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# Trends & issues in crime and criminal justice

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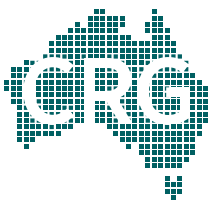
**Abstract** | Reducing Indigenous over-representation in the criminal justice system is justified on both social justice and economic grounds. We developed an innovative costing framework and estimated direct criminal justice system unit costs based on critical cost drivers. These estimates were applied to offender trajectories, modelling offences of all individuals registered as being born in Queensland during 1983–1984 (from ages 10 to 31). Separate trajectory models were developed for Indigenous and non-Indigenous Queenslanders in the birth cohort to enable separate cost estimations for these groups. Findings identified over one-half (53%) of the identified Indigenous cohort and 16 percent of the non-Indigenous cohort had moderate to chronic offender trajectories. Because of the high levels of recontact and sanction seriousness and length, Indigenous offenders were on average more costly. These findings emphasise the high cost of current criminal justice system responses to Indigenous and chronic offenders in particular and the need to consider innovative and more cost-effective approaches to reduce offending by individuals in these groups.

## The costs of Indigenous and non-Indigenous offender trajectories

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Recently it has been suggested that Indigenous over-representation in detention and prison should be included as a key national priority in the Closing the Gap strategy (COAG 2018). This strategy recognises the need for a long-term approach to reduce Indigenous disadvantage and aims to deliver improved health, education and employment outcomes for Indigenous Australians.

Achieving improved criminal justice system outcomes for Indigenous Australians has been a goal of many justice agreements and plans that have operated in every Australian jurisdiction over past decades, as well as more recently through the Commonwealth's National Indigenous Law and Justice Framework (Allard 2010; Allard et al. 2010). Despite well-intentioned efforts and investments to reduce Indigenous over-representation in the criminal justice system, the gap has widened and Indigenous Australians are now more over-represented in detention and prison populations than they have been at any point in history.



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Indigenous children are over-represented at each stage of the criminal justice system, being between three and 16 times more likely to be charged by police and seven to 10 times more likely to appear in children's court than non-Indigenous children (Allard 2011). Indigenous children are 17 times more likely than non-Indigenous children to be under community supervision and 23 times more likely to be in detention, while Indigenous adults are 12 times more likely to be incarcerated than non-Indigenous adults (Australian Institute of Health and Welfare 2019; Productivity Commission 2018). Reducing this over-representation makes sense on social justice and economic grounds. Responding to offending and applying sanctions both constitute a significant economic burden for governments, with estimates indicating that court appearances, community-based supervision, detention and incarceration incur considerable costs (see Productivity Commission 2018). Reducing Indigenous over-representation in these populations has the potential to reduce a significant proportion of the existing criminal justice system costs.

Understanding the offending patterns of individuals across their life course and the costs to the criminal justice system provides useful evidence about the long-term economic consequences of current criminal justice system responses (Allard & Manning 2011; Allard et al. 2014). Such evidence may be used, for example:

- to develop and evaluate activities which aim to prevent offending;
- to change system responses and pathways for young offenders; or
- to develop cost-effective interventions to reduce offending.

The findings of this analysis can inform the development of innovative approaches including justice reinvestment and payment by outcome, and the investment in early intervention, community, situational and criminal justice programs to reduce offending (see Allard 2010, 2011; Allen 2011; Clear 2011; Little et al. 2011; Little & Allard 2011; Ogilvie & Allard 2011).

No previous research has explored the costs of offender trajectories separately for Indigenous and non-Indigenous Australians. Findings from research conducted on whole cohorts indicate that members of ethnic minority groups including Indigenous Australians populate chronic offender groups at high rates (Allard, Chrzanowski & Stewart 2015, 2013; Allard et al. 2014; Broidy et al. 2015; Ferrante 2013; Livingston et al. 2008; Maldonado-Molina et al. 2009; Piquero & Buka 2002). It is argued that many members of ethnic minority groups have early onset and high rates of offending because of their unique structural contexts (eg racism and poverty) and related exposure to key risk factors (eg poor socialisation, development and parenting, attenuated family bonds, exposure to disadvantaged schools and fewer employment opportunities) that both foster early onset and preclude desistance (Haynie, Weiss & Piquero 2008; Moffitt 1993).

Studies that have explored the costs of offender trajectories have adopted different samples, follow-up time frames and costing frameworks. Most of these studies have been conducted overseas and have assessed the cost of offence types based on a wide range of tangible and intangible costs (eg criminal justice system, victim loss and suffering, lost productivity for victims and offenders, and fear of crime). While many of these costs are not directly transferable to the Australian context, findings indicate that chronic offenders incur a disproportionate share of costs, with each chronic offender costing between US\$95,241 and US\$17m over the life course (Allard et al. 2015, 2014, 2013; Cohen, Piquero & Jennings 2010a, 2010b; Day & Koegl 2019; Piquero et al. 2013). Only one study has explored offender trajectories and costs based on race/ethnicity (Cohen, Piquero & Jennings 2010a). That study found that African American chronic offenders had the highest total costs, with this group incurring an average cost of US\$1.6m over the life course.

