanders' perceptions of the severity of the situation, the relationship between the bystander and the victim and/or perpetrator, and feelings of social connectedness.

Research further suggests that bystanders are more likely to intervene if they perceive the situation to be more severe (Fischer et al. 2011). Additionally, bystanders may express greater empathy and be more likely to intervene if they know the victim (Bennett, Banyard & Edwards 2017; Burn 2009; Katz et al. 2015) or, for male bystanders, if the perpetrator is their friend (Burn 2009). In contrast, bystanders may be less likely to intervene if they believe they lack the skills needed to intervene (Bennett, Banyard & Garnhart 2013) or if they fear negative evaluation, where others will view the intervention as unnecessary or inappropriate (Burn 2009). Research indicates that men's intervention intentions and behaviours are adversely impacted by the belief that peers will not support intervention (Brown & Messman-Moore 2010; Kroshus 2018). In relation to sexual violence, bystanders who hold stereotypical or prejudiced beliefs, such as accepting rape myths, are also less likely to intervene, with research suggesting that men are more likely to hold these attitudes than women (Banyard 2008; Banyard, Moynihan & Plante 2007; Mainwaring, Gabbert & Scott 2022).

Bystander intervention and IBA

There is limited research on bystander intervention and IBA. In a national survey of more than 4,000 Australians, nearly one in five reported that they had been bystanders to IBA (Office of the eSafety Commissioner 2017). Of those who witnessed IBA, four in 10 did not act in response. In Henry et al.'s (2021) survey, only 46 percent of respondents who had witnessed IBA reported that they had intervened. However, despite limited research, it has been suggested that bystanders can reduce the extent and impact of IBA and other harmful behaviours (Barlińska, Szuster & Winiewski 2013; Brochado, Soares & Fraga 2017; Kowalski et al. 2014; Rebollo-Catalan & Mayor-Buzon 2020; Song & Oh 2018). Engaging bystanders is therefore an untapped prevention tool in the context of IBA.

Aims

The broader project aimed to build on existing knowledge of bystander intervention in relation to IBA in Australia to inform future resources and interventions. Key aims included to:

1. measure bystanders' capacity and willingness to engage in positive action in response to the occurrence of, or conditions contributing to, IBA;
2. identify the enablers of, and barriers to, engaging with IBA law (where it exists) as a form of remedy; and
3. identify the enablers of, and barriers to, bystander intervention and to building cultures that encourage bystanders to take action, where safe to do so.

This chapter presents the findings related to the first aim, with a specific focus on gender differences in experiences of, and responses to, witnessing IBA.

Methods

The broader project adopted a two-phase mixed methodology. Phase 1 comprised an online survey and face-to-face focus groups with a cohort of Australians aged 18–71 years across four jurisdictions: South Australia, the Australian Capital Territory, Victoria and New South Wales. These locations were selected because they had specific IBA laws at the time the project was developed (mid-2018). IBA laws have since been introduced in all Australian jurisdictions except Tasmania, and at the federal level (Flynn & Henry 2021). Phase 2 comprised a comprehensive review of available bystander resources on prevention and education on IBA and bystander intervention. This chapter reports on the survey data collected during Phase 1.

Survey recruitment and analysis

Respondents were recruited using methods successfully adopted by the researchers previously (see Flynn et al. 2021; Henry et al. 2021; McGlynn et al. 2021; Rackley et al. 2021; see also Flynn, Cama & Scott 2022 for more details). Respondents completed an online anonymous survey hosted by Qualtrics XM in May and June 2019, prior to attending a focus group. The survey was adapted from previous international research on IBA and gender-based violence (eg Cyber Civil Rights Initiative 2014; Englander 2015; Powell, Henry & Flynn 2018). It included questions regarding respondents' experiences of witnessing IBA, actions taken, concerns about taking action, reasons for taking or not taking action, and demographic characteristics.

The data analysis was completed using IBM SPSS Statistics (Version 27). Chi-square analyses, with phi (ϕ) as a measure of effect size, explored gender differences in experiences of witnessing IBA and in actions taken. For those who had witnessed IBA, *t*-test analyses, with Hedge's *g* as a measure of effect size, explored gender differences in concerns about taking action, and reasons for taking or not taking action. Comparisons across non-heterosexual groups were not possible due to small cell sizes. Comparisons between heterosexual and lesbian, gay, bisexual and other sexual identities (LGB+) can be found in the final report (Flynn, Cama & Scott 2022).

Results

The survey sample comprised 245 Australian adults (65.7% women, 29.8% men, 4.5% non-binary or other gender identity) located in South Australia (*n*=67, 27.3%), the Australian Capital Territory (*n*=35, 14.3%), Victoria (*n*=71, 29.0%) and New South Wales (*n*=72, 29.4%). The mean age was 31.20 years (*SD*=13.02, range=18–71 years) and respondents identified as heterosexual (*n*=183, 74.7%), bisexual (*n*=29, 11.8%), gay (*n*=12, 4.9%), lesbian (*n*=8, 3.3%) or other (eg asexual, pansexual, queer; *n*=13, 5.3%). Additional demographic characteristics can be found in the final report (Flynn, Cama & Scott 2022).

Experiences of witnessing IBA

Respondents were asked if they had ever witnessed any of seven unwanted behaviours, each representing a different form of IBA (Table 1). These behaviours comprised non-consensually sharing images, threatening to share images, uploading images, downblousing (an image taken down someone's shirt), taking images, upskirting (an image taken up someone's skirt/dress) and other (eg receiving unsolicited nude or sexual images). Nearly two-thirds (64.1%, *n*=157) reported that they had ever witnessed, or become aware of, someone engaging in IBA. Experiences were similar for women (63.4%, *n*=102) and men (67.1%, *n*=49).

Table 1: Experiences witnessing IBA

	Overall % (*n*) (*n*=245)	Women % (*n*) (*n*=161)	Men % (*n*) (*n*=73)	$\chi^2(1)$	*p*	ϕ
Sharing	46.1% (113)	44.1% (71)	50.7% (37)	0.88	0.349	0.06
Threatening	29.4% (72)	31.7% (51)	23.3% (17)	1.72	0.190	−0.09
Uploading	28.6% (70)	29.2% (47)	28.8% (21)	0.00	0.947	−0.00
Downblousing	22.9% (56)	26.1% (42)	15.1% (11)	3.48	0.062	−0.12
Taking	20.0% (49)	21.1% (34)	17.8% (13)	0.34	0.558	−0.04
Upskirting	16.7% (41)	18.6% (30)	12.3% (9)	1.44	0.231	−0.08
Other	13.9% (34)	14.3% (23)	12.3% (9)	0.16	0.686	−0.03
Any	64.1% (157)	63.4% (102)	67.1% (49)	0.31	0.577	0.04

Note: Gender comparison *n*=234. Trans and gender-diverse respondents were excluded from comparisons due to insufficient data

Respondents were most likely to report having witnessed the sharing of an intimate image of someone without that person's permission (46.1%, *n*=113), followed by the threatening to share an intimate image of someone (29.4%, *n*=72) and the uploading of an intimate image of someone onto a website without that person's permission (28.6%, *n*=70). A total of 149 respondents provided further information about their most recent experience witnessing IBA. Of these, 45.6% (*n*=68) reported that they said or did something in response to this experience. There were no statistically significant differences in the proportion of men (52.4%, *n*=22) and women (42.0%, *n*=42) (χ^2[1, *n*=142]=1.29, *p*=0.257, ϕ=0.095) reporting such responses.

Actions taken

The 68 respondents who reported taking action were asked which of 11 actions they took in response to their most recent experience of witnessing IBA (Table 2).

Table 2: Actions taken

	Overall % (*n*) (*n*=68)	Women % (*n*) (*n*=42)	Men % (*n*) (*n*=22)	χ^2(1)	*p*	ϕ
Confronted perpetrator	55.9% (38)	47.6% (20)	68.2% (15)	2.46	0.117	0.20
Told friend, family member or colleague	50.0% (34)	54.8% (23)	40.9% (9)	1.11	0.292	−0.13
Distanced self from perpetrator	47.1% (32)	50.0% (21)	40.9% (9)	0.48	0.489	−0.09
Supported victim	47.1% (32)	52.4% (22)	36.4% (8)	1.49	0.223	−0.15
Informed victim	26.5% (18)	26.2% (11)	27.3% (6)	0.01	0.926	0.01
Confronted perpetrator with another person	25.0% (17)	26.2% (11)	22.7% (5)	0.09	0.761	−0.04
Other	16.2% (11)	11.9% (5)	27.3% (6)	2.40	0.122	0.193
Flagged content with provider or platform	14.7% (10)	16.7% (7)	13.6% (3)	0.10	0.751	−0.04
Reported perpetrator to police or other official	14.7% (10)	14.3% (6)	13.6% (3)	0.05	0.943	−0.01
Threatened perpetrator or took physical action	13.2% (9)	11.9% (5)	13.6% (3)	0.40	0.842	0.03
Reported perpetrator to provider or platform	7.4% (5)	7.1% (3)	9.1% (2)	0.08	0.783	0.34

Note: Items were not mutually exclusive. Gender comparison *n*=64. Trans and gender-diverse respondents were excluded from comparisons due to insufficient data

These respondents were most likely to report confronting the perpetrator (55.9%, *n*=38); telling a friend, family member or colleague (50.0%, *n*=34); distancing themselves from the perpetrator (47.1%, *n*=32); and supporting the victim (47.1%, *n*=32). Respondents were least likely to report flagging the content with the provider or platform (14.7%, *n*=10), reporting the perpetrator to the police or other official (14.7%, *n*=10), threatening the perpetrator or taking physical action (13.2%, *n*=9) and reporting the perpetrator to the provider or platform (7.4%, *n*=5). There were no statistically significant differences between men and women in actions taken.

Concerns about taking action

Respondents who reported taking action were asked to indicate their level of agreement with nine statements regarding their concerns about taking action (Table 3).

Table 3: Concerns about taking action

	Overall *M* (*SD*) (*n*=68)	Women *M* (*SD*) (*n*=42)	Men *M* (*SD*) (*n*=22)	*t*	*p*	Hedge's *g*
Others harass victim	2.75 (1.66)	2.98 (1.60)	2.45 (1.71)	1.21	0.231	0.32
Perpetrator verbally abuse victim	2.68 (1.67)	3.17 (1.68)	2.05 (1.40)	2.84	0.007	0.72
Relationship with perpetrator	2.24 (1.48)	2.17 (1.43)	2.45 (1.60)	−0.74	0.465	0.19
Perpetrator physically abuse victim	2.21 (1.45)	2.48 (1.52)	1.86 (1.32)	1.60	0.115	0.43
Verbal abuse	2.13 (1.37)	2.36 (1.41)	1.73 (1.24)	1.77	0.082	0.47
Harassment	2.03 (1.35)	2.12 (1.42)	1.95 (1.33)	0.45	0.654	0.12
Relationship with victim	2.03 (1.38)	2.10 (1.43)	2.09 (1.32)	0.12	0.991	0.01
Physical abuse	1.79 (1.23)	1.90 (1.32)	1.64 (1.14)	0.81	0.422	0.21
Other	1.37 (1.01)	1.24 (0.79)	1.68 (1.36)	−1.41	0.169	0.43

Note: Measured via a 5-point scale ranging from '1 not at all' to '5 very much'. Gender comparison *n*=64. Trans and gender-diverse respondents were excluded from comparisons due to insufficient data

Respondents were most likely to indicate concern that other people might have harassed the victim (*M*=2.75, *SD*=1.66) and that the perpetrator might have verbally abused the victim (*M*=2.68, *SD*=1.67). However, it is important to acknowledge that these averages represent a relatively low level of concern: 'neutral' concern or 'not really' being concerned. Respondents were least likely to indicate concern that they might have been physically abused by the perpetrator (*M*=1.79, *SD*=1.23) or to have some 'other' concern (eg distress and not being believed; *M*=1.37, *SD*=1.01). The only statistically significant gender difference was that women (*M*=3.17, *SD*=1.68) indicated a higher level of agreement than men (*M*=2.05, *SD*=1.40) with the statement that they were concerned that the perpetrator might have verbally abused the victim as a consequence of their taking action (*t*[62]=2.84, *p*=0.007, Hedge's *g*=0.72).

Reasons for taking action

Respondents who reported taking action were also asked to indicate their level of agreement with seven statements about their reasons for taking action (Table 4).

Table 4: Reasons for taking action

	Overall *M* (*SD*) (*n*=68)	Women *M* (*SD*) (*n*=42)	Men *M* (*SD*) (*n*=22)	*t*	*p*	Hedge's *g*
It is wrong	4.79 (0.64)	4.83 (0.66)	4.68 (0.65)	0.88	0.383	0.23
Right thing to do	4.65 (0.69)	4.67 (0.75)	4.64 (0.58)	0.16	0.870	0.04
It is illegal	4.26 (1.12)	4.36 (1.12)	4.05 (1.17)	1.04	0.303	0.27
Relationship with victim	3.10 (1.54)	3.31 (1.60)	2.95 (1.40)	0.88	0.383	0.23
Relationship with perpetrator	2.25 (1.42)	1.86 (1.32)	3.09 (1.34)	−3.54	0.001	0.93
Previous experience of IBA victimisation	2.13 (1.54)	2.24 (1.59)	1.91 (1.41)	0.82	0.418	0.22
Other	1.49 (1.07)	1.52 (1.17)	1.50 (0.96)	0.08	0.935	0.02

Note: Measured via a 5-point scale ranging from '1 not at all' to '5 very much'. Gender comparison *n*=64. Trans and gender diverse respondents were excluded from comparisons due to insufficient data

Respondents were most likely to indicate that they acted because IBA is wrong (*M*=4.79, *SD*=0.64), because taking action is the right thing to do (*M*=4.65, *SD*=0.69) and because IBA is illegal (*M*=4.26, *SD*=1.12). Respondents were least likely to indicate that they acted because of previous personal experience of IBA (*M*=2.13, *SD*=1.54) or for some 'other' reason (eg stopping the behaviour; *M*=1.49, *SD*=1.07). The only statistically significant gender difference was that men (*M*=3.09, *SD*=1.34) were more likely than women (*M*=1.86, *SD*=1.32) to indicate that they acted because of their relationship with the perpetrator (*t*[62]=−3.54, *p*=0.001, Hedge's *g*=0.93).

Reasons for not taking action

The 81 respondents who reported not taking action were asked to indicate their level of agreement with 13 statements about their reasons for not taking action (see Table 5).

Table 5: Reasons for not taking action

	Overall *M* (*SD*) (*n*=81)	Women *M* (*SD*) (*n*=58)	Men *M* (*SD*) (*n*=20)	*t*	*p*	Hedge's *g*
Not comfortable	3.43 (1.40)	3.60 (1.28)	2.75 (1.55)	2.43	0.018	0.63
Not responsible	3.22 (1.40)	3.34 (1.33)	3.00 (1.56)	0.96	0.342	0.24
Harmless	2.46 (1.41)	2.16 (1.31)	3.30 (1.45)	−3.28	0.002	0.85
Not concerned	2.42 (1.37)	2.07 (1.20)	3.55 (1.32)	−4.65	<0.001	1.20
Relationship with perpetrator	2.14 (1.44)	1.98 (1.34)	2.35 (1.50)	−1.02	0.309	0.27
Others harass victim	2.12 (1.40)	2.29 (1.48)	1.50 (1.00)	2.68	0.010	0.57
Verbal abuse	2.11 (1.36)	2.16 (1.40)	1.85 (1.27)	0.86	0.392	0.23
Perpetrator verbally abuse victim	2.00 (1.37)	2.14 (1.43)	1.50 (1.05)	2.12	0.040	0.48
Harassment	1.90 (1.27)	1.93 (1.28)	1.65 (1.14)	0.87	0.388	0.22
Perpetrator physically abuse victim	1.78 (1.25)	1.79 (1.24)	1.55 (1.15)	0.77	0.443	0.20
Other	1.77 (1.30)	1.79 (1.31)	1.60 (1.14)	0.59	0.559	0.15
Relationship with victim	1.73 (1.15)	1.64 (1.04)	1.85 (1.39)	−0.72	0.473	0.18
Physical abuse	1.68 (1.10)	1.67 (1.08)	1.50 (1.00)	0.63	0.533	0.16

Note: Measured via a 5-point scale ranging from '1 not at all' to '5 very much'. Gender comparison *n*=78. Trans and gender-diverse respondents were excluded from comparisons due to insufficient data

These respondents were most likely to indicate that they did not take action because they did not feel comfortable (*M*=3.43, *SD*=1.40) and because they did not feel it was their responsibility (*M*=3.22, *SD*=1.40). Respondents were least likely to indicate that they did not take action due to concern that the perpetrator might physically abuse the victim (*M*=1.78, *SD*=1.25), due to some 'other' reason (eg they were unable to help; *M*=1.77, *SD*=1.30), because of their relationship with the victim (*M*=1.73, *SD*=1.15) and because they (the respondent) might be physically abused by the perpetrator (*M*=1.68, *SD*=1.10).

Women were more likely than men to indicate that they did not act because they did not feel comfortable (*M*=3.60, *SD*=1.28 vs *M*=2.75, *SD*=1.55), because they were concerned that other people might harass the victim (*M*=2.29, *SD*=1.48 vs *M*=1.50, *SD*=1.00) and because they were concerned the perpetrator might verbally abuse the victim (*M*=2.14, *SD*=1.43 vs *M*=1.50, *SD*=1.05; *t*[76]=2.43, *p*=0.018, Hedge's *g*=0.63, *t*[76]=2.68, *p*=0.010, Hedge's *g*=0.57, and *t*[76]=2.12, *p*=0.040, Hedge's *g*=0.48, respectively). In contrast, men were more likely than women to indicate that they did not take action because they believed the situation was harmless (*M*=3.30, *SD*=1.45 vs *M*=2.16, *SD*=1.31) and because they were not concerned about the situation (*M*=3.55, *SD*=1.32 vs *M*=2.07, *SD*=1.20; *t*[76]=−3.28, *p*=0.002, Hedge's *g*=0.85 and *t*[76]=−4.65, *p*<0.001, Hedge's *g*=1.20, respectively).

Discussion

The findings from this study provide insight into the experiences of Australian adults witnessing IBA. The survey findings reported here indicate that witnessing IBA was common among the respondents, with nearly two-thirds reporting having ever witnessed someone engaging in IBA—a rate higher than that reported in previous research (Office of the eSafety Commissioner 2017). Most commonly, respondents reported witnessing someone sharing an intimate image without the person's permission. Previous survey research in Australia has found that approximately four in 10 people who witness IBA take actions to intervene (Henry et al. 2021; Office of the eSafety Commissioner 2017). Our study similarly found that 45.6 percent of respondents reported having taken action to intervene during their most recent experience of witnessing IBA.

There are a range of barriers that prevent people from believing they have the capacity, skills and/or ability to intervene when witnessing IBA. In this study, respondents who did not intervene reported not feeling comfortable or not feeling it was their responsibility. This supports previous research which suggests that if bystanders do not feel they have any personal responsibility to intervene when witnessing harmful behaviour, they will be less likely to do so, especially where other bystanders are present (Darley & Latané 1968; Latané & Darley 1968).

Previous research suggests that women are more likely than men to intervene when witnessing sexual violence, and that this may be due to women's greater awareness of sexual violence (Banyard 2008; Burn 2009; Mainwaring, Gabbert & Scott 2022). This extends to IBA, with some evidence indicating that women are more likely than men to perceive non-consensual image sharing as serious and to report intervening in both hypothetical and actual experiences of witnessing IBA (Scott & Gavin 2018). In our study, men and women reported similar rates of both witnessing and intervening in IBA. However, there were gender differences in the reasons for taking action among those who did intervene. For example, men were more likely than women to report having intervened due to their relationship with the perpetrator, supporting earlier research findings that men are more likely to intervene if they know the perpetrator (Burn 2009).

There were also some significant gender differences among respondents who reported that they did not intervene. Women were more likely to report inaction because they did not feel comfortable, were concerned that other people might harass the victim or that the perpetrator might verbally abuse the victim. The survey did not capture whether 'not feeling comfortable' was related to respondents' concerns about self-protection from the perpetrator; however, this issue was explored in the focus groups as part of the broader research project and is discussed in the final report (see Flynn, Cama & Scott 2022). In contrast to women, men were more likely to report inaction because they believed the situation was harmless or they were not concerned about the situation. These findings are problematic, given that men in the study demonstrated a greater propensity to blame victims and minimise IBA (see Flynn, Cama & Scott 2022 for more details). Thus, there may be a range of IBA situations where men do not intervene because they believe IBA is harmless. Future bystander intervention programs may therefore need to involve additional education and skills development to improve understandings of the harms of IBA and that specifically encourage men to identify and respond to IBA.

Conclusion

This study has several limitations. First, respondents were predominantly female, self-selecting and recruited through cost-effective strategies the researchers had used previously. Thus, the sample is not generalisable. Furthermore, as noted earlier, we were unable to conduct reliable analyses across non-heterosexual groups due to insufficient data. Although comparisons between heterosexual and LGB+ can be found in the final report (Flynn, Cama & Scott 2022), sexuality diverse respondents were still analysed as one group (ie LGB+) due to insufficient data. Future research would benefit from concerted efforts to recruit a more representative sample of the Australian community, in addition to more targeted recruitment of gender and sexuality diverse respondents, to enable a more in-depth examination of bystanders' attitudes and experiences among different population sub-groups.

IBA is a complex social, legal and public health problem that requires a multifaceted response. It is vital that responses include the development of prevention education, both to discourage perpetrators and to encourage bystanders to identify and safely respond to harmful behaviour. Such education should promote the theme of shared responsibility, while also addressing how bystanders can safely and effectively intervene and/or support victims when witnessing IBA.

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Online sexual exploitation of children

12. Secrecy, control and violence in women's intimate relationships with child sexual abuse material offenders

Michael Salter, Delanie Woodlock and Natasha Dubler

Warning: this chapter contains descriptions of physical and sexual abuse of children and abuse of animals.

Introduction

Reports of child sexual abuse material (CSAM) on the internet are increasing at a rapid rate (Bursztein et al. 2019). CSAM refers to images, videos or stories that sexually exploit children. CSAM offending escalated during the COVID-19 pandemic, resulting in an unprecedented increase in reports of CSAM to authorities (Salter & Wong 2021). International data suggest that up to 42 percent of CSAM offenders were cohabiting with a partner at the time of arrest (Bouhours & Broadhurst 2012), while up to two-thirds of CSAM offenders in treatment have a partner and up to half have at least one child (Brown & Bricknell 2018). The non-offending family members of CSAM offenders are significant secondary victims of the crime and experience a range of impacts once the offending is uncovered (Walker 2019). These impacts can include mental and physical health problems and negative social outcomes for the partners and their children (Jones, Salter & Woodlock 2022).

Recent research suggests a crossover between CSAM offending and patterns of domestic violence and coercive control (Jones, Salter & Woodlock 2022). In this chapter, domestic violence refers to the use of physical, sexual and emotional violence in the context or aftermath of an intimate relationship, and coercive control refers to the entrapment of a partner or ex-partner through the use of control, fear and manipulation (Stark 2007). There is a burgeoning body of research into the experiences of non-offending partners of sex offenders, including CSAM offenders (Duncan et al. 2022), but this work has focused specifically on the discovery of the offending and its aftermath.

This study aims to analyse the dynamics of CSAM offending in a relationship, including patterns of secrecy, control and violence. It seeks to identify indicators of CSAM offending in abusive and controlling relationships in order to promote appropriate and effective responses to the partners and ex-partners of CSAM offenders.

Background

Research from the United Kingdom has detailed the trauma and shock of 'the knock': the unravelling of women's lives when the police knock on their door to arrest their partners for CSAM or other sexual offences (Duncan et al. 2022). However, the relationship experiences of people partnered to CSAM offenders are not well understood. The recent evaluation of PartnerSPEAK, a Victorian organisation that supports the non-offending partners and families of CSAM offenders, identified significant overlaps between CSAM offending and patterns of domestic violence and coercive control (Jones, Woodlock & Salter 2021). The 53 PartnerSPEAK clients surveyed as part of the evaluation reported that, following discovery of the offending behaviour, one-quarter had been in contact with the family court, 20 percent with domestic and family violence services, 16 percent with family mediation services, and seven percent with sexual assault services. Seven clients were interviewed as part of the evaluation and, although their relationship experiences were not the focus of the study, most described the CSAM offender as dishonest, manipulative and abusive in the relationship.

Contemporary research on domestic violence has not explored the possible role of CSAM offending in abusive and controlling behaviour. However, a range of studies point to the crossover between men who sexually abuse children and men who perpetrate domestic violence. An Australian study by Ahmadabadi et al. (2018) found that sexual abuse is one of the most common forms of contact child abuse perpetrated by domestic violence offenders. In their study, 11 percent of mothers who experienced domestic violence reported that their children had been sexually abused. Bancroft and Miller (2012) draw together the findings of numerous studies to show that a domestic violence perpetrator is approximately four to six times more likely than a non-perpetrator to sexually abuse his children. Research by Bowen (2000) and Kellogg and Menard (2003) found that over half of child sex offenders who lived in the family home also physically abused their adult female partner.

Men who engage in CSAM and child sexual offending in family settings are under-studied, despite constituting a significant group of CSAM producers and consumers (Salter et al. 2021; Seto et al. 2018). Research with CSAM offenders who do not engage in contact offences against children suggests that, compared to contact offenders, they have less capacity for adult romantic relationships and experience higher rates of emotional loneliness (Gallo 2020) although, as mentioned above, a significant number of CSAM offenders are in relationships at the time of arrest or treatment. Studies of contact or 'mixed' (contact and CSAM) offenders find that they have greater access to children, are more antisocial and have less victim empathy than CSAM-only offenders (Babchishin, Hanson & VanZuylen 2015). These findings point to situational and personality risk factors that are broadly congruent with risk factors for domestic violence, such as antisocial tendencies, lack of empathy and access to children.

While CSAM is distinguished from adult pornography, research has highlighted connections between domestic violence and the offenders' use of pornography. Studies of women seeking support from domestic violence services have revealed an association between their male partners' use of pornography and increased levels of sexual violence, rape and stalking (Shope 2004; Simmons, Lehmann & Collier-Tenison 2008). Research with male perpetrators has also shown a connection between pornography use and levels of domestic violence. A cross-sectional study investigated the association between self-reported problematic pornography use and domestic violence perpetration among 273 men in domestic violence intervention programs (Brem et al. 2018). The study concluded that men who self-reported higher levels of excessive, compulsive and uncontrollable pornography use also perpetrated more frequent domestic violence than did men with lower levels of problematic pornography use.

Methodology

This chapter presents findings from the first study to examine how non-offending partners of CSAM offenders experience control and abuse in their intimate relationships. This project used in-depth interviews with 10 non-offending partners and eight professionals to provide insights into the patterns of coercion, manipulation and secrecy that characterise these relationships.

Data collection and analysis: Non-offending partners

The question guiding the research process with women was: what are women's experiences of control and abuse in their intimate relationships with a CSAM offender? The project received approval from the University of New South Wales Human Research Ethics Committee (no. HC220076). We interviewed 10 women for this project and the interviews averaged one hour in duration.

Non-offending partners were recruited through social media, relevant support agencies and via snowball sampling strategies. Non-offending ex-partners are a difficult group to reach and advice from key Australian community organisations was that local research participation was likely to be low. To maximise participation, recruitment was international. Five interviewees were Australian and five were from other countries—namely New Zealand, the United Kingdom and the United States. Interview questions were developed from the knowledge we gained through previous research with non-offending partners (Jones, Woodlock and Salter 2021). Our questions also gathered basic demographic and biographical information such as age, children, cultural background and any disabilities.

For all 10 women interviewed, the male ex-partner was charged with offences relating to CSAM. For three women, the ex-partner was charged with contact child sexual offences against their children, and in two cases the ex-partner was charged with offences against other children. For two other women, the ex-partner was suspected of contact offences but charges were not laid.

We coded the transcripts using the thematic analysis process outlined by King, Horrocks and Brooks (2019). Transcripts were uploaded into NVivo, where material relevant to the research question was highlighted and notes made. Transcripts were initially coded descriptively, with a focus on the behaviours of perpetrators and the impacts on women. The second step involved interpretive coding, where descriptive codes that share a common meaning are linked together from across the transcripts. The third step was to define overarching themes which attempt to answer the research question as well as draw on the theoretical framework of the research. These themes were based on our grouping of women's experiences of control and abuse in their relationships with the CSAM offenders.

Findings are presented here in an anonymised format with pseudonyms used and identifying information redacted. The focus of our analysis here is on the reported behaviour of the perpetrators rather than the specifics of the women's intersections with the criminal justice system, family law and other services. To enhance anonymity, we do not state the country in which each woman resides, although we make some high-level comment on the quality of some of their interactions with services and agencies where relevant.

Data collection and analysis: Professionals

To provide further insights into the intersections between CSAM offending and domestic violence perpetration, we conducted interviews with six professionals and held a focus group with two professionals who work in the areas of CSAM, domestic violence and sexual assault. The questions asked were built on our interviews with women and centred on the complexities of intimate partner control and abuse, and how this may particularly manifest in relationships where the male partner is a CSAM offender. The interviews and focus group were each around one hour in duration and were conducted via Zoom. They were recorded and transcribed. Transcripts were then uploaded into NVivo. Among the eight professionals, two were managers in the Australian sexual assault and domestic violence sector, two from an Australian specialist service for family and friends of CSAM offenders, and four from UK charities and other services that work with non-offending partners and sexual assault victim-survivors.

We used a similar three-step thematic analysis process with our interviews with professionals as we did with the women's interviews (King, Horrocks & Brooks 2019). However, the analysis was guided by a different research question, which was: what are the links between CSAM offending and domestic violence perpetration and what supports do non-offending partners need?

Limitations

Due to time and funding constraints, we recruited a small sample of ex-partners and professionals, which limits the generalisability of the findings. The project aimed to recruit ex-partners with concerns about control and abuse in their relationship with the CSAM offender. Therefore, the project does not represent the breadth of experiences of the partners of CSAM offenders. For example, it does not include partners who remained in the relationship with the CSAM offender, nor does it include partners who colluded or were complicit in the CSAM offending (see Salter et al. 2021). All ex-partner volunteers for the study were female, white and English-speaking and described male ex-partners who engaged in CSAM offending. There is a need for further research into diverse experiences, including those of people who are LGBTIQ+, who come from diverse cultural or ethnic backgrounds, and for whom English is not their first language.

Findings

Our findings explore three key scenarios of CSAM offending in a relationship, according to women's descriptions: (1) secrecy, (2) control and (3) violence. The first scenario of secrecy is exemplified by Zara's story, where she described her now ex-husband's secret consumption of CSAM within a relationship that she felt was otherwise affectionate and non-abusive. The other nine interviews described situations on a continuum of control and violence, with five women reporting being subject to patterns of abuse and control, and four women being subject to physical and/or sexual violence. It is notable that, while all the male ex-partners were charged with CSAM offences, and five were charged with contact or online offences against children, no woman reported that charges were laid regarding her victimisation.

These three scenarios are overlapping and build on one another, such that women in the third category were simultaneously experiencing secrecy, control and violence. Women across the last two categories recounted experiences that have previously been documented in the literature on control and violence in relationships, including victimisation through financial abuse, technology-facilitated abuse and a gendered and sexist division of labour within the house. This report draws out some of the unique experiences of control and violence described by non-offending partners of CSAM offenders.

This section summarises interviews and focus groups with eight professionals regarding their opinion on the status of CSAM offending in relationships as a form of domestic violence. Table 1 presents a summary of women's experiences, colour-coded according to their respective categorisation in the study. Secrecy was coded as dark grey, control as light grey and violence as light green. The key offender behaviours identified in the study are arrayed across the X axis and grouped in categories of physical and sexual violence, coercive control and sexual preoccupation. Sexual preoccupation was one of the recurring themes of women's narratives of their ex-partners, with their broader experiences of secrecy, abuse and violence often shaped by the sexual impulses and obsessions of their ex-partner.

Table 1: Behaviours of CSAM offenders, as described by their female ex-partners

	Physical and sexual violence				Coercive control							Sexual preoccupation		
Name	Physical violence	Sexual violence	Child sexual abuse	Zoophilia	Isolation	Stalking	Tech abuse	Systems abuse	Financial abuse	Control	Emotional abuse	Adult porn use	Affairs (men)	Affairs (women)
Melanie		✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓
Eloise		✓	✓		✓	✓	✓		✓	✓	✓	✓		
Mary	✓					✓	✓	✓		✓	✓	✓		
Nicole	✓		✓		✓		✓	✓		✓	✓	✓		✓
Alice			✓	✓	✓			✓	✓	✓	✓	✓	✓	
Belinda	✓		✓					✓	✓	✓	✓	✓	✓	
Jane			✓						✓	✓	✓	✓	✓	✓
Olivia									✓	✓	✓	✓		
Zoe			✓						✓	✓	✓	✓		
Zara				✓						✓		✓		

Note: Light green indicates violence, light grey indicates control and dark grey indicates secrecy

Scenario 1: Secrecy and manipulation

One of the women interviewed for this study, Zara, had different experiences in her relationship to the majority of participants. Zara was clear from the outset of her interview that her ex-husband had not been violent or abusive towards her. Zara's interview offers an insight into the mixed experiences of women whose partners have viewed CSAM in the absence of overtly abusive or coercive behaviour.

Zara described her ex-partner as relaxed and easygoing, but she recognised that he had some challenging traits. He was obsessed with making sure that certain household tasks were undertaken in a specific way, to the point where he took over those duties. He was also a hoarder and Zara described their garage being stuffed full of items that her ex-partner could not bear to throw away.

A few years ago, Zara received 'the knock', in which police came to their house to investigate her husband's CSAM offending. During the investigation, Zara discovered that her husband had been looking at CSAM online for a number of years and that he had kept secret his previous conviction for CSAM. The kinds of pornography that police found were extreme, with her ex-partner confessing to her the range of material he had. Zara explained:

> I remember him saying 'I had all kinds of porn, I even had dwarf porn'. I was like, 'What is dwarf porn?!'. And he said he had animal stuff. I was like 'God, is this a thing? What?' … So I knew there was a side of life, but it wasn't something that had touched our life or our relationship, or touched our sex life in that way. So I'm standing in the kitchen looking at someone I don't know.

His obsessive and hoarding tendencies were evident in the size of his pornography and CSAM collection, which was so large that a police officer told Zara that her ex-partner could not possibly have watched all of it. This was a shock, since Zara did not know that her ex-partner looked at pornography at all. Looking back, Zara recognised that her husband had many opportunities to offend. He was a 'night owl' who spent a lot of his time on the computer at night, while she was tending to their children. This pattern, in which men went to great effort to create opportunities to offend out of sight of their partners, was evident in most of the women's stories.

Scenarios 2 and 3: Coercion and violence

The nine other women interviewed in this study described relationships of coercion and abuse. Five of the 10 women in our study described patterns of coercive control in the absence of overt violence against them. Four women described controlling relationships that included physical and/or sexual violence against them. There were a number of shared experiences and perceptions across the women in these two scenarios. This section is divided into two categories: tactics of abuse and control, and specific forms of abuse linked to CSAM offending.

A consistent theme across the interviews was that the relationship with the CSAM offender began when the women were relatively young, often late teens or early twenties. The offender was most likely to be older than the female partner, with the average being three years older, with age gaps of up to 12 years. The average length of relationship in the study was 12 years, ranging from two years to 27 years. It was common for women to comment that, during the relationship, they did not initially recognise abusive and controlling behaviour for what it was. It was only as they got older or once the relationship ended that they identified the abusive nature of their ex-partner's behaviour.

