The association between birth cohort size and fluctuating crime levels: A Western Australian case study

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Foreword | *Official Australian crime statistics indicate that individual offence levels peak around 15–24 years of age and decline thereafter (eg see AIC 2011). Change in this general age–crime trend could be expected to coincide with change in age-related demographic phenomena (South & Messner 2000). This paper is one of two by this author that investigate the impact of structural ageing on crime patterns. A case study of the South Australian population (Rosevear 2011) confirmed that total crime levels declined in that state when the proportion of young people in the population declined.*

In this paper, another aspect of the association between crime and demography is considered—age-specific offence rates and birth cohorts. Australia has experienced waves of differently sized birth cohorts (Jackson 2001; McDonald & Kippen 1999), yet the impact of these waves on long-term crime trends is frequently overlooked. This paper uses a case study of the Western Australian population to illustrate the extent to which Australia's largest ('baby bust') cohort have engaged in higher levels of criminal activity compared with smaller birth cohorts.

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Background

The trend of individual offending

> starting at an early age, rising to a peak in the late teens, and then dropping rather slowly to almost zero at a late age

has been referred to as an age–crime pattern (Blumstein 2005: 244; Braithwaite 1989, Findlay 1999, Hirschi & Gottfredson 1983). This strong association between age and crime would suggest that, as the age structure of a population changes, so may crime rates. Yet the impact of the age–crime pattern and other demographic phenomena are often overlooked, potentially leading to misunderstandings about policy and program effectiveness. This paper aims to ensure that age-related demographic phenomena and their impact on crime patterns are better understood and acknowledged in developing and evaluating policy and programs, demonstrating how the size of large birth cohorts may shape crime patterns.

The strong association between age and crime (or an age–crime pattern) would suggest that, as the age structure of a population changes, so may crime rates. Birth cohorts— 'those people born in the same time interval and ageing together' (Ryder 1965: 844)— vary in size, which results in the proportion of people at each age in the population age structure varying over time. If the 'young' age bracket (approximately 25 years and under) is comprised of predominantly small birth cohorts, the total population will be older than a total population whose 'young' age brackets comprises very large birth cohorts and vice versa for the 'older' age brackets. In addition, the varying size of cohorts means that each cohort experiences a unique array of life chances. In this respect, the quality of life chances

encountered by a birth cohort are to some degree relative to its size. It is the combination of the size and life experiences of birth cohorts that can therefore be expected to contribute to variation in cohorts' offence trends. Compared with smaller birth cohorts, larger cohorts face greater competition and less promising life chances, such as particularly high unemployment rates when first entering the work force, which results in reduced relative income (Easterlin 1987). Consequently, larger cohorts may be unable to achieve the living standards aspired to in the cohort's formative years, which impacts on fertility rates, and partnering and family choices. In turn, the stress levels of a large cohort may be higher than those of smaller cohorts. This may result in heightened levels of social disorganisation, including increased crime levels.

The Australian population has experienced waves of differently sized birth cohorts. A peak in the total fertility rate in 1961 resulted in the birth of the 'baby boom' cohort, a term used to refer to the group of people born between 1946 and 1965. This resulted in a subsequent increase in the number of women reaching reproductive age so that, despite a drop in total fertility rate, the actual number of births peaked in 1971. This has been the largest Australian cohort to date, referred to as the 'baby bust' cohort. While the size of this cohort peaked in 1971, the term 'baby bust' more broadly refers to the group of people born between 1968 and 1974 (Jackson 2001). It is the crime patterns of the baby bust cohort, therefore, that are of particular interest, particularly as each subsequent cohort has been smaller in size. The enduring impact of both the size and life chances of this particular cohort could be expected to have an enduring impact on its criminal choices, creating not only a temporary rise and fall in Australian offence rates at the young crime-prone ages (around 18–25 years) but also at the older ages as the cohort ages.