Given its potential usefulness for policymakers and advocates, the study presented in this article explored differences in life-course offender trajectories to age 31 years for Indigenous and non-Indigenous Queenslanders, and estimated the net present value of these offending trajectories, modelling the patterns of system contacts as future costs. The study analysed a population-based birth cohort that includes offending and criminal justice system contacts for all persons registered as being born in Queensland during 1983 and 1984. A narrow costing framework focused on direct criminal justice system costs was used. Estimates were based on key cost drivers, to facilitate use of the findings in cost–benefit analyses and business cases. Three research questions were addressed:

- How many distinct offender trajectories can be identified for Indigenous and non-Indigenous Queenslanders?
- What is the nature and extent of criminal justice system contacts for individuals in the Indigenous and non-Indigenous trajectory groups?
- What are the long-term criminal justice system costs associated with Indigenous and non-Indigenous offending trajectories, and how are these costs distributed across the criminal justice system agencies?

## Method

### Birth cohort

There were 83,371 individuals registered as being born in Queensland during 1983 and 1984. Just over one-half ( $n=42,946$ , 52%) of the cohort were male and a small proportion ( $n=2,295$ , 3%) were classified using the multi-stage median algorithm as having Indigenous cultural heritage. This cohort was established using the data linkage and cleaning processes described elsewhere (Allard, McCarthy & Stewart 2020). Given the data used to define the cohort, the linkage process is likely to have underestimated the overall Indigenous population size, and therefore may have somewhat inflated the frequency of criminal justice system contacts in the identified Indigenous cohort (see *Limitations of the study* for further information).

One-quarter ( $n=22,686$ , 27%) of the birth cohort were found guilty of at least one offence between the ages of 10 and 31 years. An offence involved a guilty plea or a finding for behaviours outlined in the Australian and New Zealand Standard Offence Classification (ABS 2011). Category 14 (traffic offences) were excluded because most are dealt with by infringement notice but individuals may elect to have a court hearing. Those who were classified as Indigenous in the cohort were more likely to have offended and to offend more frequently than those who were classified as non-Indigenous (Indigenous:  $n=1,844$ , 80% offended,  $M=26.84$  offences,  $SD=44.04$ ; non-Indigenous:  $n=20,843$ , 26% offended,  $M=2.12$  offences,  $SD=11.87$ ). The average age of onset of offending was 18.22 years, with individuals in the Indigenous cohort on average two years younger than those in the non-Indigenous cohort when they first offended ( $M=16.14$  years,  $SD=4.59$ ;  $M=18.4$  years,  $SD=4.64$ ). The individuals in this cohort were linked to 233,970 recorded offences and 90,087 criminal justice system events. These events included formal police cautions ( $n=12,564$ ), youth justice conferences ( $n=179$ ), finalised youth court appearances ( $n=8,829$ ) and finalised adult court appearances ( $n=68,515$ ).

## Research phases

The research questions were addressed in three phases.

### *Phase 1: Identifying the number of offender trajectories*

To address the first research question, latent class growth modelling was used to model trajectories of the biennial offence counts from age 10–11 to 30–31 years, using Mplus software. Biennial counts constrained time observations and thus assisted with model convergence. Separate trajectory analyses were performed for the identified Indigenous and non-Indigenous cohorts. A zero-inflated Poisson distribution was used for the latent class growth modelling as offence counts were over-dispersed with an excess of zero offence count observations. Additionally, several individuals had biennial offence counts that exceeded 25 offences. To assist the trajectory modelling to converge, these outliers were re-scaled to have an upper limit of 25 offences in any two-year period. Model solutions with between two and five groups were examined, and were based on a range of goodness of fit indicators, including entropy values and average class probabilities for most likely class membership. A three-class model for both Indigenous and non-Indigenous Queenslanders was selected as the best-fitting model (Allard et al. 2020).

### *Phase 2: Exploring the nature and extent of criminal justice system contacts*

The second research question targeted the nature and extent of criminal justice system contacts for individuals in the identified Indigenous and non-Indigenous trajectory groups. This question was addressed by focusing on the adolescent onset and early onset (chronic) trajectory groups. Members of the low rate and non-offenders group accounted for very few criminal justice system events (cautions, youth and adult court) and sanctions (community-based supervision, youth detention and adult incarceration). The proportions of individuals identified as Indigenous and non-Indigenous in the cohort who experienced the main criminal justice system events and sanctions were estimated. Additionally, the average number of criminal justice system events and average number of days that individuals in the groups were supervised on the sanctions were determined.

