

QUEENSLAND TREASURY

Changing patterns in the age distribution of crime in Queensland

Crime research report

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Queensland Government Statistician's Office

Queensland Treasury

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Acronyms

ABS	Australian Bureau of Statistics
ERP	estimated resident population
NSW	New South Wales
QGSO	Queensland Government Statistician's Office
QPRIME	Queensland Police Records and Information Management Exchange
QPS	Queensland Police Service

Research at a glance

Changing patterns in the age distribution of crime in Queensland

There have been changes in offender demographic composition and their offending frequency. These changes are likely to have implications for the development of criminal justice responses.*

When comparing 2008–09 with 2017–18:

Rate of all offenders

↓ **15.0%**

Number of all offenders

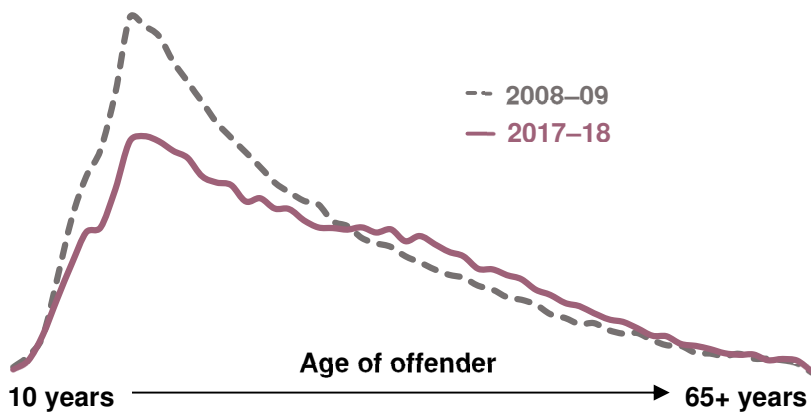
↓ **0.8%**

Number of all offences **increased by 26.1%**

Number of all events **increased by 17.5%**

Average number of events per offender **increased from 1.48 to 1.76**

Age–crime curves show **decreases in young offender rates and increases in older offender rates**



Median age of all offenders **increased from 26 to 29 years**

Proportion of all offences attributed to **offenders aged under 25 years decreased from 48.4% to 38.4%**

↓ **3.9%**

Rate of **non-Indigenous female** offenders

↑ **12.7%**

Number of **non-Indigenous female** offenders

↓ **1.5%**

Rate of **Indigenous female** offenders

↑ **25.5%**

Number of **Indigenous female** offenders



↓ **18.5%**

Rate of **non-Indigenous male** offenders

↓ **6.3%**

Number of **non-Indigenous male** offenders

↓ **9.2%**

Rate of **Indigenous male** offenders

↑ **17.4%**

Number of **Indigenous male** offenders

*In this report, the term 'offences' refers to reported and detected offences that have been actioned by the police; 'events' are where the police have taken action against an offender on a specific date; and 'offenders' refers to unique individuals that have come into contact with police at least once during the reporting period. Rates are per 100,000 of the relevant estimated resident population.

Summary

The *Changing patterns in the age distribution of crime in Queensland* research report forms part of a broader suite of research products developed as part of the *Patterns of crime and victimisation in Queensland* research project being progressed by the Queensland Government Statistician's Office (QGSO). Its overarching aim was to examine if the broad offending patterns of people in Queensland had changed over time. Two key research questions are addressed:

1. Has the age distribution of offenders changed over time in Queensland?
2. To what extent has distribution changed over time for offenders of different demographics?

The above questions were examined by plotting the age-specific rates of offending for unique offenders who had contact with the police in 2008–09 compared with 2017–18 as a measure of the prevalence of offending. In addition to the prevalence of offenders within the broader population, the frequency of offending was examined by the number of police contact events that offenders had. Another measure examined the age distribution of the frequency of offending, which displays the proportion of all events that offenders of different aggregated age groups were responsible for. Using these three measures allows a broader examination of whether offending patterns had changed over time.

The analyses show changes in the age distribution of crime when comparing 2008–09 with 2017–18, with the findings consistent with prior national and international research. Specifically, these findings include:

- *Fewer unique offenders with police contact*
Overall, there was a decrease in the number of unique offenders who had police contact in 2017–18, when compared with 2008–09. When examining offending patterns for groups of offenders by their demographic characteristics, the decrease in offender numbers was only for non-Indigenous male offenders (who comprise the largest proportion of all offenders), and there was an increase in the number of non-Indigenous female offenders, and Aboriginal and Torres Strait Islander male and female offenders.¹
- *Decreased prevalence (offending rate per 100,000 persons) for all groups of offenders*
While a decrease in offender numbers only occurred for non-Indigenous male offenders, the offending rate per 100,000 persons decreased for all groups of offenders in 2017–18, when compared with 2008–09.
- *Variations in age-crime curves show a changing prevalence of offenders by age*
The age-crime curve for 2008–09 followed the traditional shape described in the literature, however the curve for 2017–18 was substantially different. There was a decrease in the peak offender rates per 100,000 persons for younger people and a higher prevalence of offenders aged in their 30s and 40s in 2017–18 when compared with 2008–09, indicating fewer younger people and more older people having contact with police.
- *Increased frequency of offending for all groups of offenders*
The frequency of offending was examined by the number of police contact events (based on distinct dates) that offenders had with police during each 12-month period. Regardless of demographics, offenders averaged more police contact events in 2017–18 when compared with 2008–09.
- *Changing distribution of the frequency of offending*
The changing age distribution of crime meant that younger offenders accounted for fewer crime events in 2017–18 when compared with 2008–09. While almost half (48%) of all crime events in 2008–09 were attributed to offenders under 25 years of age, this reduced to 38% in 2017–18.
- *Differential offending patterns by demographic characteristics of offender groups*
The general findings outlined above remain true when examining groups of offenders by demographic characteristics but differ in terms of the magnitude of prevalence and frequency of offending, and the extent to which offenders of different age groups are responsible for a proportion of all crime events.

The research findings show a reduced number of offenders involved in more prolific offending, and changing demographics which may have implications for the development and operation of criminal justice interventions. Further research is required to establish if apparent changes have contributed to the growing number of people held in custody, or if prisoner growth is better explained by other factors, such as changing offence profiles.