Comparison of birth cohorts' apprehension trends

Apprehension ratios for five Western Australian birth cohorts (defined as comparisons of the proportion of those apprehended against the population of each age group) were compared for this paper in order to determine whether cohorts experienced rising or falling offence levels as they aged and therefore the degree to which criminal activity extended beyond the young crime-prone ages. This process was undertaken with a longitudinal method known as cohort analysis. The purpose of the technique is to examine the experiences of one or more cohorts over time and suggests how the social changes that different cohorts were exposed to may have influenced their involvement in the subject of interest (see Glenn 1977; Hagenaars 1990). There are three effects central to cohort analysis—age, period and cohort. Most simply, *age effects* are the product of being of a certain age and refer to biological, social or legal circumstances (and the like); *period effects* refer to historical circumstances or influences occurring at a certain point in time; and *cohort effects* reflect (by and large) the combination of a cohort being born when they were (cohort size and circumstances) together with the age and period effects.

For this analysis, age-specific apprehension ratios were calculated from population data (ABS 2005) and apprehension data (CRC 2003, 1999, 1996). These ratios were then reorganised to show cohort-specific apprehension trends across the cohort's relative life course for the purpose of identifying the age, period and cohort effects discussed above. Western Australia was the one jurisdiction from which a dataset suitable for these analyses was available.

The five birth cohorts examined were those born 1957–60, 1961–64, 1965–68, 1969–72 and 1973–76. This allows for a broad age range to be examined, which has been found to be useful in identifying cohort effects (see Steffensmeier, Streifel & Harer 1987; Steffensmeier, Streifel & Shihadeh 1992). Based on the sizes of these five cohorts (shown for Western Australian males in Figure 1), it could be anticipated that the cohort born 1969–72—and to a lesser extent the cohort born 1973–76— would be the most likely not to have experienced declining apprehension ratios as the cohort aged (or at least not to the extent of that for smaller cohorts). This is because, as indicated earlier, it is these two birth cohorts that are the most reflective of the period that relates to the Australian baby bust cohort. Further, because the 1969–72 cohort is somewhat larger than the 1973–76

Figure 1 Size of male Western Australian birth cohorts, by age in years, 1971–2002
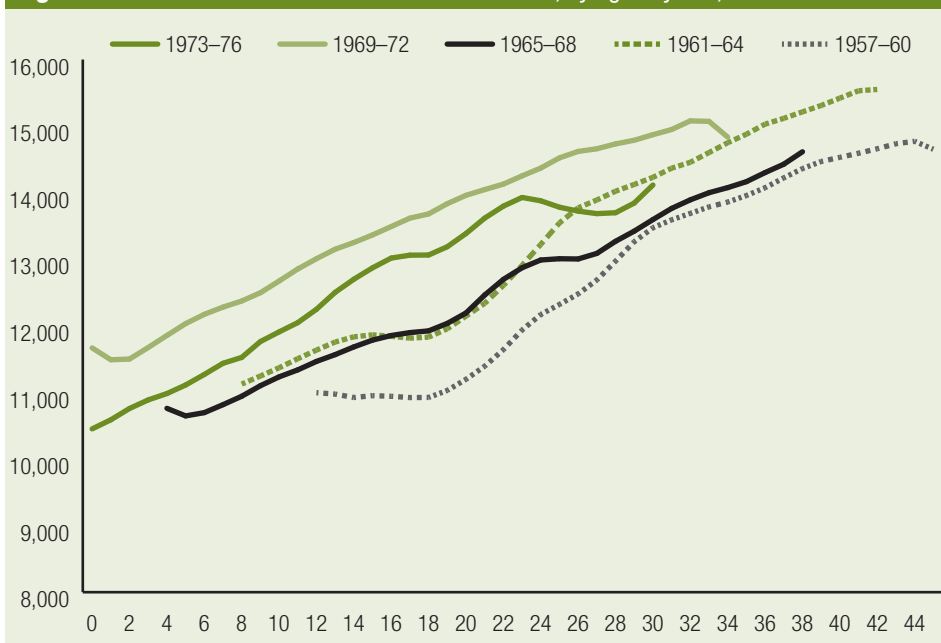
Adapted from ABS 2005

cohort, the former is a leading edge cohort and the latter a lagging edge cohort. Therefore, the life chances of the 1973–76 cohort would have been negatively impacted by following the larger 1969–72 cohort (see Macunovich 2002) and this may influence the level of difference in offence trends for the two cohorts. By contrast, it is anticipated that the smaller cohorts born 1957–60, 1961–64 and 1965–68 would have experienced apprehension ratios that generally declined as the cohorts aged (indicating that the cohort had not experienced an extended period of offending; see Figure 1).