### Phase 3: Exploring the long-term criminal justice system costs of offending trajectories for Indigenous and non-Indigenous offenders

The third research question was about the long-term criminal justice system costs for those who were identified as Indigenous and non-Indigenous in the different trajectory groups, and how these costs would be distributed across the criminal justice departments. The analytical strategy to address this question involved two stages. First, a primarily top-down costing framework was established which involved disaggregating agency expenditure (non-central operational costs directed to service delivery, excluding capital works) based on activities and outputs. A broad range of data was used to estimate resource allocation across activities and outputs, including financial and human resources data, administrative crime records, police activity and investigation management data, courts event data and interviews with frontline staff. The unit cost estimates for key transactions also took into account critical cost drivers, including whether an individual was diverted by police to a caution or conference, the most serious offence type charged, whether court events included trials and the type of supervised sanction. The detailed methodology used to establish the unit cost estimates is provided elsewhere (Allard et al. 2020) and the unit cost estimates in 2016–17 dollars are provided in Figure 1.

**Figure 1: Police, court and sanction unit cost estimates applied to the Indigenous and non-Indigenous offender trajectories (2016–17 dollars)**

Police unit cost estimates (per offending event)	Court unit cost estimates (per principal offence finalised)	Sanction/supervision costs (per event/day)
Caution \$3,453		Conference (per event) \$11,340
Conference \$3,832		Sanctions (per day)
Court	Homicide and related offences \$19,674	Youth
Homicide and related offences \$138,291	Acts intended to cause injury \$1,165	Community service order & graffiti removal order \$22
Acts intended to cause injury \$5,761	Sexual assault and related offences \$6,543	Probation order & supervised release order \$124
Sexual assault and related offences \$20,163	Dangerous or negligent acts \$508	Conditional release order & conditional bail program \$362
Dangerous or negligent acts \$4,479	Abduction, harassment and other \$2,076	Youth detention \$1,498
Abduction, harassment and other \$9,493	Robbery, extortion and related \$3,021	Adult
Robbery, extortion and related \$13,288	Unlawful entry with intent/burglary, break and enter \$1,080	Community service order \$5
Unlawful entry with intent/burglary, break and enter \$4,299	Theft and related offences \$821	Probation order & parole order \$9
Theft and related offences \$2,570	Fraud, deception and related \$1,159	Intensive corrections order \$22
Fraud, deception and related \$3,007	Illicit drug offences \$776	Adult incarceration \$182
Illicit drug offences \$3,879	Prohibited and regulated weapons and explosives offences \$761	
Prohibited and regulated weapons and explosives offences \$4,476	Property damage and environmental pollution \$981	
Property damage and environmental pollution \$2,876	Public order offences \$556	
Public order offences \$2,400	Offences against justice procedures \$603	
Offences against justice procedures \$3,302	Miscellaneous offences \$704	
Miscellaneous offences \$1,633		

Police costs were assessed for offending events cautioned or conferenced, and for the most serious offence charged for offending events proceeding to court. An offending event was defined as all offences related to an individual within an identified police occurrence or incident. The estimates took into account the relative expenditure based on the length of time that general duties, Child Protection and Investigation Unit/Criminal Investigation Branch (CPIU/CIB) and forensics officers spent on offences that were cautioned or conferenced or proceeded to court. Specialist area expenditure was apportioned based on the full-time equivalent staff in each of the areas (eg homicide, fraud and cybercrime) and then applied to the most relevant offending event types. Police prosecutions time and cost was not able to be estimated due to an absence of relevant data across offending event types.

Court costs for the Queensland Department of Justice and Attorney-General were assessed based on the principal offence finalised. Estimates took into account the proportion of offences that led to trials and trial length, as well as differences in the number of other court events (eg application, callover, committal or hearing). Unfortunately, additional court costs such as the provision of legal aid and police prosecution services could not be included. The cost of the main types of youth and adult community-based orders were assessed based on a cost per day, taking into account the different lengths of time that officers devote to different order types, based on interviews with frontline staff. Youth justice conferences were assessed as a cost per conference held, whereas youth detention and adult incarceration were assessed as a cost per day.

The second stage involved modelling the cost estimates to determine costs based on individuals identified in the cohort as Indigenous or non-Indigenous and their trajectory group in order to estimate the long-term direct criminal justice system costs for each group. To ensure that the costs in the study would be relevant and useful for contemporary policymaking, the patterns of contacts with the criminal justice system that occurred for the 1983–1984 birth cohort were projected as future criminal justice system contacts for a cohort that turned 10 in 2016–17, using an approach similar to incidence-based costing (Larg & Moss 2011). The base year for the cost modelling is 2016–17, and hence all costs are reported in 2016–17 dollars, with costs projected into the future discounted at seven percent annually, consistent with guidelines from the Australian Government Department of Finance (Australian Government 2007).