Tactics of abuse and control

Women described forms of abuse and control that were infused with an unusual level of sexual preoccupation, evident in their ex-partner's extensive pornography consumption, extramarital affairs, coercive sexuality or sexually withdrawing from their partner since their primary sexual interest lay elsewhere (for instance, in CSAM and children).

Control of household

Women generally described partners who were 'selfish' (Alice), 'lazy' and 'self-indulgent' (Zoe), and 'slacking' (Olivia), who enforced a gendered division of labour in which the female partner was expected to undertake most if not all of the housework and parenting. Alice's partner demanded a 'perfect' house and family despite putting in very little effort:

> I was taking care of the kids, basically on my own… He was like so OCD, where everything had to be perfect and clean. The food had to be freshly cooked, he wouldn't eat reheated food. The kids had to be picture-perfect clean… Or they couldn't have toys on the floor.

This was common across most women's stories, with offenders maintaining strict control over the house, while contributing little to the care of their children. Much of this behaviour was focused on maintaining what Salter (2018) has called the offender's 'double life', in which the offender constructs a pseudo-normal facade behind which he could consume CSAM and, for at least five of the 10 interviewees, commit other offences against children. Jane's partner became so detached from her and 'extremely duplicitous in everything he said' that, during the relationship, she felt 'he was obviously up to something'.

Abusive fathering

Some women also recalled frightening and abusive parenting by their ex-partners. Mary described her ex-partner's treatment of their infant son at six months of age: he would 'swing him upside down by the feet' and 'start shaking him'. Eloise recalled an incident in which her ex-husband stood over their five-year-old son and tore apart his favourite teddy bear as punishment when her son accidentally broke a toy. She said, 'That memory is still with him and I don't think it will ever leave. It's still with me and it's awful.' For women whose partners sexually abused their children, violent fathering served to silence the child victims.

Financial abuse

While some women reported that they were expected to manage the household budget and financial affairs, other women were subjected to financial abuse. Jane's husband controlled their finances and refused her access to their bank accounts and records. When the police investigated his offending, they explained to her that their bank statements showed the extent of her husband's engagement with online pornography and sexual services, which was likely why he had been so controlling and secretive regarding their banking.

Technology-facilitated abuse

Technology-facilitated abuse was a strategy that some men used to conceal their CSAM offending. Mary's partner insisted on maintaining a separate residence (with a separate computer that she was never allowed to use) despite the fact that they had a child together. He would regularly place a spy camera in her house to watch her movements. She explained that 'so many times when I sat down and ate lunch here at my house … to find myself being monitored by a camera' so that he could watch her through his phone. It seemed that her partner was paranoid that she might drop in on him unexpectedly during the day. Mary explained: '… if I'd surprised him and gone to his house for lunch, he might get caught out, you know'.

Extramarital affairs

Three of the 10 women in the sample discovered that their partners had been having extramarital affairs. This rate of infidelity is likely to be higher than that of the general community, with a large representative Australian survey finding that four percent of men in a monogamous heterosexual relationship had had sex with someone else in the previous year (Richters et al. 2014). After their divorce, Nicole found that her husband had been unfaithful throughout their marriage, and had given her sexually transmitted infections. Melanie came across sexual text messages between her partner and a local man within a year of their wedding. When she confronted him, he blamed her and said he was forced to cheat because she was 'weird'. She explained:

> He was communicating with 20 or so people a day. And whenever I was away for a night people were invited to my home. He was sending photos that were taken on our bed, and in our bathroom.

Extensive pornography use

The extensive use of pornography was a persistent theme throughout the interviews. Nicole explained that 'when I was at work or wasn't home, he would masturbate for eight hours a day' watching pornography online. Olivia's husband claimed he could not stop using pornography and blamed her. She explained:

> He'd come to me and say I can't stop myself, and it became an issue where he couldn't stop watching it. His rationalisation was that because I wasn't being intimate enough with him. He'd say if I had sex with him more or if I gave him more attention he could better control himself.

When they spoke up about their partner's use of pornography, women often found that they were blamed, or were told that 'this is normal, this is what guys do' (Eloise).

Coercive sexual activity and/or lack of sexual interest

Some women described their partner's decreasing sexual interest and disengagement from them over time. For example, Alice commented on her ex-partner's excuses to avoid sex during their marriage, including telling her that she 'gained too much weight' after the birth of their children. Women believed that the offender's withdrawal from their sexual relationship was part of a pattern of coercive behaviour that stemmed from their sexual interest in children. They felt that his disinterest in intimacy was part of his duplicitous and controlling actions to hide his offending and attraction to children. Other women reported being pressured into sexual interactions that they preferred to avoid.

Belinda experienced these two patterns simultaneously: her ex-partner seemed disinterested in sexual activity with her unless it involved elements that made her uncomfortable. She would later discover that he was sexually abusing their children and producing CSAM of them. On reflection, Belinda feels that he often practised his grooming skills on her, pushing her boundaries when it came to their sex life. Belinda explained: 'When I think back now, it's amazing how these things get pushed to the back of your mind. He always wanted to try to put me in situations that I wasn't interested in being in.' This included suggesting a threesome with a male friend of theirs, as well as taking intimate images of her.

Specific forms of abuse linked to CSAM offending

Using women as a 'cover' for offending

Some women were concerned that their relationship had been purely a 'cover' for their partner's sexual offending. Jane first unravelled her ex-partner's double life when she discovered he was having affairs with men. This confrontation led him to try and dispose of his extensive pornography collection, which included CSAM. The discovery of CSAM in their garbage led to their house being raided by police. Following his arrest, Jane had a conversation with him in which he admitted to having affairs with men, as well as sexually abusing boys and viewing CSAM. During the conversation, he was clear that he had married her for, in her words, 'cover'. She said:

> I asked him 'Why me?', and he said 'Because I knew you were strong enough to cope with it'. So he knew from the get-go how he was going to be. I don't think there was any care factor for how it would impact me, or the children, or anybody. It was just him.

Retrospectively, a number of women reflected that they may have been appealing partners to the offender because of their own 'childlike' qualities at the onset of the relationship. Zoe commented: 'When I first met him, although I was 20, I looked about 12.' Belinda remembered, 'I was 20 when he met me and he was eight years older, and I probably looked young for my age then.' Melanie recalled that her ex-partner used to tell her that he loved her 'childlike' characteristics.

Invalidating women's suspicions of their paedophilic interests

Four women encountered evidence of their partner's sexual interest in children throughout their relationship. However, the offenders would vehemently lie, make up excuses, and blame their partner for asking questions. For instance, when she was pregnant with their child, Mary saw CSAM on her partner's computer, but he denied it and she was too afraid to confront him due to his violence. After her child was born, she was supported by a friend to report him to the police.

Two women who voiced their concerns to professionals were not supported. Zoe suspected that her ex-partner was sexually interested in children after witnessing his inappropriate behaviour around young girls and coming across suspicious material on his computer. She sent him to a psychiatrist, who diagnosed him with an internet addiction but did not identify him as an offender.

In Alice's case, she came home one day after shopping and saw that her then husband had a naked picture of their infant daughter on his computer. She was deeply concerned but her ex-partner insisted that it was just a 'cute' picture of their daughter and that she was overreacting. She had her daughter assessed by a paediatrician and then contacted child protection services. They concluded that her suspicions were 'unfounded'. Three years later, her husband was charged with sexually abusing their daughter and producing CSAM of her.

Other women were clear that they had no indication that their husband or partner was sexually interested in children. Jane explained, 'In 20 years of being with him, there is nothing that would have made me go "that's what you are" [a sex offender]'. She described her ex-husband as an 'expert liar' who hid his behaviour with a 'well-secured mask'.

Zoophilia and indiscriminate sexuality

In two women's accounts, zoophilia was part of a pattern of indiscriminate sexuality, in which offenders were engaging in sexual activity with adults of both sexes, as well as abusing children and animals. Alice discovered that, in addition to his sexual offences against their infant daughter, her husband had been having extramarital affairs with men and also sexually abusing a dog. Melanie discovered a similar pattern of behaviour, in which her husband was engaged sexually with men and sexually abusing teenaged boys, and she suspected he had abused their pet dogs.

Scenario 3: Physical and sexual violence

For Melanie, Eloise and Nicole, their relationship with the offender was one where they could identify incidents of physical and sexual violence within a broader campaign of abuse and control.

Nicole's ex-partner primarily used tactics of isolation to control her; however, he was also physically abusive towards her. She said that the violence began after they were married. When police attended her house to investigate her partner for CSAM, Nicole recalled feeling 'horrified' about the abuse of the children in the images viewed by her partner. However, she also felt some relief that 'I could go, I could leave and he couldn't use his threats to keep me there anymore, and I could finally walk away and prove that he was a monster'.

Melanie was repeatedly sexually assaulted by her then husband. After Melanie discovered her ex-partner's affairs with men, she agreed to 'cover' for his sexual behaviour on the condition that their sexual relationship ended. However, he refused to accept this boundary and began to rape her during the relationship. These repeated attacks had an enormous impact on Melanie. She linked the development of an eating disorder to the trauma of the assaults.

Eloise recalled that her husband became violent when she returned to study and work as their children got older. She reflected: 'it was very textbook-type family violence. It was a slow burn. It was isolating from family and friends, that sort of thing.' She explained, 'He would throw things at me that would just miss me. And then when I'd tell him to stop he'd say "if I wanted to hit you I could".' She also considered that she had experienced sexual assault in the relationship. She said:

> I guess thinking that I'm the wife and I'm supposed to give it to him when he wants it. So I think in that sense, yeah, there was a lot of sexual contact that I probably would have rather not had.

Following his investigation and arrest, she was told by police that he had been sexually abusing and producing CSAM of their children. After her husband was imprisoned, Eloise undertook family violence training at her work, and explained: 'watching these slide shows. I was like "oh my god, this is a slide show about my marriage".' Highly traumatised, she needed to take two weeks of family violence leave to cope.

Professionals

There was general agreement among the professionals we spoke to that CSAM offending was abusive to a non-offending partner. They linked CSAM offending with domestic violence and coercive control through two pathways: either because of the control and abuse that offenders exerted over their partners to hide their secrets, or because the action of viewing CSAM in a relationship is in itself abusive. Professionals also conceptualised the impacts of the offending as abusive, with women and their children having to live with the stigma, trauma and ramifications of their partner's offending. One support professional emphasised how patterns of control and violence, and responses to women seeking support, were situated within a broader social context of gender inequality such that women often felt constrained and entrapped in the relationship. She said:

> I guess it's a fine line whether it's the consequences of the crime that is abusive or the crime itself … what makes something family violence is it's a bunch of things together, it's a pattern that's sustained. In terms of it being part of the broader picture, the nature of the crime is control over someone with less power.

Most professionals described the most common overlap between CSAM offending and domestic and family violence as involving coercive controlling behaviour that was often subtle and difficult to identify. A sexual assault services professional said: 'In the experience I've had, it's that more insidious coercive control.' The ways in which women were controlled by CSAM offenders were quite specific, with several professionals emphasising strict routines and the regulation of household tasks. A policy manager said: 'They had a routine within the families that was, of course, set up by him so he could know when he was safe to do what he wanted to do.' Professionals felt this routine was designed to keep women preoccupied and distracted.

Several workers identified an abusive inter-relationship between the offender's use of CSAM and his sexual behaviour towards his partner. A professional recalled a woman that she worked with who was disgusted by what her ex-partner had coerced her to do sexually. She explained:

> He was very, very controlling in their sexual relationship. Very domineering, very prescriptive. He liked to dress up as a little girl. She said, 'I look at that now and go—what was that?!'

This process of boundary-pushing and transgression could lead to women engaging in compromising or illegal behaviours, which introduced major complications for professionals seeking to protect women and children. One service manager recalled a case in which a woman and her children arrived at a domestic violence refuge with safety concerns that her ex-partner was tracking her mobile phone. However, the woman had been coerced by her ex-partner into making abuse images of her own children and refused to contact police or provide her mobile phone for inspection on the basis that it would implicate her. The manager said, 'She was quite compromised in terms of being able to seek assistance.'

An emerging issue identified by one service manager was the apparent targeting and 'grooming' of single women on dating apps by men with a sexual interest in children. She located this phenomenon within a broader pattern of technology-facilitated abuse in which male offenders are using dating apps to track, deceive and abuse women. She recalled a case in her service in which a client was targeted through a dating app by a paedophile:

> I know of a case here of somebody that had two gorgeous long-haired blond daughters. Mum got groomed into a relationship and then found out that he was only really interested in the daughters, a predator.

Attempts to groom women via dating apps into producing CSAM or otherwise making their children sexually available have been documented elsewhere in Australian research (Salter et al. 2021). While the ex-partners interviewed in this study were protective mothers, child sexual abuse offenders who seek to groom and compromise adult partners pose a complex challenge to child safeguarding and women's safety.

Summary and conclusions

This study has described the ways in which CSAM offending shapes relationship patterns of secrecy, control and violence. Contrary to characterisations of CSAM offenders as single men disinterested in or incapable of adult relationships (Henshaw, Ogloff & Clough 2017), a significant proportion of CSAM offenders have adult romantic partners (Bouhours & Broadhurst 2012; Brown & Bricknell 2018) and this study was the first to specifically examine CSAM offending within patterns of domestic abuse. The study suggests that secrecy is a foundational dynamic between CSAM offenders and their unwitting partners (recognising that some partners are complicit co-offenders; see Salter et al. 2021) which can provide the backdrop for practices of control and violence. Importantly, the study finds that the secrecy of CSAM offending motivates and shapes men's use of control and violence against their partners, giving rise to specific dynamics and behaviours that may distinguish domestically abusive CSAM offenders from other domestic abusers.

Zara's interview indicates that CSAM offending can have a serious impact on partners and children even in the absence of control and violence. The revelation of her ex-partner's offending behaviours, including a prior conviction, prompted her to view her husband of many years as 'someone I don't know'. Her interview also highlighted key themes that recurred throughout this study, including secrecy and obsessive pornography consumption, as well as the indiscriminate sexual interests that characterise some CSAM offenders.

The other participants described their ex-partners' behaviour as featuring a shared repertoire of abuse that overlaps significantly with what is known from existing research about coercive control. Women were expected by their ex-partners to undertake the bulk of housework and parenting, and this expectation was enforced by emotional abuse. An asymmetrical division of labour enabled the men to spend significant amounts of time engaged in CSAM offending and other sexual activity. Professionals in domestic violence and related sectors agreed that coercive control, including the strict regulation of household tasks, was the most commonly observed form of domestic abuse perpetrated by CSAM offenders.

Generally, women described highly sexually preoccupied men who spent much of their time pursuing their sexual interests. For the interviewees, a visible signal of their ex-partner's sexual preoccupations was their excessive consumption and collection of pornography. Characteristically, if they were challenged on this behaviour, men blamed their partners for being insufficiently attractive or not being sexually available.

Some women had suspicions about their partner's sexual interest in children but this could be difficult to confirm or act on in the context of pervasive emotional, physical and/or sexual violence. Furthermore, two women who did try to seek assistance from professionals in mental health or child protection were unable to access support. As a result, their ex-partners continued offending for a number of years, putting them, their children and other children at risk. Five of the 10 women reported that their partner had been charged with offences against a child as well as a CSAM offence, and two women suspected that their partner had committed contact offences although charges were not laid. Tellingly, contact offenders were present across the spectrum of experiences identified in the study, from relationships without overt violence and control to very violent and controlling relationships.

Three women in the sample described how physical and/or sexual violence was used to reinforce the offender's dominance and control over their lives and family. Professionals expressed significant concern about the overlap between domestic violence and child sexual abuse, and identified patterns of abuse that were not described by the non-offending partners interviewed. One service manager indicated that the violence and boundary transgressions committed by CSAM offenders in relationships could place women in a compromised position if they joined their partner in illegal activity, such as the abuse of children. Such a case introduced conflicting obligations regarding women's safety, child protection and mandatory reporting. Other potential scenarios identified in the professional interviews included predatory approaches to women by child abusers on dating apps.

Three typologies of CSAM offending in a relationship emerged from this study. The first was the CSAM offender who is not controlling or violent but secretly engages in CSAM offending and is dishonest with his partner and family. This scenario was evident from Zara's interview and further research is necessary to build on this picture.

The second typology is the CSAM offender whose CSAM consumption is part of a broader pattern of abusive and violent behaviour. He establishes relationships with adults out of romantic and/or sexual interest but he is also sexually interested in children. His mistreatment of his adult partner reflects a broader pattern of misogyny and self-entitlement in which his partner is expected to accommodate his needs and desires to the detriment of her own. His partner is forced to take on the majority of housework and parenting so he can pursue his own interests, including his sexual preoccupations with pornography and CSAM.

The third typology is the predatory CSAM offender who seeks adult relationships instrumentally as 'cover' for his illegal sexual activities, including CSAM as well as child sexual abuse and other forms of sexual deviancy. He may target women for romantic relationships in order to birth children for abuse, to access her children from a previous relationship or to further his double life. Characteristics of this offender may include: a preference for 'childlike' adult partners, sexually withdrawing as the adult partner ages, and hyper-sexuality in which he is engaged in sexual activity with women, men and children (and, in some cases, animals).

Key 'red flags' and potential indicators for CSAM offending in a relationship identified in this study included:

- using coercive control and/or violence to maintain a double life and ensure extreme privacy and secrecy around computer and phone use;
- excessive or compulsive pornography consumption and collection, including very diverse and paraphiliac content;
- a lack of sexual interest in adult partners or a preference for young-looking adult sexual partners; and
- coercive sexuality reflecting atypical interests including paedophilia and zoophilia.

Within the small sample size of this study, there was a diverse range of potential indicators for CSAM offending across women's narratives. While not all women described every indicator, they all described at least one or two of these 'red flags'.

This study has a number of implications. Research, policy and practice relating to domestic violence and coercive control do not currently address the overlap between domestic abuse and sexual offending against children. As rates of CSAM offending continue to grow, it is important for all professionals in safeguarding, law enforcement and related roles to recognise this overlap as well as the signs and impacts of CSAM offending in a relationship. Risk assessment tools across domestic violence and child sex offending should be sensitised to the intersections of CSAM with domestic violence and coercion. Distinguishing between the scenarios and typologies explained here may support safeguarding professionals to make more accurate decisions in the aftermath of arrest, particularly where questions of shared care and parenting arise. This study finds that violence and control can be enacted by CSAM offenders in distinctive ways, and early identification of these patterns could protect women and children from abuse.

A number of women in this study suspected that their partner was sexually attracted to children but did not know where to report it and were not supported when they did. Interviews with domestic violence and sexual assault workers suggested that these concerns are surfacing among clients in the sector. It is therefore important that relevant agencies, including child welfare agencies and domestic violence and sexual assault services, receive training on patterns of CSAM offending in a relationship and are able to identify warning signs and support women to act on their concerns. Secondary prevention services that support people concerned about their sexual feelings towards children, as well as their partners and family, should be sensitive to the ways in which CSAM offenders can blame their partners for their sexual compulsions and otherwise engage in controlling and abusive behaviour.

In women's accounts, obsessive, extensive pornography consumption was one of the earliest warning signs that their partner was a CSAM offender. Some men told their partner during the relationship that they felt their pornography use was out of control. Sexual preoccupation is a well-recognised risk factor for child sexual abuse perpetration and recidivism (Whitaker et al. 2008). Support for women with concerns about their partner's excessive pornography consumption, or men with concerns about their own pornography use, may provide new avenues for early intervention and prevention of CSAM and child sexual abuse. It is important that women are supported and taken seriously when they raise concerns about their partner's pornography use.

This study has contributed to two parallel bodies of research in child sexual abuse and relationship abuse. Firstly, it has provided insights into the behaviour of CSAM offenders who seek romantic relationships with adult women. While this study is exploratory in nature, and has a small sample size, it nonetheless may be important for forensic typologies of CSAM offenders to address this group and their particular characteristics, recognising the potential for secrecy, violence and abuse. Secondly, the study has traced patterns of coercion and violence in relationships that are motivated by the offender's sexual interest in children. Literature on relational control and violence often assumes that the female partner is the locus of the offender's aggression and manipulation, but in this study the offender controlled and abused a female partner to keep his illegal sexual activities secret. This is an alternative motivation for domestic abuse that has not been well recognised in research, policy and practice to date.

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13. Child sexual abuse material and end-to-end encryption on social media platforms: An overview

Coen Teunissen and Sarah Napier

Child sexual abuse material (CSAM) is any material (eg images and/or videos) that depicts the sexual abuse of a child. The production, distribution and viewing of CSAM has detrimental impacts on victims. This can include trauma, psychological harm, fear, guilt, shame and betrayal (Gewirtz-Meydan et al. 2018; Salter et al. 2021). Even after the physical abuse ends, victims depicted in CSAM can feel repeatedly victimised each time someone views the abusive material (Salter & Hanson 2021). The Canadian Centre for Child Protection (2017) surveyed 128 victims of CSAM; 70 percent reported constantly worrying about being recognised by someone who had viewed the CSAM showing their abuse and 30 percent reported that they had been recognised by someone online or in person who had seen images of their abuse.

Advances in technology and the growing number of internet sites and platforms have provided offenders unprecedented levels of access to children, CSAM and like-minded individuals with whom to share CSAM (WeProtect Global Alliance 2019). Consequently, CSAM has proliferated in recent years (Balfe et al. 2015; Bursztein et al. 2019), and the National Center for Missing and Exploited Children (NCMEC) received over 21 million reports of CSAM in 2020 alone (NCMEC 2021), increasing to over 29 million in 2021 (NCMEC 2022). The problem may have been exacerbated by global events such as the COVID-19 pandemic (Interpol 2020). Law enforcement agencies struggle to keep up with the staggering number of CSAM reports to investigate (NCMEC 2021; Netclean 2020). According to Netclean (2020), which surveyed 470 law enforcement officers in 39 countries, police globally were inundated with CSAM cases in 2020. This affected the mental health of some officers and meant they could investigate only the most high-risk cases. Further, use of end-to-end encryption by communication platforms, while designed for user safety, may present challenges for law enforcement in combatting CSAM offending.

Most relevant research conducted thus far has focused on the characteristics of individuals who view, distribute or produce CSAM (eg Brown & Bricknell 2018; Seto & Eke 2015)—for example, the differences between those who commit online offences and those who sexually abuse children in person (Babchishin, Hanson & VanZuylen 2015). Less research has focused on the specific online platforms where CSAM is shared and the methods these platforms use to detect and remove CSAM. Information is publicly available on the number of reports of CSAM detected on specific electronic service provider (ESP) platforms (eg NCMEC 2021); additionally, transparency reports released by each relevant ESP discuss the prevention, detection and removal measures they adopt. However, this information can be inconsistent, lacking in important details and difficult to find because it is scattered across multiple reports and websites. Given the recent dramatic increase in the amount of CSAM detected by ESPs, the adverse consequences for victims and the dynamic nature of this offence type, it is crucial to fully understand the extent and nature of the problem and the current CSAM detection and removal methods used. This will help us to develop best practice methods to prevent and disrupt CSAM offending.

Aims and method

The purpose of this study is to provide a valuable resource to inform policy and international law reform by consolidating key information on entities that detect CSAM on their platforms. The chapter has three aims:

- to provide an overview of the contemporary problem of CSAM offending on mainstream ESP platforms;
- to investigate the measures ESPs currently use to detect, remove and report CSAM on their platforms; and
- to explore the potential impact of end-to-end encryption on CSAM distribution and detection.

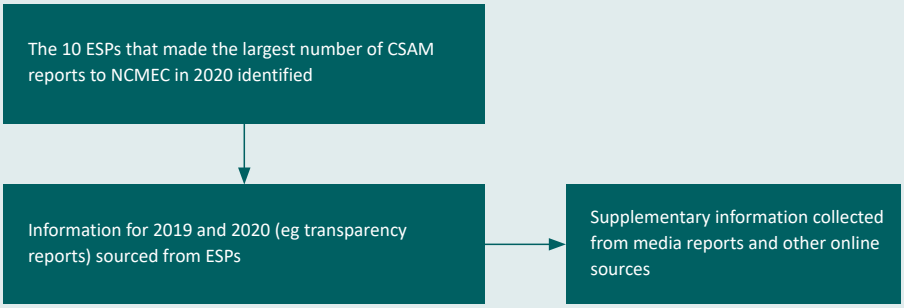
The 10 ESPs that sent the largest number of CSAM reports to NCMEC in 2020 were identified via NCMEC's (2021) report, which was the latest available at the time of data collection. Information sought for each identified ESP included: the number of CSAM reports provided to NCMEC; the company protocols for CSAM prevention, detection and removal; and the end-to-end encryption status of the messaging/chat function. This information was obtained directly from ESP websites—for example, from transparency reports, annual reports and official blogs. This material was supplemented with media releases and news articles (see Figure 1). The search was limited to data from 2015 onwards and ESP transparency reports from 2019 and 2020 due to data availability limitations, the dynamic nature of online communication platforms and the necessity for this review to be as up to date as possible. However, readers should note that NCMEC (2022) has since released its report on notifications received during 2021.

The chapter focuses on open web platforms and does not cover darknet sites, nor describe all available types of websites or encryption or anonymisation technologies which offenders have used to share and access CSAM, such as virtual private networks (VPNs) and peer-to-peer networks. Only ESPs that report CSAM to NCMEC were included. From here on, we use the term 'ESP' to describe both social media platforms and search engines (Table 1).

Table 1: Acronyms and terminology

Acronym or term	Explanation
CSAM	Child sexual abuse material (known legally in some countries as child pornography)
End-to-end encryption	A system of communication that usually allows only the sender or receiver of a private message or video call to view the content
ESP	Electronic service provider (eg Google, Meta)
NCMEC	National Center for Missing and Exploited Children

Figure 1: Flow diagram of resource selection process



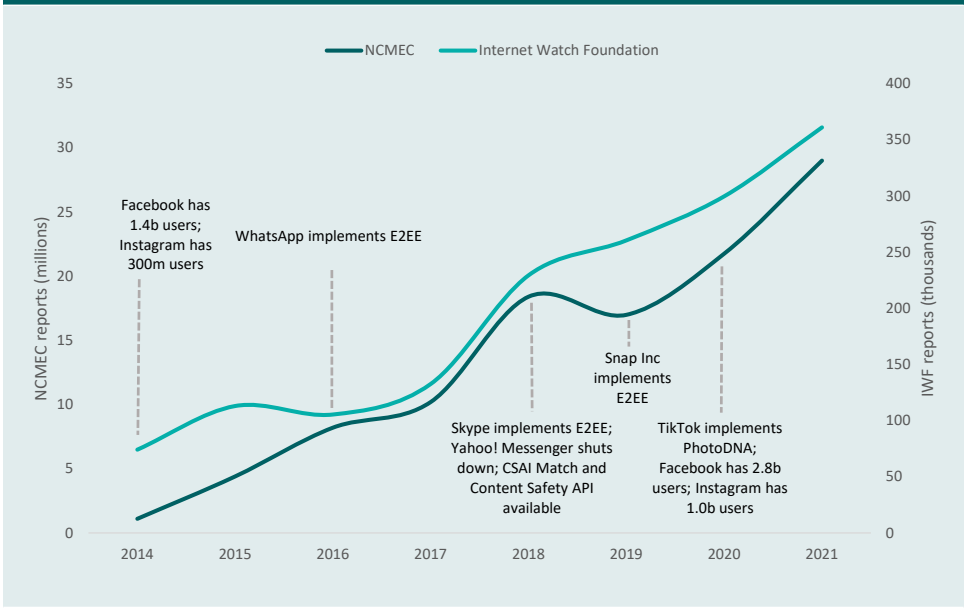
CSAM detected on online platforms

Prevalence of CSAM and growth in reports

It is not possible to know the true amount of CSAM available on the internet. However, police and non-government organisations (NGOs) provide insight into the number of reports of CSAM received from businesses and the public. In 2019, the Australian Federal Police received 450 CSAM reports from members of the public and 13,368 from NCMEC relating to Australian victims, offenders or IP addresses. Both of these figures increased in 2020, to 559 and 21,148 reports respectively (Australian Federal Police personal communication 01 September 2021). Unfortunately, these data were not available for Australia before 2019.

Both NCMEC and the Internet Watch Foundation are NGOs to whom members of the public and ESPs can report suspected online sexual exploitation of children, including CSAM. In 2021, 99 percent of such reports received by NCMEC related to CSAM (NCMEC 2022; herein referred to as CSAM reports). The rapid growth in CSAM availability in recent years is evident in the statistics provided by these two organisations. Figure 2 shows a clear upward trend in the number of CSAM reports to both entities across an eight-year period. The number of reports received by NCMEC increased from 1.1m reports (28m CSAM files) in 2014, to 21.7m reports (65.5m CSAM files) in 2020 and 29.3m reports (84.7m CSAM files) in 2021. The number of reports received by the Internet Watch Foundation of URLs containing CSAM increased from 74,000 URLs in 2014 to 299,619 URLs in 2020 and 361,062 URLs in 2021. This increase in CSAM reports coincided with an increase in users of Facebook (from 1.4b to 2.8b) and Instagram (from 300m to 1.0b). Between 2016 and 2017 there was a clear change to the otherwise sharp upward trend in the number of CSAM reports received by NCMEC. This coincided with the year WhatsApp implemented end-to-end encryption (2016). Between 2018 and 2019, there was a clear drop in the number of CSAM reports received by NCMEC (from 18.4m in 2018 to 17m in 2019), coinciding with the year Skype implemented end-to-end encryption and Yahoo Messenger shut down. There was no drop in the number of CSAM reports following Snap Inc implementing end-to-end encryption in 2019. However, due to the small number of data points, it was not possible to conduct an interrupted time series analysis to determine whether the changes in encryption status were associated with the change in trends. It is also possible that other factors influenced these changes in the trends, including an increase in detection and reporting by ESPs.

Figure 2: Number of CSAM reports to NCMEC and Internet Watch Foundation, 2014–2021



Note: National Center for Missing and Exploited Children (NCMEC) reports relate to online sexual exploitation of children, most of which comprises CSAM images and/or videos, and each report potentially involves multiple files. Internet Watch Foundation (IWF) reports relate to websites or URLs that contain CSAM. It is possible that there is some double-counting where reports were made to both entities. E2EE=end-to-end encryption

Sources: Internet Watch Foundation 2014–2021; NCMEC 2014–21; Statista 2022a, 2022b; Synstrom 2014

CSAM on specific platforms

NCMEC publishes the number of CSAM reports made by individual ESPs (NCMEC 2021). At the time of data collection, the most recent report related to 2020. Of the 21.7m CSAM reports received by NCMEC in 2020, Meta, who owns Facebook, Messenger, Instagram and WhatsApp, made 93 percent (*n*=20,307,216; see Table 2). The number of reports from this company dwarfed those of the remaining top five companies reporting the most CSAM: Google (546,704), Snap (144,095), Microsoft (96,776) and Twitter (65,062).

Table 2: CSAM reports to NCMEC in 2020, detection methods and end-to-end encryption status for top 10 reporting ESPs

ESP	CSAM reports 2020 (*n*)	% of reports to NCMEC	CSAM detection and information protection	End-to-end encryption messaging?
Meta[a]	20,307,216	93.4	Uses PhotoDNA, proprietary machine learning and artificial intelligence. Commenced using Google's Content Safety API in 2021 (see below).	WhatsApp—yes (since 2016) Facebook Messenger—encryption can be manually enabled Instagram—no
Google[a]	546,704	2.5	Developed/uses CSAI Match and Content Safety API. Data encrypted at rest and in transit.	Messages—yes (since 2020) Gmail—no
Snap Inc	144,095	0.7	Uses PhotoDNA and CSAI Match.	Snapchat—yes (since 2019)
Microsoft[a]	96,776	0.4	Developed/uses PhotoDNA.	Skype—encryption can be manually enabled (since 2018) Teams—yes Outlook—no
Twitter	65,062	0.3	Uses PhotoDNA.	No
INHOPE[b]	57,170	0.3	N/A—not a platform.	N/A—not a platform
Imgur	31,571	0.1	Messages and images can be monitored and accessed.	No
TikTok	22,692	0.1	Uses PhotoDNA and other technologies. Collects and scans information contained in messages being composed, sent or received.	No
Dropbox	20,928	0.1	Public files only viewable by people who have a link to the file/s (and by Dropbox staff). Data encrypted at rest and in transit.	No
Omegle	20,265	0.1	No information available.	No

a: Aggregate includes the total for all platforms owned by a company. For example, Facebook, Messenger, Instagram and WhatsApp are included under Meta (previously Facebook Inc); Google, Gmail and YouTube are included under Google; Bing, Xbox, Outlook and others are included under Microsoft

b: INHOPE is a global network of CSAM reporting hotlines partnered with Interpol and Microsoft and funded by the European Union. It is likely that these reports sent to NCMEC relate to reports received by a hotline, rather than CSAM activity on INHOPE's website

Sources: Allen 2011; Arthur 2013; Canegallo 2021; Davis 2021a; Deahl 2018; Dropbox nda, ndb; Google nda, ndb, ndc, ndd, nde; Gruszczyk 2021; Holt 2021; Imgur 2019; Microsoft nda, ndb; NCMEC 2021; Omegle 2022; Signal 2018; Snap Inc 2021a, 2021b; TikTok 2021, 2022; Titcomb 2019; Vincent 2018

CSAM detection methods used by platforms

As well as examining the extent of CSAM detected on specific platforms, it is important to look at the methods currently used by the platforms to detect and disrupt this offending. The authors could not locate any information on the methods used by Imgur, Dropbox or Omegle to detect or remove CSAM.

Microsoft

At the time of writing, one of the main technologies industry use to detect CSAM is 'PhotoDNA', which detects the digital fingerprint ('hash') of an image and compares it against a database of previously identified CSAM. This was developed by Microsoft in 2009, and the video-detection capability was implemented in 2018 (Langston 2018). It is provided freely to eligible organisations and businesses, with over 100 companies currently using the tool (Thorn 2016). Microsoft has also developed technology that can flag suspicious conversations for review by human moderators, to assist companies to detect online grooming on their platforms (Gregoire 2020).

According to Microsoft's 2020 transparency reports (Microsoft 2021a, 2021b), of the 1,079,246 abusive images and videos removed, blocked or delisted through Bing in 2020, 99.5 percent were proactively detected by its PhotoDNA technology. Similarly, 99.9 percent of the 177,000 CSAM files removed or blocked from other Microsoft services (OneDrive, Outlook, Skype, Xbox and others) were proactively detected by its technology, resulting in 33,369 accounts being blocked or suspended (Microsoft 2021a, 2021b).

However, empirical evaluations on the effectiveness of this technology are scarce. While it is clearly responsible for detecting a large amount of CSAM (Farid 2019), a New York Times investigation found vulnerabilities in PhotoDNA in the Bing search engine (Keller & Dance 2019). Further, PhotoDNA only detects known CSAM stored in databases such as NCMEC's; CSAM that is new, substantially altered or not yet known to law enforcement is not detected.

Meta (previously Facebook Inc)

Meta uses PhotoDNA (Allen 2011; Davis 2020) and unspecified artificial intelligence (AI) to proactively detect CSAM, including previously undetected material (Davis 2018). Meta also commenced using Google's Content Safety API in 2021 (Davis 2021a). However, there is little information available on their proprietary AI, including how it detects new CSAM. Meta also uses pop-up messages and other technologies to prevent online grooming and CSAM by deterring users who enter search terms linked with child sexual exploitation (Davis 2021a). Evidence suggests that pop-up warning messages can be effective in deterring individuals from sharing sexual images of young females online (Prichard et al. 2022), but no studies have measured the success of pop-ups currently used by platforms like Facebook. Meta also provides information about the illegality and harms resulting from online sexual exploitation of children to users whose accounts are flagged, disabled and/or removed and reports these users to NCMEC (Davis 2021a).