Three levels of non-declines in cohorts' apprehension ratios—or so-called departures from age–crime trends—are referred to here:

- 'significant' if the ratio has increased by more than five percent between ages;
- 'moderate' if the ratio has been relatively stable (having increased or declined by less than 5%); or
- 'minor' if the rate of decline for the ratio slowed by more than one-quarter.

Where such departures are restricted to a particular cohort, this is likely to be reflective of the size and/or experiences of that cohort and therefore reflect a cohort effect. Alternatively, where all cohorts experience departures at the same time, it is more likely to be indicative of some underlying effect that has influenced all cohorts such as a criminal justice mechanism or broader social trend and therefore be reflecting a period effect.

Total crime: Males

Cohort-specific apprehension ratios of male Western Australians (shown in Figure 2) indicate that all cohorts—with the minor exception of the cohort born 1969–72—experienced declining apprehension ratios as they aged. Younger birth cohorts similarly experienced higher apprehension ratios than older birth cohorts.

Nonetheless, apprehension trends for each cohort indicate a deceleration in the rate of decline as the cohort has aged. However, because the changes vary across cohorts—for example, between ages 26–29 and 30–33 years, the cohort born 1969–72 experienced essentially no change in apprehension ratios, while the cohort born 1965–68 experienced a decline—these decelerations cannot simply be dismissed as age-crime trends (or age effects, discussed previously).

All of the departures occurred over the same period (that corresponding to 1998–2002). However, there was some variability in the level of departure across birth cohorts—being moderate for the cohort born 1969–72 (ratios increasing by only 1% between ages 26–29 and 30–33 years) but minor for the cohorts born 1957–60, 1961–64, 1965–68 and 1973–76 (with reductions in the rate of decline of at least one-quarter). On this basis, it cannot be assumed that the offence trends of all cohorts have been influenced by a common factor, or a period effect discussed previously. Rather, it is plausible that at least some of the trends are indicative of cohort effects.

The Easterlin hypothesis (1987) would suggest that the moderate departure from the age–crime pattern that is indicated for the cohort born 1969–72 may, in particular, be related to a cohort effect. ABS census data (2008b) suggests that the mean number of persons in the male Western Australian cohort born 1969–72 at age 18 years was 13,681 compared with 10,925, 11,830, 11,925 and 13,064 respectively for the cohorts born 1957–60, 1961–64, 1965–68, and 1973–76 at the same age (see Figure 1). Also, the cohorts' early experiences of unemployment were less promising than those of other cohorts, with labour market entry age for the cohort coinciding with a period of very high unemployment in Australia (this occurring in the late 1980s). When the cohort reached 16–19 years of age, across the period 1985 to 1991, unemployment rates (per 1,000) for Western Australian males of this age ranged between 18 and 22 percent (falling from 18% in 1985 to 13% in 1989, then increasing to 22% in 1991; calculated from ABS 2008a). The cohort then reached 20–23 years of age over the period 1989 to 1996 and subsequently, males experienced unemployment rates that rose in Western Australia from seven to 20 percent (peaking in 1991), then fell back to 11 percent. Therefore, being a large cohort that encountered a poor labour market would have increased the likelihood of the cohort experiencing disadvantage and associated stress levels, and it is this situation that may underlie the cohort born 1969–72 maintaining rather than reducing its criminal activities as it aged.