## Results

### Number of offender trajectories

The first research question required examination of the number of trajectory groups for those classified as Indigenous and non-Indigenous in the birth cohort. Figure 2 presents the three trajectory groups identified by latent class growth modelling.

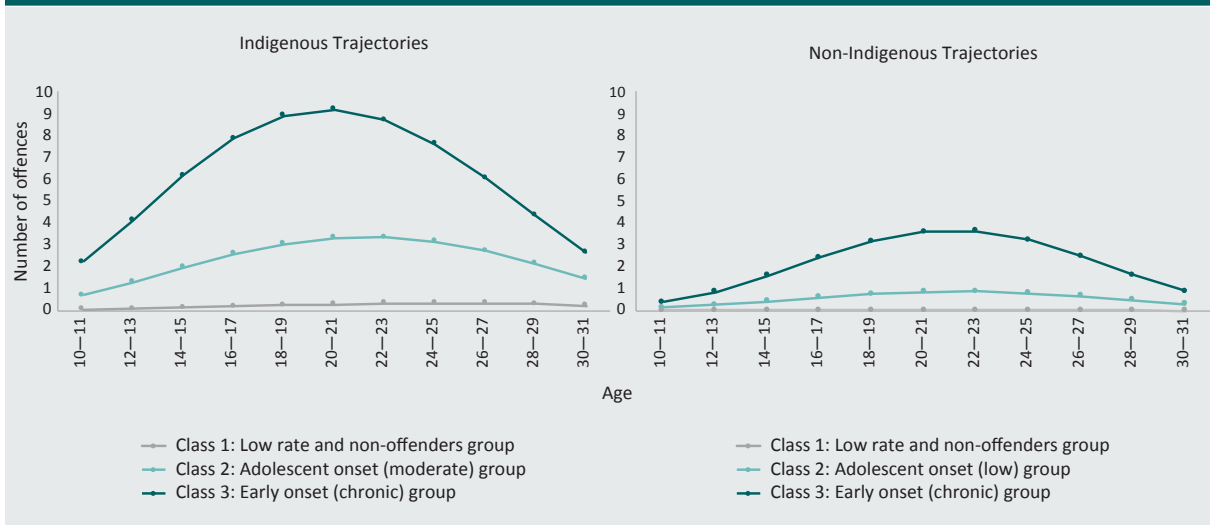
For those in the cohort classified as Indigenous, individuals in class 1 had either low levels of offending or no offending between the ages of 10 and 31 years. Nearly one-half (47%) of the identified Indigenous cohort were in class 1, and accounted for four percent of offending by the identified Indigenous cohort ( $M=2.26$  offences,  $SD=2.68$ ). Given the low rate of offending over time, class 1 was labelled the 'low rate and non-offenders' group.



Class 2 displayed adolescent onset offending ( $M=15.05$  years old,  $SD=3.32$ ) which continued into adulthood and peaked between the ages of 20 and 25 years. Just over one-third (38%) of the identified Indigenous cohort were in class 2 and accounted for one-third of offences (36%) committed by the identified Indigenous cohort ( $M=25.16$  offences,  $SD=16.13$ ). Class 2 was labelled the ‘adolescent onset (moderate)’ group.

Class 3 had early onset ( $M=13.2$  years,  $SD=2.84$ ) and high levels of offending ( $M=107.77$  offences,  $SD=62.4$ ), with offending peaking when individuals were aged 20–21 years old. Class 3 included 15 percent of the identified Indigenous cohort and accounted for 60 percent of offences by the identified Indigenous cohort. Class 3 was labelled the ‘early onset (chronic)’ group.

**Figure 2: Estimated marginal means for three-class Indigenous and non-Indigenous trajectory models**



The trajectory model for those classified as non-Indigenous showed similar patterns, though the volume of offending and the age at which offending began differed notably from the Indigenous cohort (Figure 2). Additionally, the proportions of individuals classified in each group differed markedly. Over four-fifths (84%) of the identified non-Indigenous cohort were in class 1, the ‘low rate and non-offenders’ group, and had either low levels of offending or no offending when aged 10 to 31 years ( $M=0.13$  offences,  $SD=0.38$ ).

Class 2 had adolescent onset of offending ( $M=18.26$  years old,  $SD=4.5$ ) which continued into adulthood and peaked at ages 20 to 23. Just over one-tenth (14%) of the identified non-Indigenous cohort who were born in 1983–1984 were in class 2, averaging 6.08 offences when aged 10 to 31 ( $SD=5.43$ ). Class 2 was therefore labelled the ‘adolescent onset (low)’ group. Class 3, the ‘early onset (chronic)’ group, had early onset ( $M=16.22$  years old,  $SD=4.18$ ) and high levels of offending ( $M=46.01$  offences when aged 10 to 31,  $SD=56.47$ ), with offending peaking when aged 20 to 23 years old. Class 3 included three percent of the identified non-Indigenous cohort and 56 percent of their offending.