Meta's transparency report (Facebook nd) provides statistics relating to Facebook, Messenger and Instagram platforms. Nearly all (99%) of the child nudity and sexual exploitation material found on Facebook in 2019 and 2020 was detected and flagged by Meta's technology, compared to one percent being reported by users. In 2019, 99 percent of the 37.4m child nudity and sexual exploitation files removed by Facebook were proactively found by the technology, with only one percent being reported by users. In 2020, this rate remained at 99 percent across the 35.9m files removed. Similar rates were also observed for Instagram: 97 percent of the 3.3m pieces of abusive content (posts, photos, videos or comments) found in 2020 were detected by Meta's technology (Facebook nd). While this demonstrates that Meta's technology is successful in detecting large amounts of CSAM on Facebook and Instagram, these rates do not compare the content detected versus the content available on the platform. In other words, we do not know how much CSAM

was overlooked. This rate has also been questioned by experts in the field who call for more transparency around Meta's definitions of CSAM (Gladstone 2019).

WhatsApp states that unencrypted information such as profile and group photos and metadata (eg dates of contact, IP addresses) on the platform is scanned using technology (not specified) to match photos/videos against known CSAM (WhatsApp 2021). WhatsApp bans over 300,000 accounts per month for sharing CSAM (WhatsApp 2021). Due to its use of end-to-end encryption, WhatsApp is unable to detect child sexual exploitation distributed via private messages unless users report it directly.

Google

Google developed 'Content Safety API', which uses AI to identify and triage CSAM for review by organisations, providing this tool freely to other companies and NGOs including the Internet Watch Foundation and the Canadian Centre for Child Protection (Google nd). Google and YouTube also developed 'CSAI Match', a proprietary technology to detect CSAM videos. Google makes this technology freely available to NGOs and industry (Canegallo 2021). Google also presents warning messages containing links to reporting hotlines to individuals who enter search terms associated with child sexual exploitation (Google nd).

In 2020, Google detected 4,266,308 CSAM files on its platform (Google 2021). Over this period, 542,621 URLs relating to CSAM were removed from Google's search index, and Google identified 1,449,284 new CSAM hashes and shared them with NCMEC. Additionally, 188,955 CSAM reports were submitted by YouTube, and a total of 175,898 YouTube accounts were disabled for CSAM violations (Google 2021).

Steel (2015) found that Google and Bing's efforts to block searches for terms related to CSAM resulted in a 67 percent drop in CSAM searches during a one-year period over 2013 and 2014 in the United States. Yandex, an ESP located in Russia, did not implement similar blocking efforts nor experience a commensurate drop in CSAM searches during this period. However, the study could not distinguish between the effect of blocking and that of other interventions (eg warning messages) or a user shift from clear web to darknet searches.

Other companies

Snap, TikTok and Twitter

Snap Inc (Snapchat), TikTok and Twitter use PhotoDNA to detect CSAM images. Snap Inc also uses Google's CSAI Match to detect CSAM videos (Snap Inc 2021a, 2021b). TikTok and Twitter also use other unspecified technologies to detect CSAM. In 2020:

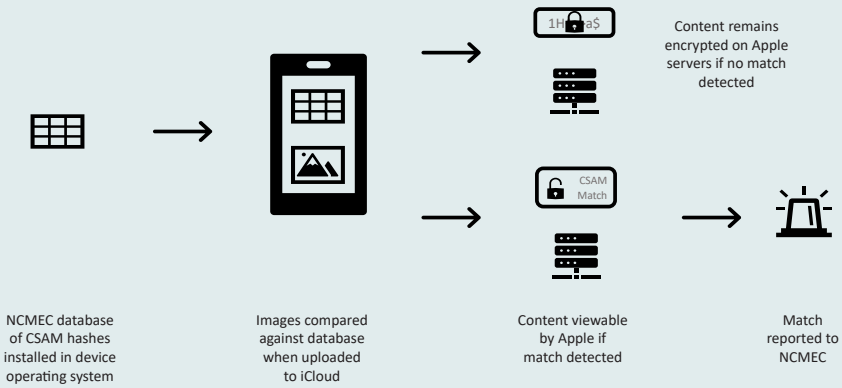
- Twitter suspended 903,613 accounts and removed 19,521 files associated with child sexual exploitation (Twitter 2021a, 2021b);
- Snap Inc deleted 94,686 accounts for suspected child sexual exploitation, including grooming of children, and 1,808 of these accounts belonged to Australian users (Snap Inc 2021a, 2021b); and
- TikTok made 22,692 CSAM reports to NCMEC, compared with 596 in 2019 (TikTok 2021).

Apple

Although Apple was not one of the top 10 ESPs submitting the largest number of CSAM reports, the company developed technology that is important to report in this chapter. In August 2021 Apple announced its new technology 'NeuralHash', which scans devices for known CSAM when images are uploaded to iCloud (see Figure 3; Apple 2021a; Nicas 2021). Content that matches a NCMEC hash of known CSAM is flagged for human review and can then be reported to NCMEC and law enforcement for action. This ensures that iCloud content is still encrypted via end-to-end encryption (Apple 2021b), unless it matches known CSAM when it is uploaded (with an error rate of less than one in a trillion per year; Apple 2021a). This technology is innovative in its method of detection; however, it appears to be limited to CSAM images (Apple 2021a), with no indication of being applicable to videos yet. It also has the same limitation as PhotoDNA in that it is unable to detect new or substantially altered CSAM, and is limited to iCloud content.

It remains to be seen how effective this tool will be in detecting and preventing CSAM offending. Other technology company leaders, including the Chief Executive Officer of WhatsApp, have criticised this technology, expressing privacy concerns (Clayton 2021). In September 2021, Apple delayed the implementation of this technology, citing concerns from customers, privacy campaigners and others (Wakefield 2021).

Figure 3: Explanation of Apple's NeuralHash technology



Source: Adapted from Apple 2021a

In summary, most ESPs examined are actively detecting and removing CSAM. However, transparency reports relating to CSAM and online sexual exploitation of children are not produced consistently across ESPs. There is also little reliable or detailed information available on definitions of CSAM used and, for some ESPs, the detection and prevention tools used and their effectiveness. Lastly, it is important to note that this study focused on the 10 ESPs who provided the highest number of CSAM reports to NCMEC in 2020. There are many other ESPs for whom the methods of detecting and reporting CSAM were not reviewed in this study.

End-to-end encryption

End-to-end encryption ensures that information on a platform is visible only to the individual or entity who has the 'key' to decrypt it (Schiemer 2018), and in almost all cases, this is only the sender and recipient. This is designed to protect sensitive and personal information such as messages and transactions (eSafety Commission 2020), and also to protect users from malicious online activity such as cybercrime (Amnesty International 2016). Data show that apps with security features have more active users (Stevens 2020), which demonstrates the appeal of privacy to the public.

Unfortunately, end-to-end encryption presents significant challenges to law enforcement officers who investigate CSAM offending (Netclean 2019), and limits companies' ability to prevent, detect and report CSAM occurring on their platforms. For example, online chat logs are a key form of evidence in CSAM investigations. In one such Australian case, the offender used several popular platforms to distribute CSAM he had produced, which involved severe abuse of babies (*Commonwealth Director of Public Prosecutions v CCQ* [2021] QCA 4 (22 January 2021); warning: contains highly graphic details of abuse). In this case the offender's chat logs were used as evidence to demonstrate the severity of offending that took place. In another case, Meta detected CSAM in a conversation between an Australian man and a Filipino child, leading to the man's arrest when he travelled to the Philippines (Murdoch 2016). If the platforms used by these offenders had implemented end-to-end encryption at that time, this evidence may not have been available for investigations and the offenders may still be at large.

Currently, four of the companies that send the top 10 number of CSAM reports to NCMEC use end-to-end encryption for private messages on some of their platforms: Meta (used on WhatsApp), Google, Snap and Skype (see Table 2). Snapchat introduced end-to-end encryption for private messages including photos in 2019 (Titcomb 2019). WhatsApp has two billion users (WhatsApp 2020)—more than both Facebook Messenger (988 million; Statista 2022c) and Instagram (1 billion; Statista 2022a). However, given its use of end-to-end encryption, CSAM cannot be detected in WhatsApp conversations unless users report it.

Meta plans to implement universal end-to-end encryption on Facebook Messenger and Instagram's private messages in 2023 (Davis 2021b; Kent 2021). These are two of the largest social media platforms in the world. There are concerns that current CSAM detection technologies (eg PhotoDNA, AI) will not work in an end-to-end encryption environment as they will be unable to decrypt the content and scan it for CSAM (NCMEC 2019). To our knowledge, Meta has not publicly proposed a strategy to maintain its ability to detect and report CSAM on these platforms in the end-to-end encryption environment. As most CSAM on Facebook Messenger is detected using PhotoDNA and AI tools (Facebook nd; Farid 2019), NCMEC has estimated that Meta's implementation of end-to-end encryption across all its major platforms would reduce the number of CSAM reports it receives by more than 50 percent (NCMEC 2019). This would mean that more than 18m CSAM files would potentially be undetected and unreported.

Discussion

In 2020 the number of CSAM reports received by NCMEC reached 21.7m, relating to approximately 65.5m CSAM files. This increased to 29.3m reports in 2021. In 2020 the overwhelming majority of CSAM reports—93 percent—were made by Meta.

The large amount of CSAM detected by Meta may be due to the immense number of users on its platforms—WhatsApp, Messenger and Instagram each have close to or more than a billion users (Statista 2022a, 2022c; WhatsApp 2020)—as well as the methods it uses to proactively detect and remove CSAM (Thorn 2021) and the access it has to platform content. In contrast, ESPs such as Google provide search tools that direct users to third-party websites. While Google can prevent websites from appearing in its search results, it has no control over the content on the sites except for those that it owns (eg Google Drive and YouTube; Google 2021). It has also been noted that large social media platforms such as Facebook have functions that allow like-minded offenders to easily connect with each other and share CSAM (Andrus, Buckley & Williams 2021). Similarly, offenders may use the functions on social media platforms such as Facebook to coerce children to create self-produced CSAM or to engage in live streamed abuse (eg de Santisteban et al. 2018; Napier, Teunissen & Boxall 2021), whereas the functions of services such as Dropbox, OneDrive, Outlook and Gmail may be less conducive to this type of offending.

If Meta introduces end-to-end encryption on Facebook Messenger and Instagram in 2023 as planned, the amount of CSAM currently detected and reported to NCMEC may be reduced by more than half (NCMEC 2019). This means that most CSAM on Meta's platforms will be invisible even to Meta. In 2020 WhatsApp had two billion users (WhatsApp 2020), almost twice as many as Facebook Messenger or Instagram. Yet, due to its use of end-to-end encryption, it remains unclear how much CSAM is circulated on WhatsApp.

Implications for ESPs

While most ESPs examined in this study are publicly opposed to CSAM and proactively detect and remove it, they are unfortunately still inadvertently facilitating its distribution. There are also concerns that ESPs are deflecting responsibility for preventing CSAM distribution and focusing on reporting CSAM if they find it (Salter & Hanson 2021). The staggering amount of CSAM reported by ESPs places a huge burden on law enforcement, who struggle to keep up with the workload (NCMEC 2021; Netclean 2020). There are several measures that ESPs should adopt to help address the problem.

Firstly, every company should be consistent in their reporting of CSAM and transparent about their definitions of CSAM and the specific measures they use to prevent, detect and report it. Providing this detailed information will help enforce best practice standards and assist companies to improve their tools for preventing harm to children.

Secondly, more responsibility should be placed on ESPs to prevent CSAM from being uploaded in the first instance. These platforms should adopt evidence-based methods such as pop-up warning messages (Prichard et al. 2022), which can deter engagement with CSAM and refer individuals to sources of support to stop their offending. Deterrence messaging campaigns can potentially also reach large numbers of individuals (Grant et al. 2019). These tools should also be evaluated; Meta currently uses pop-up warning messages to deter child sexual exploitation, yet there is no information publicly available on their impact or effectiveness.

Lastly, ESPs should invest in more innovative technology. Currently, NeuralHash, Apple's proposed technology to scan devices for CSAM, is the only publicly described tool that will detect CSAM in an end-to-end encryption environment. Although Apple has delayed the release of this technology (Wakefield 2021), ESPs should similarly invest in developing technology to prevent CSAM from being uploaded onto their platforms in the first instance. This would supplement their current methods of detecting and removing CSAM from their platforms.

Implications for international law reform

The beginning of this chapter outlined the deleterious effects of CSAM offending on victims. The monumental increase in availability of CSAM on major platforms will result in continuing and increased harm to children. Yet debate continues over the importance of protecting children versus the privacy of individuals (Allen 2021). The adoption of end-to-end encryption by more ESPs will likely provide a haven for CSAM offending, rather than preventing it. Further policy discussions are required about the best way forward in terms of end-to-end encryption which consider the impact it would have on current and future child victims.

Secondly, it would be beneficial for countries globally, including the Five Eyes nations and European nations, to introduce legislation requiring communication platforms to report CSAM consistently and adopt evidence-based detection and prevention measures. Additionally, ESPs should be consistent and transparent in how they report:

- definitions of CSAM;
- the amount of CSAM detected and removed;
- the number of accounts banned, suspended and/or deleted due to child sexual exploitation;
- detailed methods for detecting and removing CSAM;
- detailed methods for preventing CSAM offending (eg messaging campaigns, warning messages); and
- evaluations of the effectiveness of these methods in detecting and preventing CSAM offending.

Adopting such legislation will help reduce the sexual abuse and online sexual exploitation of children globally.

Limitations and future directions

This study had several limitations which should be considered. Firstly, it examined reports to NCMEC, which only companies registered in the United States are required to submit under the US Criminal Code. Hence, this chapter did not examine CSAM occurring on platforms owned by companies registered in other countries. It is important to note that only detected CSAM was reported and not all CSAM is detected by ESPs or law enforcement. Finally, research has found that offenders use social media platforms to groom children for sexual abuse and exploitation (de Santisteban et al. 2018) including live streaming of child sexual abuse (Napier, Teunissen & Boxall 2021). However, it was beyond the scope of this study to examine grooming. Future research focused on how offenders use online platforms to groom children for sexual abuse and exploitation and the methods used by platforms to prevent and detect this offending would be a valuable addition to the knowledge base. Lastly, due to the lack of academic research into this topic, this study relied heavily on grey literature that had not been peer reviewed.

The problem of CSAM offending on online platforms is growing and changing rapidly, exacerbated by global events such as the COVID-19 pandemic. Therefore, despite its limitations, this study is valuable and timely in providing an overview of this dynamic and harmful crime to help inform industry, policy and law reform.

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14. The sexual exploitation of Australian children on dating apps and websites

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Introduction

Mobile dating apps and dating websites can be used to create opportunities to develop and pursue social, romantic and/or sexual relationships (Gillett 2018; Paat & Markham 2021). However, there appears to be a link between the use of dating apps and technology-facilitated sexual violence victimisation (Choi, Wong & Fong 2018; Pooley & Boxall 2020; Powell & Henry 2019; Wolbers et al. 2022), with women (Albury et al. 2019), ethnically diverse people, individuals identifying as LGBTQIA+ and those with a disability at higher risk of being subjected to these forms of abuse (Albury et al. 2019; Henry & Powell 2018; Powell, Scott & Henry 2020; Wolbers et al. 2022).

While there is some emerging evidence about the prevalence and nature of dating app and website facilitated sexual violence (see, for example, Wolbers et al. 2022), little is known about the extent and nature of child sexual exploitation occurring on these platforms. Given the staggering amount of child sexual abuse material (CSAM) reported by mainstream social media and other platforms (National Center for Missing and Exploited Children 2022), it is crucial to investigate whether similar forms of exploitation are occurring on dating apps and websites. This includes CSAM produced by parents or guardians, who may be groomed to provide these materials to people they meet on these platforms.

CSAM produced by parents and guardians

Some CSAM cases involve parents or guardians producing material of their own children and distributing it to others online, or making their children available for abuse to people they have met online. In 2009, over a third (35%) of the National Center for Missing and Exploited Children's Child Victim Identification Program database comprised materials produced by parents and relatives of the victims (Lanning 2010). Men comprise the vast majority of adult offenders responsible for the creation and distribution of CSAM, with one estimate ranging from 82 to 98 percent, depending on whether the offending involved one or more perpetrators (Seto et al. 2018).

A recent study conducted by the Canadian Centre for Child Protection (C3P 2017) involved a survey of CSAM victim-survivors who were asked about the characteristics of the abuse they were subjected to and the abusers. Most of the perpetrators (those who sexually abused the victim and/or recorded the abuse) identified by respondents (82%) were either immediate or extended family members of the victim, and 38 percent were the victim-survivor's biological father. In most cases the CSAM had been produced in the child's own home.

Another study involved the analysis of cases reported in Australian media or legal databases where parents/guardians had been prosecuted for producing CSAM of their children (Salter et al. 2021). The authors identified three 'types' of parental CSAM producers: the male offender who forms adult relationships and exploits his own children; the male offender who forms a relationship with a woman and exploits her children or gains access to children to abuse by other means; and the biological mother who produces CSAM of her own children for men she knows (sometimes a partner) either online or in person. That study indicated that individuals who are approached by other adults online under the guise of romantic relationships may be at risk of being groomed for the purpose of sexually exploiting their children. Certainly, qualitative research has indicated that individuals seeking to pay for live streamed child sexual abuse accessed these victims by communicating with adult traffickers over dating and social media websites (Napier, Teunissen & Boxall 2021). Although the victims in that study were predominately located overseas, it is possible that potential child victims in Australia may also be targeted for sexual exploitation through their parents or carers who use dating apps and websites.

Current study

There is limited empirical research exploring the prevalence and nature of child sexual exploitation occurring on or being facilitated by dating apps and dating websites. The current study aimed to fill this knowledge gap by measuring the prevalence of dating app/website users receiving requests from other users to access their children or other children they know for sexually exploitative purposes.

Methodology

This study was conducted as part of a larger research project examining the prevalence and nature of online and in-person sexual violence facilitated by dating apps and websites, as self-reported by people living in Australia (AIC Human Research Ethics Approval: P0320A.A). A survey was administered to almost 10,000 people living in Australia who reported that they had used a mobile dating app or dating website in the previous five years. The survey was conducted by Roy Morgan Research Solutions between 23 June 2021 and 9 August 2021 using its Single Source panel and panels managed by PureProfile and Dynata. The survey was sent to men, women and non-binary members of these online panels aged 18 years and over. Proportional quota sampling, and a non-probability sampling method, was used. Quotas were based on the Australian adult population stratified by sex, age and usual place of residence, derived from data from the Australian Bureau of Statistics. The Single Source survey, which is recruited through a rigorous cluster-sampled, face-to-face survey approach, was conducted first and was used to calibrate the quotas for the external panels to account for the age and gender-related propensity for using a dating app or dating website in the past five years.

The survey took respondents an average of 13 minutes to complete. The overall completion rate for the survey—the proportion of total invitations (n=185,840) sent to panel members that resulted in completed surveys—was 5.4 percent; however, this does not consider the additional eligibility criteria for the survey. When adjusted, the estimated completion rate was 6.3 percent. Overall, 75.5 percent of respondents who opened the invitation, passed the screening process and read the consent form went on to complete the survey.

Respondents were asked a series of questions about their sociodemographic characteristics, the nature of their dating app/website usage (eg frequency of use, reasons for use, types of apps and websites used) and their experiences of sexual aggression, harassment and violence while using these apps. A copy of the survey questions is available in Wolbers et al. (2022). Nine respondents were removed due to erroneous and nonsense responses, resulting in a final sample of 9,987 respondents.

Measures of child sexual exploitation

The focus of the current study was on adult respondents receiving requests from people they had met through a mobile dating app or dating website to facilitate (arrange, assist) the sexual exploitation of children they had access to (hereafter referred to as 'requests for facilitated child sexual exploitation'). This does not imply that respondents were perpetrators, but rather that these requests were attempts to have the respondent facilitate the exploitation of a child. Specifically, respondents were asked about their experiences of someone:

- asking them to provide images of their children or other children they had contact with;
- pressuring them to provide sexual images of their children or other children they had access to;
- asking to meet their children or other children they had access to before the respondent felt it was appropriate;
- asking them questions of a sexual nature about their children or other children they had access to (eg if their children had their period yet, their breast size); and
- offering to pay respondents for photos/videos of their children or other children they had access to, or to have these children perform on webcam.

Respondents were also asked about the target of the requests they had received: specifically, whether the request to facilitate child sexual exploitation was in relation to their own children (ie biological, adopted or stepchildren), younger family members, younger friends, or other children they had access to (eg students).

Sample demographics

As shown in Table 1, there was a fairly even split between male (50.0%) and female (49.3%) respondents, with less than one percent identifying as non-binary (0.7%). Three-quarters of the sample were between 18 and 44 years of age (78.0%; see Table 1). Almost a third (33.7%) of the respondents reported that they were living with children at the time of completing the survey. Over three-quarters of respondents (80.2%) lived in major cities, 17.3 percent lived in regional Australia and 2.1 percent lived in remote areas. Approximately eight percent of respondents identified as First Nations.

Table 1: Sociodemographic characteristics of survey respondents (*n*=9,987)		
	n	%
First Nations[a]	778	7.8
Living with children	3,361	33.7
Gender		
Man	4,992	50.0
Woman	4,924	49.3
Non-binary	71	0.7
Age		
18–24	2,092	21.0
25–34	3,471	34.8
35–44	2,220	22.2
45–54	1,161	11.6
55–64	636	6.4
65+	407	4.1
Usual place of residence[b]		
Major city	8,008	80.2
Regional	1,731	17.3
Remote	211	2.1

a: Denominator includes 126 respondents who did not provide their Indigenous status

b: Regional classification calculated using the respondent's postcode and concordance with the Australian Statistical Geography Standard (Australian Bureau of Statistics 2018); denominator excludes 37 respondents who did not provide a response

Note: Percentages may not total 100 due to rounding

Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Results

Requests for facilitated child sexual exploitation

Overall, 12.4 percent (*n*=1,237) of respondents said they had received at least one request for facilitated child sexual exploitation involving their own children or children they had access to.

Approximately one in 10 respondents (9.4%, *n*=939) indicated that they had been asked by someone they met on a dating app/website to provide photos of their own children, other children they had access to (eg if the respondent was a teacher at a school), or younger friends or family members aged under 18. Although asking for photos of children generally is not inherently exploitative, possession of non-illegal material depicting children may be indicative of a sexual interest in children (Taylor, Holland & Quayle 2001). This is supported by the current data, as close to half of the respondents who said they had been asked for photos of their children or children they had access to said that they had also been pressured to provide sexual photos of the children (48.5%, *n*=455; 4.6% of all respondents).

Further:

- 8.4% of respondents reported that someone they had met on a dating app/website requested to meet their children (or those they had access to) in person before it was appropriate (*n*=838);
- 7.7% of respondents said someone they had met on a dating app/website had asked questions of a sexual nature about these children (*n*=765); and
- 7.1% of respondents said someone they had met on a dating app/website had offered payment for photos/videos of these children or to have them perform on webcam (*n*=704).

When broken down by gender (excluding non-binary gender respondents due to the small sample size), chi-square analysis showed that men were statistically more likely than women to receive requests to facilitate child sexual exploitation involving their children or children they had access to (see Table 2). Of note, significantly more men than women (10.0 vs 6.8%) reported being asked by other dating app/website users to let them meet their children (or those they had access to), receiving questions of a sexual nature about these children (9.7% vs 5.5%) or being offered payment for photos/videos of these children or to have them perform on webcam (9.1% vs 5.0%).

Table 2: Requests for sexual exploitation of children by people met on dating apps/websites, by respondent gender identity and type of request (*n*=9,916)

	Men		Women		Chi-square (χ^2)[a]
Type of request	**%**	***n***	**%**	***n***	
Someone on a dating app/website asked the respondent for photos of children[b]					
Yes	11.2	561	7.6	374	38.51***
No	88.8	4,431	92.4	4,550	
Someone on a dating app/website pressured the respondent to provide sexual images of children[b]					
Yes	5.7	286	3.4	167	31.07***
No	94.3	4,706	96.6	4,757	
Someone on a dating app/website asked to meet children[b] before it was appropriate					
Yes	10.0	500	6.8	335	33.18***
No	90.0	4,492	93.2	4,589	
Someone on a dating app/website asked the respondent questions of a sexual nature about children[b]					
Yes	9.7	486	5.5	273	61.61***
No	90.3	4,506	94.5	4,651	
Someone on a dating app/website offered the respondent payment for photos/videos of children[b] or to have them perform on webcam					
Yes	9.1	455	5.0	246	64.01***
No	90.9	4,537	95.0	4,678	

***statistically significant at $p<0.001$

a: All chi-square tests had *n*=9,916 and one degree of freedom

b: Respondents could select whether these children were their own children, other children they had access to, friends (aged under 18 years) or family members (aged under 18 years). Respondents could select multiple responses and therefore percentages may not total 100

Note: Table percentages and significance tests exclude non-respondents and non-binary respondents (due to small numbers)

Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

It is important to note here that the gender of the individuals requesting facilitation of child sexual exploitation was unknown; only the gender of the person receiving the request was reported. To interrogate the findings described in Table 2 further, the gender cohorts were disaggregated by the sexual orientation of the respondent. Respondents who did not self-identify as heterosexual (eg lesbian, gay, bisexual, asexual etc) were categorised as LGB+ for the purposes of this analysis. The resulting sexual orientation variable comprised two categories: heterosexual and LGB+ (see Table 3).

As shown in Table 3, the cohort of respondents who reported the highest levels of facilitation requests were LGB+ men. For example, 18.0 percent of these men said they had received any request for sexual exploitation materials of their own children or children they had access to, which decreased to approximately 14 percent for heterosexual men (13.7%) and LGB+ women (13.6%). Only 8.9 percent of heterosexual women said they had received any request. This pattern was also found for each individual type of request, with a greater proportion of LGB+ men receiving such requests compared to other respondent cohorts. LGB+ men were significantly more likely than heterosexual men to receive any request for sexual exploitation of their own children or children they had access to, as were LGB+ women compared with heterosexual women (Table 3).

Table 3: Requests for child sexual exploitation by people met on dating apps/websites, by respondent gender and sexual identity, and type of request

	Men (%)		Chi-square (χ^2)[a]	Women (%)		Chi-square (χ^2)[b]
	Heterosexual	LGB+		Heterosexual	LGB+	
Any request	13.7	18.0	9.43**	8.9	13.6	17.56***
Asked for photos of children[c]	10.2	14.9	13.95***	6.4	10.8	19.4***
Pressured to provide sexual images of children[c]	5.0	7.7	8.73**	2.8	5.5	16.4***
Asked to meet children[c] before it was appropriate	9.0	13.6	14.5***	5.8	10.1	20.5***
Asked the respondent questions of a sexual nature about children[c]	8.6	14.4	24.31***	4.6	8.7	23.78***
Offered payment for photos/videos of children[c] or to have them perform on webcam	8.3	12.6	14.07***	4.1	8.0	23.56***

**statistically significant at $p<0.01$, ***statistically significant at $p<0.001$

a: All chi-square tests had $n=4,908$ and one degree of freedom

b: All chi-square tests had $n=4,873$ and one degree of freedom

c: Respondents could select whether these children were their own children, other children they had access to, friends (aged under 18 years) or family members (aged under 18 years)

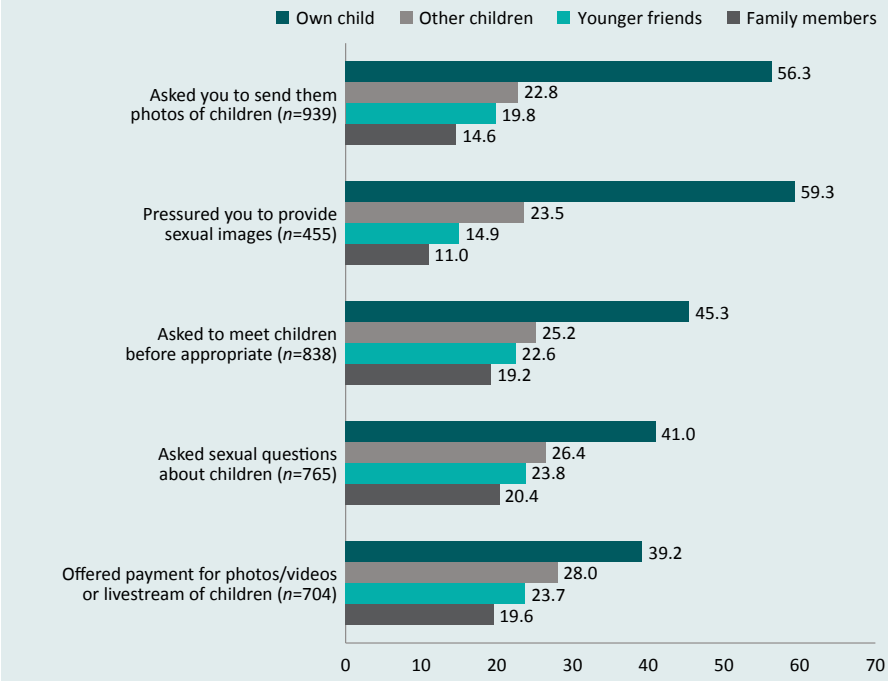
Note: Table percentages and significance tests exclude non-respondents and non-binary respondents (due to small numbers)

Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Target of the request for facilitated child sexual exploitation

As indicated in Figure 1, larger proportions of respondents reported that requests for facilitated child sexual exploitation had involved their own children (ie biological, adopted and stepchildren) compared with other children they may have had access to (eg students) and younger friends or family members. Of respondents who received requests to provide photos of children (*n*=939) and those who reported being pressured to provide sexual images of children (*n*=455), over half reported these requests were directed at their own children (56.3%, *n*=529; 59.2%, *n*=270 respectively). This pattern remained consistent across the other types of requests for facilitated child sexual exploitation included in the survey, where interest in the respondents' own children was more common (Figure 1).

Figure 1: Relationship of child target to respondent who received requests for child sexual exploitation by someone on a dating app/website (%)



Note: Respondents could select multiple options for each question, hence the percentages for each question do not total 100

Source: AIC Mobile Dating Apps and Sexual Violence Survey 2021 [computer file]

Discussion

To the best of our knowledge, this is one of the first studies in Australia and internationally that explores the use of mobile dating apps and dating websites to facilitate child sexual exploitation. Overall, one in eight respondents (12.4%) received at least one request from someone they had met on a dating app/website to provide CSAM or access to their children (or children they had contact with) for sexually exploitative purposes.

Respondents' own children were the targets of these requests more often than other children the respondents had access to (including other family members). This was anticipated, as recent research has found that substantial proportions of both CSAM offenders (C3P 2017; Seto et al. 2018) and child sex trafficking offenders (Cole 2018) are the parents or extended family members of victims. However, there were still large numbers of respondents who indicated that requests were directed towards other children they had access to. It may be that respondents who received requests to facilitate child sexual exploitation had communicated the fact that they had children (or access to children) to other dating app/website users, either in their profile's information or photos or through conversation. Future research is required to understand if the offenders issuing these requests are simply impetuous and opportunistic (Powell, Casey & Rouse 2021) upon learning of the presence of children, or if results suggest more purposeful, protracted and predatory behaviour.

A finding from this study which requires additional unpacking was that men were more likely to receive these requests than women. This was unexpected given previous research has found that women who produce CSAM of their own children tend to do so at the behest of a current or potential male partner, while men tend to instigate CSAM production (Salter et al. 2021). However, the study also found that male respondents who self-identified as LGB+ were more likely to receive requests compared with heterosexual men and heterosexual and LGB+ women. On the face of it, this could suggest that, consistent with previous research, LGB+ men were being approached by other men to facilitate access to sexual exploitation materials.

However, our ability to comment on the gender of perpetrators of facilitation requests is limited for two reasons. First, we did not ask respondents to provide information about the gender of perpetrators. Second, even if this information was provided it would not be possible to verify its accuracy. It is possible that some of the perpetrators requesting facilitated child sexual exploitation were 'catfishes': individuals using a false identity (eg pretending to be women or LGBTQIA+ men) to obtain exploitative images or have contact with children from men online (McCosker et al. 2019). Such individuals may be seeking financial benefits through sextortion (eg Beck 2021), or seeking new CSAM for their own private use or to share with others (Wortley & Smallbone 2012). This aligns with existing evidence that online child grooming offenders may conceal aspects of their identity to ingratiate themselves with their targets, such as giving a falsified age and/or identity (de Santisteban et al. 2018). Similar tactics have been observed among romance scammers who defraud users of dating apps/websites for monetary purposes (see, for example, Coluccia et al. 2020; Kopp et al. 2015).

The ability of perpetrators to seek access to CSAM or children through online dating platforms is in part facilitated by the characteristics of these platforms. In particular, most mobile dating apps and dating websites do not require individuals who set up new accounts to provide evidence that they are who they say they are—meaning that users can create any kind of avatar they want. However, in 2021 Tinder introduced a voluntary feature where users could provide a valid ID to verify their identity. Once verified, Tinder places a blue tick on the user's profile, communicating to others that the user is not a catfish. Future research should examine in detail the demographics of individuals who request CSAM from people on dating apps/sites. It would also be valuable to compare the levels of child sexual exploitation occurring on sites that incorporate such safety features and those that do not.

These findings indicate that LGB+ men are vulnerable to receiving requests to facilitate access to sexual exploitation materials of their children or children they have access to. This is consistent with other research which has found that individuals identifying as LGBTQIA+ are more likely to report experiencing sexual harassment, aggression and violence on mobile dating apps and dating websites than heterosexual individuals (Albury et al. 2019; Anderson, Vogels & Turner 2020; Wolbers et al. 2022). These research findings have been attributed to a range of factors, including differences in the way that LGBTQIA+ communities use online spaces compared with heterosexual communities which may increase their risk of experiencing online harms. Specifically, it has been suggested that some online platforms are used as safe spaces by LGBTQIA+ communities for social support and to connect with others (GLSEN, CiPHR & CCRC 2013; Ybarra et al. 2015), which may increase opportunities for these harms to occur. Alternatively, it has been suggested that LGBTQIA+ communities are targeted by other online users because of their perceived vulnerability and their sexuality (Gámez-Guadix & Incera 2021). To better protect vulnerable users of online dating platforms, more research is needed to identify the reasons for their increased risk.

This said, the current study did not determine whether respondents fulfilled requests and solicitations for child sexual exploitation. Future research should explore the characteristics of individuals who respond to requests for these materials. This information is essential for identifying users who may be vulnerable to online grooming and requests for child sexual exploitation, which could in turn inform the development of awareness raising campaigns among dating app/website users, as well as safety mechanisms within online dating platforms. Specifically, stringent and well-equipped reporting functions should be incorporated into apps and websites, and the benefits and drawbacks of blocking should be considered, as user blocking capability can allow perpetrators to easily become hidden from their victims, thus avoiding detection (see Wolbers et al. 2022). It is also important to determine if material is being distributed on the platforms themselves, as more investment in CSAM detection and removal technology, such as PhotoDNA (Langston 2018) or artificial intelligence based web crawlers (eg Project Arachnid; C3P 2021), may be required.