¹ In this report the term Indigenous is used to refer to Australian Aboriginal peoples and Torres Strait Islander peoples and reflects its use in the administrative data used for this report. The use of the term Indigenous is not intended to diminish or deny the diversity between and within Aboriginal and Torres Strait Islander individuals, families, communities, groups and nations across Australia.

1.0 Introduction

The *Patterns of crime and victimisation in Queensland* research project (the project) aims to explore crime trends to identify the ways in which crime, offenders and victims of crime have changed over time, determine if certain locations in Queensland experience a higher prevalence of crime and victimisation than others, and to examine whether offending patterns have changed over time. The *Changing patterns in the age distribution of crime in Queensland* research report presents the second component of the project and is focused on whether the age distribution of offenders has changed over time. The first component of the project examined the locations within Queensland where offences concentrate (see *Spatial and temporal distribution of crime in Queensland* research report [not yet published]), and the third component will investigate the extent to which people have been victims of personal crime.

Working towards keeping communities safe is a key objective for the Queensland Government, which has introduced a range of strategies and reform activities to reduce offending behaviour and victimisation. A greater understanding about the nature of offending patterns can help support the Queensland Government's efforts to keep communities safe through the implementation of responsive criminal justice interventions.

Following this introduction, the report provides some background information to position the research within existing literature and outlines the research methods used to examine whether there have been changes in age–crime patterns within Queensland over time. The key findings from analyses are then presented, followed by a summary and discussion of the research findings.

The information presented in this report may vary from data published elsewhere by QGSO and others, due to the dynamic nature of the data and depending on the dates data were extracted. Readers are therefore urged to exercise caution when making comparison between publications.

2.0 Background

This section provides a brief introduction to the literature focused on the relationship between age and crime. While this relationship is best demonstrated through plotting age-specific rates of offending and there had been a view of its invariance across locations and time, there is increasing research that suggests changes in broad offending patterns over time. The section concludes with the broad objectives of this research report.

2.1. Age and crime

One of the most consistently observed findings in criminological research is the robust relationship between age and crime. This relationship is best demonstrated through the “age–crime curve”, which plots offending at specific ages. The classic age–crime curve shows the proportion of people who offend at specific ages and demonstrates that offending behaviour increases in adolescence, peaks in the teenage years and then declines from the late teens or early 20s (Farrington 1986; Hirschi and Gottfredson 1983; Sampson and Laub 2005; Steffensmeier et al. 1989).

2.2. Recent changes in offending patterns

Despite early indications that the age–crime curve retained this shape over time, location and offence type (Hirschi and Gottfredson 1983), recent research has used age–crime curves to identify changing offending patterns, particularly when examining variations by demographics, offence type, and over time (Farrell, Laycock and Tilley 2015; Fernández-Molina and Bartolomé Gutiérrez 2018; Matthews and Minton 2018; Payne, Brown and Broadhurst 2018; Trimboli 2019; Weatherburn, Freeman and Holmes 2014). Broadly, these findings suggest that there appears to have been a reduction in the number of young offenders entering (or having contact with) the criminal justice system than in the past (Farrell, Laycock and Tilley 2015; Fernández-Molina and Bartolomé Gutiérrez 2018; Kim, Bushway and Tsao 2016; Matthews and Minton 2018; Payne, Brown and Broadhurst 2018; Weatherburn, Freeman and Holmes 2014). Despite fewer young offenders, there appears to be an increase in the number of older offenders with criminal justice system contact when compared with data from decades prior (Farrell, Laycock and Tilley 2015; Kim, Bushway and Tsao 2016; Payne, Brown and Broadhurst 2018). Finally, there are some suggestions that those offenders who do have criminal justice system contact tend to have more frequent system contact (Farrell, Laycock and Tilley 2015; Matthews and Minton 2018; Payne, Brown and Broadhurst 2018). The combination of these patterns (a decrease in youth offenders, an increase in older offenders, and a general increase in the frequency of offending) has contributed to marked differences between the age–crime curves plotted in the past, with that of more recent data (Farrell, Laycock and Tilley 2015; Matthews and Minton 2018; Payne, Brown and Broadhurst 2018). Therefore, in this research report, we use age–crime curves as one technique to explore whether there have been variations in offending patterns in Queensland.

2.3. Research objectives

The *Changing patterns in the age distribution of crime in Queensland* research report aims to contribute to the existing literature on age-patterns of crime by examining whether there have been changes in the age-specific rates of offending in Queensland between 2008–09 and 2017–18. The aim is to contribute to this literature by further exploring for changes in age-patterns of crime for specific groups of offenders, based on their broad demographics.

The research questions addressed in this research report are:

1. Has the age distribution of offenders changed over time in Queensland?
2. To what extent has distribution changed over time for offenders of different demographics?

The methods used to address these research questions are outlined in the following section.

3.0 Method

This section provides information on the data used, how concepts were defined and measured, and the statistical techniques used as part of the research to examine the changes in the age distribution of crime over time in Queensland. The section concludes with a discussion of the limitations of the research.

3.1. Data

The data used in this project were obtained from Queensland Police Service (QPS) and the Australian Bureau of Statistics (ABS). The characteristics and use of these data are described in more detail below.

3.1.1. Offence-based information

Administrative data from QPS form the basis of the quantitative analyses presented in this publication. These data were derived from information recorded in Queensland Police Records and Information Management Exchange (QPRIME). Specifically, data were selected for offences where an alleged offender had action taken against them by police (e.g. arrest, summons, warrant, caution, restorative justice conference or other action) in 2008–09 or 2017–18.² Offences that had been actioned were used because they provide demographic information about the offender required to examine age-specific rates of offending (e.g. age, gender and Indigenous status of the offender).

3.1.2. Population estimates

To calculate age-specific rates of offending, estimated resident population (ERP) figures from the ABS were obtained.³ Single-year-of-age population estimates (overall and by key demographics including gender and Indigenous status) were obtained to allow the calculation of age-specific rates of offending (ABS 2019a, 2019b).⁴

3.2. Prevalence, frequency and age distribution of frequency of offending

Changes in the age distribution of offenders over time in Queensland is examined through three measures related to offending and the age distribution of offending: (1) *prevalence*, (2) *frequency*, and (3) *age distribution of frequency of offending*. Broadly speaking, prevalence refers to how common an event is within the broader population (in this case, a person who has been proceeded against by police for their offending), while frequency refers to how often the event occurs.