## Nature and extent of criminal justice system contacts

The second research question required exploration of the nature and extent of criminal justice system contacts for individuals in the Indigenous and non-Indigenous trajectory groups. Table 1 presents the main criminal justice system events and sanctions that were used to respond to offending by members of the adolescent onset and early onset (chronic) offending groups based on identified Indigenous status. High proportions of individuals in these groups had at least one caution or youth court appearance, and nearly all individuals in these groups also experienced an adult court appearance. Relatively high proportions of individuals in the early onset (chronic) groups and Indigenous people in the adolescent onset group experienced supervision through a community-based order, youth detention or adult incarceration. It is apparent from the average number of youth and adult court finalisations that individuals in these groups had considerable repeat contact with the system.

Individuals in the chronic offender groups also spent considerable lengths of time under community-based supervision and in detention or incarceration. Those classified as Indigenous and in the chronic offender group spent an average of 4.8 years on community-based orders and 4.9 years incarcerated, compared with those classified as non-Indigenous in the chronic offenders group spending 2.3 years on community-based orders and 1.3 years incarcerated, between the ages of 10 and 31. Table 1 displays the mean number of events presented for caution and finalised court appearances, and the mean number of days presented for youth and adult community-based orders (excluding community service), youth detention and adult incarceration.

**Table 1: Main criminal justice system events and sanctions experienced by members of the adolescent onset and early onset (chronic) offender groups based on whether classified as Indigenous or non-Indigenous**

Nature of contact with system	Adolescent onset group				Early onset (chronic) group			
	Indigenous (n=878)		Non-Indigenous (n=11,029)		Indigenous (n=347)		Non-Indigenous (n=2,093)	
	% experience	M	% experience	M	% experience	M	% experience	M
Caution	64.6	1.12	38.9	0.54	79.8	1.80	57.4	1.00
Youth court	51.9	1.54	11.1	0.18	86.5	6.69	39.3	1.45
Adult court	98.5	9.41	87.7	2.55	98.8	21.02	90.0	8.67
Youth community-based order	27.5	136.20	2.7	10.8	78.1	686.20	24.4	136.7
Adult community-based order	56.5	417.10	16.5	98.8	83.0	1,079.40	64.8	708.30
Youth detention	7.2	3.53	0.2	0.12	54.5	127.95	9.3	8.22
Adult incarceration	34.4	282.90	3.8	21.88	82.1	1,659.35	37.3	440.00



## Long-term criminal justice system costs for Indigenous and non-Indigenous offending trajectory groups

The third research question required the application of unit cost estimates and economic modelling to estimate the long-term costs of criminal justice system responses to individuals in the trajectory groups. As well as giving a clearer indication of the accumulation of direct criminal justice system costs over the long term, this type of analysis can also indicate the magnitude of potential cost savings that could result from preventing initiation of offending by individuals in the different trajectory groups and allows an exploration of how these savings could be distributed across criminal justice system agencies. However, while estimated costs can indicate potential cost savings, it is not assumed that all existing criminal justice system costs are avoidable. Table 2 presents the net present value (in 2016–17 dollars) of the costs associated with offending by individuals in the trajectory groups, with the offending trajectories projected into the future and discounted at seven percent per annum.

Over one-half of the identified Indigenous cohort (53%; 1.5% of the total birth cohort) were in the adolescent onset (moderate) or early onset (chronic) groups. When modelled as future costs based on the nature and volume of contacts, individuals in these two groups accounted for 40 percent of total criminal justice expenditure. Based on this analysis, an Indigenous young person aged 10 years in 2016–17 will cost an average of \$57,806 in the adolescent onset group or \$380,097 in the early onset group in direct criminal justice system costs by the time they turn 31 years old.

In contrast, individuals in the non-Indigenous cohort who were in the adolescent onset (low) and early onset (chronic) groups accounted for 16 percent of the total cohort and 55 percent of the projected criminal justice system costs. A non-Indigenous young person in the early onset (chronic) group aged 10 in 2016–17 will cost an average of \$74,798 by the time they turn 31 years old.

**Table 2: Net present value of long-term direct criminal justice system costs for individuals in each trajectory group, from age 10 to 31 years**