Finally, awareness raising initiatives should be developed to target mobile dating app/website users, warning them to be wary about sharing any information about or images of children with other users on these platforms. This is because the results of this study demonstrated that close to half of users who share any images of children are then pressured to provide sexual images of these children. This may be assisted by preventative/warning messaging, which has shown promise in reducing the online distribution of CSAM (Prichard et al. 2022). This could be expanded to include not only warnings about the illegality of distributing such material but also messaging for dating app/website users about the severe and lifelong harms posed by sexual exploitation to the children in question.

Conclusion

This study has important implications for understanding the risks and potential harms associated with the use of mobile dating apps and dating websites. The findings suggest that adults who use dating apps/websites are at substantial risk of receiving requests to facilitate child sexual exploitation. In particular, LGB+ men appear to be vulnerable to receiving these requests. Therefore, it is important for dating apps/websites to provide users with avenues for reporting people who have attempted to groom them for child sexual exploitation, and to implement increased warnings and safety measures for users.

This chapter's unique insight into the concerning problem of child sexual exploitation occurring on dating apps and dating websites is an important resource for government policymakers concerned with regulating these platforms. It is also an important resource for the dating apps/websites themselves in ensuring their users are safe and that their platforms are not used for child exploitation.

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15. Advancing child sexual abuse investigations using biometrics and social network analysis

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Trends in the distribution of child sexual abuse material (CSAM) online demonstrate a growing preference by producers and consumers for video and 'on-demand' live streams (Brown, Napier & Smith 2020; Dance & Keller 2020; Maxim et al. 2016). Such preferences are also confirmed by recent reporting to the National Center for Missing and Exploited Children (2022), which in 2021 received more reports for videos than images (44.8 million vs 39.9 million), representing an increase of 41.7 percent over the previous year. These trends highlight a growing need for effective tools for analysing videos in child sexual abuse (CSA) investigations. The proliferation of video files amplifies the challenges investigators face, given that software tools available to process and analyse video lag behind those developed for images (Sanchez et al. 2019). This necessitates painstaking manual review and verification to extract key information about individuals, or significant patterns across multiple videos (eg victims or offenders appearing in several videos, instances of co-offending and co-victimisation).

Manual processing of videos furthers the existing problems investigators face with unmanageable workloads and burnout, as well as significant psychological harms, including secondary traumatic stress disorder, emotional exhaustion, intrusive thoughts, and interpersonal and marital problems (Bourke & Craun 2014; Burns et al. 2008; Powell et al. 2015; Seigfried-Spellar 2018). This has led to an emergence of automated techniques, including those using hash values (ie digital fingerprints) and, more recently, biometric characteristics to ameliorate these challenges and enhance investigations.

Recent work by the present authors has demonstrated the utility of combining multiple biometric modalities (face and voice) from CSA videos using a custom-designed automated software system, entitled the Biometric Analyser and Network Extractor (BANE). Through a series of performance tests, this research showed that multiple biometric cues (ie faces and voices) can be successfully extracted and matched in CSAM (see Westlake et al. 2022 for a detailed overview). These performance results demonstrate the potential utility of this automated software infrastructure to augment investigations undertaken by law enforcement. This software offers a means of automatically grouping victims/offenders by face and/or voice matches, in ways that would be very difficult, if not impossible, to accomplish manually.

Although using multiple biometric attributes can improve accuracy in identifying the same individuals from one video to the next, it is possible to take this further and identify significant patterns pertaining to co-offending or co-victimisation, both within and across investigations (and across time). Establishing such connections is important, as there is considerable evidence to suggest that children are often victimised by multiple offenders, and that it is not uncommon for an offender to appear, visibly or audibly, in CSAM (Canadian Centre for Child Protection 2017; Interpol 2018; Salter & Whitten 2022; Seto et al. 2018). In this chapter, we demonstrate how such patterns can be revealed by using social network analysis to examine face and voice biometric match data extracted from CSA videos. To this end, this work describes how this analytical approach can point investigators towards media files that should be prioritised for manual analysis. This also has the potential to dramatically reduce investigator workloads by obviating the need to manually review all media files, as well as the attendant psychological harms associated with viewing such materials.

This chapter is presented in three parts. First, we provide a methodological account of this research. Second, using a database of 530 CSA videos compiled by law enforcement, we demonstrate how specific social network metrics (community detection, degree centrality and betweenness centrality, which are explained below) can be used and visualised to rapidly pinpoint key media files associated with an investigation, without the need for an investigator to first manually review and catalogue files. Third, we outline the implications of integrating and improving this analytical approach in future research.

Methodology

Given the nature of the content being studied, BANE was supplied to Australian law enforcement agencies to extract biometric match data from a collection of CSA videos. Match data were extracted from BANE as metadata, to plot a network map for visualisation and analysis. These processes are detailed below.

Compilation of the video database

A collection of 1,308 videos was compiled by Australian law enforcement. These videos represent all videos seized by law enforcement relating to a large and recent CSA investigation (ie all video files from hard drives, mobile phones, tablets, online accounts, messaging applications etc), with each file being verified by investigators as containing CSA, as defined under Australian law. The collection contained numerous duplicate files, which were removed using a script written to identify duplicates (on the basis of a file being of the same size, length and extension), leading to a sample of 553 unique videos. The final sample of videos contained a variety of forms of CSA, involving children of a range of ages (roughly between 3 and 17 years old), as well as adults. Videos also varied in length, with the shortest being five seconds and the longest approximately 48 minutes. At no point did members of the research team view or have access to CSAM.

Data procedures

Law enforcement officers imported the 553 videos into BANE, which successfully processed 530 videos. A small proportion of video files (*n*=23, or 4.2%) were not included in the analysis because either they were not encoded in one of the formats BANE is presently designed to process (ie *.3gp, *.3gpp, *.asf, *.avi, *.divx, *.mkv, *.mp4, *.mpg, *.mpeg, *.wmf, *.wmv, *.vob), they were corrupted, or they could not be decoded using ffmpeg v 4.0 (see https://ffmpeg.org).

This study deployed a processing pipeline similar to the one described in Westlake et al. (2022), with the only change being the use of a different face recognition library. This study used a pipeline consisting of the Dlib face detector (King 2009) and an open-source face recognition system (see https://github.com/ageitgey/face_recognition). The included face recognition pipeline achieves 98.9 percent accuracy on the 'Labeled Faces In The Wild' dataset (Huang et al. 2007), which is in line with state-of-the-art face recognition systems. Facial features were successfully extracted from 258 videos and audio features from 352 videos. Such performance aligned with expectations, given that CSAM does not always contain a clearly visible face or audible voice (Salter & Whitten 2022; Tejeiro et al. 2020). In total, biometric features (a face and/or a voice) were extracted from 445 videos. These extracted features were then matched to all other faces and voices from other videos in the database, producing a match score for each pair.

We used an inductive approach to selecting an appropriate threshold from which matches would be derived for further analysis. To our knowledge, no previous study has sought to match face and voice biometrics on a raw database of CSA videos (Westlake et al. 2022 is the closest, using a small, labelled dataset of CSAM). Consequently, the research team had limited empirical evidence with which to determine appropriate match threshold levels. Discussions with investigators revealed that the database comprised numerous videos containing the primary offender (whose computer, phone, accounts etc were seized) offending against multiple children. In addition, there were various other separate collections featuring victims that the primary offender had not had contact with, which the primary offender had found online or had been sent by other offenders.

Accordingly, we expected that the matching process would return one large cluster of nodes (corresponding with the primary offender), and numerous smaller clusters (varying in size, according to the number of videos containing each individual). We evaluated several thresholds for matching both faces and voices. Faces were matched using a dissimilarity score, meaning that scores closer to 0 are more likely to indicate a genuine match, while voices were evaluated on a similarity score, meaning that scores closer to 1 are more likely to indicate a genuine match (for further detail, see Westlake et al. 2022). Through this process, it was determined that the expected pattern was generated using thresholds of less than 0.47 for face and greater than 0.96 for voice. In making this selection, we acknowledged that presenting false positive matches may slow down or be harmful to an investigation and reduce the practical utility of the software. As such, we sought thresholds corresponding with a low false match rate, even though this will also result in a lower true match rate.

Analytical framework

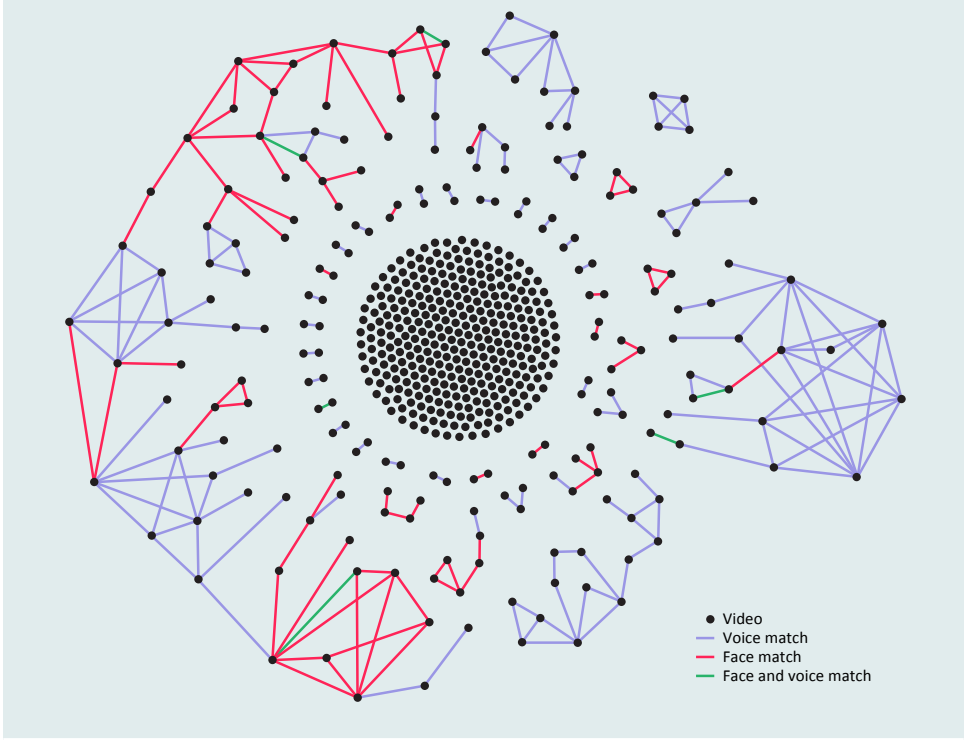
Once processed by BANE, inter-video match scores for the 445 videos were converted into matrices, to permit analysis of biometric matches using social network analysis (SNA). SNA is an analytical technique that can be used to triangulate multiple file attributes (eg face and/or voice matches), as well as identify and visualise structural patterns across large datasets. With its roots in mathematical graph theory, this analytical approach focuses on a set of actors or 'nodes' (in this case, CSA videos) that are tied by one or more types of relations (in this case, biometric matches) (Wasserman & Faust 1994). SNA can be used to examine patterns of relations across different levels of networks, including the complete network of relations, relations within clusters or subgroups, and relations between pairs of nodes. SNA can also be used to identify well-connected or strategically positioned nodes within a network. This approach has the advantage of yielding new information about the structural characteristics of a network, and allows analysts to visualise and identify significant connections between nodes that may not otherwise be revealed (Marin & Wellman 2011). Various research studies have extolled the potential of this approach as a means to better understand and control crime (see Brewer 2017), particularly in the context of CSA (eg Bursztein et al. 2019; Krone 2004; Westlake & Bouchard 2016; Westlake & Frank 2016).

To permit SNA in the present study, the full list of match pairs derived from the dataset by BANE was converted into a machine-readable format (ie an edge list) and imported into a separate SNA software program, Gephi (v 0.97), for further analysis. This made it possible to generate a visual representation of the network and to calculate several measures of connectivity (density) and centrality (degree centrality and betweenness centrality) and to detect communities (using the Girvan–Newman algorithm). This revealed both important patterns and key videos across the network. Ethics approval for this work was granted by the University of Adelaide Human Research Ethics Committee.

Results and discussion

Biometric data (faces and voices) extracted from the 445 distinct videos were matched, combined and modelled as a network map, visually represented in Figure 1. Here, each of the 445 black dots, or nodes, represents a video, while the 222 lines, or ties, linking nodes denote at least one biometric match between people contained within the two connected videos (one video can contain multiple people, who are each matched to other videos). These matches are diverse and represent one of three tie types: a face match (red), a voice match (violet) or a match between *both* face and voice (green). The diversity of match types may be attributable to the fact that faces and voices often do not appear in CSAM. To further assist with visualisation, the Force Atlas algorithm was applied to drive isolates (the nodes not linked to any other nodes) to the centre of the map, leaving clusters on the periphery of the network for closer inspection. This modelling makes it possible to draw links between people (victims or offenders) across videos by constructing more complex networks. This network visualisation moves beyond simply identifying the same victim or the same offender appearing in multiple videos and can also establish co-offending and co-victimisation relationships across a large holding of videos.

Figure 1: Network of videos extracted from a single investigation



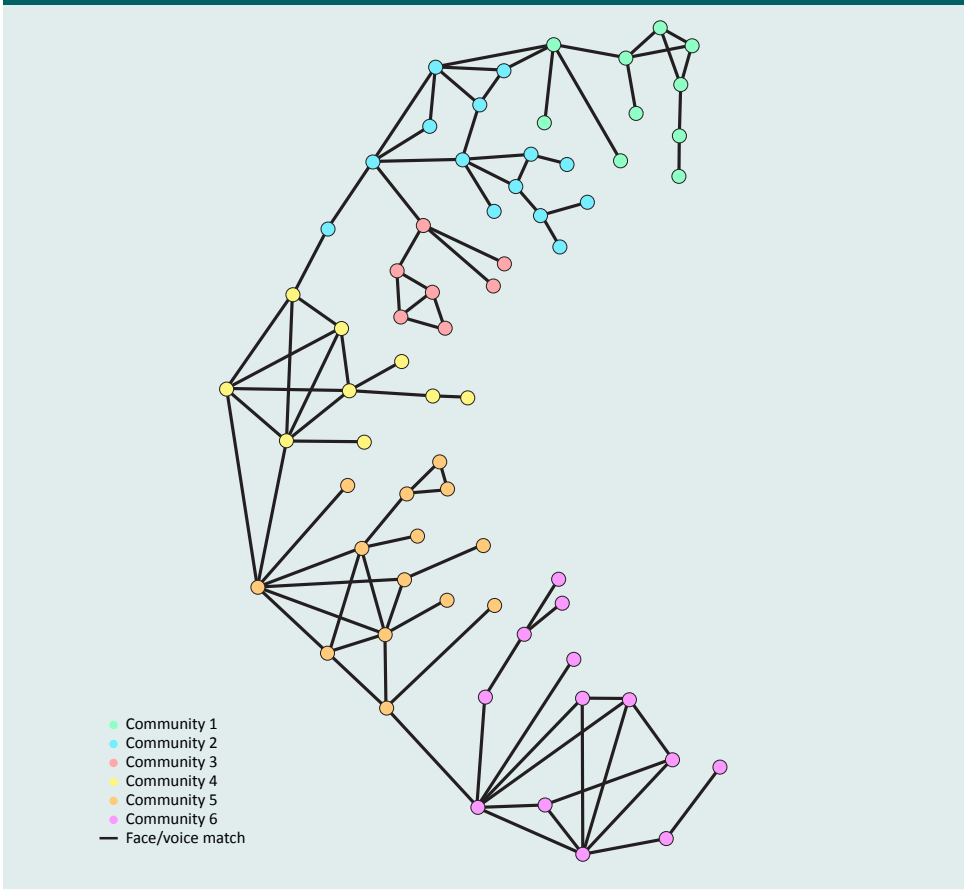
As expected, the network is relatively low in density, with matches being returned across 0.02 percent of the total matches possible between videos (Figure 1). Matches are, nevertheless, largely concentrated in clusters. Just under half of all matches (42%) are concentrated into one large cluster (likely depicting the primary offender and associated victims and co-offenders), located in the left-hand portion of the network. Videos throughout this cluster are indeed connected by face matches, voice matches or both, with the loss of either biometric severely fragmenting the cluster. Elsewhere, 15 other smaller clusters populate the periphery of the network, likely representing victims and/or offenders not directly associated with the primary offender. These smaller clusters vary in size, each containing between three (bottom right) and 17 (far right) nodes. Closer to the centre of the graph are 25 matches that link only two videos (ie 2 nodes and a single tie), while 324 isolates (videos with no matches) reside at the centre of the network map. Further analysis of these connections can reveal key patterns within the data that can direct investigations.

Identifying subgroups of related videos using community detection

While mapping these 16 clusters offers initial macro-level insights into how video files are connected, it does not provide investigators nuanced information about how individual subjects are represented within clusters. For investigators, making such distinctions is crucial, as clusters may contain subgroups of videos depicting multiple victims or offenders. That is, a subgroup within a cluster could represent multiple victims being abused by the primary offender or multiple offenders victimising the same child. To this end, it is possible to detect subgroups that form structurally separate entities, commonly referred to in the literature as 'communities'.

Numerous methods exist for identifying communities in network data. In this study, we applied the commonly used Girvan–Newman algorithm, which identifies discrete communities (subgroups of nodes) by locating structurally important ties, whose removal fragments the network (Borgatti, Everett & Johnson 2018). This method revealed six communities contained within the largest cluster, distinguished by colour in Figure 2: green (10 nodes), blue (14 nodes), pink (7 nodes), yellow (9 nodes), orange (14 nodes) and purple (13 nodes). The communities present within the clusters suggest that there are separate yet interconnected collections of different people within the primary cluster that investigators may wish to focus on. That is, each of these communities may contain a particular victim or offender, or potentially be part of the same series of videos. For this dataset, beyond the primary cluster, no additional communities were found to be contained *within* other clusters or pairings (and were therefore not visualised below). Note that a uniform colour (black) has been applied to all ties (biometric matches) in Figure 2 for clarity purposes. Tie types can still be determined by referring to Figure 1.

Figure 2: Identifying communities of victims/offenders within the primary cluster



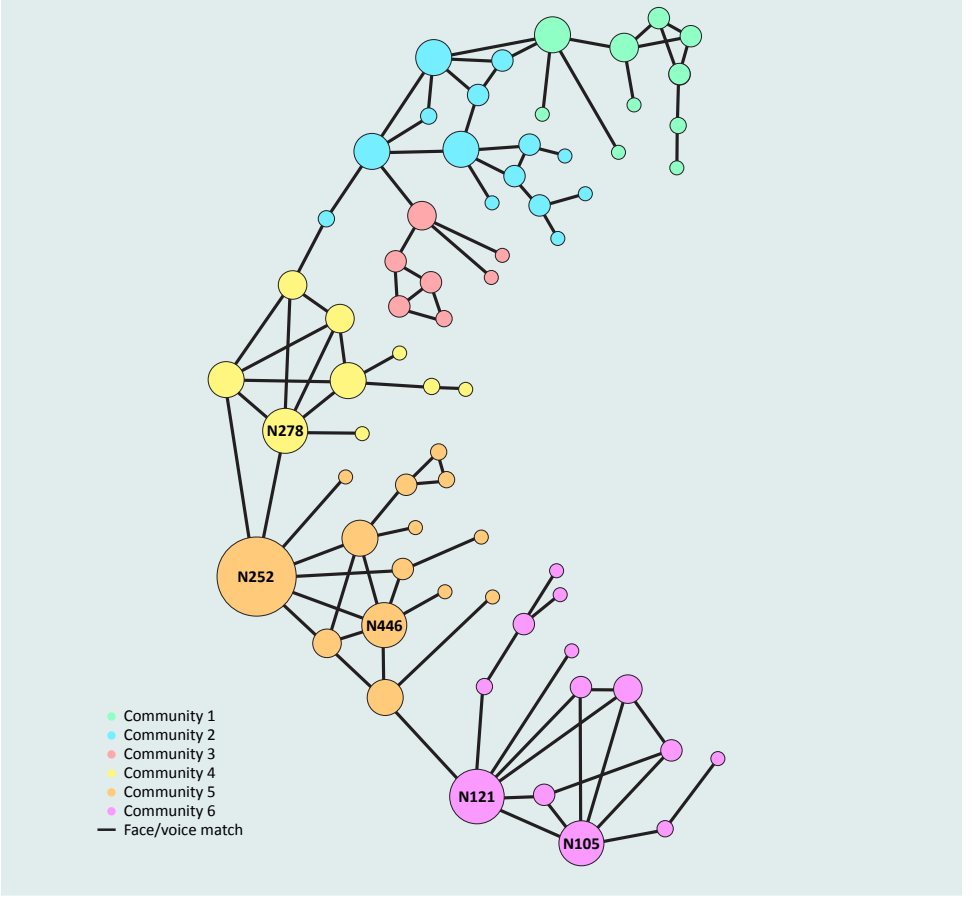
Identifying videos most central to the network

Beyond detecting communities, alternative network measures can be used to identify the most 'central' (ie highly connected) nodes within the network. This has the potential to provide investigators important insights about where to focus an investigation, whether within a community or within a particular cluster. In the current application, this means establishing which videos have the largest number of connections to other videos in the network. In practical terms, this could allow investigators to flag key videos that are likely to contain:

- a victim or offender who appears in many videos;
- the highest-quality biometric samples that match with other videos (ie videos matched using face and voice rather that only one biometric feature); or
- a number of different people from which matches can be drawn.

The most commonly used centrality metric is degree centrality, which is simply a sum of the number of ties (in this case, biometric matches) a node has with other nodes (Borgatti, Everett & Johnson 2018). This is illustrated in Figure 3, where the size of nodes is weighted in direct proportion to the number of direct matches they have with other nodes (the degree). That is, the larger the node, the greater the number of videos it matches. Visual inspection of the network makes clear that several nodes have greater importance than others. For example, nodes 252, 278, 446, 121 and 105 attract the most matches, relative to other nodes. See the *Appendix* for a full list of degree centrality scores for this network.

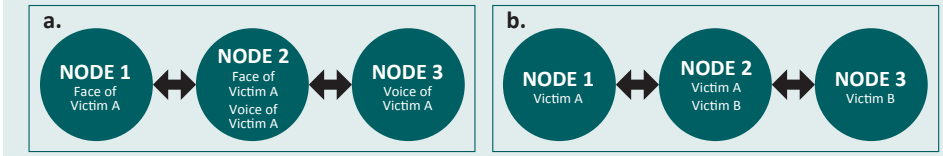
Figure 3: Degree centrality across the primary cluster



Identifying strategically-placed videos in the network

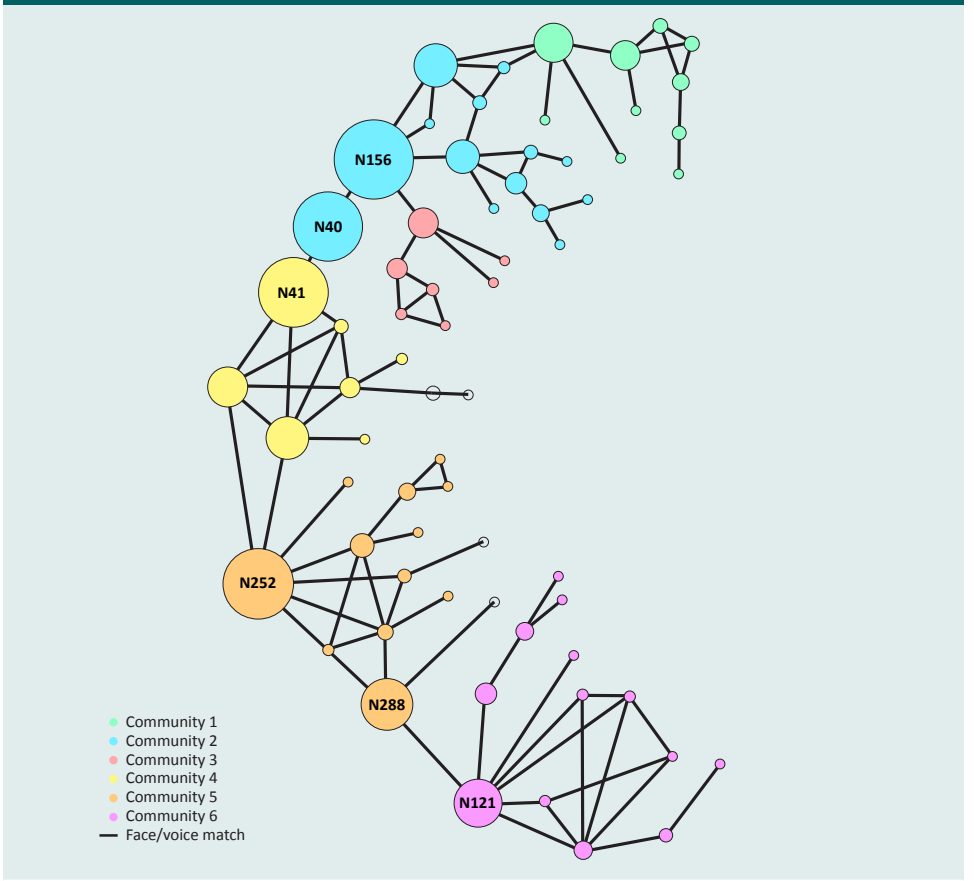
Beyond degree centrality, there are other measures of centrality that can effectively be used to focus investigations. One other commonly used centrality metric is betweenness centrality, which measures the extent to which any one node lies on the shortest path between all other pairs of nodes in the network. Betweenness has been used to identify strategically placed 'brokers' in networks (eg Morselli 2009). Determining the extent to which a video is strategically placed within a network (ie assumes a 'brokerage' function) may be particularly useful in investigatory contexts—permitting an investigator to pinpoint a specific video that creates a path between two otherwise disconnected videos. This may benefit an investigation in two ways. First, Figure 4a provides an example where a single video (Node 2) contains multiple biometric attributes of a single victim (Victim A) and thus brokers a connection between videos containing only one biometric attribute of that victim (Node 1 and Node 3). Second, Figure 4b depicts a situation where brokerage can be used to identify connections between discrete subjects contained within videos. For example, Node 2 (video containing Victims A and B) brokers a link between two otherwise disconnected nodes—Node 1 (a video containing Victim A) and Node 3 (a video containing Victim B).

Figure 4: Biometric match brokerage configurations



We assessed the strategic position of nodes by calculating betweenness centrality scores for every node in the network (for full results, see the *Appendix*). These scores are also depicted visually in the network map appearing at Figure 5, where node sizes are adjusted according to betweenness centrality (larger nodes have higher betweenness centrality scores). Here, the nodes intersecting communities are most prominent. These nodes—such as those numbered 40, 41, 156 and 252—unite various otherwise disconnected components. Identifying these videos may thus be of immense value to an investigation, as high betweenness scores suggest that these nodes may be the key linking videos that draw connections between previously unmatched victims or offenders contained in different sets of videos, as compared to degree centrality, which likely flags videos that contain individuals appearing in numerous other videos.

Figure 5: Betweenness centrality across the primary cluster



Limitations and directions for future research

Using biometric data extracted from CSA videos as linking attributes, SNA can aid investigators in identifying which videos to prioritise, without having to review and catalogue hundreds of different videos. We demonstrate how various measures can be used to take a macro view of a network and potentially parse out individuals via clusters, or to provide more granular insights by identifying distinct communities. In addition, measures of centrality can be used to identify the videos in a network that match most frequently with other videos (degree centrality), as well as those videos that link groups of videos together, possibly by virtue of unique characteristics being portrayed (betweenness centrality). In undertaking this analysis, however, we recognise that the results are based on some assumptions about the data, and that future research should seek to address these limitations. Three of these are discussed in turn.

First, we acknowledge the practical utility of SNA in assisting investigations relies on the veracity of the underpinning ties—in this case, the accuracy of the face and voice match data. The algorithms used by BANE (see Westlake et al. 2022 for additional details) were developed for other purposes and were not trained using CSAM, which limits their performance. This is a common problem experienced by researchers in this field and can be addressed through the creation of large, labelled datasets of CSAM (in partnership with law enforcement) for training and testing purposes.

Second, and relatedly, while care was taken to ensure that videos in the testing database contained CSA and were reflective of 'real-world' conditions, it was not possible to verify the face and voice matches returned by the software at the selected thresholds. As such, it was not possible to determine the accuracy of the network, according to the corresponding true/false match rates. Future research will need to incorporate labelled data with an established ground truth so that accuracy can be evaluated. Given the graphic nature of the content, and the legal implications of possessing CSAM, such activities will need to be completed in partnership with law enforcement (see Bright, Brewer & Morselli 2021 for further elaboration on how this can be accomplished).

Finally, this chapter presented a network derived from face and voice biometric match data. This can be problematic, as a proportion of CSA videos being distributed online contain neither a face nor a voice (as was the case in 85 videos contained in the current dataset). This suggests a need to extend the software's extraction and matching capabilities to include algorithms capturing additional biometrics such as age, gait, gender, hair colour and ethnicity (eg Macedo, Costa & dos Santos 2018; Moser, Rybnicek & Haslinger 2015; Sae-Bae et al. 2014; Yiallourou, Demetriou & Lanitis 2017), as well as objects (eg artwork, food packaging, newspapers and magazines), camera sensors (Bennabhaktula et al. 2020; Timmerman et al. 2021), and file encoding properties (Lyons & Epstein 2021, 2020). Such algorithms can be integrated into future iterations of BANE and may further enhance matching performance as well as the depth and breadth of networks derived.

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Appendix

Table A1: Full centrality results

Node	Degree centrality	Betweenness centrality
7	3	65.3
36	3	65.0
40	2	1080.0
41	4	1085.0
50	1	0.0
52	4	369.0
85	1	0.0
87	3	129.0
95	1	0.0
99	1	0.0
105	6	149.3
118	2	65.0
121	7	687.8
136	2	65.0
142	1	0.0
148	4	20.5
149	1	0.0
151	1	0.0
153	1	0.0
156	5	1265.7

Table A1: Full centrality results		
Node	**Degree centrality**	**Betweenness centrality**
170	3	128.0
208	1	0.0
219	3	32.0
221	2	0.0
226	5	528.0
238	1	0.0
242	2	189.0
252	8	1111.0
257	1	0.0
260	1	0.0
262	5	587.8
263	3	31.7
265	3	65.0
271	3	32.0
272	1	0.0
278	6	607.2
285	3	93.0
286	2	0.0
288	5	741.0
310	3	129.0
335	5	251.0
356	4	25.0
357	1	0.0
359	1	0.0
370	4	365.0
372	5	542.2
373	5	441.5
375	4	42.7
379	3	20.0
380	3	93.0
389	3	0.3
408	3	128.0
414	3	0.0
419	1	0.0
439	3	189.0

Table A1: Full centrality results		
Node	**Degree centrality**	**Betweenness centrality**
444	1	0.0
446	6	111.0
452	1	0.0
458	1	0.0
459	1	0.0
473	2	0.0
486	1	0.0
489	3	189.0
503	1	0.0
504	2	65.0
532	5	191.0
533	2	0.0

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16. How to implement online warnings to prevent the use of child sexual abuse material

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Introduction

The rapid expansion of the internet and related technologies has seen the availability of child sexual abuse material (CSAM) grow exponentially (Holt et al. 2020; WePROTECT Global Alliance 2021; Westlake 2020). The amount of CSAM online is described as 'overwhelming' (Europol 2020: 36). Legal definitions of CSAM vary globally but typically include images, videos and texts depicting or describing infants, children and young people in sexual poses through to depictions of extreme sexual assaults and rape (Westlake 2020). The increasing availability of CSAM online has seen an upwards trend in the frequency of online CSAM offending (Europol 2020)—a trend which intensified during the COVID-19 pandemic (Interpol 2020).

The availability of CSAM online means that many internet users come into contact with CSAM (Broadhurst 2019; Westlake 2020). Contact can occur via searches of indexed content on the surface web (Westlake 2020), including searches of ostensibly legal adult pornography sites (Morgan & Lambie 2019), and non-indexed but mainstream peer-to-peer (P2P) networks (Wolak, Liberatore & Levine 2014). Some internet users who encounter CSAM may report it, or they may simply ignore it (Internet Watch Foundation (IWF) 2013). However, a proportion of internet users who are exposed to CSAM will go on to deliberately view it, even if the initial exposure was accidental (Protect Children 2021). Exposure represents an important factor in CSAM offending onset (Wortley & Smallbone 2012). Various pathways to exposure exist, but three broad types of CSAM offenders have been identified. These are individuals whose offending is:

- consistent with a diagnosis of paedophilia;
- part of a hypersexual disorder, with CSAM consumption part of a broader range of behaviours; and/or
- the result of impulsive risk-taking behaviour (Seto & Ahmed 2014).

Accessibility of CSAM online

Search engines are pointed to as the 'most common method' of finding CSAM online (Steel 2015: 151). Recently, Google has undertaken significant work to ensure that CSAM is not indexed through their platform (Google 2020). Yet other search engines have less developed (or undeveloped) CSAM detection programs, and researchers conclude that 'if an individual can access and use a search engine with a modicum of skill, they can assuredly find [CSAM]' (Westlake, Bouchard & Girodat 2017: 291). Publicly accessible CSAM websites, or websites that contain hyperlinks to CSAM, are 'overt' and 'do little to hide their intended purpose' (Westlake, Bouchard & Girodat 2017: 289). Research (Morgan & Lambie 2019) also suggests that CSAM is accessible via searches of popular legal adult pornography websites. Further, studies examining keyword searches of P2P networks show that these networks are frequently used to search for and share CSAM (Bissias et al. 2016; Interpol 2020). And, together with P2P networks, the darknet (eg Tor) is a popular means of accessing and sharing CSAM (Europol 2022).

Challenges in tackling CSAM online

In response to the growing problem, the capacity of law enforcement agencies (LEAs) to detect, investigate and prosecute CSAM offenders has become increasingly sophisticated, with attention rightly focusing on the 'most immediate and serious threats' (Holt et al. 2020: 6). Human and resourcing constraints limit the capacity of LEAs to respond to CSAM offending (Holt et al. 2020; see also Broadhurst 2019; Carr 2017; Westlake, Bouchard & Girodat 2017). These constraints have only tightened since the COVID-19 pandemic (Europol 2020; Interpol 2020). Recognition of this, together with an acknowledgement that CSAM offending is not a problem that LEAs can 'arrest their way out of' (Quayle & Koukopoulos 2019: 348), has been a catalyst for researchers, the technology industry and LEAs to explore other responses to tackle CSAM offending. An area attracting particular interest is the potential for early interventions to prevent an escalation from viewing to more serious forms of CSAM offending (WePROTECT Global Alliance 2019).

In addition, industry plays a part in the detection and reporting of CSAM, as electronic communication service providers in the United States are required to report instances of detected CSAM offending to the CyberTipline of the National Center for Missing and Exploited Children under 18 US Code § 2258A. In 2021, 29.1 million reports (of a total 29.3 million) were made under this Code (National Center for Missing and Exploited Children 2022). While 230 service providers submit reports to the CyberTipline, the vast majority of reports were made by Facebook (22,118,952 reports) followed by Instagram, WhatsApp and Google, with Apple making only 160 reports. In August 2021 Apple announced that it would scan photos in its iCloud Photos for CSAM (Schneider 2021a). While providers already scan photos shared on platforms, the Apple proposal would allow the scanning of photos on phones, raising concerns about privacy (Green & Stamos 2021). Following public debate, the proposal was apparently dropped (Schneider 2021b).