3.2.1. Prevalence: Age-specific rates of unique offenders

The classic age–crime curve is constructed by plotting the age-specific offending rates for a population of interest for a given year (Farrington 1986; Hirschi and Gottfredson 1983). Age-specific rates can be calculated for a range of different offending measures (including arrest rates or crime rates), from different sources of data (including recorded or self-reported crime data), and can demonstrate different dimensions of offending (such as prevalence or frequency) (Blumstein and Cohen 1987; Brame and Piquero 2003; Farrell, Laycock and Tilley 2015; Steffensmeier et al. 1989; Stolzenberg and D'Alessio 2008).

In this report, age-specific rates of offending were calculated for *unique* offenders who were proceeded against by police during each of the two reference periods. This means that an offender was counted only once during each reference period, regardless of whether they had been proceeded against by police on multiple occasions (police actions on different dates) during the reference period. This count of unique offenders acts to provide a measure of the *prevalence* (how common it is for the population of interest to have been proceeded against by the police) of offending within the population for that specific year. Thus, age-specific rates of offending are calculated by dividing the count of unique offenders within an age category (single year of age from 10 to 64 inclusive, plus an aggregated category of all offenders aged 65 years and older), dividing it by the ERP for that group of people in Queensland for a specific year, and multiplying the resulting number by 100,000.

² The information presented in this report may vary from data published elsewhere by QGSO and others, due to the dynamic nature of the data and depending on the dates data were extracted. Readers are therefore urged to exercise caution when making comparison between publications.

³ ERP figures used to calculate rates are periodically updated and so rates provided in this report may differ slightly to rates reported elsewhere.

⁴ Single-year-of-age population estimates for Queensland are sourced from ABS 3101.0, *Regional Population Growth, Australia*. Single-year-of-age population estimates for Aboriginal and Torres Strait Islander Australians were obtained from unpublished data from ABS 3238.0, *Estimates and Projections, Aboriginal and Torres Strait Islanders Australians, 2006 to 2031*.

3.2.2. Frequency: Average number of events by age

The first measure of frequency is the average count of events that offenders had with the police that resulted in police proceeding against them during each reference period. In this report, an 'event' is defined as being where police action was taken against an offender on a specific date, regardless of the action taken, or if there were multiple actions taken against the offender on the same date. Where offenders had multiple events during the reference period, their age for the reference period remained the same as it was for their first event, regardless of whether the person had their birthday in between events. The decision to count the events that offenders had instead of offences was based on consideration that, in some instances, some offence types can have large counts (e.g. number of fraud or drug offences within one charge) which could inflate the average number of offences. Independent samples *t*-tests were used to examine if there were statistically significant differences in the mean number of events between groups, and Cohen's *d_s* effect size for between-subjects design used to assess the magnitude of any difference.

3.2.3. Age distribution of frequency of offending

The second measure related to the frequency of offending for offenders is examined by the *age distribution of frequency of offending* (Britt 2019). This displays the proportion of all events that offenders of different aggregated age groups (10–14, 15–17, 18–20, 21–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64 years and 65 years and over) were responsible for during each reference period, and enables the comparison of the age distribution of frequency of offending at different reference periods to examine for change.

3.3. Limitations

There are four main limitations to the findings presented in this report. These relate to data accuracy and the use of cross-sectional data to explore changes over time.

1. The data used in this project relate to recorded offences, and therefore cannot provide an accurate and true measure of all offending within Queensland, because not all offending is reported to, or detected by police, and because not all offences reported to police are proven in a court of law. Further, as the data relate to recorded offences, any changes may reflect proactive police practices, or may be influenced by the types of crime being committed, as some crimes have lower clearance rates (such as robbery, fraud and unlawful entry), while others have high clearance rates (such as drug offences and homicide) (Holmes and Fitzgerald 2017; QGSO 2019a).
2. The current research provides a comparison of two cross-sectional snapshots of crime – the 2008–09 and 2017–18 financial years. A limitation of this approach is that offenders are examined at aggregate level, rather than examining the age–crime relationship for individual offenders over time. As analyses of age differences in cross-sectional data result in different sample compositions at each age, it is possible that there are other factors that could impact on offending behaviour or reporting rates of offences (Blumstein and Cohen 1987; Kim, Bushway and Tsao 2016; Kim and Bushway 2018). An example of these is provided by 'period effects', which arise from events that affect individuals of all ages, such as a war, famine or policy change, or 'cohort effects', which affect only people from a given cohort regardless of age (Matthews and Minton 2018; Yang and Land 2013). The best way to be able to assess whether changes can be attributed to either period or cohort effects, is through a longitudinal study, in which data are collected for a single set of participants and followed over time as all participants are exposed to the same conditions.
3. As the research uses cross-sectional data, it is not possible to examine for chronicity in offenders (offenders who have committed five or more offences). This was achieved by Payne, Brown and Broadhurst (2018) who examined the police contact that two birth cohorts (separated by 10 years) had during adolescence and early adulthood in New South Wales (NSW). By following birth cohorts, they were able to examine the entire criminal career of individuals, and were able to identify those who were 'chronic', or high-rate offenders. In the current research, it was only possible to examine the offending patterns of offenders during each reference period (12 months in length), providing only a partial snapshot of a person's offending over the life course.
4. Rates of offending are likely to be impacted by changes in the ERP, especially for sub-groups. For example, there has been a reported increase in the number of Aboriginal and Torres Strait Islander people in Queensland between the 2011 and 2016 Censuses (ABS 2018). The increase was in excess of what could be explained by demographic factors, such as births, deaths and net migration, and suggested there was an increased propensity for some people to self-identify as Aboriginal and/or Torres Strait Islander than may have in the past. As such, any change in trends might reflect changes in population estimations, and therefore some caution should be exercised in the interpretation of findings.

4.0 Results

The overarching aim of the *Changing patterns in the age distribution of crime in Queensland* research was to examine for changes in offending patterns over time. Two research questions are addressed:

1. Has the age distribution of offenders changed over time in Queensland?
2. To what extent has the distribution changed over time for offenders of different demographics?