Figure 2 Apprehension ratios for males in Western Australia, by age and birth cohort, 1994–2002
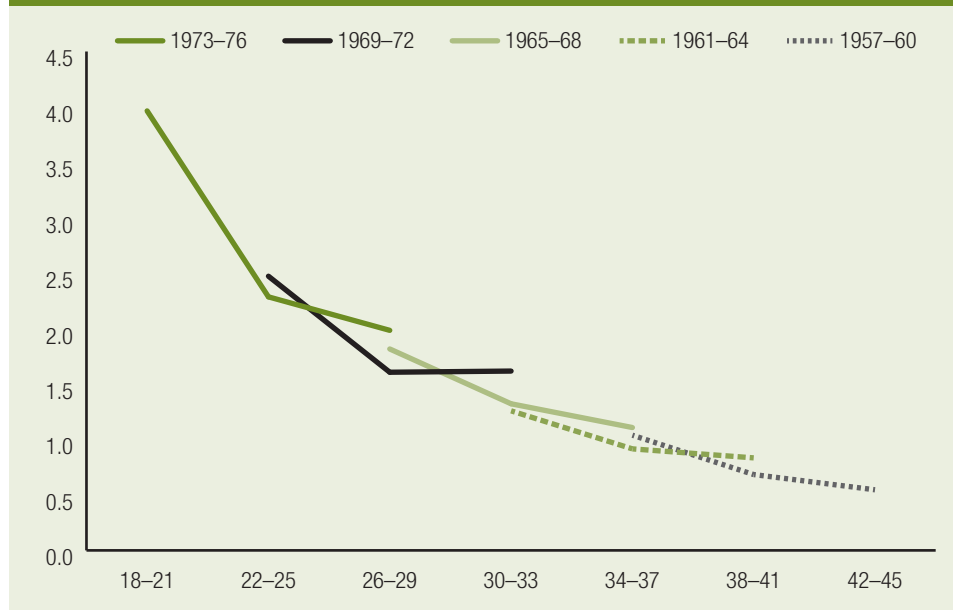
Adapted from ABS 2005; CRC 2003, 1999, 1996

Table 1 Departures from age-crime trends for Western Australian birth cohorts, by sex, 1994–2002

	Born 1961–64	Born 1965–68	Born 1969–72	Born 1973–76
Males				
Against property	Moderate	Moderate	Significant	Minor
Against the person	Minor	No	Moderate	Minor
Fraud and misappropriation	Minor	Minor	Moderate	Significant
Sexual offences	No	No	Significant	Moderate
Robbery and extortion	Significant	Significant	No	No
Total	Minor	Minor	Moderate	Minor
Females				
Against property	No	No	Significant	Moderate
Against the person	Significant	Minor	Significant	Significant
Fraud and misappropriation	Moderate	No	Minor	Significant
Sexual offences	n/a	n/a	n/a	n/a
Robbery and extortion	n/a	n/a	n/a	n/a
Total	Minor	Minor	Moderate	Significant

Adapted from ABS 2005; CRC 2003, 1999, 1996

Significant=apprehension ratios increasing by more than 5%

Moderate=apprehension ratios increasing or declining by less than 5%

Minor=rate of decline in apprehension ratios declining by at least one-quarter

n/a refers to a category that could not be included in the analysis because of a low number of offences

A similar interpretation would be expected to apply to the later-born 1973–76 cohort. The younger of the two baby bust cohorts considered here, this so-called *lagging edge* cohort was still relatively large and also struck disproportionately high unemployment rates when entering the labour market. However, as is demonstrated in Figure 2, this cohort does not show any significant signs of an extended participation in crime (having experienced only a minor deceleration in apprehension ratios between ages 22–25 and 26–29 years). While other factors not considered in this analysis may have contributed to this finding, it does indicate that high levels of cohort density (the combination of size and competition with fellow members) may not have a homogenous impact on apprehension trends.