Value of automated responses to CSAM online

Against this background, researchers have stressed the value of automated methods of tackling CSAM online, informed by theoretical models of crime prevention (Prichard et al. 2019; Quayle & Koukopoulos 2019; Smallbone & Wortley 2017). Automated methods of identifying CSAM and responding to offending have been developed and implemented by the technology industry in recent years, often in collaboration with LEAs and/or non-government organisations (NGOs). For example, the use of hashing technology has reduced the need for visual inspection to identify previously identified CSAM images by automating identification of duplicate copies of a CSAM image based on a library or database of hashes (eg Microsoft's PhotoDNA technology; Microsoft 2022). Other examples of automated responses include URL blocking (Carr 2017) and filtering software (Quayle 2013).

Warning messages as a prevention strategy

Automated online warning messages are a form of secondary, offender-focused prevention, as they target an at-risk group to 'prevent an offence before it occurs' (Wortley & Smallbone 2017). Currently, this is attempted through deterrence content, which alerts users to the illegality of CSAM, and referral messages, which refer users to therapeutic services that can address their attraction to CSAM (Prichard et al. 2022a). A warning message is displayed to an individual within the online environment in response to a user's conduct at the very time the user is contemplating engaging in illegality.

Warning messages have typically been used to respond to two types of user conduct:

- when an internet user enters a CSAM keyword as a search query into a search engine (eg Google 2020); and
- when an internet user attempts to access a URL which has been removed due to CSAM content (Bailey, Squire & Thornhill 2018).

The first type of warning message typically appears at the top of the list of search results (see Quayle & Koukopoulos 2019), while the second type of warning message appears as an HTML 'stop page' (Wortley & Smallbone 2012) or 'splash page' (see Bailey, Squire & Thonhill 2018). Both LEAs (eg the Norwegian police) and search engine operators (eg Google) have used messages that warn internet users of the potential criminality of their behaviour (Smallbone & Wortley 2017; Wortley & Smallbone 2012). Search engine operators along with NGOs (eg the Lucy Faithfull Foundation) have also used messages to encourage users to report CSAM (Google 2020; Steel 2015) and/or seek help (Bailey, Squire & Thornhill 2018).

Additionally, some pornography companies have recognised the role they can play in dissuading users from attempting to access illegal content. Notably, MindGeek, which operates PornHub, uses warning messages and a chatbot to reduce the likelihood that users access the results of search terms that might lead to CSAM (see Prichard et al. 2022a).

The display of an automated warning message is the result of a manipulation of the content sent by the web server in response to a particular user action. Webpages displayed in a web browser require a programming language, such as JavaScript, to create a dynamic webpage interface. By manipulating the programming language behind the webpage, a warning can be automatically displayed when the user performs a particular action. The warning message can appear as either an outbound or inbound display. An outbound display occurs when a warning is presented to the user when they send a request for content over the internet (ie when they click 'search')—before the request leaves the user's device. An inbound display occurs when a warning is presented on the request's return journey to the user but before (or instead of) the search results being given to the user.

The action that triggers a warning message can take a number of forms, as programming languages provide numerous mechanisms—for example, by detecting when a button is clicked, when text is entered into a field, or when a browser window is closed. There are also a number of ways to present a warning message to the user, including as a pop-up, an alert, or as an HTML page (eg a stop or splash page). The warning message could be small and designed to automatically recede (like reminders to update software) or it could fill the entire screen and require a user action to make it disappear. In addition, the content of a warning message could include text, static images, moving images (eg GIFs), audio or video.

Keyword searches are commonly the trigger action for displaying a warning message to a user. Several methods for identifying and monitoring keyword searches for CSAM exist (Belbeze et al. 2009). Research shows that when keyword search terms are regularly monitored and updated they are a reliable indicator of CSAM content (Steel 2015; Westlake, Bouchard & Frank 2017). A number of organisations maintain keyword lists, including the IWF, which updates its *Keyword List* monthly (IWF 2020). In addition, lists of URLs identified as containing CSAM are maintained by a number of organisations including LEAs (eg Interpol) and NGOs such as the IWF (IWF 2020). URLs and filenames may also contain metadata indicative of the content, which may be indexed on large-scale file hashing databases (effectively a library of known CSAM images) maintained by law enforcement and other agencies (Sanchez et al. 2019).

A number of studies suggest that warning messages can prevent undesirable behaviour offline (Hammond 2011) and online (Maimon et al. 2014). Although research into the efficacy of warning messages to deter online CSAM offending is scarce (Prichard et al. 2019; Wortley & Smallbone 2012), recent empirical studies have found that warning messages dissuaded internet users from viewing 'barely legal' pornography online (Prichard et al. 2021) and sharing potentially illegal sexual images (Prichard et al. 2022b). Relevant to the focus of this chapter, the practicalities of implementing online CSAM warnings has received little attention in the academic literature.

Implementing online warning messages

In this section we analyse the types of actions a wide range of organisations across the technology, government and private sectors could take to implement warning messages to prevent CSAM use. By way of identifying the range of actors involved, consider the following scenario describing an individual searching for CSAM using keyword searches before their behaviour progresses to the use of more complex technology including virtual private networks (VPNs) and the darknet (eg Tor):

> An individual (the user) activates their device—for instance, a computer or a smartphone. The user opens a web browser through their operating system. Their device connects to the internet via a broadband modem using an internet service provider (ISP). At this point, the user navigates to a search engine website, P2P website or other website with a search option (eg a pornography website). Next, the user enters a search term associated with CSAM. If the user enters the term into a search engine, the search engine will process the query and provide a set of resulting links to webpages or uniform resource locators (URLs). The URLs will point to the particular internet web server that hosts the content most closely matching the query. The user can then click on a link which will take them to the particular website (URL) where they can view CSAM. Similarly, if the user accessed a P2P website or other searchable website, the query will be processed and a set of results will be displayed to the user. Again, they can click on the material they want to view. For the purpose of this case study, we assume that, at a certain point, the user obscures their identity by downloading and using a VPN and/or Tor software.

In this scenario, the user may hold the ISP account, or they may be using a shared network with the account held by another private individual (eg the user is using a shared network as part of a family or share-house arrangement) or a public/private institution. In what follows, we identify the actors involved in the above case study and describe the actions they may be able to take to implement warning messages.

Account holders

An account holder is the individual or entity that pays the ISP for access to the internet. This can include a private individual or an institutional, corporate or other business account holder that allows others to use that account. An account holder may require identity verification before their network is accessible to others. For example, a corporation may require users to register to access the internet, or an account holder may require registration but not identity verification, as in the case of a food outlet that provides free public wi-fi to customers. Alternatively, access may be provided with neither registration nor identity verification. An account holder could take a number of actions to implement automated warning messages, including installing security software and employing a link-checker or proxy server.

- **Security software**—End-point security has the potential to be programmed to display a warning message in response to a user typing a keyword into a web browser or attempting to access a banned URL. Most common forms of security software work by monitoring all data on a user's computer. There are a variety of types of security software. For example, 'Net Nanny' type software monitors what users type into web browsers and blocks inappropriate results. This type of security software could be extended to not only block access but also display a warning message in response to the user action described in the above scenario.

- **Link-checker service**—A link-checker service, which provides redirection, is a cloud-based service that checks links that a user may try to access—for example, a link contained in an email. By employing a link-checker service, an account holder uses a third party to check all links that appear in its users' emails and, if the link is defined as malicious, generates a warning. This type of service could be extended to check the links generated when a user conducts a CSAM keyword search or attempts to access a banned URL.
- **Proxy server**—A proxy server stands between the user's computer and the rest of the internet. A proxy server can monitor outbound traffic from a user's computer on a network and, if a user searches for a keyword or attempts to access a banned URL, it could be programmed to deliver a warning message to the user and/or the account holder.

Operating system developers and vendors

Operating system (OS) developers and vendors provide the basic platform on which applications run, including web browsers. The three most common operating system are Microsoft Windows, macOS and Linux. The operating system manages and coordinates the computer's hardware (ie the computer's data storage) and the software (ie applications including web browsers such as Google Chrome, Safari and Firefox). An OS has the capacity to take various actions. For example, because an OS has access to all memory that is used by the browser, an OS could be programmed to detect when a user types a CSAM search term into a browser and generate a warning, displayed in either a separate window or as a pop-up window within the browser itself.

Browser developers and vendors

Browser developers and vendors create the software, or interface, between a user's computer and the internet. For an existing computer program, a browser developer could develop a 'plug-in'—a customised software component—to monitor the terms that a user types into a search engine and generate a warning message in response to the above scenario. For example, a range of plug-ins are currently available to protect users, including AdBlock, which blocks all internet ads. A vendor could also make such a plug-in a native feature of their browsers, thereby making it available to anyone who uses that browser.

Search engine operators

Internet search engines—including Google, Bing and Baidu, to name but a few—are software systems through which a user can systematically search the internet using a text-based query (ie a keyword). To display 'relevant' advertising, many search engines maintain a full set of data about a user's search history (Price 2021). By matching search terms with a list of suspicious or known CSAM-related terms, a search engine can either display a warning message to a user when they search for a particular keyword or provide a redirection to a third-party link-checking service, as described above, for the links returned as part of the search results. This latter option may be particularly relevant for search engine operators that do not have the resources of the larger companies like Google. The feasibility of search engine operators displaying warnings has been demonstrated by Google, which presents deterrence ads when an individual searches for CSAM-related terms in a number of countries (Google 2020). Another option is that, if a URL page in the search results is known to contain CSAM, a warning message could be displayed if the user clicks on the link, in addition to the URL being blocked.

Internet service providers

Commercial internet service providers, such as Telstra, Vodafone, Optus and iiNet (among others), sell internet connections and services to private individuals and organisations, including institutions and corporations. The customers of ISPs are the account holders. ISPs play the crucial role of connecting a user, either as the account holder or via an account holder's account, to the internet. ISPs have the capacity to monitor all inbound and outbound internet traffic between the user and internet servers using the internet protocol (IP). ISPs also have the capacity to block URLs, as further discussed below, and theoretically to monitor search terms being sent by users to search engines.

Virtual private network vendors

VPN services enable a user to send and receive data within an encrypted private network using a shared or public internet network. In effect, a VPN creates a secure tunnel between a user and the local network they want to access (eg a workplace network). Vendors of VPNs fall into two types: those providing secure VPN services based in Australia and those operating beyond Australia's regulatory environment. While options for implementing warning messages are more limited, a warning message could, in theory, be displayed to a user if they tried to initiate a connection to a VPN. However, only ISPs in some jurisdictions maintain a list of IP address ranges belonging to VPNs, which may make identification difficult.

Domain name service providers

Domain name service (DNS) providers translate a readable domain address into an IP address—that is, a numerical identifier. When a URL is typed or web page bookmark is clicked, the computer sends a DNS query to look up the IP address (ie the numerical identifier of the server it is attempting to contact). This look-up matches the human readable address, such as www.google.com, to an IP address like 142.250.70.142. The computer uses the latter to communicate with that server. DNS providers are in a position to block access to CSAM material by not responding to DNS queries to websites that have been previously identified as containing CSAM. DNS providers are also able to redirect the traffic to a different location, and this provides an opportunity for warning messages to be displayed or for users to be referred to support services. As such, DNS providers are well placed to remove access to websites that appear on a deny list, or fail a check with a link-checking service.

Tor software

Tor software, named after the original software project, The Onion Router, enables anonymous communication through layers of encryption (like the layers of an onion), hiding the source and destination addresses from observers such as ISPs or government entities. The Tor network requires the use of a modified internet browser (of which there are several) which supports its encryption protocols to enable access to what is termed the darknet. These websites are not otherwise accessible. There are essentially two parts to Tor: the web browser and the darknet itself. It would be challenging to insert messages directly through the Tor network, as the content is encrypted multiple times. However, as the Tor client runs on an operating system, it may be feasible to deliver a warning message to a user via the operating system notification window—that is, to display the warning message at the point where traffic enters and exits the Tor network.

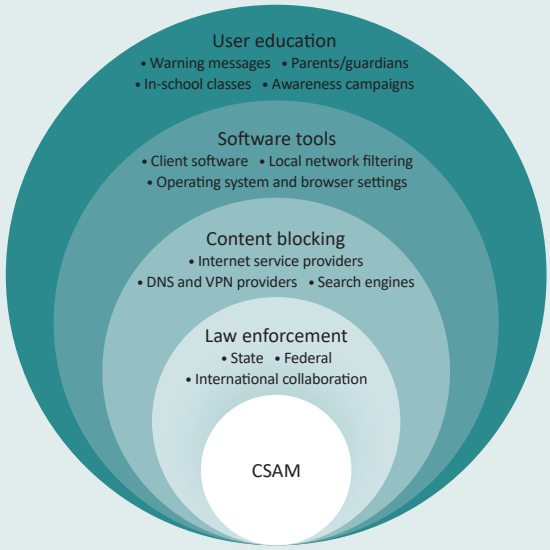
Third parties

Third parties include government departments, statutory bodies (eg Office of the eSafety Commissioner), agencies (eg LEAs), NGOs, and for-profit companies who operate in the child protection sector. The action of third parties with regard to warnings has largely been limited to collaborative action—for example, between LEAs and ISPs (Williams 2005) or between ISPs and NGOs (eg Google and INHOPE). However, while the capacity of third parties to implement warnings unilaterally may be limited, some third parties may be able to develop or adapt consumer software packages. One example would be the adaption of filtering software to include warnings in response to specific user actions (eg keyword searches), while another is the development of a downloadable plug-in that could operate, effectively, as an in-browser version of filtering software. Admittedly, both these options are premised on voluntary adoption by the relevant user, whether a private individual or an institutional, corporate or other business account holder. Moreover, indirectly, governments can enact laws requiring key actors in the technology industry to implement warnings. Indeed, as discussed below, a key example from the Australian context is the legislative requirement that ISPs block Australian internet users' access to URLs that contain some types of CSAM (Conroy 2012).

Discussion

From a technical perspective, the best approach to implement an automated warning message system is likely to be one based on the cooperation of multiple actors using a combination of actions—that is, an approach to cybersecurity based on the theory of defence in depth (Coole, Corkill & Woodward 2012), as illustrated in Figure 1. This requires the cooperation of multiple actors within the technology industry, and the implementation of measures by account holders. The premise of the approach is that, if a single layer of defence fails, the other layers of defence can still provide protection. New methods of circumventing protective measures will always be created, so having multiple measures in place increases the effectiveness and resiliency of the system.

Figure 1: An illustration of the concept of defence in depth



Note: Each layer works towards the same goal.
If one layer is ineffective, the other layers still provide defence

Yet even unilateral actions by individual actors may offer a partial solution. As described above, an account holder could take a number of actions to effectively implement warning messages. At present, the key limiting factor is the lack of relevant consumer products available for private individual account holders. Private individuals tend not to have the level of expertise needed to customise software. As such, actions by account holders are likely to be restricted mostly to the larger institutional, corporate or other business account holders who have the resources to purchase such products (eg NetClean ProActive: https://www.netclean.com/proactive/) or who can acquire the expertise necessary to customise or develop new products. For example, with regard to the use of proxy servers, an institution or corporation could require all network access within the organisation to be undertaken through a proxy server and, as described above, the proxy server could monitor all outbound traffic from computers on the network, displaying a warning message if a user searched for a CSAM keyword or attempted to access a banned URL. Such actions may, however, require an impetus for action, such as a requirement for warnings to be explicitly included within an organisation's cybersecurity policy.

The actors who can perhaps take the most obvious actions to implement warning messages are in the technology industry. Resource and expertise constraints may limit the capacity of some actors within this industry to take action (Thorn 2020). For others, such constraints are less likely to be an issue, in particular for those who develop and/or run the infrastructure where CSAM may be present (Holt et al. 2020). Indeed, in March 2020, several of the largest actors in the technology industry (including Microsoft, Yahoo! and Vodafone) committed to pursue the prevention of CSAM offending through voluntary principles developed by the WePROTECT Global Alliance (2020).

More generally, however, the technology industry has been criticised for being less than enthusiastic about 'proactively policing' CSAM online (Holt 2018). For example, while the vital role that ISPs can play in this context is well recognised (Holt et al. 2020), with few exceptions, ISPs have been condemned for having 'sat mostly at the sidelines' (Westlake 2020: 1236; World Health Organization 2020). One exception is where there is a legislative requirement to take action. Since 2010, Australia's largest ISPs have been required under the Commonwealth *Telecommunications Act 1997* s 313(1), to block URLs on Interpol's 'worst of' list—that is, URLs containing the most severe forms of CSAM (Conroy 2012). If an Australian internet user attempts to access a blocked URL, a stop page is displayed which provides reasons for the block and contact details for follow-up (AFP and telecommunications targeting online crime, *About the House*, February 2015: 11. http://classic.austlii.edu.au/au/journals/AboutHouseMag/2015/8.html). We note that the Commonwealth *Telecommunications and Other Legislation Amendment (Assistance and Access) Act 2018* amended the *Telecommunications Act 1997* to authorise communication providers to give voluntary technical assistance when requested by law enforcement and that this could extend to the adoption of warning messages.

As noted above, it would also be technically possible for warning messages to be implemented in response to the use of VPNs and Tor software. A range of strategies have been proposed on the Tor network to counter CSAM, with the potential to uncover at least partial identity information (Abbott et al. 2007; Loesing, Murdoch & Dingledine 2010). Even so, tackling nefarious activities on the Tor network presents an ongoing challenge for law enforcement and government.

Third parties already play a vital role in maintaining the data necessary for a warning to be delivered (eg keyword and URL lists). Moreover, as mentioned above, a number of third parties including NGOs and LEAs have collaborated with the technology industry to develop and implement warning messages. There are also examples of key actors within the technology industry providing financial support to third parties in this area. For example, Google offers paid advertising credits to NGOs and charities who run reporting hotlines for CSAM (Google 2020). Going further, some third parties may be in a position to commission the development of a range of services for individual and other users, including security software, link-checker services and proxy servers to implement warning messages. A potentially simpler option would be for a third party to commission the development of a plug-in for web browsers, which could be programmed to generate a warning message when any user searches for a CSAM-related term or attempts to access a banned URL using that browser.

Conclusion

In this chapter, we have provided a technical overview of the actions that could be taken by various actors to display a warning message to a user when they search for CSAM online. In doing so, we have shown that, from a technical perspective at least, there is considerable opportunity for a range of actors across the technology, government and private sectors to implement warning messages. The context for this overview is that the availability and accessibility of CSAM online means that the average internet user may come into contact with CSAM, and even inadvertent exposure may lead to further offending. Moreover, the capacity of LEAs to respond to every instance of CSAM offending—particularly viewing or accessing behaviours—is necessarily limited. In providing this technical overview, we acknowledge that we have not presented a complete picture of the issues associated with implementing warning messages—in particular, questions about the efficacy, scalability and reach of warning messages, and the cost of implementing them, fall outside the scope of this study (but see Prichard et al. 2021). Further research examining these factors is needed.

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17. The overlap between child sexual abuse live streaming, contact abuse and other forms of child exploitation

Coen Teunissen and Sarah Napier

Warning: this chapter contains graphic descriptions of child sexual abuse.

Background

Child sexual abuse material (CSAM) refers to images and videos that depict the sexual abuse of a child. Popular video call platforms such as Facebook Messenger and Skype have been used by Australian men to view the live streamed sexual abuse of children in vulnerable countries (Napier, Teunissen & Boxall 2021a). Child sexual abuse (CSA) live streaming differs from CSAM offending and contact sexual abuse in that the offender is in a different location to the victim and requests specific acts to be performed by the child or perpetrated against the child by another individual facilitating the abuse (WeProtect Global Alliance (WPGA) 2021).

Law enforcement and non-government organisations have indicated that CSA live streaming is increasing (Interpol 2020; Netclean 2019; WPGA 2021) and is often facilitated by third-party traffickers (WPGA 2021). Offenders will often pay small sums of money (usually under A$100, and as low as A$13) to either the victim or facilitator for CSA live streaming (Brown, Napier & Smith 2020; Cubitt, Napier & Brown 2021; Napier, Teunissen & Boxall 2021a, 2021b). While these facilitators can be part of organised criminal groups, research has found that they are commonly adult female relatives of the victims, acting alone and seeking money for basic living necessities (International Justice Mission 2020a; Napier, Teunissen & Boxall 2021b). While many countries are at high risk of CSA live streaming (Netclean 2019), South East Asia, in particular the Philippines, has emerged as an epicentre for this type of exploitation, particularly when being sourced by Australian offenders (AUSTRAC 2022).

According to law enforcement agencies internationally, offenders are also recording live streams to 'sextort' victims and to create and disseminate CSAM online (Australian Federal Police (AFP) 2021; Europol 2020). Europol and Interpol suggest that offenders use online child abuse and exploitation as an alternative to contact sexual offending when they are unable to meet victims face-to-face, which was exemplified during the COVID-19 pandemic (Europol 2021; Interpol 2020). However, at the time of writing, only one empirical study could be located that examines the overlap between CSA live streaming and contact sexual offending (Cubitt, Napier & Brown 2022). Further, little information was available on how CSA live streaming interacts with CSAM offending.

CSA live streaming and contact sexual offending

Research, including meta-analyses and rapid evidence assessments, has found that a small minority of detected online sexual offenders will subsequently be detected for a contact sexual offence (1%–8%; Dowling et al. 2021; Seto & Eke 2015; Seto, Hanson & Babchishin 2011). However, this research did not focus on CSA live streaming offenders, and very little is known about whether individuals who view CSA live streaming also commit contact CSA offences in person. A study of 256 Australian CSA live streaming offenders found that only seven percent had a prior sexual offence against a child in their criminal history (Brown, Napier & Smith 2020). Further analysis identified a subgroup of CSA live streaming offenders who engaged in contact sexual offending and had characteristics unique to those who did not (Cubitt, Napier & Brown 2022). Important to note, however, is that criminal justice figures likely under-represent actual CSA offending. For example, Schuler et al. (2021) surveyed 4,161 respondents who accessed a web-based intervention app for individuals with a sexual interest in children and completed a 'self-assessment'. They found that 41.5 percent self-reported ever committing CSA, while only 9.4 percent had been prosecuted or sentenced. Further, given that CSA live streaming offenders target victims located in vulnerable countries for online abuse (Napier, Teunissen & Boxall 2021b), they may also target victims in vulnerable countries for contact CSA offending to avoid being detected. However, little research is available to verify this.

Travelling abroad to sexually abuse children is an ongoing problem, particularly in countries where children are vulnerable due to poverty, corruption, and limited community knowledge of offending (AUSTRAC 2022). A survey of 8,718 German men in the community found that 1.5 percent (*n*=132) admitted to sexually abusing a child in the past (Koops et al. 2017). Within this group, over a quarter (27%, *n*=36) reported travelling to a foreign country to pay a child for contact CSA. Intelligence-based information from law enforcement agencies suggests that individuals who view CSA live streaming may subsequently travel to sexually abuse the child/children they viewed virtually in person, or other children (AUSTRAC 2022).

International Justice Mission (2020a) released a report on the characteristics of online CSA offenders based on 44 case referrals of online sexual exploitation of children and young people (including CSA live streaming) where offender information was available. They found that Australia was the third most common nationality (18%) among these offenders, and that 39 percent of cases involved online sexual exploitation 'customers' (offenders) who were known to have travelled to the Philippines at some point in their lives. This suggests that some offenders who engage in CSA live streaming or other forms of online sexual exploitation of victims in vulnerable countries may be prone to visiting these countries.

CSA live streaming and CSAM offending

Very little is known about the role played by the viewing or sharing of CSAM in CSA live streaming offending. For example, individuals who view children being abused live online may also view abusive images and videos of children online, yet little information is available on whether this is the case or whether one behaviour precipitates or substitutes for the other. The Internet Watch Foundation (2018) analysed over 2,000 video captures from CSA live streaming sessions, which demonstrates that the live streams are sometimes recorded and distributed online. Insoll, Ovaska and Vaaranen-Valkonen (2021) found that 45 percent of 5,171 CSAM offenders surveyed anonymously on the darknet said they had viewed CSA live streaming.

Research is required to explore how CSA live streaming is intertwined with CSAM offending and contact CSA offending. It is important to gain insight into whether individuals who pay to watch children being abused live online are at risk of travelling to abuse children in vulnerable countries, and whether they also consume CSAM in the form of images and videos. Knowing this will assist in identifying important intervention points and indicators for this offending, to disrupt escalation.

This chapter forms part of a series of studies (see Napier, Teunissen & Boxall 2021a, 2021b) examining the chat logs of Australian CSA live streaming offenders to better understand the nature of this crime type. This study investigated the links between CSA live streaming and other forms of CSA perpetrated by the offenders, including CSAM offending and contact sexual offending against children. The study aimed to answer three research questions:

- Do CSA live streaming offenders attempt to travel to offend against children face-to-face in vulnerable countries and what are the circumstances surrounding these attempts?
- Do offenders form relationships with victims and facilitators online and what part does this play in the offending?
- What part does engagement with CSAM play in CSA live streaming offending?

Methodology

Sample

This study was approved by the Australian Institute of Criminology (AIC) Human Research Ethics Committee in 2020 as part of a series of studies. The AFP provided the AIC with chat logs from cases of seven Australian men aged 42 to 72 years (median=58 years) who had been investigated for attempting to view, pay for and often direct CSA live streaming of children overseas (predominantly in the Philippines) between March 2012 and April 2019. This was a purposive sample and was limited to cases that the AFP was currently or had finished investigating (see Napier, Teunissen & Boxall 2021a for more detail).

Analysis and key measures

Grounded theory and protocols (Charmaz & Belgrave 2012; Glaser 1978) were implemented due to the exploratory nature of this study. The themes identified were primarily led by the data rather than a prescribed set of pre-existing coding frameworks. Key information was extracted from the chat logs—for example, when offenders discussed intentions to travel to offend against victims, or when they negotiated with facilitators/victims over obtaining CSAM. For each case, discussion between an offender and victim or offender and facilitator about travel was coded as not present (0) or present (1). For example, an offender explicitly discussing travel plans including sharing flight details with victims or facilitators was coded as travel to offend=1, and when an offender did not mention travelling to offend in any capacity, this was coded as travel to offend=0. Attempts to access CSAM (images or videos of victims) were also coded as not present (0) or present (1).

Travel to offend attempts were defined as an expressed desire or intent either to travel to another location to sexually abuse a child, or to arrange for the victim to travel to the offender's location for sexual abuse. This included:

- the offender requesting of a victim or facilitator to meet a victim in person to have sexual contact with them, or agreeing to such a request, regardless of whether the meeting took place;
- the facilitator or victim agreeing to arrange in-person contact between offender and victim for sexual contact, regardless of whether the meeting took place;
- the offender booking travel (eg flights for himself or the victim) and/or successfully travelling to meet the victim in person with an expressed intent to have sexual contact with them, regardless of whether the sexual contact took place.

Firstly, the data were qualitatively analysed in NVivo 10 (Lumivero nd) by reading the data line-by-line and applying basic codes. Secondly, these data were analysed in greater detail to identify additional subcategories and themes. Finally, additional analysis and coding were performed to identify relationships between existing codes and to link them with theory (Thornberg & Charmaz 2013; Urquhart 2012). The authors discussed findings and agreed on the coding framework at each stage of analysis. Quantitative information was stored and analysed in Microsoft Excel and Stata MP14.

Key terms are provided in Table 1.

Table 1: Key terminology used in the current study

Victim	Child or young person (below the age of 18) who was abused or referenced/involved in negotiations for CSA live streaming. This would occur either as a result of the victim conversing directly with the offender or being 'offered' to the offender by a facilitator.
Chat log	Online discussions between an offender and a facilitator and/or victim.
Child sexual abuse material (CSAM)	Photos or videos of children (under 18) being sexually abused/exploited.
CSA live streaming offence	An attempt by an offender, either successful or unsuccessful, to watch a child being sexually abused via a live stream video platform.
Travel to offend	An expressed desire or intent either to travel to another location to sexually abuse a child, or to arrange for the victim to travel to the offender's location for sexual abuse.
Facilitator (also known as a trafficker)	A person who organises and coordinates the abuse of a child over live stream, and often collects the money from the offender.
Offender	An individual who attempts to view CSA live streaming.

Limitations

It is important to note that, while some attempts to travel to offend were clear and involved offenders catching flights and arranging accommodation, others likely did not evolve past discussion. We could not determine from the data whether some discussions of travel were motivated by fantasy, such as has been highlighted in research into the online sexual solicitation of children (Broome, Izura & Lorenzo-Dus 2018). Nevertheless, all discussions in the chat logs about travelling to offend were relevant to the research questions as they illustrate offenders' desires and thought processes relating to contact sexual offending and the willingness of facilitators and victims to grant in-person access to victims for sexual abuse.

It should be noted that the current study was based on a small sample of CSA live streaming offenders who may be at the severe end of the offending spectrum, which may be why they were detected by police. Therefore, observations about the number of CSA live streaming offenders who attempted to travel to offend against children in person or who engaged with CSAM cannot be applied to the general population of these offenders. Further, the sample was based on chat logs that were available to police. It is likely that many CSA live streaming offenders delete their chat logs to avoid detection, and the study could not capture those individuals. Despite these limitations, the study is valuable given the dearth of research into the characteristics of CSA live streaming offending and in particular its co-occurrence with other forms of child abuse and exploitation. Further, chat logs provide genuine insight into offending behaviour, given the individuals are not aware they are being observed, whereas survey research can suffer from biases (McGrath, Cann & Konopasky 1998; Tan & Grace 2008).

Results

Offenders paid to watch CSA live streaming involving 74 victims, predominantly in the Philippines; as outlined in Napier, Teunissen and Boxall (2021a), two offenders offended against the majority (*n*=44) of these victims. See Napier, Teunissen and Boxall (2021a, 2021b) for an in-depth overview of the characteristics of victims, offenders, facilitators and offences relating to the present sample, including how offenders accessed victims for CSA live streaming.

Travelling to offend

The study investigated whether CSA live streaming offenders attempted to travel to sexually offend against child victims in person. Four of the seven offenders attempted to travel to offend; one of these also attempted to arrange for a victim to travel to Australia. Available information indicates that these four offenders attempted to travel to offend against almost a third of their 62 victims (*n*=20, 32%). Travelling to offend against victims was discussed with five (29%) facilitators during online communications (Table 2).

Table 2 displays the variation between offenders in attempts to travel to offend. For example, in Case 1, the offender offended against 22 victims over live stream, and discussed travelling to offend with seven of these victims as well as one facilitator. The offender in Case 2 also offended against 22 victims (where relevant information was available) and discussed travelling to offend with two of his victims but no facilitators. Conversely, the offender in Case 7 discussed travelling to offend with most of his CSA live streaming victims (10/14) and all four facilitators. The offender in Case 4 discussed travelling to offend with one of his four victims.

Table 2: Victims and facilitators approached about travelling to offend (*n*)

Case	CSA live streaming victims	Victims with whom travelling to offend was discussed	Facilitators involved in CSA live streaming offences	Facilitators with whom travelling to offend was discussed
1	22	7	2	1
2	22	2	8	0
3[a]	4	0	1	0
4	4	1	3	0
5[a]	6	0	1	0
6[a]	2	0	1	0
7	14	10	4	4
Total	74 (62[b])	20	20 (17[c])	5

a: The offenders in Cases 3, 5 and 6 did not appear to discuss traveling to offend with any of their victims (*n*=12)

b: The four offenders who attempted to travel to offend committed CSA live streaming offences against a total of 62 victims, although did not discuss travelling to offend with most of them

c: The four offenders who attempted to travel to offend engaged with a total of 17 facilitators, although did not discuss travelling to offend with most of them

Source: AIC CSA Live streaming dataset [computer file]

Sequence of CSA live streaming and attempts to travel

Of the four offenders who attempted to travel to offend, three (Cases 1, 2 & 7) made these attempts after viewing their victims in CSA live streaming sessions. In the fourth case, it was unclear whether attempts to travel to offend occurred before or after CSA live streaming.

Table 3 displays an excerpt of the 18-month-long conversation between an offender and victim. After viewing the victim in CSA live streaming sessions and in videos and images sent by the victim, the offender purchased flights to the Philippines and met the victim in person. However, it is not clear whether sexual abuse occurred, as the offender complained in a later message: 'why are you always so hard on me for money, but not let me touch you when I was there, a good wife would be comfortable naked in the arms of her husband'. Please note that these chat logs are presented verbatim and are often graphic in nature.

Table 3: Case study of a 49-year-old offender discussing travelling to offend against a 16-year-old victim (Case 2)

Victim:	…while ur not here yet we just use a cam to cam ok?
Offender:	can I see you pls
Victim:	no cam here
Offender:	:'(…I miss your body
	I thought after you got money, I would see your sexy bits <3
	Who i will sex with when I'm there
	You, [name] and [name] sister, but not your sister?
	I am scared to meet you, I still dont know much about you, /i'd like to talk to your family
	I'm spending 106,000 peso to come and see you… show me how much you love me…
	you only going online to ask for money is heart breaking…you dont care enough about ME. :'(
	want to see more of you <3
Victim:	Hi my love i love you i miss you so much
Offender:	missing my love too, loving your little video's so much too <3
The conversation continues and the offender shares his flight details and arrival time.	

Note: Some messages between the victim and offender were removed for brevity. Message content is presented verbatim

Source: AIC CSA Live streaming dataset [computer file]

Similarly, after viewing children in a CSA live streaming session, the offender in Case 7 continued to communicate with the facilitator and discuss travelling to offend against the same children in person (Table 4). It is not clear whether this was fantasy-driven or if the offender travelled and abuse occurred, but the facilitator agreed to arrange for an in-person meeting with the children.

Table 4: Case study of a 58-year-old offender discussing travelling to offend after viewing CSA live streaming (Case 7)	
Offender:	can i ask you something.....??
Facilitator:	sure
Offender:	is [10-year-old girl] your daughter.....??
Facilitator:	yes
Offender:	thats good i like that we will be very close and the other girls [12-, 14- and 15-year-old girls]…they are your daughters too…???
Facilitator:	no nieces
Offender:	nice too.....i like that as well we will come to a nice agreement with their parents.....
Facilitator:	yes if u will meet in real not have problem
Offender:	yeahhh....thats right i pay them very well and i get there permission

Note: Some messages between the facilitator and offender were removed for brevity. Message content is presented verbatim
Source: AIC CSA Live streaming dataset [computer file]

Forming relationships when arranging CSA live streaming

While all offenders had transactional relationships with facilitators and victims, it was evident from their communications that some offenders perceived that they were in an intimate relationship with these individuals. The perceived relationships were usually characterised by financial support for victims and facilitators and by offenders' desire to have sexual contact with a child. As demonstrated earlier in Table 3, for example, both the offender and the victim used romantic language towards one another.

In another example, the offender used sexualised language with a 20-year-old female facilitator during communications ('when im there baby… we will have a very good time… I will take you shopping… your pussy will be mine… soon as im there I will look after you and the girls… and we will have fun together'; Case 7). Even when younger, pre-pubescent children were offered by facilitators or requested by offenders for CSA live streaming, the offenders would sometimes request to talk to these children over chat before or during the CSA live stream session.

Engagement with CSAM

Information from police briefs indicated that three of the offenders were found in possession of CSAM on their devices (Table 5). This information was not available for the remaining four cases. For offenders in Cases 1 and 3, this included large numbers of CSAM files (312 and 1,072 respectively) created during webcam sessions. This suggests that some CSA live streaming offenders generate their own CSAM through live streaming sessions.