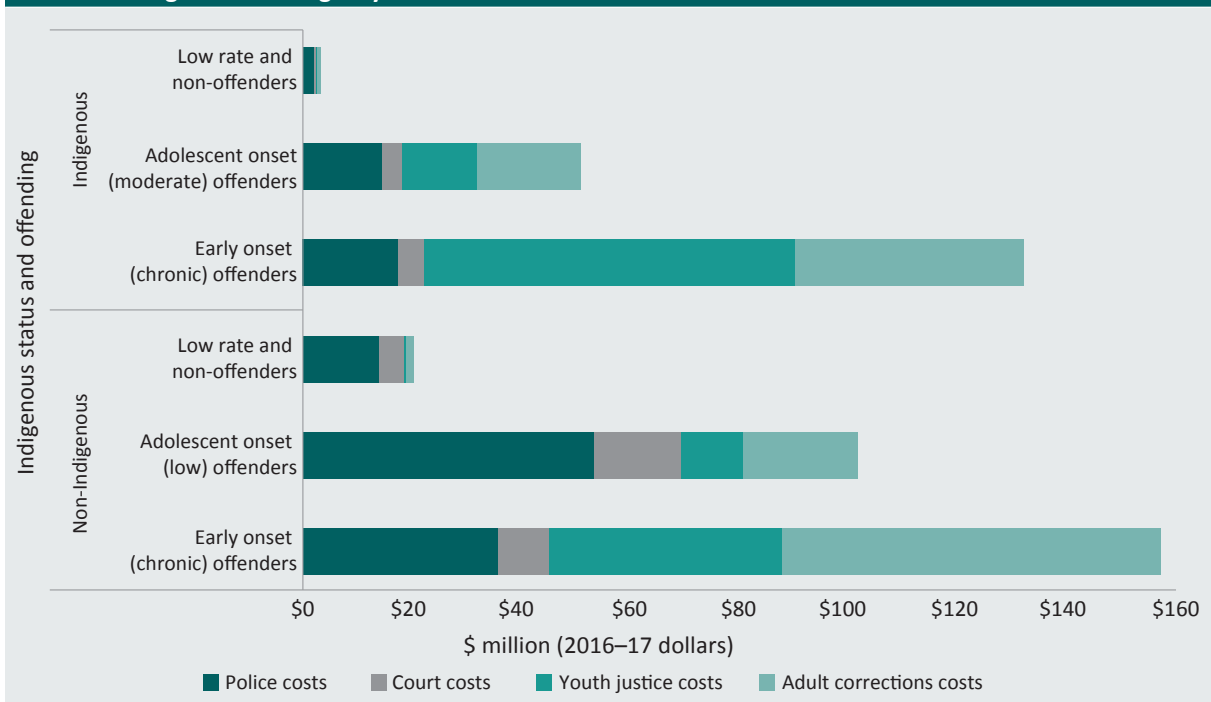
Trajectory group		Individuals					Cost	
		<i>N</i>	% of Indigenous or non-Indigenous cohort	% of total cohort	Average Individual cost (\$)	Total group cost (\$) (2016–17 dollars)	% of Indigenous or non-Indigenous cost	% of total cost
Indigenous	Low rate and non-offenders	1,070	46.6	1.3	2,980	3,188,345	1.7	0.7
	Adolescent onset (moderate)	878	38.3	1.1	57,806	50,753,239	27.3	11.1
	Early onset (chronic)	347	15.1	0.4	380,097	131,893,751	71.0	28.8
<b>Total</b>		<b>2,295</b>	<b>100</b>	<b>2.8</b>	<b>80,974</b>	<b>185,835,335</b>	<b>100</b>	<b>40.6</b>

**Table 2: Net present value of long-term direct criminal justice system costs for individuals in each trajectory group, from age 10 to 31 years (cont.)**

Trajectory group		Individuals					Cost	
		N	% of Indigenous or non-Indigenous cohort	% of total cohort	Average individual cost (\$)	Total group cost (\$) (2016–17 dollars)	% of Indigenous or non-Indigenous cost	% of total cost
Non-Indigenous	Low rate and non-offenders	67,954	83.8	81.5	267	18,112,599	6.7	4.0
	Adolescent onset (low)	11,029	13.6	13.2	8,783	96,868,753	35.7	21.2
	Early onset (chronic)	2,093	2.6	2.5	74,798	156,552,496	57.7	34.2
<b>Total</b>		<b>81,076</b>	<b>100</b>	<b>97.2</b>	<b>3,349</b>	<b>271,533,847</b>	<b>100</b>	<b>59.4</b>

Figure 3 presents the net present value of criminal justice system costs for each trajectory group up to age 31 years when modelled into the future, based on the agency that bears the costs. This modelling indicates which agencies would benefit from reduced costs if offending by individuals in the different trajectory groups was prevented or reduced. Most cost savings would result from preventing early onset (chronic) offending, with significant savings for youth justice (\$110,940,032; 81% of the total estimated youth justice costs for the cohort) and adult corrections (\$111,415,641; 73% of the total estimated adult corrections costs for the cohort). Preventing early onset (chronic) offenders from initiating would also result in considerable savings for police (\$54,894,764; 39% of the total estimated costs for the cohort), although a significant proportion of the police budget is also directed towards adolescent onset (low) offenders because of the larger volume of these types of offenders.