Total crime: Females

Although females commit crime at a much lower level than males, it could still be expected that their apprehension trends would be influenced by birth cohort size and characteristics. Despite younger cohorts exhibiting higher apprehension ratios than older cohorts at almost every age, the majority of female birth cohorts experienced a departure from traditional age–crime patterns (see Figure 3). Indeed, apprehension ratios for four cohorts declined as the cohort aged. Significant departures (ratios increasing by more than 5%) were indicated for the cohorts born 1953–56, 1957–60 and 1973–76, while a moderate departure (relatively stable ratios) was indicated for the cohort born 1969–72 and minor departures (a reduction in the drop in ratios of at least one-quarter) were indicated for the cohorts born 1961–64 and 1965–68.

Female birth cohorts, therefore, appear to have experienced departures from age–crime trends more frequently, and at a higher level, than their male counterparts. Furthermore, these departures did not occur over any particular period; departures for the cohorts born 1953–56 and 1965–68 are evident between 1994 and 1998, compared with between 1998 and 2002 for all the other birth cohorts. In addition, departures over the same period are variable by cohort (for the 1994–98 period, for example, a significant departure for the cohort born 1953–56, but only a moderate departure for the cohort born 1965–68, was indicated).

The trends therefore differed from cohort to cohort and so would not appear to be the result of a common factor or period effect, or at least not one influencing all cohorts at the same level. Rather, they may be indicating the impact of cohort size and/or life experiences (ie a cohort effect).

Of particular interest, by contrast with male trends, the lagging edge female cohort experienced higher levels of departure from recognised age–crime trends than the leading edge female cohort. The former experienced a significant departure, compared with the latter who only experienced a moderate departure. This again suggests that high levels of cohort density may not have a homogenous impact on apprehension trends and further, that the impact is not the same for males and females.

Offence categories

Cohort-specific apprehension ratios were also examined in relation to five offence categories:

- offences against property (including break and enter, burglary, handling of stolen goods, motor vehicle theft and property damage);
- offences against the person (including homicide and assault);
- fraud and misappropriation;
- sexual offences; and
- robbery and extortion.

Table 1 summarises the findings for male and female Western Australian cohorts. In relation to males, each cohort experienced apprehension ratios that did not decline as the cohorts aged. With one exception (being a significant departure in relation to sex offences for the cohort born 1969–72), the analyses suggested that all such departures occurred across the period corresponding to 1998–2002. However, as the level of departure differed across cohorts and apprehension categories, it would appear that cohort characteristics were related to some cohorts' apprehension trends. This means that the trends evident would not appear to be explained solely by period effects, but also by cohort effects.

Figure 3 Apprehension ratios for females in Western Australia, by age in years and birth cohort, 1994–2002
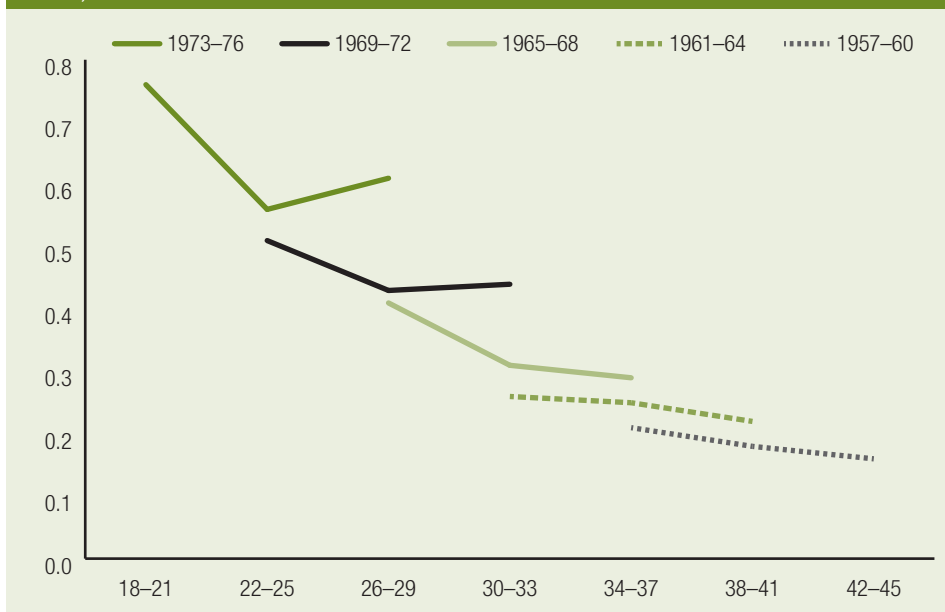
Adapted from ABS 2005; CRC 2003, 1999, 1996