Table 5: Material found on offenders' devices	
Case	**Material found on devices**
1	• 587 CSAM files (567 images, 20 videos), including 312 files saved from webcam • 14,564 files containing legal material (14,548 images, 16 videos), including 4,251 files saved from webcam
2	• 34 CSAM files (33 images, 1 video)
3	• 1,994 CSAM files, including 966 images and 106 videos saved from webcam

Source: AIC CSA Live streaming dataset [computer file]

It was common for offenders in the sample to request images and/or videos of the victims they viewed in the CSA live streaming sessions. Six of the seven offenders either requested or were offered (by facilitators or victims) images or videos of at least one of their victims. When examining this figure with the victims as the unit of analysis, of the 74 CSA live streaming victims in the study, 48 (65%) received requests for or offered images/videos of themselves. These were mostly sexual in nature (eg nude or erotic posing, or sexual abuse involving an adult), although occasionally the images were non-sexual. Of the facilitators for whom information was available, most (15/17) discussed distributing CSAM to offenders, either by offering it or receiving requests from offenders (see Table 6). While offenders did not always receive CSAM when they requested it, there was no information available on whether those who did distributed the material to others.

Table 6: Victims and facilitators who received requests for or offered CSAM (*n*)				
Case	**CSA live streaming victims**	**Victims who received requests for or offered CSAM**	**Facilitators involved in all CSA live streaming offences**	**Facilitators who received requests for or offered CSAM**
1	22	11	2	2
2	22	17	8	7
3	4	4	1	1
4	4	0	3	0
5	6	5	1	1
6	2	2	1	1
7	14	9	4	3
Total	74	48	20	15

Source: AIC CSA Live streaming dataset [computer file]

Purchasing CSAM

Victims and facilitators always requested payment for photos/videos in addition to, or in place of, CSA live streaming. This included, for example, when victims or facilitators appeared to avoid or to be unable to provide CSA live streaming (see Table 7). Some offenders would initiate the purchase process for CSAM with facilitators: '…and send me some pics too baby… i send you 2000 [Philippine pesos] cause its your b/d' (Case 7). In Case 7, a facilitator offered to sell the offender a video of a victim being sexually abused by a 'foreigner'. The offender had already viewed this victim over live stream and responded that he would rather have sexual contact with the victim in person than buy the video. The offender in Case 2 paid to view CSAM of two victims who were sisters, aged 12 and 16, and eventually paid to watch CSA live stream sessions of these victims. The offender continued to request CSAM of the victims by communicating directly with the 16-year-old, who on one occasion said she could not because she was in a public place.

It is clear from these results that engagement with CSAM is a prominent part of the CSA live streaming offence process, although there was no clear pattern showing that one always preceded the other.

Table 7: Case study of 17-year-old CSA live streaming victim offering CSAM to a 42-year-old offender (Case 1)

Victim:	You want some fun? …Hehe u want to see my naked pics? Lol
Offender:	so you offering a show also naked pics?
Victim:	20pics for 3000peso, deal?
Offender:	i never bought pics b4, i used to pay 4 shows how many naked pics you got in total?
Victim:	Ammm, 80pics lol
The offender requests a CSA live stream show, but the victim declines due to having no laptop. The offender then agrees to purchase CSAM and sends money via Western Union.	

Note: Some messages between victim and offender were removed. Message content is presented verbatim

Source: AIC CSA Live streaming dataset [computer file]

Discussion

This study investigated whether CSA live streaming offenders travel to offend against children in person, and how their offending relates to engagement with CSAM and the relationships they form with victims and facilitators. This analysis of offender chat logs is the third in a series of studies on CSA live streaming (see Napier, Boxall & Teunissen 2021a, 2021b). It is one of the first to demonstrate that live streaming of CSA can co-occur with CSAM engagement and travelling overseas to offend against live streaming victims in person.

CSA live streaming and CSAM engagement

The study explored what part engagement with CSAM and forming relationships with victims and facilitators may play in CSA live streaming offending. Australia-based offenders who paid to watch CSA live streaming commonly received CSAM from facilitators and victims in the Philippines. Six of the seven offenders requested or accepted offers of CSAM that depicted the victims they had viewed in CSA live streaming sessions. These images and videos were usually but not always sexual in nature. When CSAM was received by offenders, it was almost always in exchange for money. This differs from the uploading of CSAM online typically observed by not-for-profit agencies, who find it is mostly non-commercial in nature (Internet Watch Foundation 2021, 2018). The willingness of offenders to pay for CSAM in this context may be driven by their sexual interest in specific victims, which developed through their engagement with these victims or facilitators in online chat and through viewing live abuse of the victims. Offenders sometimes perceived that they were in intimate relationships with victims or facilitators. Although engagement with CSAM appeared to be an important part of CSA live streaming offending, there was no clear pattern showing escalation from one behaviour to another. Some offenders would receive CSAM before viewing CSA live streaming, while others would receive it afterwards or in place of it.

Additional information from police briefs was available for three of the seven offenders. These offenders were found with CSAM on their devices, which included images and videos saved from webcam sessions.

CSA live streaming and travelling to offend

The study also investigated whether CSA live streaming offenders attempt to travel to offend against children in person. Four of the seven offenders in the study attempted (successfully or unsuccessfully) to travel to sexually abuse victims in person. This occurred for almost a third (n=20) of the 64 CSA live streaming victims for whom this information was available. Further, of the four offenders who attempted to travel to offend, three did so after viewing their victims in CSA live streaming sessions. In the context of this qualitative study, CSA live streaming, travelling to offend attempts, and engagement with CSAM appear to be interrelated.

Some discussions about travelling to offend observed in the chat logs were vague. Research has found that online sexual offenders may vaguely discuss travel with victims (such as talking about or arranging face-to-face meetings) as part of their offending fantasy (for a review, see Broome, Izura & Lorenzo-Dus 2018) or as part of their sexual solicitation of children (Seto et al. 2012), even if these physical meetings never eventuate. However, other discussions about travel in the present study were more substantive and involved purchasing of flights or passports, and these occurred after the offender had viewed the victim in CSAM and/or CSA live streaming sessions. This clearly illustrates that these offenders' discussions about travel were not solely fantasy and that some CSA live streaming offenders do travel to sexually abuse children in person.

Research has found that most contact child sexual offending is perpetrated by a family member or someone else known to the victim (Australian Bureau of Statistics 2016; Canadian Centre for Child Protection 2017) and that most individuals detected for CSAM offences will not progress to contact offending (Dowling et al. 2021). However, viewing CSA live streaming is different to viewing CSAM. Wortley and Smallbone (2012) suggest that individuals who sexually offend against a child must first cross a psychological threshold. Arguably, CSA live streaming offenders have already done this, by directing and watching the live sexual abuse of a child online—which is on par with abusing the children themselves. This may partly explain why some CSA live streaming offenders in the current study attempted to travel to offend against children in person.

The present study was qualitative in nature and did not compare CSA live streaming offenders with CSAM-only offenders. However, based on knowledge from previous research on CSAM offenders (Henshaw et al. 2020; Knack, Holmes & Fedoroff 2020), we argue that two key factors differentiate CSA live streaming offenders from CSAM-only offenders and increase their risk of contact offending:

- offenders form relationships with the facilitators and victims they view over live stream, which provides greater access to the victims and for some leads to a desire to sexually abuse these children in person; and
- the victims and facilitators with whom offenders are communicating are vulnerable and likely to comply with the offenders' requests to arrange contact sexual offending in exchange for money.

For these reasons, CSA live streaming offenders are at risk of traveling to vulnerable countries to sexually offend against the children they view over live stream, or other children whom they are provided access to. This study showed that at least some offenders will attempt to do this. A previous study examining the financial transactions and criminal histories of 209 Australia-based CSA live streaming offenders found that a subgroup of these individuals also engaged in contact sexual offending (Cubitt, Napier & Brown 2022). The authors found that these offenders tended to display more compulsive and persistent behaviour in their CSA live streaming offending than the non-contact sexual offenders in the sample. Further empirical research is required to determine whether some CSA live streaming offenders are more likely than others to travel to offend against children, and which other characteristics increase this likelihood.

Implications for law enforcement and the tech sector

The findings relating to the overlap between CSA live streaming, CSAM engagement and travelling to offend have implications for law enforcement investigations. Travel restrictions relating to the COVID-19 pandemic may have prevented travel for many CSA live streaming offenders and other child exploitation offenders (Europol 2021, 2020). However, with many borders having reopened, persons identified as making transactions for CSA live streaming should also be investigated for travelling to vulnerable countries to offend against children. Further, travel to vulnerable countries and possession of CSAM may be additional behavioural indicators of engagement in CSA live streaming, which could be used when profiling individuals at the border. These factors could be combined with other established tech and financial sector indicators such as chat log keywords (International Justice Mission 2020b) and transaction information/patterns (AUSTRAC 2022) to assist in the detection of CSA live streaming offending.

The findings also have implications for the tech sector. Offenders producing CSAM by recording CSA live streaming may increase the volume of new and unique CSAM on the internet, if they then distribute this material (Internet Watch Foundation 2018). This presents challenges for law enforcement and electronic service providers (eg Meta, Snap Inc), because most existing tools rely on matching images and videos with databases containing known CSAM (Langston 2018; Teunissen & Napier 2022). This emphasises the need to develop technology that can detect whether an image or video is CSAM (eg scanning for content that shows nudity and children in the same image/video), in addition to indicating whether it matches a previously identified CSAM file. While some companies such as Meta and Google claim to use technology that identifies new CSAM (Jasper 2022; Teunissen & Napier 2022) there is little information on how the technology works or its effectiveness. Similarly, a 2022 study found there was little public information available stating whether major electronic service providers use technology that specifically tackles CSA live streaming (Teunissen & Napier 2022). Detection and removal of new CSAM, and scanning of live streams for abusive content, should be a priority for all electronic service providers.

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F

Cybercrime

18. Data breaches and cybercrime victimisation

Anthony Morgan and Isabella Voce

Recent high-profile data breaches have drawn attention to the risks that the release of personal information poses to individuals and businesses. Large-scale breaches can affect millions of customers, as was illustrated in the recent breaches of data held by telecommunications company Optus and health insurance provider Medibank (ABC News 2022; Terzon 2022). When this information is made available to malicious actors, it can be used in myriad ways to steal a person's identity or target vulnerable computer users, ultimately allowing opportunistic offenders to generate profit.

Data breaches are not always caused by a malicious actor. According to the Office of the Australian Information Commissioner (2022), half of the notifiable data breaches (55%) in the most recent reporting period were due to a malicious or criminal attack, while 41 percent were the result of human error, such as personal information being unintentionally published or sent to the wrong recipient. Certain sectors are more vulnerable than others, with health service providers the most frequently targeted (Office of the Australian Information Commissioner 2022).

Information exposed in data breaches can be used by motivated and opportunistic offenders to gain access to the secure accounts of individuals and businesses. This information can be used to commit other related crimes, particularly those crimes that immediately benefit from access to personally identifying information. According to McAlister and Franks (2021), 12 percent of victims of identity crime and misuse of personal information—which they define as obtaining or using personal information to carry out a business, other types of activities and transactions in a person's name without their permission—said that their personal information had been obtained via a data breach.

Offenders can also use information from data breaches to create targeted campaigns that have an increased likelihood of success (Europol 2021). There is, as a result, a growing market for personal information obtained through data breaches (Holt, Smirnova & Chua 2016), particularly on the darknet (Smirnova & Holt 2017). Data breaches have also been closely linked to ransomware attacks (Australian Cyber Security Centre 2021; Europol 2021).

In this study, we explore how common it was among a large sample of Australian computer users to have been notified that their information had been exposed in a data breach. We then examine the prevalence of self-reported cybercrime victimisation among computer users who reported being notified of a data breach and measure the relationship between data breaches and cybercrime victimisation.

Method

Data

This study uses data collected as part of the Australian Institute of Criminology's pilot Australian Cybercrime Survey, conducted in mid-2021. This survey asked 15,000 members of the public about a range of experiences related to cybercrime victimisation. Invitations were sent to 171,537 individual members of an established online research panel. Non-proportional quota-based sampling—with quotas for age, gender and state/territory—was used to ensure the sample was representative of the Australian population. The survey had an overall completion rate of nine percent, but 76.8% of respondents who accessed the survey and read the information sheet went on to complete it. Post-stratification weights were applied to male and female respondents using demographic data as of December 2020 (Australian Bureau of Statistics 2021). Six respondents were removed from the sample due to data quality issues detected during data cleaning, resulting in a final survey sample of 14,994 respondents. Further information is provided in the *Method* section of Voce and Morgan (2021).

The survey included a question about whether the respondent had been notified that their information had been exposed in a data breach in the 12 months prior to the survey. While we acknowledge that other respondents may have fallen victim to a data breach, whether due to a malicious actor or human error, we wanted to identify those respondents who had been specifically notified of a breach. This distinguishes them from respondents who assumed they had been a victim of a data breach because they had experienced some form of cybercrime that compromised their identity.

The survey adopted a bottom-up approach to measuring cybercrime victimisation, given the difficulties respondents may have in accurately identifying whether they had been a victim, and the broad range of criminal activities that fall under the definition of cybercrime (Phillips et al. 2022). The survey included several items that were used to measure whether respondents had ever:

- been a victim of identity theft, compromise or misuse (excluding data breaches)—hereafter referred to as identity crime;
- been a victim of an online scam or fraud; or
- received instructions on their device for paying a ransom—hereafter referred to as ransomware.

This approach enabled us to measure overall rates of victimisation for the major categories of cybercrime (ie identity crime, online scams or fraud, and ransomware) as well as for specific indicators or subtypes of these cybercrimes.

Analysis

We began by examining simple descriptive statistics for the overall prevalence of data breaches and the relationship between data breaches and key socio-demographic characteristics and computer activity. This was followed by an analysis of cybercrime victimisation (including identity crime, online scams and fraud, and ransomware) among respondents who were notified their information had been exposed in a data breach.

We then compared respondents who had and had not been notified that their information had been exposed in a data breach in terms of whether they had also been a victim of identity crime, online scams and fraud, or ransomware. We could not compare the two groups based on raw prevalence rates, because there may be important differences between respondents who had and had not been notified of a data breach that are associated with the likelihood of being a victim of cybercrime. For each type (and subtype) of cybercrime, we estimated a logistic regression model to measure the relationship between being notified of a data breach and being a cybercrime victim in the 12 months prior to the survey, while controlling for the potential confounding effect of other variables in the model.

We drew on prior research on demographic characteristics and routine online activities associated with cybercrime victimisation (Holt et al. 2020; Leukfeldt & Yar 2016). Each model included variables relating to key socio-demographic characteristics, including the respondents' age, gender, employment status, language spoken at home, restrictive health conditions, and whether they had children at home. The models also included variables relating to computer use and activity, including:

- the average number of hours spent per day using the internet for personal use;
- the frequent use of platforms that might be regarded as vulnerable to exploitation (such as online marketplaces, dating websites, sexually explicit websites and gaming platforms);
- the use of practices which might increase the likelihood of personal information being accessible to malicious actors; and
- respondents' self-rated ability to use digital technologies.

The analysis was undertaken using weighted data.

We were primarily interested in whether having been notified of a data breach was a statistically significant factor once these other variables had been taken into account, meaning we can be confident data breach notifications were associated with a change in the likelihood of victimisation. We calculated adjusted odds ratios, which measure the strength of this relationship. We then determined the marginal effect of a respondent's information being exposed in a data breach, which indicates how much the probability of victimisation changes, controlling for other variables. This is based on average predictive margins estimated using the marginal standardisation method (Muller & MacLehose 2014).

The prevalence of each indicator of identity crime was relatively low among the sample, with all but two indicators falling below five percent. The same was true of the prevalence of ransomware victimisation. By way of a robustness check, we used rare event logistic regression to re-estimate the model for each indicator and for ransomware victimisation (King & Zeng 2001). Results from these rare event models are presented in Table A1 in the *Appendix* and confirm the results from the logistic regression models presented below.

Limitations

Limitations associated with the survey methodology more broadly and with the analysis presented in this chapter should be acknowledged. The benefit of online panels is that they allow for the collection of data from large samples, particularly when the main population of interest is computer users. The sample in this study is large and representative of the spread of the Australian population, but it is a non-probability sample and we must be cautious about generalising beyond the survey respondents.

A large proportion of respondents declined to answer the questions about whether they were a victim of different forms of cybercrime. This could be for a range of reasons, including shame or embarrassment, which is a common emotion among victims of cybercrime (Cross, Richards & Smith 2016), or because they were uncertain whether they had been a victim. Because there is a high likelihood of non-response being correlated with the outcome (ie people who were victims being less likely to respond), we relied on casewise deletion. While these accounted for most missing data in the sample, a smaller proportion of cases were missing data on key socio-demographic characteristics and computer activity. Overall, around 10 percent of cases were excluded due to missing data, and we acknowledge that this may have a small effect on the robustness of the results.

Of particular relevance to this study is that not everyone who has been a victim of a data breach will be aware that their personal information has been exposed, meaning the prevalence of data breaches reported in this study is almost certainly an underestimate. In many instances, a person will need to be notified by the custodian of the data accessed, or another service provider who becomes aware of the breach, potentially as a consequence of an individual falling victim to another type of cybercrime. It is possible that some respondents were made aware of their information being exposed in a data breach because they fell victim to another type of cybercrime. This may explain some of the observed differences. However, most victims did not report having had their information exposed in a data breach, and this does not vary significantly between the different subtypes of identity crime (identity theft, compromise and misuse), suggesting any effect is small. We were able to address this limitation by separately considering the results for the different subtypes of identity crime, including those in which it is unlikely that a data breach would be automatically assumed to be the cause (such as finding suspicious transactions on your credit card).

Finally, the study uses cross-sectional data, meaning that we could not establish with certainty whether cybercrime victimisation occurred before or after the respondents were notified of a data breach. We therefore focused solely on the association between data breaches and cybercrime victimisation.

Results

Prevalence of data breaches

Overall, 9.3 percent of survey respondents said they had been notified that their information was exposed in a data breach in the 12 months prior to the survey. The proportion of survey respondents who had received such a notification varied according to socio-demographic characteristics (Table 1). Male respondents were more likely than female respondents to have been notified of a data breach (10.2% vs 8.4%, F=14.3, p<0.001), while respondents aged 18 to 34 years (10.4%) and 35 to 64 years (9.8%) were more likely than respondents aged 65 years and over (6.5%) to have been notified their information was exposed (F=17.6, p<0.001). There was a significant relationship between employment status and data breaches, with respondents who were not currently working (7.0%) less likely than any other employment category to have had their information exposed in a data breach (F=16.8, p<0.001). Finally, respondents who said they had a restrictive long-term health condition were also more likely than other respondents to have been notified of a data breach in the 12 months prior to the survey (11.2% vs 9.2%, F=4.5, p<0.05). Some of these differences may be explained by differences in online behaviour between groups.

Many data breaches occur when data custodians are targeted by a malicious actor or information held by these data custodians is released due to human error. However, certain internet practices appear to make individuals more vulnerable to having their information exposed in a data breach. This includes daily or weekly use of platforms that might be regarded as more vulnerable to exploitation, such as online marketplaces, dating websites, sexually explicit websites and gaming platforms. Among survey respondents who used such platforms frequently, 11.7 percent had been notified of a data breach, compared with 6.7 percent of those who used these platforms less often or never (F=100.8, p<0.001).

Certain practices might also increase the likelihood of personal information being accessible to malicious actors, such as using public wi-fi, sharing account passwords with someone else, or opening emails from unknown people or organisations. Respondents who engaged in these unsafe online activities were more likely than other respondents to report having their information exposed in a data breach (14.5% vs 7.5%, F=153.2, p<0.001).

While there was no relationship between the average number of hours people used the internet for personal use and data breaches (4.1 hours among respondents who were notified of a data breach vs 4.1 hours among respondents who were not, t= −0.8, p=0.44), the average number of hours respondents used a digital device for work was positively associated with the likelihood of being notified of a data breach (5.1 hours vs 4.6 hours, t= −3.7, p<0.001). Further, respondents' self-rated ability to use digital devices was significantly associated with the likelihood of a data breach (F=67.4, p<0.001); however, data breaches were more common among those who rated their ability as high or very high (12.9%) or moderate (8.2%) than among respondents who said it was low or very low (4.5%).

Table 1: Survey respondents who had been notified that their information had been exposed in a data breach, by selected demographic characteristics and computer activity (n=14,994)

	n	%	
Gender[a]			
Male	7,326	10.2	F=14.3, p<0.001[b]
Female	7,610	8.4	
Non-binary	39	12.8	
Age			
18–34 years	4,614	10.4	F=17.6, p<0.001
35–64 years	7,246	9.8	
65 years and over	3,134	6.5	
Employment status[c]			
Small to medium enterprise (SME) owner	2,166	10.9	F=16.8, p<0.001
SME employee	2,819	9.6	
Employed (but not owner or employee of SME)	4,719	10.9	
Not currently working	4,989	7.0	
Restrictive long-term health condition[d]			
Yes	1,195	11.2	F=4.5, p<0.05
No	13,396	9.2	

Table 1: Survey respondents who had been notified that their information had been exposed in a data breach, by selected demographic characteristics and computer activity (*n*=14,994)			
Speaks a language other than English at home[e]			
Yes	1,085	7.9	*F*=2.3, *p*=0.13
No	13,855	9.4	
Uses high-risk platforms on a daily or weekly basis[f]			
Yes	7,954	11.7	*F*=100.8, *p*<0.001
No	6,790	6.7	
Unsafe online activities			
Yes	3,758	14.5	*F*=153.2, *p*<0.001
No	11,236	7.5	
Self-rated digital ability[g]			
Low or very low	2,055	4.5	*F*=67.4, *p*<0.001
Moderate	7,197	8.2	
High or very high	5,536	12.9	

a: 19 respondents did not provide this information

b: 39 non-binary respondents excluded due to small cell size

c: 300 respondents did not provide this information. Not currently working includes respondents who were currently unemployed (7.9%); who were studying, a full time homemaker or in other circumstances (7.0%); or who were retired or on a pension (6.8%)

d: 403 respondents did not provide this information

e: 54 respondents did not provide this information

f: 250 respondents did not provide this information

g: 207 respondents did not provide this information

Source: Australian Cybercrime Survey 2021 [weighted data]

Cybercrime victimisation among respondents notified of a data breach

Nearly a third of respondents (28.0%) who said they had been notified of a data breach also reported some evidence of having been a victim of identity crime in the previous 12 months (Table 2). This most frequently involved evidence of suspicious financial transactions. One in 10 respondents (11.0%) had been notified by a financial institution that their identity had been stolen or that there was suspicious activity on their account. Further, 8.3 percent said unfamiliar and unauthorised activity had appeared on their credit card, 8.1 percent were contacted about unpaid bills they did not recognise, and 6.0 percent said that suspicious transactions had appeared on their bank statement. A smaller proportion said they had received goods (2.3%) or credit cards (1.4%) in the mail they had not ordered or applied for, while evidence that utilities (1.5%) or medical accounts (1.3%) had been corrupted was also relatively uncommon.

In terms of other types of cybercrime, 12.7 percent of respondents who said they had been notified their information had been exposed in a data breach said they had also been a victim of an online scam or fraud in the 12 months prior to the survey. In addition, 4.1 percent of respondents who said they had been notified of a data breach said they had also been a victim of ransomware in the 12 months prior to the survey.

Table 2: Indicators of identity crime experienced by respondents whose information was exposed in a data breach (*n*=1,393)		
	n	%
They were notified by a bank, financial institution or credit card company that their identity had been stolen or that there was suspicious, unrecognised activity on their account	154	11.0
Unfamiliar and unauthorised activity appeared on their credit card or credit report	116	8.3
They received calls from debt collectors asking about unpaid bills they didn't recognise	113	8.1
Suspicious transactions appeared in their bank statements or accounts, or their cheques bounced	84	6.0
They were unsuccessful in applying for credit and this was surprising given their credit history	38	2.7
They were notified by the police or a government agency that their identity had been stolen	35	2.5
Their bills were missing or they received unfamiliar bills	32	2.3
They received goods in the mail, such as mobile phones, that they did not order	32	2.3
Their mobile phone or other utility lost service because their service had been transferred to a new unknown device	22	1.5
They received credit or payment cards in the mail that they did not apply for	20	1.4
They got a medical bill for a service they didn't receive, or their medical claim was rejected because they had unexpectedly reached their benefits limit	19	1.3
They were unable to file taxes because someone had already filed a tax return in their name	12	0.9
Any evidence of identity theft, compromise or misuse	390	28.0

Note: Respondents could select multiple indicators of identity crime

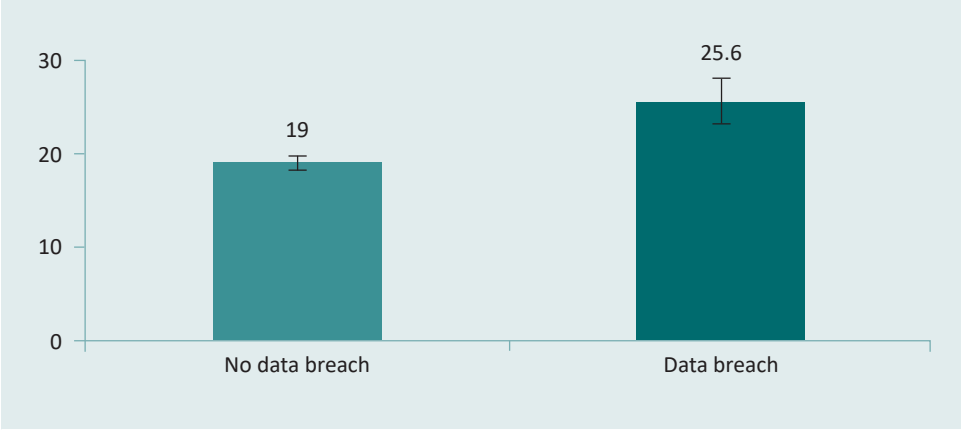
Source: Australian Cybercrime Survey 2021 [weighted data]

Relationship between data breaches and cybercrime victimisation

Identity crime

We used logistic regression models to measure the relationship between having been notified of a data breach and different forms of cybercrime, starting with the overall prevalence of identity crime, while controlling for socio-demographic characteristics and online behaviour. There was a statistically significant relationship between being notified of a data breach and being a victim of identity crime (AOR=1.9, 95% CI [1.3, 1.7], $p<0.001$). After adjusting for key differences between the two groups, respondents who received notification of a data breach were 34.4 percent more likely to have been a victim of identity crime than respondents who had not been notified of a data breach (25.6% vs 19.0%).

Figure 1: Estimated probability of identity crime victimisation, by whether respondent was notified of a data breach (%) (*n*=13,528)



F=40.97, *p*<0.001, AUROC=0.653; AME=0.07, *t*=5.19, *p*<0.01

Note: Estimated probabilities are derived from predicted margins from logistic regression using weighted data. Error bars represent 95% confidence interval for estimated probability

Source: Australian Cybercrime Survey 2021 [weighted data]

We then repeated this analysis for individual indicators of identity crime. This enabled us to identify whether specific types of victimisation were more likely among respondents whose information was exposed in a data breach. Respondents whose information was exposed in a data breach were 130.6 percent more likely than other respondents to be notified by a bank, financial institution or credit card company that their identity had been stolen or that there was suspicious, unrecognised activity on their account (10.7% vs 4.6%). Given that respondents may have conflated a data breach notification with a notification from a financial institution about identity theft, this may not be the best indicator of the effect of data breaches on cybercrime risk.

Further analysis reveals a significant relationship between data breaches and a number of other subtypes or indicators of identity crime. Respondents who were notified their information was exposed in a data breach were 50.0 percent more likely to also report unfamiliar and unauthorised activity on their credit card (8.0% vs 5.3%), 103.9% more likely to receive calls about unpaid bills (7.4% vs 3.6%), and 34.2 percent more likely to report suspicious transactions in their bank statements or accounts (5.3% vs 4.0%). Though much less common among respondents, those who were notified of a data breach were also 101.3 percent more likely to be unsuccessful in applying for credit (2.3% vs 1.2%), 80.7 percent more likely to report missing or unfamiliar bills (2.0% vs 1.1%), and 109.2 percent more likely to receive goods in the mail they did not order (2.0% vs 1.0%).

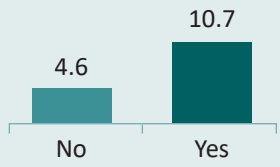
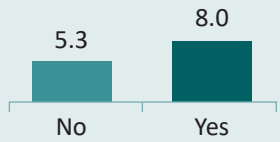
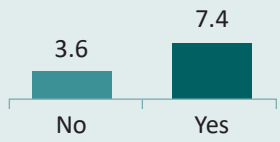
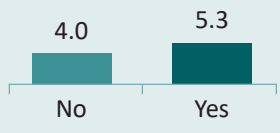
Table 3: Indicators of identity crime experienced by respondents whose information was exposed in a data breach (*n*=13,528)			
	AOR (95% CI)	Probability of victimisation by whether notified of data breach	% diff. (pp)
They were notified by a bank, financial institution or credit card company that their identity had been stolen or that there was suspicious, unrecognised activity on their account	2.5*** (2.0, 3.1)		+130.6 (6.1)
Unfamiliar and unauthorised activity appeared on their credit card or credit report	1.54*** (1.25, 1.92)		+50.0 (2.7)
They received calls from debt collectors asking about unpaid bills they didn't recognise	2.1*** (1.7, 2.7)		+103.9 (3.7)
Suspicious transactions appeared in their bank statements or accounts, or their cheques bounced	1.4* (1.1, 1.8)		+34.2 (1.4)
They were unsuccessful in applying for credit and this was surprising given their credit history	2.1*** (1.4, 3.1)		+101.3 (1.2)
They were notified by the police or a government agency that their identity had been stolen[a]	1.5 (1.0, 2.2)		–
Their bills were missing or they received unfamiliar bills	1.9** (1.2, 2.9)		+80.7 (0.9)

Table 3: Indicators of identity crime experienced by respondents whose information was exposed in a data breach (*n*=13,528)			
They received goods in the mail, such as mobile phones, that they did not order	2.2** (1.4, 3.4)	1.0 No / 2.0 Yes	+109.2 (1.0)
Their mobile phone or other utility lost service because their service had been transferred to a new unknown device	1.2 (0.7, 2.0)	1.1 No / 1.3 Yes	–
They received credit or payment cards in the mail that they did not apply for	1.4 (0.8, 2.4)	0.9 No / 1.2 Yes	–
They got a medical bill for a service they didn't receive, or their medical claim was rejected because they had unexpectedly reached their benefits limit	1.1 (0.6, 1.8)	1.0 No / 1.1 Yes	–
They were unable to file taxes because someone had already filed a tax return in their name	1.1 (0.5, 2.1)	0.7 No / 0.7 Yes	–

***statistically significant at $p<0.001$, **statistically significant at $p<0.01$, *statistically significant at $p<0.05$

a: The coefficient for this indicator was significant in the rare events logistic regression (see Table A1). We opted to present results from the original logistic regression model for consistency and because it represents a more conservative estimate

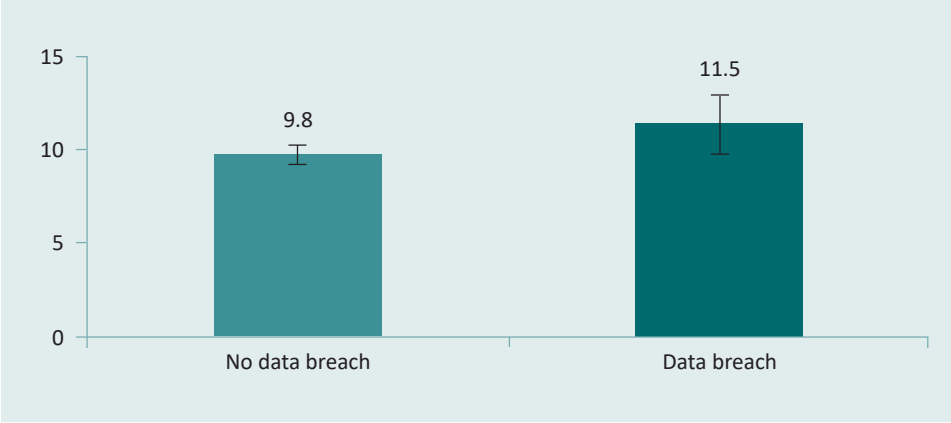
Note: AOR=adjusted odds ratio, CI=confidence intervals, pp=percentage point. Estimated probabilities are derived from predicted margins from logistic regression using weighted data and including controls for demographic characteristics and computer activity and security

Source: Australian Cybercrime Survey 2021 [weighted data]

Online scams and fraud

There was a statistically significant relationship between being notified of a data breach and being a victim of an online scam or fraud (AOR=1.2, 95% CI [1.0, 1.5], $p<0.05$). After adjusting for key differences between the two groups, respondents who were notified of a data breach were 16.8 percent more likely to have been a victim of an online scam or fraud than respondents who had not been notified of a data breach (11.5% vs 9.8%).

Figure 2: Estimated probability of online scam or fraud victimisation, by whether respondent was notified their information was exposed in a data breach (%) (*n*=13,362)



F=56.70, *p*<0.001, AUROC=0.760; AME=0.02, *t*=1.93, *p*=0.05

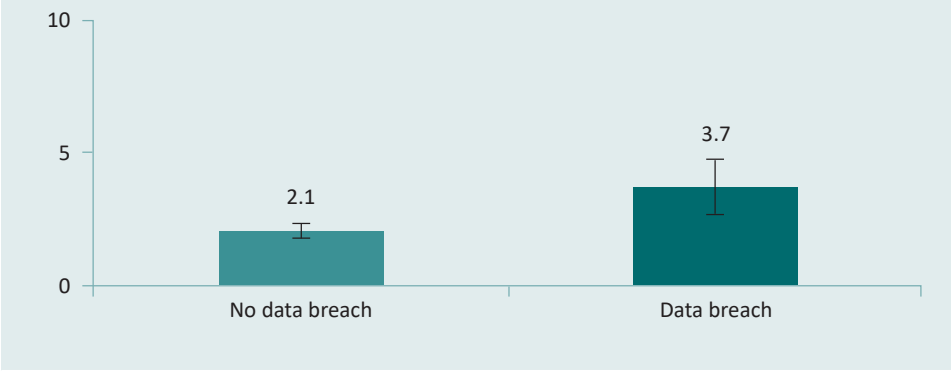
Note: Estimated probabilities are derived from predicted margins from logistic regression using weighted data and including controls for demographic characteristics and computer activity and security

Source: Australian Cybercrime Survey 2021 [weighted data]

Ransomware

Alongside other questions about malware victimisation, respondents were asked whether they had received instructions on their device for paying a ransom (see Voce & Morgan 2021 for a more detailed discussion of ransomware victimisation). There was a statistically significant relationship between being notified of a data breach and being a victim of ransomware in the 12 months prior to the survey (AOR=1.8, 95% CI [1.3, 2.6], *p*<0.001). Respondents who had been notified of a data breach were 79.5 percent more likely to have also received a ransom message on their device. This is equivalent to an increase in the estimated probability of being a ransomware victim from 2.1 percent to 3.7 percent.

Figure 3: Estimated probability of ransomware victimisation, by whether respondent was notified their information was exposed in a data breach (%) (*n*=13,046)



F=11.77, *p*<0.001, AUROC=0.706; AME=0.02, *t*=3.00, *p*<0.01

Note: Estimated probabilities are derived from predicted margins from logistic regression using weighted data and including controls for demographic characteristics and computer activity and security

Source: Australian Cybercrime Survey 2021 [weighted data]

Discussion

Recent events have focused attention on the potential risks that large-scale data breaches present, particularly as they expose individuals to cybercrime victimisation. This chapter draws on data collected in 2021 from a large sample of Australian computer users to explore the relationship between being notified of a data breach and being a victim of different types of cybercrime—specifically, the forms of cybercrime that require or benefit from access to the personal information of prospective victims.