This section presents the findings in relation to the above research questions and the analytical techniques described in section 3.0. First, descriptive statistics for the two reference periods are provided, including the number of offences and events within each reference period, as well as the number of unique individual offenders responsible for them, and their broad demographic characteristics. Following this, the prevalence and frequency of offending and age distribution of frequency of offending for 2008–09 are compared with 2017–18 to examine for changes in offending patterns over time. Finally, analyses are conducted to compare patterns for offender groups based on demographic characteristics.

4.1. Offender and offences overview

The project used information related to offenders and the contact they had with police for two reference periods – 2008–09 and 2017–18. Descriptive statistics related to the number of unique individuals (including their demographic characteristics) and the extent of their contact with the police (offences and events) are provided in Table 1.

Table 1 Descriptive statistics related to offences, events and offenders in each reference period

	2008–09	2017–18	
Offenders			% change
Number of unique individual offenders	113,985	113,017	–0.8 ▼
ERP (10 years and older) ^(a)	3,701,121	4,317,012	16.6 ▲
Offender rate (per 100,000 persons)	3,079.7	2,617.9	–15.0 ▼
Offences and events			% change
Total number of offences	266,799	336,324	26.1 ▲
Total number of events	169,234	198,769	17.5 ▲
Average system contact			Effect size ^(b)
Mean events per offender (SD)	1.48 (1.28)	1.76 (1.70)	Very small
Offender age (in years)			Median change
Median age	26	29	3
Gender of offenders ^(c)			% change
Male (%)	88,235 (77.5)	84,205 (74.5)	–4.7 ▼
Female (%)	25,633 (22.5)	28,714 (25.4)	12.0 ▲
Indigenous status of offenders ^(d)			% change
Indigenous (%)	16,397 (14.4)	19,701 (17.4)	20.2 ▲
Non-Indigenous (%)	93,787 (82.3)	91,645 (81.1)	–2.3 ▼

(a) The mid-point ERP of both calendar years in a financial year is used to provide the most accurate estimate of the offender rate. These have been rounded up to the nearest full number.

(b) The magnitude of the difference between the means provided by Cohen's d_s effect size, where 0.2 represents a 'small' effect size, 0.5 a 'medium' effect size, and 0.8 a 'large' effect size. Detailed statistics for the t -test and effect size are presented in Table A5 (Appendix A: Additional tables).

(c) There were 27 offenders (0.0%) in 2008–09 and 98 offenders (0.1%) in 2017–18 whose gender was not stated; thus, these percentages may not add up to 100%. These offenders were excluded from analyses based on gender.

(d) There were 3,801 offenders (3.3%) in 2008–09 and 1,671 offenders (1.5%) in 2017–18 whose Indigenous status was not stated; thus, these percentages may not add up to 100%. These offenders were excluded from analyses based on Indigenous status.

Source: QGSO, estimates derived from unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

In 2008–09, a total of 113,985 unique offenders were proceeded against by police, while in 2017–18 there were slightly fewer unique offenders ($n = 113,017$, a decrease of 0.8%) (see Table A1 in Appendix A: Additional tables for similar information by age groups). This decrease in unique offenders occurred despite a 16.6% growth in the population of people aged 10 years and over in Queensland. As a result, the offender rate per 100,000 persons aged 10 years and over in Queensland decreased by 15.0%, when comparing 2017–18 with 2008–09.

The composition of gender and Indigenous status of offenders in each group was similar, when comparing 2008–09 with 2017–18, with approximately three-quarters of each group of offenders being male, and approximately 80% being non-Indigenous. However, these groups differed in respect to the overall age profile of offenders: in 2008–09, the median age of offenders was 26 years, while in 2017–18 it was 29 years.

The descriptive statistics highlight that the two offender groups have different overall age profiles. In the following section, we examine the age profiles of these groups in more detail by comparing the age–crime curves plotting the age-specific rates of offending for each group.

4.2. Age–crime offending patterns

The analyses presented in this section indicate that the age distribution of offending has changed in three key ways when comparing 2008–09 with 2017–18. These changes can be summarised as:

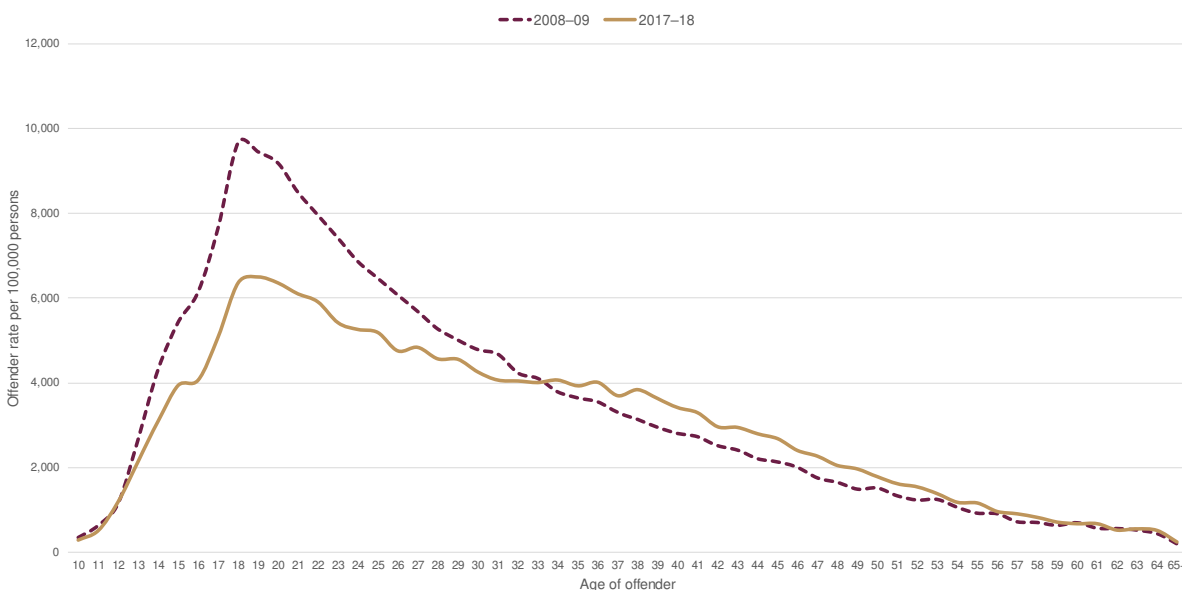
- a decrease in the prevalence of young individual offenders and an increase in the prevalence of older offenders resulting in considerable change in the age–crime curves between the periods
- an increase in the frequency of offending which has resulted in a higher number of total offences despite the decline in offender rates
- variations in the age distribution of frequency of offending.