**Figure 3: Net present value (2016–17 dollars) of total criminal justice system costs for each trajectory group based on the government agency that bears the costs**



## Discussion

### Overview of the findings

There are four important findings from this study. First, those in the identified Indigenous cohort were more likely than those in the identified non-Indigenous cohort to be found guilty of offending. They also had a higher frequency of offending and experienced more serious sanctions. Over one-half (53%) of those in the identified Indigenous cohort were in the two main offender groups (adolescent onset and early onset) and on average were found guilty of 49 offences before age 31 years. Only 16 percent of those in the identified non-Indigenous cohort were in the two offending groups, and they were found guilty of an average of 13 offences. For the cohort as a whole (including the low rate and non-offenders group), each individual classified as Indigenous was found guilty of an average of 27 offences, while each individual classified as non-Indigenous was found guilty of an average of two offences.

Second, a large proportion of those in the identified Indigenous (47%) and non-Indigenous (83%) cohorts were classified in the low rate and non-offenders groups, and there is a considerable difference in the average cost of individuals in these groups based on Indigenous status. Each Indigenous person in the low rate or non-offenders group cost \$2,980, while each non-Indigenous low rate or non-offender cost \$267. This difference can be explained in part by the larger proportion of the selected Indigenous cohort who had at least one recorded offence: 58 percent of Indigenous and 11 percent of non-Indigenous individuals in the low rate or non-offender groups had one or more offence.

Third, there is considerable churn in the system, with many individuals having repeated contact. On average, each individual who was classified as Indigenous and who was in the early onset (chronic) group had seven finalised youth court appearances. In the adult court, those identified as Indigenous who were in the adolescent onset and early onset (chronic) groups had an average of nine and 21 finalised adult court appearances respectively. Individuals in the chronic offender groups also spent considerable time being supervised on orders. In the chronic offender groups, those identified as Indigenous spent an average of 10 years and those identified as non-Indigenous spent an average of four years on community-based orders and in detention and/or prison between the ages of 10 and 31.

The notable differences in cost between chronic offenders in the Indigenous cohort and chronic offenders in the non-Indigenous cohort (\$380,097 compared to \$74,798 respectively) appear to derive in large part from the greater frequency and length of youth justice sanctions for the Indigenous chronic offending cohort—in particular, probation orders and detention. The greater frequency of these sanctions may be to some extent a function of the greater churn or frequency of contact with the criminal justice system for the Indigenous chronic offenders cohort over their young adult life, compared to the non-Indigenous chronic offenders cohort. It may also in part derive from a somewhat greater rate of violent offending among the Indigenous chronic offenders cohort, which may affect their eligibility for diversionary options or particular sanction types, as well as potentially affecting the length of their sanctions.

Finally, considerable economic benefits would result from reducing offending by those identified as Indigenous in the adolescent onset group and by those identified as Indigenous and non-Indigenous in the early onset (chronic) groups. When the direct criminal justice system costs of individuals in these groups are projected into the future, individuals within these groups account for nearly half of police costs (49%), just over half of court costs (57%) and the vast majority of youth justice (91%) and adult corrections (85%) expenditure for the entire cohort. On average, each Indigenous early onset (chronic) offender will cost \$380,097 over their young adulthood, while each non-Indigenous early onset (chronic) offender will cost \$74,798 over this period. Each adolescent onset Indigenous offender will cost an average of \$57,806 over young adulthood. When the adolescent onset and early onset groups are combined for those in the identified Indigenous cohort, which account for over one-half of that cohort, the average cost of each individual is \$208,026. In total, individuals in these three groups represent four percent of the cohort and account for 74 percent of the total cohort costs, with costs primarily related to youth justice and adult corrections expenditure.

### Implications for policy and practice

The project has two main implications for policy and practice. First, the unit cost estimates and the estimates for the trajectory groups that were developed can both serve as key inputs or enablers for cost–benefit analyses or business cases that estimate the costs of changes to current responses in the criminal justice system, or that assess the benefits of prevention programs, interventions targeted at preventing reoffending, or innovative approaches such as justice reinvestment or payment by outcome. These estimates may be particularly useful for programs and approaches that aim to reduce Indigenous over-representation in the criminal justice system, given the relatively high levels of costs associated with the Indigenous offending cohorts.

Existing unit cost estimates for criminal justice system practices (see Productivity Commission 2018) do not include police costs, and the validity of other estimates may be questionable because they do not take into account critical cost drivers. The unit cost estimates produced in this project considered whether an individual was diverted, offence type, whether there was a trial and trial length, and the length of time directed towards supervised orders. Moreover, the cost estimates of the different trajectory groups have been projected as future costs, with 2016–17 used as the base year and costs discounted at seven percent annually. The estimates therefore represent the net present value of future costs and can be used to assess the likely benefits that may result from alternative criminal justice system pathways, programs and approaches.