Almost one in 10 respondents (9.3%) said they were notified their information was exposed in a data breach in the last 12 months. Data breaches were more common among certain groups, including younger respondents, men, and respondents with a restrictive long-term health condition. People who were working were more likely to report having been notified of a data breach. Among those who were working, the likelihood of data breaches was higher among respondents who spent more time online for work. While many data breaches target organisations rather than individuals, using more vulnerable websites or platforms and engaging in practices known to undermine cyber safety were both associated with a higher likelihood of data breaches. Counterintuitively, those respondents who rated their digital ability more highly were more likely to say their information was exposed in a data breach. This suggests that online activity may have a greater influence on the likelihood of having personal information exposed in a data breach than digital knowledge or ability. Indeed, the likelihood of having your personal information exposed in a data breach is a function of the data custodians with which your personal information is shared, their vulnerability to malicious actors and their capacity to avoid human error.

A significant proportion of respondents who had been notified their information was exposed in a data breach in the last 12 months were also victims of cybercrime. Nearly a third of respondents who said they had been notified of a data breach also reported some evidence of having been a victim of identity crime in the previous 12 months. This most frequently involved evidence of suspicious financial transactions—being notified by a financial institution that their identity had been stolen, unauthorised activity appearing on their credit card, being contacted about unpaid bills, and suspicious transactions appearing on their bank statement. The misuse of personal information for direct financial gain is a common feature of identity crime (McAlister & Franks 2021).

Overall, once key demographic characteristics and computer activity were taken into account, the estimated probability of identity crime victimisation was 34 percent higher for respondents who were notified that their personal information had been exposed in a data breach. There was a smaller increase in the likelihood of being a victim of online scams or fraud (which is less common overall than identity crime). This may be because access to personal information is not sufficient to carry out an online fraud or scam. Rather, it enables motivated offenders to better target potential victims, without necessarily increasing their likelihood of success. People whose information was exposed in a data breach were also nearly twice as likely as other respondents to have been a victim of ransomware. Ransomware messages may include threats to release data that have already been exposed in a data breach (meaning respondents became aware of the data breach because they were a victim of ransomware); however, extortion without encryption accounts for only a very small proportion of ransomware attacks (Sophos 2022). We note the limitations of not being able to link directly the data breach and other types of cybercrime, but there is clear evidence that people who are notified that their information has been exposed in a data breach are more likely to be a victim of cybercrime, particularly forms of cybercrime that involve the malicious use of personal information.

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Appendix

Table A1: Rare events logistic regression estimating likelihood of being a victim of different types of cybercrime		
	B	95% CIs
Identity crime (*n*=13,556)		
They were notified by a bank, financial institution or credit card company that their identity had been stolen or that there was suspicious, unrecognised activity on their account	0.91***	0.71, 1.10
Unfamiliar and unauthorised activity appeared on their credit card or credit report	0.39***	0.18, 0.60
They received calls from debt collectors asking about unpaid bills they didn't recognise	0.76***	0.54, 0.98
Suspicious transactions appeared in their bank statements or accounts, or their cheques bounced	0.32*	0.08, 0.58
They were unsuccessful in applying for credit and this was surprising given their credit history	0.83***	0.45, 1.21
They were notified by the police or a government agency that their identity had been stolen	0.45*	0.03, 0.86
Their bills were missing or they received unfamiliar bills	0.57**	0.14, 0.99
They received goods in the mail, such as mobile phones, that they did not order	0.74**	0.31, 1.16
Their mobile phone or other utility lost service because their service had been transferred to a new unknown device	0.26	−0.23, 0.75
They received credit or payment cards in the mail that they did not apply for	0.37	−0.13, 0.88
They got a medical bill for a service they didn't receive, or their medical claim was rejected because they had unexpectedly reached their benefits limit	0.09	−0.45, 0.63
They were unable to file taxes because someone had already filed a tax return in their name	0.10	−0.57, 0.76
Ransomware (*n*=13,081)		
They received instructions on their device for paying a ransom	0.55**	0.24, 0.87

***statistically significant at $p<0.001$, **statistically significant at $p<0.01$, *statistically significant at $p<0.05$

Note: CIs=confidence intervals. Results are based on rare events logistic regression using unweighted data

Source: Australian Cybercrime Survey 2021

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19. Help-seeking among Australian ransomware victims

Isabella Voce and Anthony Morgan

Ransomware is malicious software (also known as malware) used to deny a person or organisation access to their IT systems and devices and/or to threaten the release of private data unless a ransom is paid (Australian Cyber Security Centre (ACSC) 2020b). ReportCyber is a national online tool run by the Australian Cyber Security Centre which receives cybercrime reports from members of the public, provides information to Australian law enforcement agencies and provides crime prevention advice to the public. The ACSC has observed an increase in the number of ransomware incidents against Australian organisations in recent years (ACSC 2020b) and states that ransomware has become one of the most significant threats facing Australia given the potential impact on the operations of businesses and governments (ACSC 2020a).

It is likely that ransomware reports to law enforcement, such as the police or ACSC, underestimate the true prevalence of victimisation in the community. Law enforcement data is limited to offences reported to or detected by police, and cybercrime activity in general is often difficult to detect even by victims (Cobb 2015). Businesses can be reluctant to divulge information on cyber attacks, partly due to fear of reputational damage and possible legal proceedings (Pereira 2016), while individuals may also be reluctant to report due to shame and embarrassment, confusion about which agency to contact, and uncertainty about whether they have actually been the victim of a crime (Morgan et al. 2016). Cybercrimes, including crimes targeting computer systems, are among those least reported to police (van de Weijer, Leukfeldt & Bernasco 2019). The seriousness of the incident, and perceptions of police, are also important factors in whether a victim will report a cybercrime incident to law enforcement (Graham, Kulig & Cullen 2020; van de Weijer, Leukfeldt & Van der Zee 2020).

Ransomware victimisation in the Australian community was recently examined in the Australian Cybercrime Survey (Voce & Morgan 2021). This was a large-scale survey of 15,000 members of the public which provides information on the prevalence of and trends in ransomware victimisation, independent of victim reporting behaviour and police recording practices. Nearly five percent of respondents had ever experienced ransomware, and two percent had experienced it in the past year. Small to medium business owners were twice as likely as other respondents to have been the victim of a ransomware attack in the past year and were more likely to have paid the ransom. In line with advice given by the ACSC (2020b), most respondents did not pay the ransom.

The advice given to ransomware victims was consistently identified as the most common reason for a respondent's decision about whether or not to pay the ransom, particularly in the case of small to medium business owners. This highlights the crucial role of the advice provided to ransomware victims in shaping their behaviour and underscores the need to understand where victims go for help, advice and support.

The current study aimed to measure the help-seeking behaviour of ransomware victims among a sample of adult Australian computer users in the Australian Cybercrime Survey (Voce & Morgan 2021). This chapter examines the informal and formal sources of advice and support, the reasons for seeking help, and the satisfaction with the help provided. A focus of this chapter is the prevalence, experience and outcome of reporting to law enforcement, including directly to police or to the ACSC.

Method

A large-scale survey of 15,000 members of the public was conducted in June 2021 (Voce & Morgan 2021). The survey was conducted in partnership with JWS Research. An invitation to complete the survey was sent out to 171,537 individuals who were members of the data collection agency Online Research Unit, with a total completion rate of nine percent (which is consistent with online panels generally; see Pennay et al. 2018). Importantly, not all recipients of an invitation will read it or access the survey—77 percent of respondents who accessed the survey and read the information sheet went on to complete the survey. The survey took an average of approximately 17 minutes to complete. The survey measured a range of experiences related to cybercrime victimisation, help-seeking behaviour, risk factors for victimisation and harms resulting from victimisation. A range of sociodemographic information was also collected.

To ensure the final sample was representative of the spread of the Australian adult population, post-stratification weights based on jurisdiction, age and gender were applied to male and female respondents using Australian demographic data from December 2020 (Australian Bureau of Statistics 2021). Weights were not applied to non-binary respondents (*n*=47), for whom population-level data are not available, or to respondents who did not provide their gender (*n*=19), who accounted for less than 0.5 percent of all respondents. Of the 15,000 respondents, six respondents were removed from the sample for providing illogical responses to sets of questions which implied they were answering the survey randomly, resulting in a final survey sample of 14,994 respondents.

Respondents were identified as ransomware victims if they had received instructions on their device for paying a ransom. In the last 12 months, 321 respondents (2.1%) had been the victim of ransomware. Victims of other forms of malware were identified if they had experienced any of the following issues or incidents:

- pop-up ads started appearing everywhere;
- people they knew told them they had been sending them suspicious messages and links over social media or email;
- their device was working excessively while no programs were running;
- their device slowed down and acted strangely;
- their browser kept getting redirected when they tried to search for a familiar site;
- their devices kept crashing for some reason;
- their programs were opening and closing automatically;
- their files had gone missing or been replaced with odd file extensions and the icons for the files were blank;
- there was a lack of storage space that they could not explain; and
- previously accessible system tools (such as personalised or security settings) were disabled.

While ransomware victimisation was determined based on whether respondents had received a ransom demand, some of these other symptoms of malware may be a feature of ransomware. For all these incidents, respondents were asked whether they had ever been a victim and, if so, whether it had occurred within the last year. Respondents who had experienced ransomware in the 12 months prior to the survey were asked whether they had sought help, advice or support from a range of sources, their satisfaction with the help received and, for respondents who sought help from police or the ACSC, their reasons for seeking help and their satisfaction with the outcome. Ransomware victims who did not seek help were asked their reasons for not seeking help.

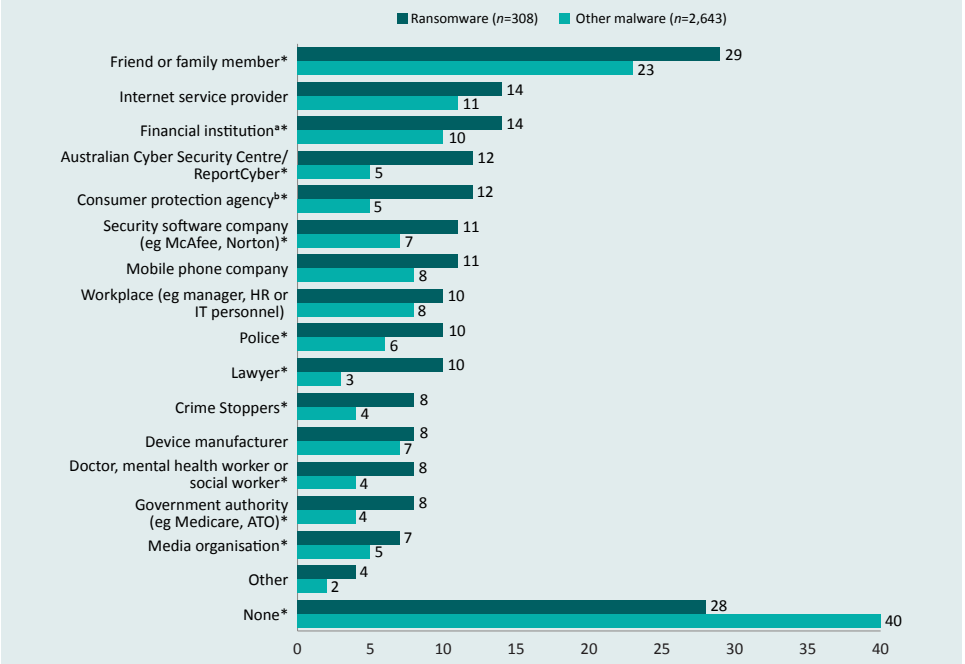
The limitations of the methodology used in this study are outlined in Voce and Morgan (2021). There are advantages to using online panels as they allow for the rapid collection of data from large samples, but there are limitations in relation to generalising results from a non-probability sample to the general population. There are also limitations specific to the measurement of help-seeking in the survey. First, respondents were asked about sources of help, advice and support for incidents of malware they had experienced in the previous 12 months. While we report on help-seeking among ransomware victims, we cannot be certain which sources of help were sought for ransomware versus other types of malware they had experienced (where they experienced multiple incidents, many of which may also be related to ransomware attacks). Second, we asked whether respondents had sought help, advice or support, but do not define the nature of the help sought or received. While respondents who sought help from police were subsequently asked questions about the reasons for and experience of reporting to police, we cannot be certain that they ever submitted an official report.

Results

Sources of advice and support

Victims could seek help, advice or support from multiple people or organisations, including formal and informal sources (Figure 1).

Figure 1: People and organisations reported to by ransomware and other malware victims (%)



a: Such as a bank or credit union, a credit/debit card company (eg Visa or MasterCard) or an e-commerce provider (eg PayPal)

b: Includes Scamwatch, Consumer Affairs, Office of Fair Trading

Note: Excludes 13 ransomware victims and 145 other malware victims who did not indicate whether they had sought help, advice or support from anyone or from whom. Categories are not mutually exclusive. Statistically significant differences are marked by an asterisk (*). Results from corrected Pearson chi-square tests are as follows: told a friend or family member: F=5.04, p<0.05; told a doctor, mental health worker or social worker: F=10.29, p<0.05; told a lawyer: F=32.12, p<0.001; told the police: F=8.80, p<0.05; told Crime Stoppers: F=8.45, p<0.05; told the Australian Cyber Security Centre: F=21.21, p<0.001; told a consumer protection agency: F=23.45, p<0.001; told a financial institution: F=4.42, p<0.05; told a government authority: F=9.38, p<0.05; told the company that runs their security software: F=5.27, p<0.05; told a media organisation: F=4.04, p<0.05; and did not tell anyone: F=15.93, p<0.001. Percentages may not total 100 due to rounding. Frequencies produced in the weighted analysis are not presented as integers, meaning that frequencies may not equal totals due to rounding

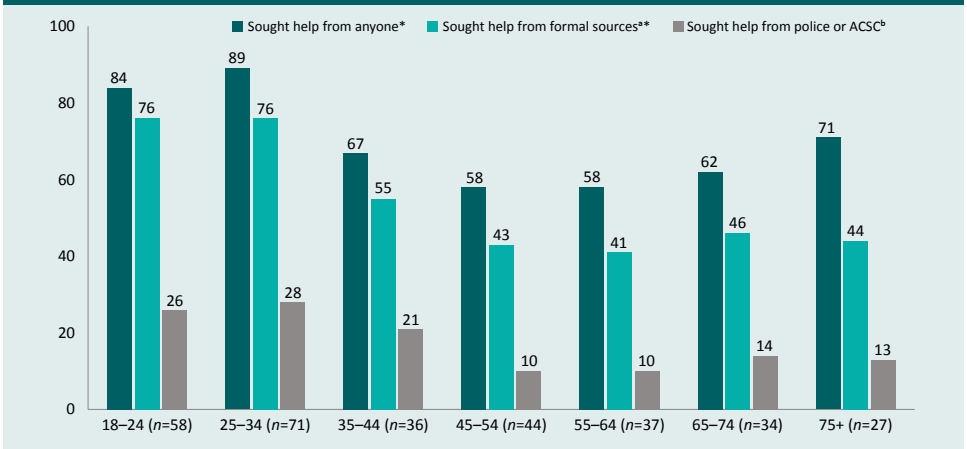
Source: AIC Cybercrime Survey [weighted data]

Overall, nearly three-quarters of ransomware victims sought help, advice or support from at least one source (*n*=223, 72%). Most of these victims—58 percent of all ransomware victims—sought help, advice or support from at least one formal source (ie they told someone other than a family or friend, *n*=180). Ransomware victims most commonly told a family member or friend (*n*=88, 29%), their internet service provider (*n*=43, 14%), or a financial institution—a bank or credit union, a credit/debit card company (eg Visa or MasterCard) or an e-commerce provider such as PayPal (*n*=43, 14%). Other organisations reported to include the Australian Cyber Security Centre, through its ReportCyber portal (https://www.cyber.gov.au/acsc/report; *n*=37, 12%), and consumer protection agencies such as Scamwatch, Consumer Affairs or the Office of Fair Trading (*n*=37, 12%). Ten percent of victims sought help, advice or support from the police (*n*=31). Overall, 19 percent of victims sought help, advice or support from either the police or the ACSC (*n*=58).

Ransomware victims were significantly more likely than other malware victims to have sought help, advice or support from a range of sources (see Figure 1, significant differences marked with an asterisk). Ransomware victims were significantly more likely to seek help, advice or support from police (*n*=31, 10% vs *n*=155, 6%) and the ACSC (*n*=37, 12% vs *n*=137, 5%), but also consumer protection agencies (including Scamwatch, *n*=37, 12% vs *n*=127, 5%), Crime Stoppers (*n*=24, 8% vs *n*=106, 4%) and legal representatives (*n*=29, 10% vs *n*=78, 3%). Ransomware victims were also more likely to seek help, advice or support from friends and family (*n*=88, 29% vs *n*=603, 23%); the company that runs their security software (*n*=33, 11% vs *n*=184, 7%); a financial institution (*n*=43, 14% vs *n*=259, 10%); a doctor, mental health worker or social worker (8% vs 4%); a government authority (*n*=23, 8% vs *n*=93, 4%); or a media organisation (*n*=22, 7% vs *n*=120, 5%). The proportion of respondents who did not tell anyone about the incident was significantly lower for ransomware victims than for other malware victims (ransomware victims *n*=85, 28%; other malware victims *n*=1,044, *n*=40%). This may be because ransomware victims were more likely than other malware victims to lose money and to lose larger amounts (see Voce & Morgan 2021).

Age was significantly associated with the likelihood of seeking help from any source and from formal sources other than friends and family (Figure 2). In general, a higher proportion of younger respondents sought help from anyone (18–24 years *n*=49, 84%; 25–34 years *n*=63, 89%), from formal sources (18–24 years *n*=44, 76%; 25–34 years *n*=54, 76%) and from police or the ACSC (18–24 years *n*=15, 26%; 25–34 years *n*=20, 28%) than older respondents. However, older respondents sought help more often than middle-aged participants (sought help from anyone: 65–74 years *n*=21, 62%; 75 years and over *n*=19, 71%), but not from formal sources or from the police or ACSC, which suggests older ransomware victims tend to seek help from their informal social networks.

Figure 2: Help-seeking behaviour among ransomware victims, by age (%)



a: Includes all sources of help, advice or support except for friends and family and 'other' unspecified sources

b: Includes seeking help, advice or support from police and the Australian Cyber Security Centre (also referred to as ReportCyber/cyber.gov.au)

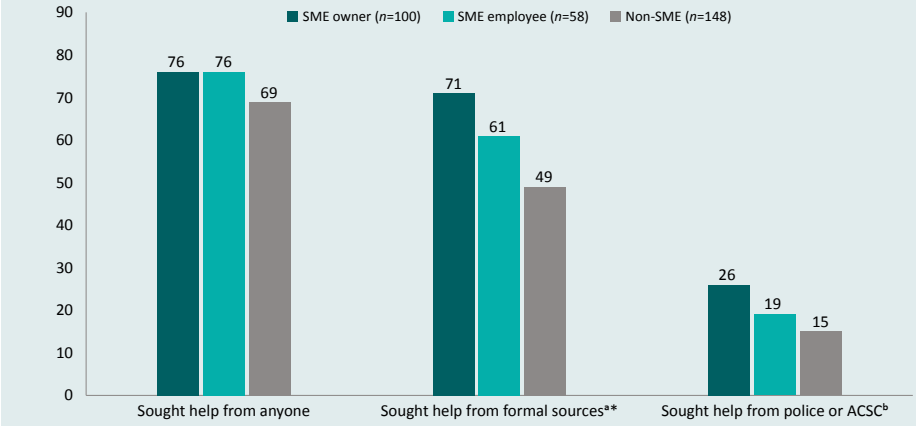
Note: Excludes 13 ransomware victims who did not indicate whether they sought help, advice or support. Statistically significant differences are marked by an asterisk (*). Statistically significant differences include: sought help from anyone: $F=3.85$, $p<0.001$; and sought help from formal sources: $F=4.53$, $p<0.001$. Percentages may not total 100 due to rounding. Frequencies produced in the weighted analysis are not presented as integers, meaning that frequencies may not equal totals due to rounding

Source: AIC Cybercrime Survey [weighted data]

Given recent evidence that small business operators have an elevated risk of ransomware victimisation (Voce & Morgan 2021), we then compared the help-seeking behaviours of small to medium enterprise (SME) owners, SME employees, and people who are not an SME owner or employee. Importantly, as with our previous research, we cannot be certain whether ransomware incidents occurred in the context of work or during personal computer use. A higher proportion of SME owners sought help from formal sources, which include persons or organisations other than friends and family (*n*=71, 71%) compared with SME employees (*n*=36, 61%) and individuals who did not own or work for an SME (*n*=72, 49%). This difference in seeking help, advice or support from formal sources was statistically significant (Figure 3). Among past-year ransomware victims, more than a quarter of SME owners made a report to police or the ACSC (*n*=26, 26%). There were no statistically significant differences between SME owners, SME employees and individuals who did not own or work for an SME in whether they made any report or whether they made a report to police or the ACSC.

Among past-year ransomware victims who sought help from anyone, around half sought help from only one source (*n*=106, 48%; see Figure 4). This was also true among victims who sought help from formal sources (*n*=91, 51%).

Figure 3: Help-seeking behaviour among ransomware victims, by SME status (%)



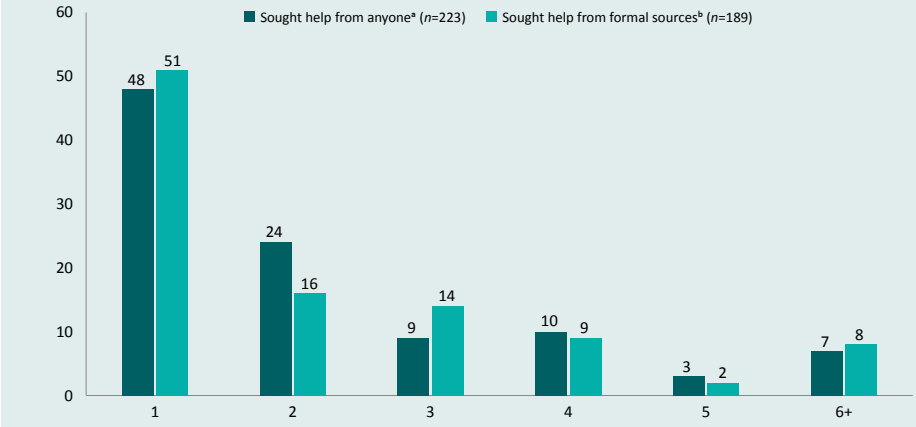
a: Includes all reports except those made to friends and family and 'other' unspecified reports

b: Includes reports to police and the Australian Cyber Security Centre (also referred to as ReportCyber/cyber.gov.au)

Note: Excludes 15 ransomware victims who did not indicate whether they owned or were employed by an SME or did not indicate to whom they had reported the incident. Categories of help-seeking sources are not mutually exclusive. Statistically significant differences are marked by an asterisk (*). Statistically significant difference in help-seeking from formal sources: F=5.94, p<0.05. Percentages may not total 100 due to rounding. Frequencies produced in the weighted analysis are not presented as integers, meaning that frequencies may not equal totals due to rounding

Source: AIC Cybercrime Survey [weighted data]

Figure 4: Number of different sources of help, advice or support among ransomware victims (%)



a: Range is 1–16 different sources of support (including 'other' unspecified sources)

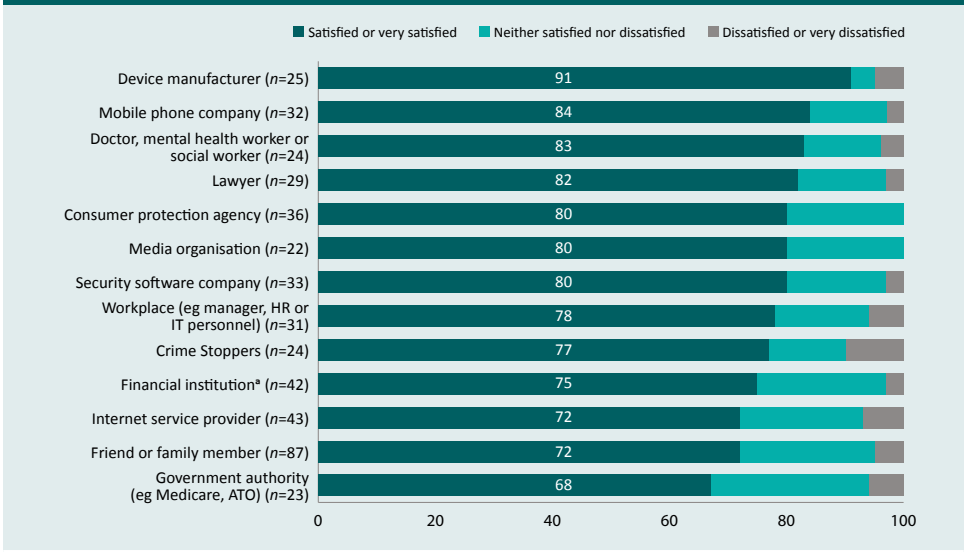
b: Range is 1–14 different sources of support, includes all sources except for friends and family and 'other' unspecified sources

Note: Excludes 13 respondents who did not indicate whether they sought help, advice or support and 85 respondents who did not seek help, advice or support from anyone. Percentages may not total 100 due to rounding. Frequencies produced in the weighted analysis are not presented as integers, meaning that frequencies may not equal totals due to rounding

Source: AIC Cybercrime Survey [weighted data]

Victims who reached out to people or organisations were generally satisfied with the help, advice or support they received, with a quarter stating that they were satisfied (*n*=55, 25%) and 46 percent stating they were very satisfied (*n*=102). Levels of satisfaction varied by the source of support victims reached out to (Figure 5).

Figure 5: Satisfaction with the quality of help, advice or support received by ransomware victims by source of help (%) (*n*=222)



a: A bank or credit union, a credit/debit card company (eg Visa or MasterCard) or an e-commerce provider (eg PayPal)

Note: Excludes 13 respondents who did not indicate whether they reported the incident, 85 respondents who did not report to anyone, and 1 respondent who selected 'Don't know/prefer not to say'. Satisfaction with reporting to police and/or ACSC is reported in Figure 8. Percentages may not total 100 due to rounding. Frequencies produced in the weighted analysis are not presented as integers, meaning that frequencies may not equal totals due to rounding

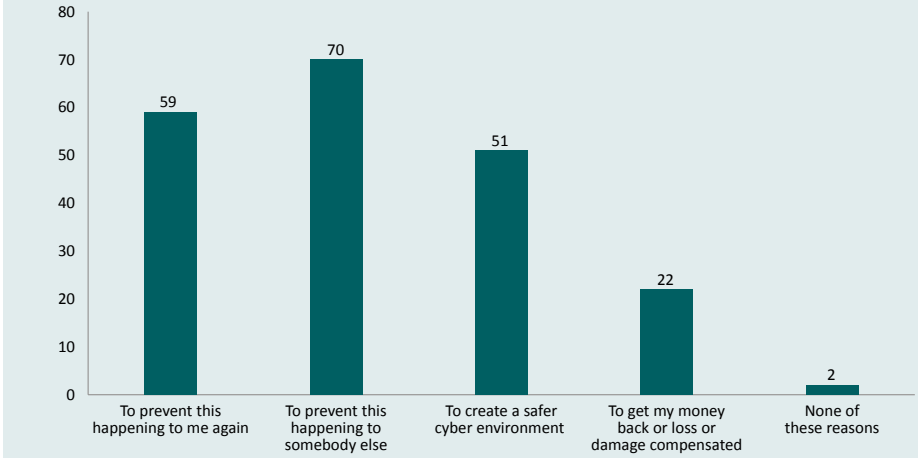
Source: AIC Cybercrime Survey [weighted data]

Victims were most satisfied with the help they received from device manufacturers; mobile phone companies; doctors, mental health workers and social workers; and legal professionals. Importantly, because victims could report to multiple organisations and were asked about their satisfaction with reporting overall, there was no way of determining satisfaction with specific organisations (besides police and the ACSC—discussed below).

Reasons for, outcomes of and satisfaction with reporting to police

Nineteen percent of past-year ransomware victims (*n*=58) said they had sought help, advice or support from either the police or the ACSC, which is also referred to as ReportCyber or cyber.gov.au. These respondents were asked about their reasons for seeking help from police and the ACSC (Figure 6), the outcomes of their report and their satisfaction with the outcome. Victims most often stated that they made a report to police or ACSC to prevent the incident happening to somebody else (*n*=41, 70%), to prevent the incident happening to them again (*n*=35, 59%) and to create a safer cyber environment (*n*=30, 51%). Only a fifth of victims reported the incident because they wanted to get their money back or compensation for the loss or damage (*n*=13, 22%).

Figure 6: Reasons for reporting incidents to the police or ACSC among ransomware victims (%) (*n*=58)

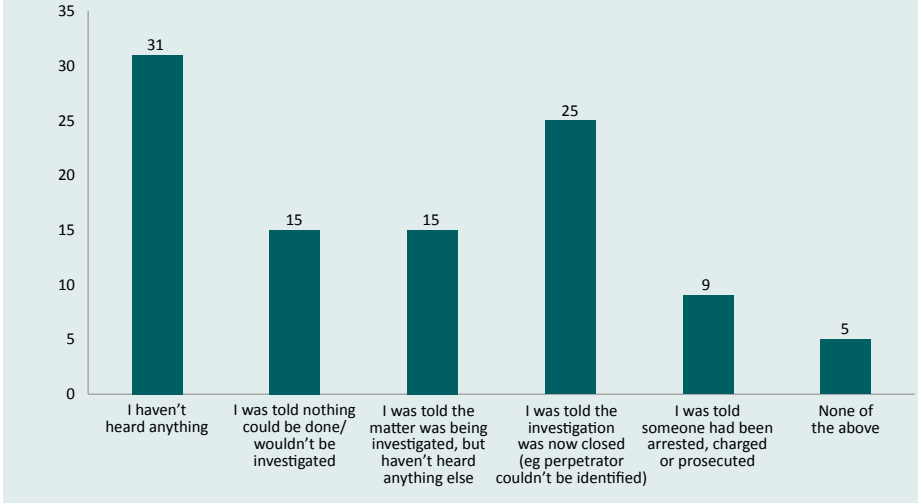


Note: Categories are not mutually exclusive; respondents could select multiple answers. Percentages may not total 100 due to rounding. Frequencies produced in the weighted analysis are not presented as integers, meaning that frequencies may not equal totals due to rounding

Source: AIC Cybercrime Survey [weighted data]

In 46 percent of cases (*n*=27), victims either did not hear back from police or the ACSC about their report or were told the matter would not be investigated (Figure 7). Half of the cases were investigated (*n*=29), and 25 percent (*n*=15) were closed without an arrest, charge or prosecution. Nine percent (*n*=5) resulted in an offender being arrested, charged or prosecuted.

Figure 7: Outcome of ransomware incidents reported to the police or ACSC (%) (*n*=58)

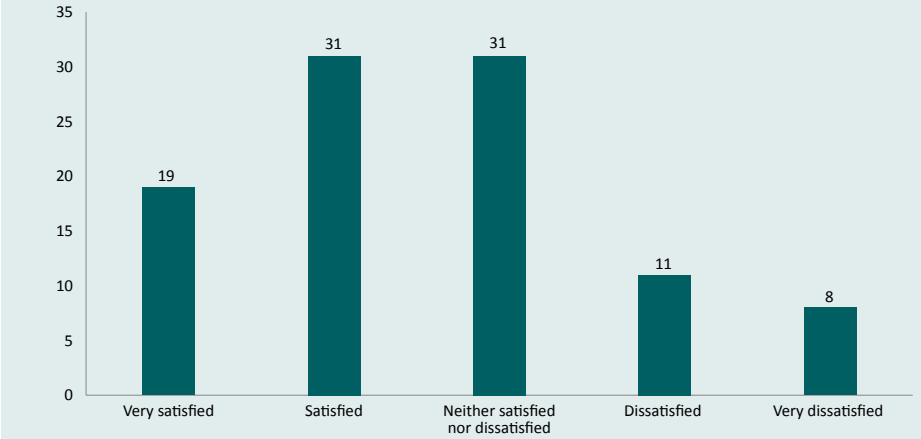


Note: Categories are not mutually exclusive; respondents could select multiple answers. Percentages may not total 100 due to rounding. Frequencies produced in the weighted analysis are not presented as integers, meaning that frequencies may not equal totals due to rounding

Source: AIC Cybercrime Survey [weighted data]

Victims were generally satisfied with the outcomes of their reports to police or ACSC (Figure 8). Fifty-one percent of victims stated that they were satisfied or very satisfied (*n*=28), while 31 percent said they were neither satisfied nor dissatisfied (*n*=17).

Figure 8: Satisfaction with reporting to the police or ACSC among ransomware victims (%) (*n*=56)



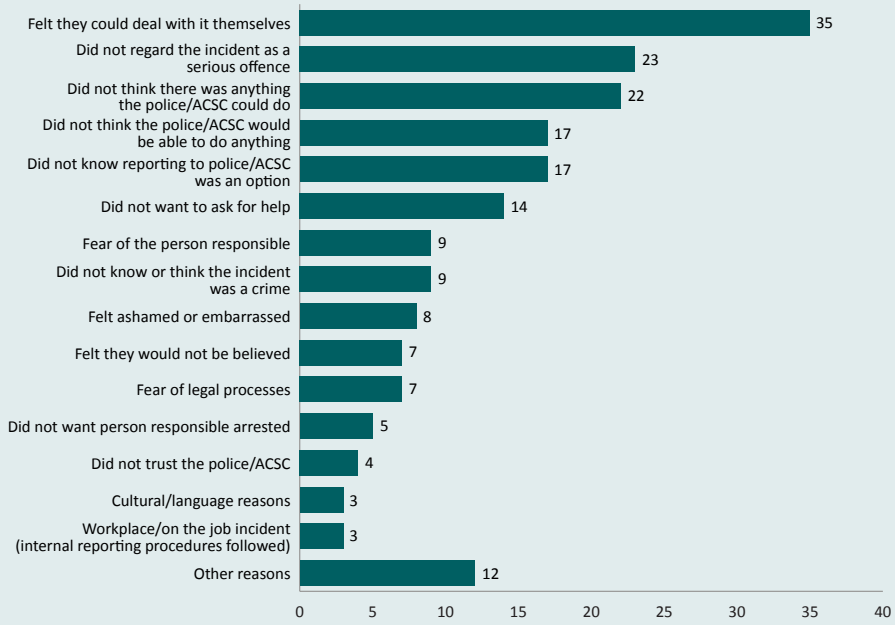
Note: Excludes 2 respondents who answered 'Don't know/prefer not to say'. Percentages may not total 100 due to rounding. Frequencies produced in the weighted analysis are not presented as integers, meaning that frequencies may not equal totals due to rounding

Source: AIC Cybercrime Survey [weighted data]

Reasons for not reporting to the police or ACSC

Respondents could nominate multiple reasons for not having reported incidents to the police or ACSC. Most often, respondents who had been a victim of ransomware did not seek help from police or ACSC because they felt they could deal with the incident themselves (*n*=82, 35%), they did not think there was anything the police or ACSC could do (*n*=67, 28%), they did not regard the incident as a serious offence (*n*=55, 23%) or they did not know that reporting to the police or ACSC was an option (*n*=41, 17%; Figure 9).