These results are examined in more detail in the following section.

4.2.1. Decrease in the prevalence of younger offenders and an increase in older offenders

The age-specific rates of offending for 2008–09 to 2017–18 are presented in Figure 1 and provide further insight into the slight decrease in offender numbers shown in Table 1. The age–crime curve for 2008–09 follows the shape of the classic curve that has been described and demonstrated throughout the literature; showing a sharp increase in offending during the early teenage years until a peak at age 18, followed by a sharp decline that slowly declines into middle age. In contrast, the age–crime curve for 2017–18 is markedly less peaked (a reduction in the peak offender rate of 32.8%), indicating a reduction in the prevalence of offenders, and that the rate of offending declines at a slower rate and plateaus from about 30 years of age, before continuing the slow decline.

Figure 1 Age-specific rates of offending for unique offenders in Queensland, 2008–09 and 2017–18



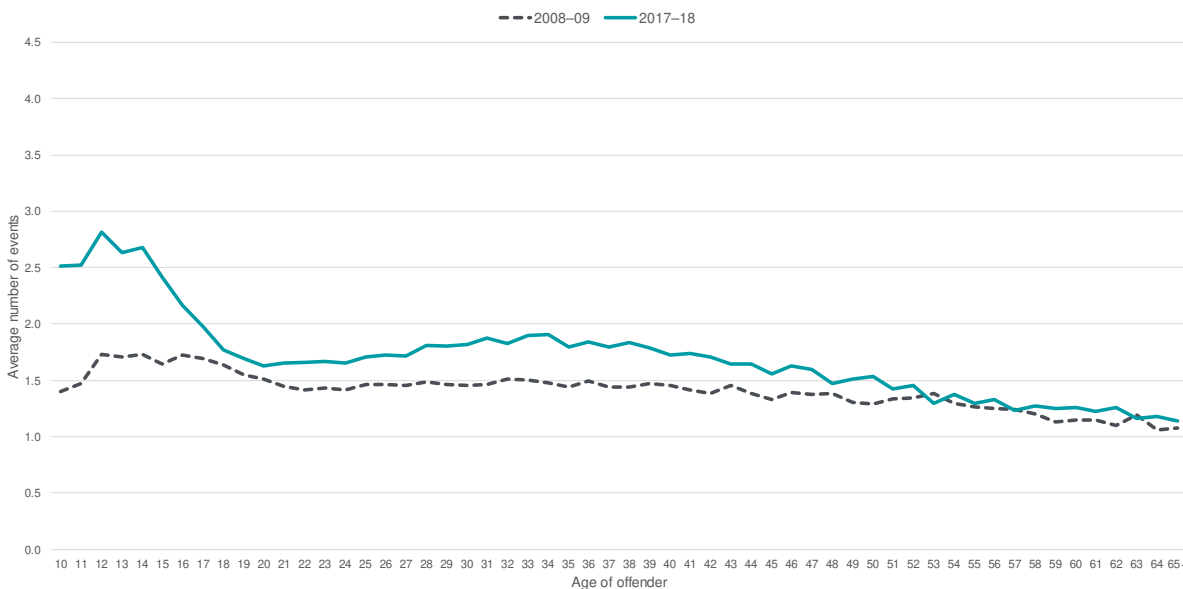
Source: QGSO, unpublished QPS data; ABS 3101.0.

4.2.2. Increase in the frequency of offending

Despite a decrease in the prevalence of offenders, the data indicate that offenders in 2017–18 were more prolific in terms of their offending frequency, when compared with 2008–09 (Table 1). The 113,985 unique offenders in 2008–09 were proceeded against by police for a total of 266,799 offences across 169,234 contact events. In contrast, despite a decrease in offender numbers in 2017–18, the 113,017 offenders were responsible for 336,324 offences (an increase of 26.1%) and 198,769 events (an increase of 17.5%).

As an aggregated group, offenders in 2017–18 averaged more contacts with the police ($M = 1.76$, $SD = 1.70$), when compared with those in 2008–09 ($M = 1.48$, $SD = 1.28$).⁵ To provide more fine-detailed information, the average number of events for offenders by age within each reference period is provided in Figure 2. The results indicate that the average number of events for offenders in 2017–18 was consistently above the corresponding figure in 2008–09, until about the age of 53 years when they converge. The biggest gap is observed for young offenders (aged 10–14 years), where those in 2017–18 averaged approximately one more event than their 2008–09 counterparts. From the age of 17 years and onwards, the two lines remain close, with little difference in the average number of events for offenders from each reference period.

Figure 2 Average number of events by age of offender, 2008–09 and 2017–18



Source: QGSO estimates derived from unpublished QPS data; ABS 3101.0.

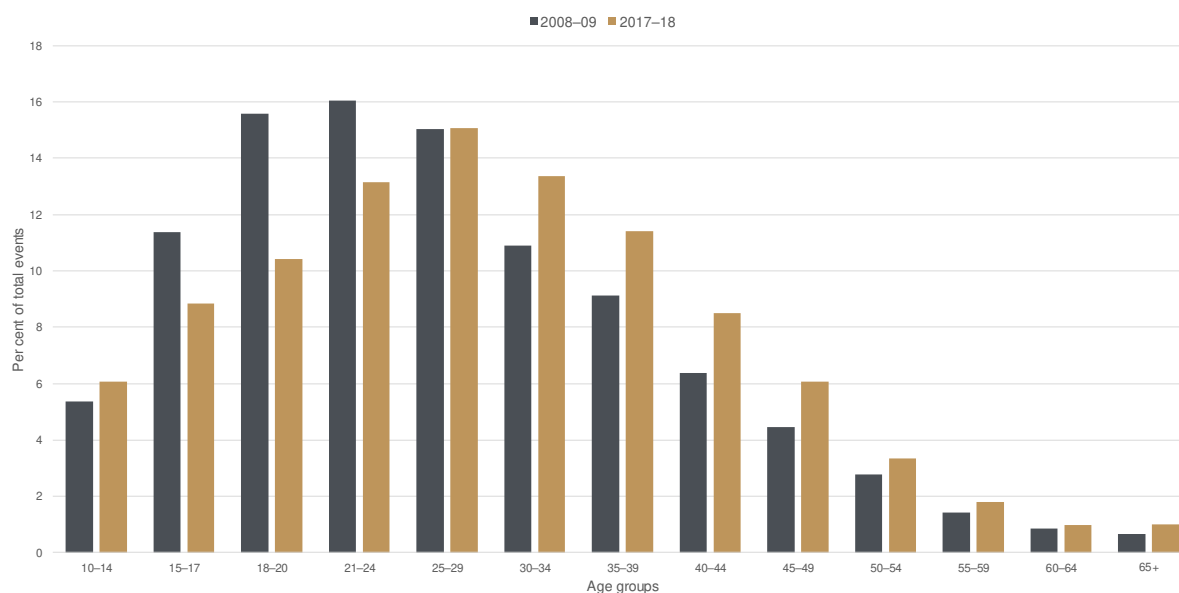
4.2.3. Changing age distribution in the frequency of offending