Apprehension trends for the two cohorts that are the largest and second-largest in Australia's history (being the 'baby bust' cohorts born 1969–72 and 1973–76)—and that also experienced very high unemployment rates at a younger age—show little evidence of a decline in ratios as they have aged. Rather, offence trends for these two cohorts generally run counter to age–crime trends. In fact, for these cohorts, a consistent rate of decline is indicated for only one apprehension category—robbery and extortion. Instead, for the majority of apprehension categories, inconsistencies from age–crime trends are shown. The largest (leading edge) cohort, born 1969–72, experienced five moderate or significant departures from recognised age–crime trends (ie apprehension ratios either increasing or being relatively stable for all categories except robbery and extortion), while the second-largest cohort, the lagging edge cohort born 1973–76, experienced only two, but shows three minor departures. These findings therefore suggest a strong association between high cohort density and crime (which is somewhat stronger for the leading edge cohort).

It is interesting, however, that the level of inconsistency for the two cohorts differed by apprehension category. For example, for three categories (offences against property, offences against the person and total apprehensions), a moderate or significant departure was indicated for the cohort born 1969–72 compared with a minor departure for the cohort born 1973–76.

Under Easterlin's (1987) hypothesis, apprehension trends for the cohorts experiencing lower levels of cohort density and relative disadvantage (the smaller cohorts born 1961–64 and 1965–68) should be more likely to have experienced apprehension ratios that declined as the cohorts aged by comparison with the higher density cohorts. Data presented in Table 1 shows that each of these cohorts experienced two significant or moderate departures from this trend. In addition, a consistent rate of decline in ratios was indicated twice for the cohort born 1965–68, but only once for the cohort born 1961–64. Therefore, apprehension trends for the older, smaller cohorts do appear to have been more reflective of recognised age–crime trends than those of their younger and larger counterparts.

All female Western Australian cohorts also appear to have experienced two or more departures across the three offence categories for which reliable analyses could be undertaken (see Table 1). Analyses indicated that such departures, which differed across cohorts and apprehension categories, occurred over the periods corresponding to both 1994–1998 and 1998–2002. In this respect, females do not appear to have experienced a common factor that resulted in them experiencing these departures at any one time. In this regard, the departures suggest that some cohorts experienced cohort effects.

Neither of the particularly high-density cohorts (born 1969–72 and 1973–76) showed evidence of a consistent decline in ratios as the cohorts aged. Therefore, for females, the baby bust cohorts' apprehension trends contradict traditional age–crime trends across all apprehension categories analysed. Again, this suggests a strong association between high cohort density and crime (and theoretically, relative disadvantage generated by high unemployment). In most cases, the second-largest cohort, born 1973–76, experienced significant departures from the pattern, while the largest (born 1969–72) experienced only two significant departures, but also a moderate and minor departure. Consequently, some difference in the level of departure across apprehension categories is evident for each of these cohorts, with the lagging edge cohort indicating the greater departures from the age–crime pattern.

By comparison with the higher density cohorts, apprehension trends for the older, smaller cohorts (born 1961–64 and 1965–68) are more reflective of the age–crime pattern. In particular, despite experiencing a consistent rate of decline in its ratios as it aged, the latter cohort experienced no significant or moderate departures from the pattern.