Figure 9: Reasons for not reporting incidents to the police or ACSC among ransomware victims (%) (*n*=237)



Note: Only includes respondents who did not report to police or the ACSC. Excludes 13 ransomware victims who did not indicate whether they had reported the incident and 12 respondents who did not answer the question. Categories are not mutually exclusive; respondents could select multiple answers. Percentages may not total 100 due to rounding. Frequencies produced in the weighted analysis are not presented as integers, meaning that frequencies may not equal totals due to rounding

Source: AIC Cybercrime Survey [weighted data]

Discussion

Ransomware victims seek help, advice and support from a range of sources. Nearly three-quarters of ransomware victims sought advice or support from at least one person or organisation, and nearly 60 percent sought help from at least one formal source (ie they told someone other than a family member or friend), and over half sought help from multiple sources. Most commonly, victims sought help from their friends and family, police or the ACSC, internet service providers, a financial institution, or a consumer protection agency (including Scamwatch). Formal help-seeking was higher among younger respondents and small to medium enterprise owners.

Nineteen percent of victims sought advice or support from either the police or the ACSC. This suggests that the true number of ransomware incidents in the community is significantly underestimated by official law enforcement data using reports made to police and ACSC. Most often, victims did not seek advice or support from the police or ACSC because they felt they could deal with the ransomware attack themselves, they did not think there was anything the police or ACSC could do, they did not regard the incident as a serious offence or they did not know that reporting to the police or ACSC was an option.

The most common reasons for reporting to police or the ACSC were to prevent the incident happening to somebody else or to prevent revictimisation. Only a fifth of victims reported because they wanted to get their money back or to be compensated for the loss or damage. This is largely consistent with the findings of previous research into reporting by malware victims (van de Weijer, Leukfeldt & Van der Zee 2020). Half of the reports resulted in the matter being investigated, and nine percent resulted in an offender being arrested, charged or prosecuted. Fifty-one percent of victims said they were satisfied or very satisfied with the outcome of their report to police or ACSC.

Overall, these findings show that ransomware victims actively seek information on dealing with their victimisation, and highlight the importance of providing advice and support to victims to minimise the impact of ransomware attacks and reduce the risk of repeat victimisation. Critically, because victims seek help from a wide range of sources in the law enforcement, government and private sectors (such as banks and internet services providers), there is a need for consistent, up-to-date and accurate messaging, both at the broad community level and targeted to the organisations that provide support to victims.

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20. Online behaviour, life stressors and profit-motivated cybercrime victimisation

Isabella Voce and Anthony Morgan

Cyber-enabled and cyber-dependent crimes pose a growing threat to the safety of individuals and businesses online. In the 2021–22 financial year the Australian Cyber Security Centre (ACSC 2022) received over 76,000 reports of cybercrime, an increase of nearly 13 percent from the previous financial year. The COVID-19 pandemic was associated with increases in reports of phishing and identity theft (ACCC 2021), ransomware (ACSC 2021), certain forms of hacking (Buil-Gil et al. 2021), and many types of cyber-enabled fraud (Buil-Gil, Zeng & Kemp 2021). The growing threat posed by cybercrime has recently led to significant government investment in enhanced cybersecurity capabilities and in law enforcement.

At the same time, there is an important human factor in cybercrime victimisation, with some computer users more vulnerable to becoming a victim than others. Routine activity theory (Cohen & Felson 1979) describes how daily activities bring about three situational criteria necessary for a crime to occur: a suitable target, a motivated offender and the absence of capable guardianship. In the case of cybercrime, targets can include personal information or financial assets, while guardians may include computer users, antivirus software, identity authentication, or third parties such as network administrators and financial institutions (Leukfeldt & Yar 2016; Reyns 2018; Williams 2016).

While routine activity theory has its limitations—such as its inability to explain why certain individuals are motivated to offend, and challenges associated with translating key concepts to the online environment—it has been shown to be a useful lens through which to understand cybercrime victimisation (Reyns 2018). For example, research has consistently shown the importance of the visibility of potential targets—by virtue of the amount and type of online activity—in determining the risk of victimisation for different types of cybercrime (Leukfeldt & Yar 2016). Online forums, pornography websites, online gambling, dating websites, online gaming and online purchases are all associated with fraud and scam victimisation (Gainsbury, Browne & Rockloff 2018; van Wilsem 2013; Whitty 2019). Identity theft victimisation has been linked to online shopping, banking, emailing or instant messaging and downloading behaviours (Reyns 2013; Williams 2016). Malware and ransomware victimisation have also been linked to the frequency of internet use, number of internet devices, and online activities such as illegal downloading, using dating websites and blogging (Bergmann et al. 2018; Bossler & Holt 2010; Holt et al. 2020).

While there are risks associated with online routine activities, these risks are not evenly distributed among all computer users. Some individuals may be more vulnerable to victimisation than others. Some studies have linked cybercrime risk to low self-control (Holt et al. 2020; van Wilsem 2013; Whitty 2019), emotional instability, higher openness to experience and lower conscientiousness (van de Weijer & Leukfeldt 2017). Yet these factors may be difficult to modify, as research shows that personality and self-control are relatively fixed risk factors for most people, at least in the short term (Cobb-Clark, Kong & Schildberg-Hörisch 2021; Roberts 2009). Prior research has also produced mixed results as to the importance of these individual factors (Bossler & Holt 2010; Ngo & Paternoster 2011).

Recent life stressors may also increase vulnerability to cybercrime victimisation but have received less empirical attention. Online fraud victimisation has been linked with negative life events such as divorce, the death of a family member or close friend, injury or illness in one's family and job loss (Anderson 2013; Emami, Smith & Jorna 2019; Ross & Smith 2011). These types of events can lead to social isolation, loneliness and reduced psychological wellbeing, which can further increase vulnerability to financial exploitation and scams (James, Boyle & Bennett 2014). Socially isolated individuals may be unable to seek advice about scams from friends and family or be more open to engaging with strangers to fulfil social needs (Lee & Soberon-Ferrer 1997). Additionally, individuals who are stressed tend to make poorer decisions (Wemm & Wulfert 2017), with research showing that decision-making is negatively affected by sad emotional states (Baumeister et al. 2005; Lerner, Li & Weber 2012). None of this is intended to blame victims; rather, motivated offenders exploit the susceptibility of victims through manipulation, persuasion and coercion, making it hard to distinguish legitimate from illegitimate exchanges or determine whether a scenario is likely to be harmful (Carter 2023; Cross 2015).

The importance of understanding the intersection between online routine activities and the vulnerabilities of potential targets was particularly evident during the COVID-19 pandemic. The pandemic and associated containment measures brought about significant, abrupt changes in online activities. Many employees transitioned to working from home (WFH; Baxter & Warren 2021), including many small business operators, using their home internet connections and personal devices to undertake work tasks (Nabe 2021). This increased the accessibility of targets while simultaneously lowering capable guardianship. At the same time, there was significant concern during the COVID-19 pandemic about profit-motivated offenders exploiting the fear and anxiety that make individuals susceptible to scams, as evidenced by the large volumes of malicious emails and text messages with pandemic-related themes (ACSC 2021).

In this study, we explored how the significant changes in the online routine activities of computer users during the pandemic, coupled with the effects of the psychological, social and economic stress of the pandemic, influenced the risk of cybercrime victimisation. In doing so, we provide important insights into the human factor in profit-motivated cybercrime victimisation and identify several implications for prevention.

Method

This study used data collected as part of the Australian Institute of Criminology's pilot Australian Cybercrime Survey to examine the relationship between past-year profit-motivated cybercrime victimisation, the routine activities of computer users and presence of life stressors. The pilot survey asked 15,000 members of the public in June 2021 about a range of experiences related to cybercrime victimisation, reporting behaviour, risk factors for victimisation, and harms resulting from victimisation, as well as sociodemographic information. While this was a cross-sectional survey, we capitalised on the fact that the survey covered the first year of the pandemic and captured information about changes to respondents' online routine activities and individual circumstances.

Non-proportional quota-based sampling was used to ensure the sample was representative of the spread of the Australian population. Invitations to the survey were sent to 171,537 individuals who were members of a panel managed by the data collection agency Online Research Unit, with a total completion rate of nine percent (which is consistent with online panels generally; see Pennay et al. 2018). Post-stratification weights based on jurisdiction, age and sex were applied to male and female respondents using Australian Bureau of Statistics demographic data as of December 2020 (ABS 2021). Despite processes that excluded poor-quality responses from the total sample, six respondents were removed from the sample for providing illogical responses which implied they were answering the questions randomly, resulting in a final survey sample of 14,994 respondents.

For further details on the sampling and weighting of the data used in this study, see the method section of Voce and Morgan (2021).

Changes to working arrangements during the pandemic, including WFH and work-related hours spent on the internet, represented a major shift in the routine activities of computer users. To explore how this may have influenced cybercrime risk, we limited the sample to respondents who were employed at the time of the survey (*n*=9,827). We then excluded respondents with missing data for any of the main variables of interest, resulting in a final sample of 8,914 respondents included in the study. Data on risky online activities, the impacts of the pandemic and victimisation accounted for the largest proportion of missing data. We did not use missing data imputation because there is a strong possibility that missing data was correlated with the likelihood of the response to sensitive questions (eg victims being more likely to refuse to answer questions about their victimisation, or people who engaged in risky online behaviour being unwilling to admit that). We note the risk of bias and do not assume results from the regression model would apply equally to excluded respondents.

Dependent variables

The dependent variables in this study were whether, in the 12 months prior to the survey, the respondent was a victim of the following broad crime types, typically motivated by financial gain:

- identity theft, compromise or misuse (hereafter referred to as identity crime and misuse);
- malware; or
- fraud and scams.

We adopted a bottom-up approach that sought to capture a wide range of cybercrime modus operandi. For each broad crime type, individuals were presented with a list of incidents or symptoms associated with being a victim, and were categorised as a victim if they had experienced at least one incident or symptom related to that type of cybercrime. For identity crime and misuse, the victim had to suspect these issues were the result of a privacy breach or information compromise. For malware, victims had to believe the issues were not just the result of genuine device malfunction or aging.

Independent variables

We included several main variables of interest in our analysis. The first set related to the social, economic and psychological stress associated with the pandemic. Respondents were asked whether the COVID-19 pandemic had impacted them in the following ways at any point since early 2020, even if their current situation had improved:

- they had experienced an increase in financial stress;
- they had become more socially isolated;
- they had increased the amount of time or money they gambled;
- their relationships with family and friends had been negatively impacted;
- they had experienced mental or emotional distress;
- their overall physical health and wellbeing had deteriorated; and
- they had increased their consumption of alcohol or other drugs.

Responses to these questions were based on a five-point Likert scale (strongly disagree to strongly agree). For the purpose of analysis, these variables were all recoded as binary variables (0=no, 1=yes).

We also included several variables that related to the routine online activities of computer users. These included measures relating to the accessibility of computer users as potential targets, based on the extent and type of internet use:

- the average number of hours on a normal business day spent using the internet for work-related purposes (continuous variable);
- the average number of hours per day spent using the internet for personal use (continuous variable);
- the frequency with which they engaged in certain online activities in the previous 12 months, including using online blogs, forums and interest groups; purchasing items from online marketplaces or online stores; being active on romance or dating websites or apps; participating in online gaming or esports; and accessing sexually explicit adult websites or subscribing to sexually explicit interactive adult platforms (five-point scale ranging from daily to never, recoded to 0=less than weekly, 1=daily or weekly basis).

We included two measures of guardianship. The first related to personal guardianship—namely, whether the respondent had engaged in any risky online behaviours in the previous 12 months, based on their responses to questions about whether they had opened emails from unknown people or organisations, shared passwords with someone they knew, and used freely available wi-fi in public locations to conduct financial transactions (0=no, 1=yes).

The second was a measure of physical guardianship. We measured whether respondents were WFH at any point because of pandemic-related social distancing measures (0=no, 1=yes). Home internet connections may be less secure than those of workplaces, devices may no longer be protected by corporate security controls or may not get the updates and patching they need, and sensitive work information may be stored on or shared over unsecure personal devices.

Finally, we included a variable to identify small-to-medium enterprise (SME) owners and employees, and several socio-demographic variables including gender, age and relationship status, as these have been identified as correlates of cybercrime victimisation (Jorna & Hutchings 2013).

Analytic strategy

Following similar studies of cybercrime victimisation (Mikkola et al. 2020; Ngo & Paternoster 2011; Reyns 2013), we used logistic regression to measure the relationships between main variables of interest and the likelihood of past-year victimisation while controlling for other factors. The analysis was undertaken using weighted data. Model fit was assessed using a modified version of the Hosmer–Lemeshow goodness-of-fit test, which estimates the *F*-adjusted mean residual test following the estimation of logistic regression models using survey commands in Stata (Archer & Lemeshow 2006). Because there is evidence this test is susceptible to bias in large samples (Nattino, Pennell & Lemeshow 2020), further link tests were conducted to assess the goodness-of-fit. This test is used to detect specification errors and assumes that in a properly specified model it would not be possible to identify additional significant independent variables (Pregibon 1979). A weighted area under the receiver operating characteristic curve (AUROC) was also calculated for logistic regression models using Somers' *D* (Newson 2006).

For identity crime and misuse, initial model fit diagnostics indicated the model was not properly specified. An interaction between the variables WFH and SME ownership/employment was included and further tests revealed the revised model was a good fit for the data. The same interaction effect included in the other models and was also statistically significant.

Limitations

Online panels allow for rapid collection of data from large samples, which is particularly useful where the main population of interest is computer users. However, while the sample is large and representative of the spread of the Australian population, we are cautious not to generalise the results to the wider population, or assume the results are representative of non-respondents.

As this study uses cross-sectional data, the temporal order and causal relationships between the independent variables and outcomes of interest cannot be established. For instance, in the case of an association between psychosocial life stressors and cybercrime victimisation, these stressors may be both a risk factor for and consequence of being a victim. We attempted to overcome this by asking specifically about the effects of the COVID-19 pandemic. Similarly, it was not possible to compare respondents' online behaviour before and after the pandemic. While there is clear evidence that people's online behaviour changed during the pandemic, we can only highlight those behaviours that were associated with an increased risk of victimisation.

Results

Sample characteristics

In the past year, 28 percent (*n*=2,479) of the study sample had been a victim of identity crime and misuse, 22 percent (*n*=1,965) had been a malware victim, and 10 percent (*n*=912) had been a fraud or scam victim. Many victims of profit-motivated cybercrime had experienced more than one form of cybercrime in the previous 12 months. Thirty-five percent of victims said they experienced two or more forms of profit-motivated cybercrime (*n*=1,262) with 13 percent experiencing all three forms of cybercrime victimisation (*n*=483). This is not surprising, given that they are frequently interrelated (eg offenders may use an identity theft victim's personal information to carry out fraud or scams).

Sample characteristics for respondents included in the current study are presented in Table 1 (*n*=8,914). Fifty-three percent of the sample were male, 36 percent were aged 18 to 34 years, and 22 percent owned an SME. Pandemic-related stressors were common among respondents, including increases in social isolation (49%), mental or emotional distress (42%), deterioration in physical health and wellbeing (34%), increases in financial stress (33%), negative impacts on personal relationships (27%), and increases in alcohol and/or drug use (24%) and gambling (12%). Fifty-eight percent of respondents were WFH at some point in the previous year as a result of COVID-19 related social distancing measures.

In terms of the online behaviour of respondents, 28 percent frequently used online blogs, forums or interest groups; 38 percent frequently purchased items from online marketplaces or online stores; 11 percent were frequently active on romance and dating websites or apps; 17 percent frequently participated in online gaming or esports; and 22 percent frequently accessed sexually explicit adult websites or subscribed to sexually explicit interactive adult platforms. Twenty-eight percent of respondents had engaged in at least one risky online behaviour in the previous 12 months.

Table 1: Sample characteristics (*n*=8,914)			
		(*n*)	%
Gender	Male	4,703	52.8
	Female	4,211	47.2
In a current relationship		5,842	65.5
Age	18–34 years	3,184	35.7
	35–64 years	5,186	58.2
	65+ years	544	6.1
Owns or operates an SME	SME owner	1,924	21.6
	SME employee	2,597	29.1
	Not an SME owner nor employee	4,394	49.3
Mean work hours using internet (*SD*)		4.68 (3.37)	
Mean personal hours using internet (*SD*)		3.74 (2.93)	
Risky online practices in past year		2,454	27.5
Online activities undertaken daily or weekly (vs less frequently)	Online blogs, forums, interest groups	2,527	28.4
	Purchasing from online marketplaces/ stores	3,355	37.6
	Romance/dating websites or apps	971	10.9
	Online gaming/esports	1,550	17.4
	Sexually explicit adult websites or platforms	1,926	21.6
Negative impacts of pandemic experienced	Increase in financial stress	2,913	32.7
	More socially isolated	4,342	48.7
	Increased time and/or money gambling	1,089	12.2
	Negative impact on relationships with family and friends	2,368	26.6
	Mental or emotional distress	3,780	42.4
	Physical health and wellbeing deteriorated	3,057	34.3
	Increased consumption of alcohol or other drugs	2,170	24.3
WFH due to pandemic		5,183	58.1

Note: From the sample presented in Table 1, 272 respondents were excluded from the identity crime and misuse model, 423 respondents were excluded from the malware attacks model, and 196 respondents were excluded from the fraud/scams model due to data missing on the outcome variable. These respondents are included in the denominator for the prevalence rates reported in text. SME=small to medium enterprise

Source: AIC pilot Australian Cybercrime Survey, 2021

Multivariable analysis

Results from the three multivariate logistic regression models—for identity crime and misuse (model 1), malware attacks (model 2) and fraud and scams (model 3)—are presented in Table 2. We summarise the results for the main variables of interest below.

Respondents who reported engaging in risky online practices were more likely to have been a victim of identity crime and misuse (adjusted odds ratio (AOR)=1.54), malware (AOR=1.61) and fraud (AOR=1.53) than those who had not engaged in these behaviours in the last year (reference category). The number of hours respondents spent online in their personal time was a statistically significant predictor of fraud victimisation (AOR=1.05), as was the number of hours spent online for work (AOR=1.05). For every hour of personal time spent online, the odds that a respondent would fall victim to fraud increased by five percent.

Respondents who frequently used online blogs, forums and interest groups were significantly more likely to experience identity crime and misuse (AOR=1.24) but not malware or fraud. Frequently purchasing items from online marketplaces or online stores was also a significant predictor of identity crime and misuse (AOR=1.32), malware (AOR=1.32) and fraud (AOR=1.57). Frequently being active on romance and dating websites or apps was also a significant predictor of identity crime and misuse (AOR=1.46), malware (AOR=1.46) and fraud (AOR=2.21). Frequently participating in online gaming or esports was a significant predictor of malware (AOR=1.34) and fraud (AOR=1.52) but not identity crime and misuse. Similarly, frequently accessing sexually explicit adult websites or subscribing to sexually explicit interactive adult platforms was a significant predictor of malware (AOR=1.25) and fraud (AOR=1.50) but not identity crime and misuse.

Social, psychological and economic stressors were associated with all three types of victimisation. Respondents who spent an increased amount of time or money gambling were significantly more likely to experience identity crime and misuse (AOR=1.24), malware (AOR=1.59) and fraud (AOR=2.16). Respondents who experienced increased financial stress were more likely to have experienced identity crime and misuse (AOR=1.13), malware (AOR=1.32) and fraud victimisation (AOR=1.59). Respondents who experienced negative impacts on their relationships with family and friends were also significantly more likely to experience identity crime and misuse (AOR=1.16), malware (AOR=1.29) and fraud (AOR=1.46). Respondents who had increased their consumption of alcohol or other drugs were significantly more likely to experience identity crime and misuse (AOR=1.28) and malware (AOR=1.25) but not fraud. Deteriorating physical health and wellbeing was also associated with malware victimisation (AOR=1.22).

Table 2: Logistic regression model predicting profit-motivated cybercrime victimisation in the 12 months prior to the survey

		Model 1: Identity crime and misuse (*n*=8,644)		Model 2: Malware attacks (*n*=8,491)		Model 3: Fraud or scams (*n*=8,719)	
Variable		**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**
Male (vs female)		1.00	0.90, 1.12	0.94	0.83, 1.06	1.08	0.90, 1.29
Current relationship (vs not in current relationship)		1.09	0.98, 1.22	1.17*	1.03, 1.33	1.13	0.95, 1.35
Age (vs 18–34 years old)	35–64 years	0.81**	0.72, 0.91	0.67***	0.59, 0.77	0.67***	0.56, 0.81
	65+ years	1.10	0.88, 1.39	0.87	0.67, 1.13	0.90	0.59, 1.37
Owns or operates an SME (vs neither)	SME owner	1.21	0.97, 1.53	1.75***	1.37, 2.24	1.52*	1.10, 2.11
	SME employee	1.04	0.86, 1.26	1.32*	1.07, 1.64	0.89	0.65, 1.23
Work hours using internet (continuous variable)		1.01	0.99, 1.03	1.01	0.99, 1.02	1.05***	1.02, 1.08
Personal hours using internet (continuous variable)		1.01	0.99, 1.03	1.02	0.99, 1.04	1.05***	1.02, 1.08
Risky online practices in past year (vs no)		1.54***	1.38, 1.72	1.61***	1.42, 1.82	1.53***	1.29, 1.80
Online activities undertaken daily or weekly (vs less frequently)	Online blogs, forums, interest groups	1.24**	1.10, 1.40	1.07	0.93, 1.23	1.10	0.92, 1.32
	Purchasing from online marketplaces/ stores	1.32***	1.19, 1.48	1.32***	1.17, 1.49	1.57***	1.32, 1.86
	Romance/ dating websites or apps	1.46***	1.22, 1.74	1.46***	1.21, 1.76	2.21***	1.76, 2.77
	Online gaming/ esports	1.11	0.96, 1.28	1.34***	1.15, 1.57	1.52***	1.25, 1.86
	Sexually explicit adult websites or platforms	1.12	0.97, 1.29	1.25**	1.07, 1.45	1.50***	1.22, 1.83

Table 2: Logistic regression model predicting profit-motivated cybercrime victimisation in the 12 months prior to the survey (continued)

		Model 1: Identity crime and misuse (*n*=8,644)		Model 2: Malware attacks (*n*=8,491)		Model 3: Fraud or scams (*n*=8,719)	
Experienced negative impacts of pandemic (vs did not)	Increase in financial stress	1.13*	1.01, 1.28	1.32***	1.15, 1.50	1.59***	1.32, 1.92
	More socially isolated	1.09	0.97, 1.23	1.14	0.99, 1.30	0.86	0.71, 1.05
	Increased time and/or money gambling	1.24**	1.06, 1.46	1.59***	1.34, 1.89	2.16***	1.76, 2.67
	Negative impact on relationships with family and friends	1.16*	1.02, 1.31	1.29***	1.13, 1.49	1.46***	1.20, 1.76
	Mental or emotional distress	1.05	0.92, 1.20	1.08	0.93, 1.24	0.92	0.75, 1.12
	Physical health and wellbeing deteriorated	1.12	0.99, 1.27	1.22**	1.06, 1.40	1.09	0.89, 1.34
	Increased consumption of alcohol or other drugs	1.28***	1.13, 1.46	1.25**	1.09, 1.44	1.19	0.99, 1.44
WFH due to pandemic (vs no)		1.36***	1.15, 1.60	0.90	0.74, 1.10	0.63**	0.47, 0.85
Interaction[a]	WFH and SME owner[a]	1.33*	1.01, 1.74	1.44*	1.07, 1.94	2.28***	1.52, 3.43
	WFH and SME employee[a]	0.97	0.76, 1.24	1.25	0.95, 1.66	1.92**	1.26, 2.92
Constant	0.15***	0.12, 0.18	0.09***	0.07, 0.12	0.02***	0.02, 0.03	

***statistically significant at $p<0.001$, **statistically significant at $p<0.01$, *statistically significant at $p<0.05$

a: Compared with respondents who did not own or operate an SME and were not WFH

Note: AOR=adjusted odds ratio, CI=confidence interval, SME=small to medium enterprise, WFH=working from home

Identity crime and misuse: Hosmer–Lemeshow $\chi^2(9)=1.34$, $p=0.21$; AUROC=0.791; $F(24, 14970)=26.99$, $p<0.001$

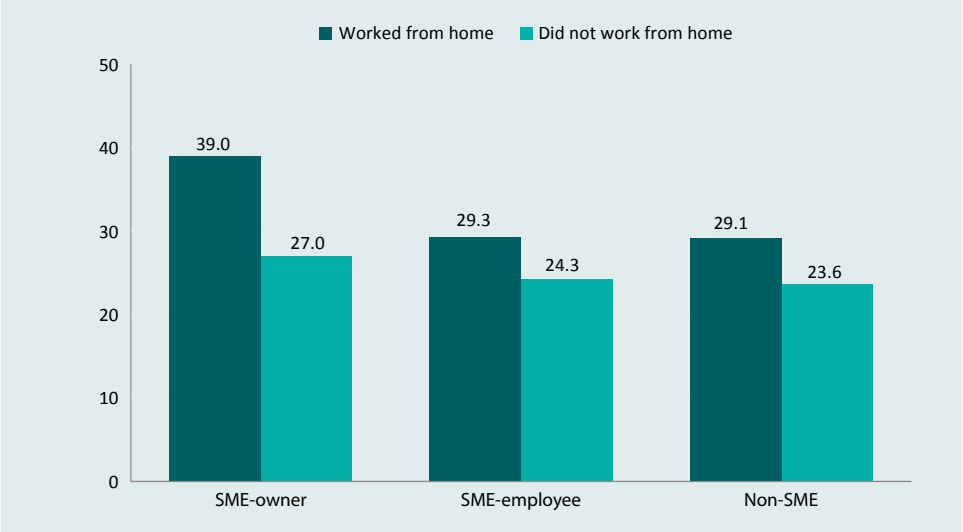
Malware: Hosmer–Lemeshow $\chi^2(9)=1.04$, $p=0.41$; AUROC=0.807; $F(24, 14970)=39.26$, $p<0.001$

Fraud and scams: Hosmer–Lemeshow $\chi^2(9)=0.425$, $p=0.92$; AUROC=0.816; $F(24, 14970)=39.52$, $p<0.001$

Source: AIC pilot Australian Cybercrime Survey, 2021

WFH in response to COVID-19 social distancing measures was associated with a higher likelihood of identity crime and misuse victimisation (AOR=1.36) and a lower likelihood of fraud victimisation (AOR=0.63). There was a significant interaction between owning an SME and WFH during the pandemic for identity crime and misuse (AOR=1.33), malware (AOR=1.44) and fraud victimisation (AOR=2.28). To demonstrate this relationship between SME ownership and WFH during the pandemic, Figures 1 to 3 display the average predictive margins, adjusted for covariates using marginal standardisation (Muller & MacLehose 2014), which represents the average predicted probability of each type of victimisation. The predicted probability of identity theft was 1.4 times higher for SME owners who were WFH than for those who were not (39% vs 27%; Figure 1). The predicted probability of malware attacks was 1.2 times higher (33% vs 28%; Figure 2), and the predicted probability of fraud and scams was 1.3 times higher (17% vs 13%; Figure 3). For fraud and scams, the risk of victimisation for respondents who did not own or operate an SME was higher among those who did not work from home (9.7%) than those who did work from home (6.8%).

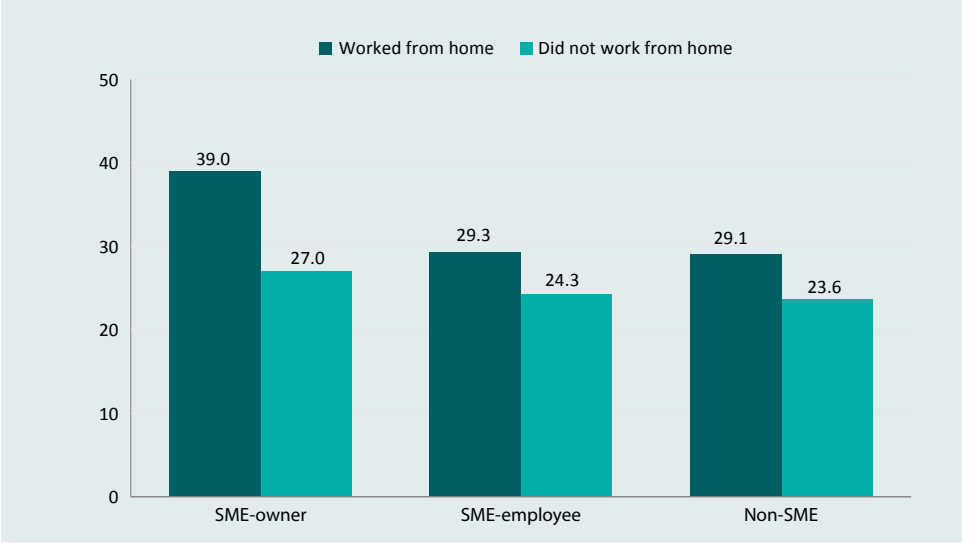
Figure 1: Predicted probability of identity crime and misuse by SME status and WFH due to COVID-19 social distancing measures (%)



Note: Predictive margins based on the logistic regression model reported in Table 2 (Model 1). SME=small to medium enterprise, WFH=working from home

Source: AIC pilot Australian Cybercrime Survey, 2021

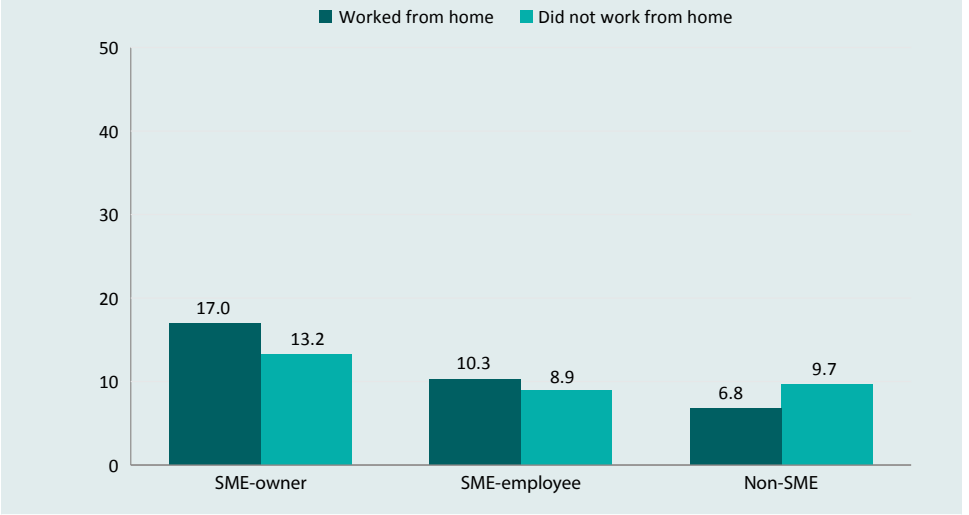
Figure 2: Predicted probability of malware attacks by SME status and WFH due to COVID-19 social distancing measures (%)



Note: Predictive margins based on the logistic regression model reported in Table 2 (Model 2). SME=small to medium enterprise, WFH=working from home

Source: AIC pilot Australian Cybercrime Survey, 2021

Figure 3: Predicted probability of fraud and scams by SME status and WFH due to COVID-19 social distancing measures (%)



Note: Predictive margins based on the logistic regression model reported in Table 2 (Model 3). SME=small to medium enterprise, WFH=working from home

Source: AIC pilot Australian Cybercrime Survey, 2021

Discussion

This study explored how the online routine activities of computer users, coupled with the effects of the psychological, social and economic stress of the pandemic—which we collectively described as the human factor in cybercrime—influenced the risk of profit-motivated cybercrime victimisation among a large sample of Australian adults. We capitalised on the fact that our survey covered the first year of the pandemic and captured self-reported changes in online routine activities and individual circumstances.

Victimisation was linked to the amount of recreational time individuals spent online and the specific online activities that they engaged in, both of which increase their accessibility or exposure to motivated offenders as a suitable target (Leukfeldt & Yar 2016; Reyns 2018). Purchasing items from online marketplaces or online stores and being active on romance or dating platforms exposes users to profit-motivated offenders. These activities involve communicating with strangers on the internet, and registration processes require users to enter financial information, which can be targeted. Alternatively, the source of risk might not be the platforms themselves but the opportunity they create for malicious actors to exploit them. Offenders may lure victims off legitimate platforms onto platforms with lower levels of monitoring (and therefore guardianship) to ask for personal information or money or to send malicious links. Malicious actors may also trick online shoppers by sending scam text messages pretending to be from couriers and post office companies. These scams proliferated during the COVID-19 pandemic. Other online activities were also related to increased risk of victimisation, reflecting the diverse methods profit-motivated cybercrime offenders use to target victims.

Risky online behaviour was associated with all three forms of victimisation, emphasising the importance of personal guardianship in preventing cybercrime (Williams 2016). This finding highlights the need for public messaging about the threat of cybercrime, the value of data and privacy, and what constitutes risky online behaviour. Given users of certain platforms were at elevated risk of victimisation, educating users of these platforms who also engage in other risky online behaviours may be an effective means of reducing cybercrime victimisation.

It was anticipated that WFH due to COVID-19 social distancing measures would increase vulnerability to cybercrime by reducing the guardianship afforded by secure workplace settings and networks. Whether WFH was a risk factor for victimisation depended on the respondent's working arrangements. SME owners who worked from home were at significantly increased risk of all three types of cybercrime victimisation. Unlike large companies and government departments, SME owners may lack the resources to employ cybersecurity personnel and implement strong cybersecurity measures at home. SME owners may also lack the necessary knowledge when assessing risks and vulnerabilities. This research highlights the need to better support small business.

While online routine activities were important, profit-motivated cybercrime victimisation was also associated with psychosocial, economic and health-related stressors. Respondents who reported pandemic-related increases in financial stress, gambling and relationship difficulties were significantly more at risk of all three types of cybercrime than those who did not report these types of pandemic-related impacts. This is consistent with previous research linking stressful life events to fraud victimisation (Anderson 2013; Ross & Smith 2011). Financial pressures, exacerbated by frequent gambling or substance use, may increase a person's vulnerability to exploitation by offenders promising quick and easy money (Levi & Smith 2021). The link between low self-control and cybercrime victimisation may also explain the link between increased gambling and substance use and victimisation, especially for cyber-enabled crimes (Reyns et al. 2019; van Wilsem 2013). While we cannot establish the temporal order of these stressors and victimisation from a cross-sectional survey, we asked respondents whether they experienced these stressors because of the pandemic, giving us some confidence that they were not the effects of being a cybercrime victim. We therefore conclude that the risk of cybercrime victimisation is explained by both the online activities of individuals and the life circumstances that may make them vulnerable to manipulation, coercion and exploitation.

While awareness campaigns that promote personal or physical guardianship of personal and financial information are important, this study echoes others that have pointed to the fact that the risk of victimisation will not be eliminated solely by encouraging people to use appropriate safeguards when online (Carter 2023). The findings from this study may help inform targeted prevention strategies focused on those most vulnerable to victimisation, or awareness campaigns based on the understanding that certain stressors may affect people's decision-making when online. These findings may also guide the development of interventions that simultaneously aim to promote safe online practices and address broader vulnerabilities of potential victims experiencing life stressors. For example, victim support services could assess victim needs and offer referrals to different sources of help to reduce the likelihood of repeat victimisation. Finally, these findings may assist in planning and resourcing for support services and cybercrime prevention efforts, noting that many of the stressors amplified during the pandemic—such as financial stress—are by no means unique to that period.

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URLs correct as at May 2023

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