The above findings demonstrated that, when comparing 2017–18 with 2008–09, there were fewer offenders overall, but they averaged more contact with the police. Examining the proportion of events that each age group accounted for in each reference period (Figure 3) highlights a shift in the age distribution of frequency of crime. In 2008–09, offenders under 25 years of age accounted for almost half of all events (48.4%), while being responsible for 38.5% in 2017–18.

There was a slight increase in the proportion of all events that children aged 10–14 years of age accounted for in 2008–09 (5.4%) compared with 2017–18 (6.1%). Young offenders aged 15–17 years accounted for a smaller proportion of all events in 2017–18 (8.8%) when compared with 2008–09 (11.4%).

The offending age group responsible for most events in 2008–09 was those aged 21–24 years (16.1%), followed by those aged 18–20 years (15.6%) and 25–29 years (15.0%). In contrast, the group of offenders responsible for the most events in 2017–18 was those aged 25–29 years (15.1%), followed by those aged 30–34 years (13.4%) and 21–24 years (13.2%).

⁵ While a *t*-test indicated that the differences in the mean number of events was statistically significant, Cohen's *d*_s effect size indicates that this difference did not meet the threshold to be considered a 'small' effect, and is therefore not meaningful ($t(209,823) = 43.32$, $p < .001$, $d_s = 0.19$).

Figure 3 Age distribution of frequency of crime, 2008–09 and 2017–18


Source: QGSO, unpublished QPS data.

The above results are based on the aggregation of all offenders and are largely driven by non-Indigenous males given that they account for the majority of offenders. Further analyses were undertaken to examine the age-specific rates of offending for groups based on demographic characteristics of the offenders including gender, Indigenous status, and the interaction of gender and Indigenous status to determine if changes were apparent across different offender groups.

4.3. Offending patterns by gender

In this section, any changes in the offending patterns over time for males and females are explored. Descriptive statistics for offenders based on gender for 2008–09 and 2017–18 are provided in Table 2.

Table 2 Descriptive statistics of male and female offenders, 2008–09 and 2017–18

	Male offenders			Female offenders		
	2008–09	2017–18	% change	2008–09	2017–18	% change
Offenders						
Number of unique individual offenders	88,325	84,205	–4.7 ▼	25,633	28,714	12.0 ▲
ERP (10 years and older) ^(a)	1,840,443	2,126,949	15.6 ▲	1,860,678	2,190,063	17.7 ▲
Offender rate (per 100,000 persons)	4,799.1	3,959.0	–17.5 ▼	1,377.6	1,311.1	–4.8 ▼
Offences and events			% change			% change
Total number of offences	210,239	253,262	20.5 ▲	56,509	82,912	46.7 ▲
Total number of events	133,108	148,300	11.4 ▲	36,090	50,350	39.5 ▲
Average system contact			Effect size ^(b)			Effect size ^(b)
Mean events per offender (SD)	1.51 (1.31)	1.76 (1.70)	Very small	1.41 (1.17)	1.75 (1.71)	Small
Offender age (in years)			Median change			Median change
Median age	26	29	3	26	29	3

(a) The mid-point ERP of both calendar years in the financial year is used to provide the most accurate estimate of the offender rate. These have been rounded up to the nearest full number.

(b) The magnitude of the difference between the means provided by Cohen's d_s effect size, where 0.2 represents a 'small' effect size, 0.5 a 'medium' effect size, and 0.8 a 'large' effect size. Detailed statistics for the t -test and effect size is presented in Table A5 (Appendix A: Additional tables).

Source: QGSO, estimates derived from unpublished QPS data; ABS 3101.0.

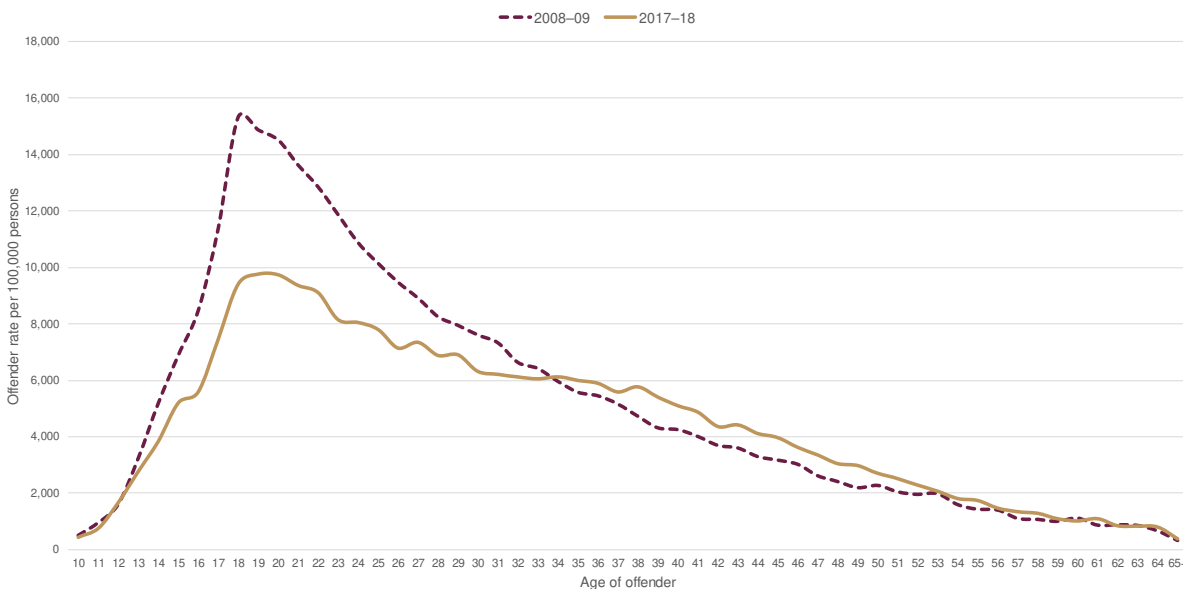
There were fewer unique male offenders in 2017–18 ($n = 84,205$) when compared with 2008–09 ($n = 88,325$), representing a decrease of 4.7% (see Table A1 in Appendix A: Additional tables for similar information by gender and age groups). In contrast, there was a 12.0% increase in the number of female offenders in 2017–18 ($n = 28,714$) when compared with 2008–09 ($n = 25,633$). Despite the increase in the number of female offenders, there was a 4.8% decrease in the rate of police contact due to the larger relative increase in the Queensland female population overall.