Conclusions

Cohort-specific apprehension trends in Western Australia between 1994 and 2002 indicate that large birth cohorts experienced apprehension ratios that did not decline as the cohorts aged. By comparison with smaller cohorts, the level of departure from apprehension ratios as these cohorts aged is both higher and more frequent. Similarly, the large birth cohorts have been less likely than smaller cohorts to experience a consistent rate of decline in their

apprehension ratios. The variability in trends across cohorts suggests that inconsistencies identified in the analyses are not only due to period effects such as changes in criminal justice system procedures or broad social phenomena. Rather, theoretically, trends for the two large birth cohorts may be due to cohort effects arising from the cohorts' large size and relative life chances.

However, there were three specific findings that need to be borne in mind when considering the above conclusion and which are relevant to broader criminological discussions as well as specific policy implications.

First, the male cohort born 1969–72 was the least likely male cohort to experience declining apprehension ratios as they aged, compared with the 1973–76 cohort for women. As these cohorts represent, respectively, leading and lagging edge cohorts, the differing apprehension trends suggest that size is more influential with regard to male birth cohorts, but the experiences of relative disadvantage may be more influential for females.

Second, departures from age–crime trends varied by offence categories for the sexes. In relation to the pivotal baby bust cohorts, males showed greater departures from the age–crime pattern (ie a relative rise or no change between ages) for offence categories regarded as having an 'older' age distribution of offenders (ie fraud and misappropriation, and sexual offences). Conversely, females showed greater departures for offences with a 'younger' age distribution of offenders (ie offences against property and offences against the person). Although not examined here, it is also possible that there would be differences in relation to factors such as offences falling under the broad categories analysed here (such as motor vehicle theft compared with offences against property) or ethnic groups (including Indigenous Australians and migrants).

Third, large birth cohorts should be tentatively regarded as 'unique' groups of offenders. Not only do the apprehension

trends discussed in this paper indicate that their apprehension levels are inconsistent with age–crime trends, but also that these levels are inconsistent with unemployment-crime trends. That is, large cohorts experience higher unemployment levels (as discussed previously), but departures from age–crime trends for these cohorts were not necessarily greater for offences against property, or for males in general. Therefore, their apprehension patterns contradict broader understandings of unemployment–crime trends (eg see Chiricos 1987).

In short, large cohorts did not show apprehension patterns that 'fit' with recognised crime trends, which demonstrates the danger of making assumptions about the crime trends of demographic groups based on generalised patterns and understandings of crime. Nonetheless, apprehension data has consistently shown that young people account for the majority of crime. It may be that large birth cohorts are an example where 'age does not have as strong an effect as usual' on criminal activity (Gottfredson & Hirschi 1990: 128). This conclusion is also consistent with arguments that cohort replacement is a significant source of variation for the age distribution of homicide offenders (O'Brien & Stockard 2009).

It is noted that, while the association between birth cohort size and crime has been considered in the international literature, the findings from those and the present analyses are not easily comparable (and may be misleading) for various reasons. Such reasons include the breadth in application of the Easterlin hypothesis and differences in method, for example modelling rather than 'true' cohort analysis or referring to *cohorts* when *age groups* would be a more appropriate term. For further reading, see Maxim (1985), O'Brien (1989), O'Brien and Stockard (2009), O'Brien, Stockard & Isaacson (1999), Savolainen (2000), Steffensmeier, Streifel & Harer (1987) and Steffensmeier, Streifel & Shihadeh (1992).

Having identified how birth cohorts can shape apprehension levels, this analysis can provide insight into the actual effectiveness of crime prevention and control strategies. Therefore, the association between birth cohorts and fluctuating crime rates should be incorporated into evidence-based policy making and evaluations. Criminal justice facilitators should find the patterns identified in this paper useful in understanding previous, and potentially future, numbers of people who are likely to come into contact with the criminal justice system. Similarly, the patterns provide further information on how and why the characteristics of these people may differ from those who regularly come into contact with the criminal justice system. In particular, recent increases in apprehensions for young persons may be a short-term trend that will ease once the large cohorts have passed out of these ages. However, a higher than expected number of apprehensions around the middle adult age groups could be anticipated as these cohorts progress through their respective life courses.

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