Second, there is a need to reduce Indigenous over-representation in the criminal justice system by ensuring equitable processes at each stage of the criminal justice system and by better identifying the causes of over-representation. This would enable more focused efforts not only to prevent the onset of offending but also to encourage desistance from offending by Indigenous young people (Allard 2011). Indigenous people accounted for three percent of the cohort but 40 percent of total criminal justice system costs. The large proportion of those classified as Indigenous people who were in the adolescent onset and early onset (chronic) groups and the small proportion of individuals classified as non-Indigenous in the early onset (chronic) group would be ideal candidates for prevention activities.

Innovative approaches including justice reinvestment and payment by outcome may prove to be effective investment frameworks. There are also a range of early-intervention, community-based, situational and criminal justice activities that could be considered which would reduce the risk factors for offending and enhance protective factors to prevent offending or reduce its reoccurrence (Allard 2011, 2010; Allen 2011; Clear 2011; KPMG 2018; Little & Allard 2011; Little et al. 2011; Ogilvie & Allard 2011). Indeed, the findings provide some support for innovative initiatives that are currently being provided in Queensland by the Department of Child Safety, Youth and Women which may reduce offending such as the Our Way strategy, The First 1000 Days, and Aboriginal and Torres Strait Islander Family Wellbeing Services.

## Limitations of the study

There are two main limitations of the study. First, the study was based on analyses of administrative data which only include reported offences, and there is always the potential for such data to include as being born in Queensland during 1983 and 1984, with Indigenous status determined using the multi-stage median algorithm (see Allard et al. 2019). This algorithm resulted in the classification of 2,295 people as having Indigenous cultural heritage. While this approach may reduce the likelihood of incorrectly identifying someone who had contact with the systems as Indigenous (eg due to administrative error), it may potentially fail to count Indigenous people who did not identify as Indigenous, or who had no contact with the systems and who were either not registered at birth or not registered as Indigenous at birth.

Other sources suggest that the number of Indigenous people in the birth cohort may be an underestimate, with the ABS *Experimental estimates* suggesting that there may have been 4,970 Indigenous people (ABS 2009). Other less conservative approaches to classifying individuals based on Indigenous status such as the 'ever' identifier resulted in the identification of 4,821 Indigenous people. When the 'ever' identifier was used, 24 percent (19,183÷78,550) of individuals classified as non-Indigenous had an offending history ( $M=1.83$  offences,  $SD=11.13$ ) and 73 percent (3,504÷4,821) of individuals classified as Indigenous had an offending history ( $M=18$  offences,  $SD=11.13$ ). Therefore, the approach used to classify an individual's Indigenous status was conservative and likely under-identified and/or enumerated the denominator population. The results in this report should be considered indicative rather than exact representations of Indigenous offending rates, and, when applying these results to the broader Indigenous population, the under-identification of Indigenous people in the cohort and the resulting potential inflation of the frequency of offending in this cohort should be considered.

Second, all cost estimation exercises involve sources of uncertainty and error. The cost of the trajectories projected into the future assumes that patterns of contacts and existing cost estimates will be relatively stable over time. The unit cost estimates relied on administrative data relating to activities and resources which were not designed for estimating costs. This means that estimates will be impacted by the quality of the data systems and any assumptions that had to be made. Further, while the estimates took into account critical cost drivers, other cost drivers that could not be assessed may also impact such as location (eg remote area versus major city) and whether the offender pleaded guilty. Finally, the unit estimates were based on the direct criminal justice system costs and therefore do not include other considerable costs that result from offending—particularly those for victims, offenders, families of victims and offenders, taxpayers and government, and wider society (see Allard & Manning 2011).

## Directions for future research

Future research should consider using different costing methods to explore the costs of offender trajectories and could try to prospectively identify members of trajectory groups based on risk and protective factors (see Allard et al. 2015). Research should consider using a bottom-up costing framework to produce more fine-grained cost estimates that reflect the short-run opportunity costs associated with reduced offending, as well as the wider economic and social costs that would facilitate cost–benefit analyses. Additional research that assesses the costs of crime and intangible costs will help researchers to develop more valid and reliable cost estimates. The need for additional research which predicts future offending and differentiates offender trajectory groups based on risk factors is also essential to improve the efficient targeting of costly crime prevention programs.

## Conclusion

Understanding the offending patterns over the life course of the different trajectory groups promotes long-term thinking about appropriate responses to offending and encourages the use of potentially more resource-intensive early-intervention and criminal justice system programs to prevent offending and reoffending. Multiple intervention points (including intergenerational interventions such as working with the children of prisoners) can be identified to prevent the initiation of offending or—once an individual has engaged in offending—to prevent reoffending and encourage desistance of offending. These intervention points are not restricted to early intervention and can occur at all points in the life cycle; however, there are clearly social and economic benefits to reducing the harms of offending early in life, not only for victims and offenders but also for broader society. In addition, many of these interventions may not directly target offending but may instead target risk factors outside the criminal justice system that are known to be associated with offending, such as mental health, child protection, and school engagement programs. While many of these programs and interventions may appear costly, they may be cost-effective when the magnitude of long-term systems costs are considered.

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