The offending patterns for both male and female offenders are explored in more detail below. These results show that, much like the aggregated results, there has been considerable change in offending patterns for both groups, including a relative decrease in young offenders, a relative increase in older offenders, an increase in the frequency of offending, and older offenders being responsible for most crime events for both men and women.

4.3.1. Decrease in prevalence of male offenders

The age-specific rates of offending for male offenders in 2008–09 and 2017–18 are provided in Figure 4. As most offenders are men, the age-crime curve plotting age-specific rates of male offending typically follows the same shape as the overall age-crime curve, but the magnitude is greater. In 2008–09, the peak age of offending for men was 18 years (15,331 offenders per 100,000 male persons), while in 2017–18 the peak age was 19 years (9,751 offenders per 100,000), representing a decrease of 36.4%.

Figure 4 Age-specific rates of male offenders



Source: QGSO, unpublished QPS data; ABS 3101.0.

The median age of male offenders in 2008–09 was 26 years of age, and 29 years in 2017–18. The increase in median age indicates that the group of male offenders in 2017–18 was older than the group in 2008–09.

4.3.2. Increase in the frequency of male offending

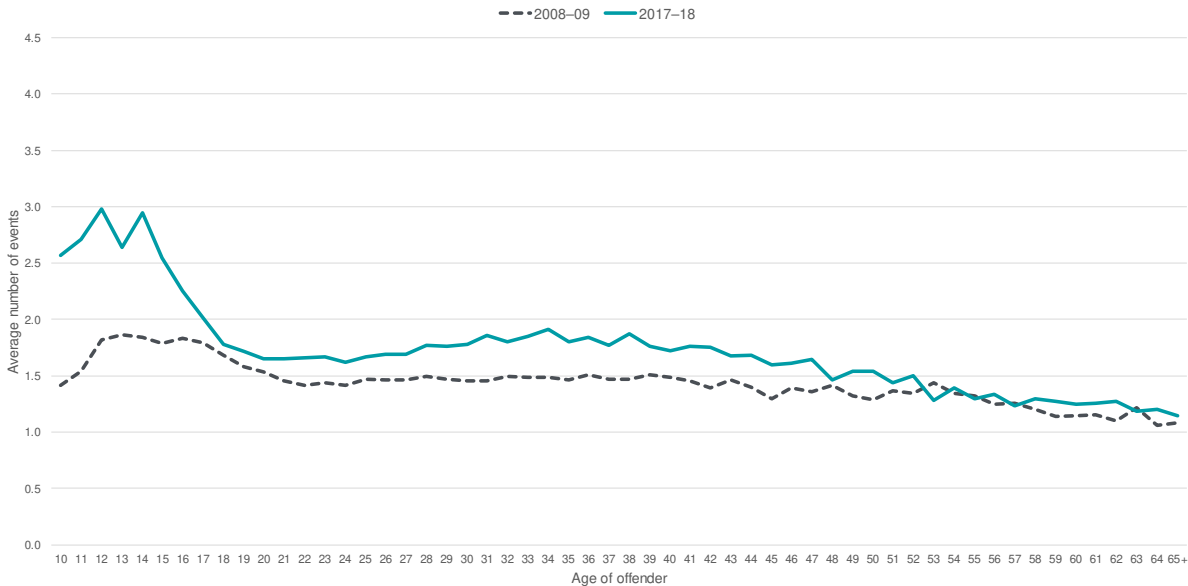
Despite a decrease in the prevalence of male offenders, the data indicate that offenders in 2017–18 were more prolific in terms of their offending frequency, when compared with male offenders in 2008–09 (Table 2). The 88,325 unique male offenders in 2008–09 were responsible for 210,239 offences across 133,108 events. In contrast, despite a decrease in offender numbers in 2017–18, the 84,205 male offenders were responsible for 253,262 offences (an increase of 20.5%) and 148,300 events (an increase of 11.4%).

As an aggregated group, male offenders in 2017–18 averaged more contact events with the police ($M = 1.76$, $SD = 1.70$), when compared with those in 2008–09 ($M = 1.51$, $SD = 1.31$).⁶ The pattern for the average number of events for male offenders of each age is presented in Figure 5, and follows the pattern of all aggregated offenders (Figure 2). Young

⁶ The t -test results and Cohen's d_s indicate that, despite being statistically significant, the difference is not meaningful between the groups ($t(158,077) = 34.64$, $p < .001$, $d_s = 0.17$).

offenders aged between 10 and 14 years in 2017–18 averaged one more event than the corresponding group from 2008–09, and there was also slight growth in the average number of events for those between the ages of 30 and 45 years. Male offenders aged 50 years and older averaged a similar number of events in both reference periods.

Figure 5 Average events by age of male offenders

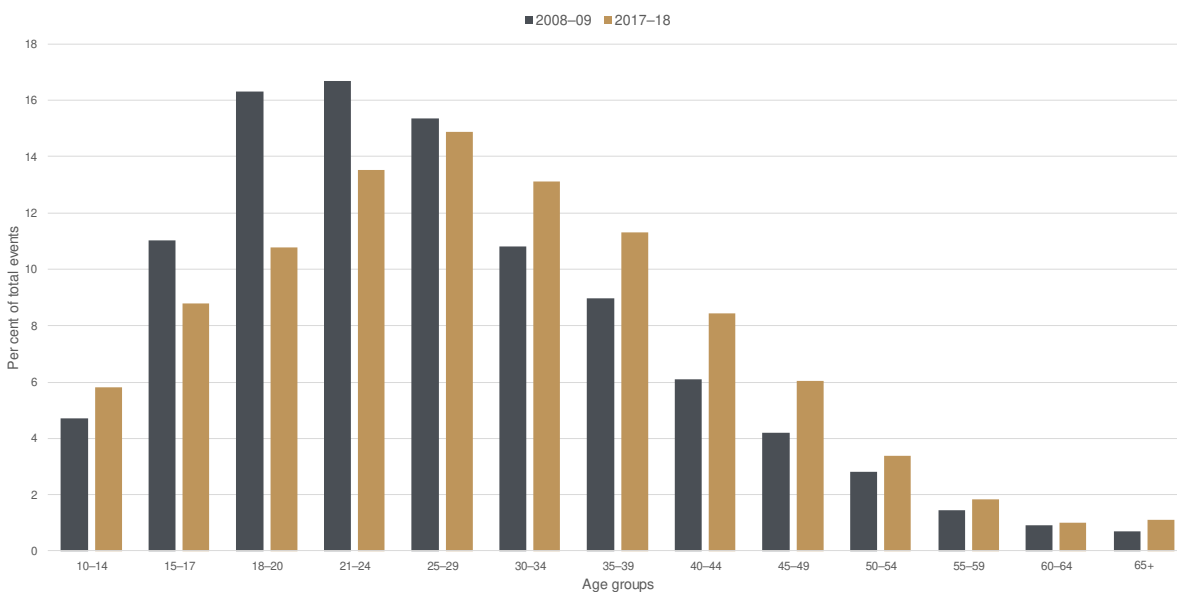


Source: QGSO estimates derived from unpublished QPS data; ABS 3101.0.

4.3.3. Young male offenders responsible for fewer male events

The age distribution of crime for male offenders is provided in Figure 6, and the patterns are similar to those evident in the age distribution of crime for all offenders (Figure 3). Almost half (48.7%) of all events for male offenders in 2008–09 were by those under 25 years of age, while the proportion of all events by male offenders in 2017–18 by male offenders under 25 years was 38.9%. In 2008–09, male offenders aged between 21 and 24 years were responsible for the largest proportion of all events by male offenders, followed by those aged 18–20 years. In 2017–18, the age group responsible for the largest proportion of events by male offenders was those aged 25–29 years, followed by 21–24 years.

Figure 6 Age distribution of frequency of crime: male offenders

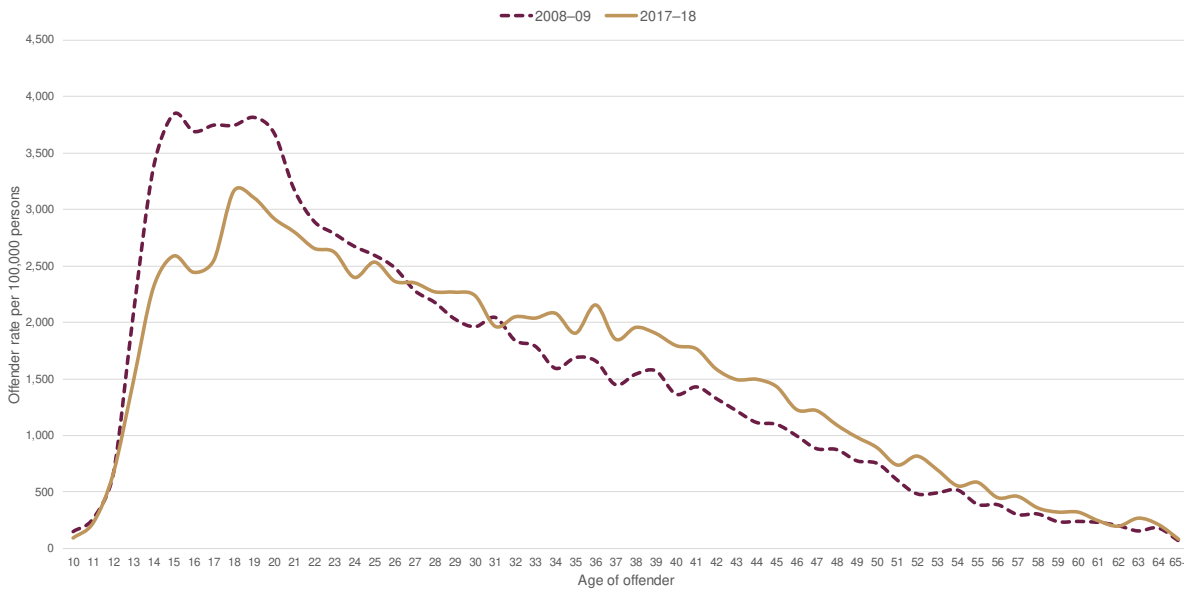


Source: QGSO, unpublished QPS data.

4.3.4. Decrease in the prevalence of female offenders

The age-crime curves for female offenders in 2008–09 and 2017–18 are presented in Figure 7. It shows that female offender rates are substantially lower than male offender rates (Figure 4) and in contrast to the peaked curve for male offenders, the curves for female offenders are 'flatter'. The latter indicates that for female offenders, there are multiple ages with similar offender rates. In 2008–09, the peak age of offending for female offenders was 15 years (3,844 offenders per 100,000 female persons), with another peak at 19 years (3,818 per 100,000) before declining. In 2017–18, the peak age of offending for female offenders was 18 years (3,164 per 100,000), but with a less steep decline between 20 and 40 years, where the rate of decline matches that of female offenders from 2008–09.

Figure 7 Age-specific rates of female offenders



Source: QGSO, unpublished QPS data; ABS 3101.0.

Much like their male counterparts, the median age for female offenders in 2008–09 was 26 years, which then increased to 29 years in 2017–18. Again, this indicates that the group of female offenders in 2017–18 was older than the group in 2008–09.

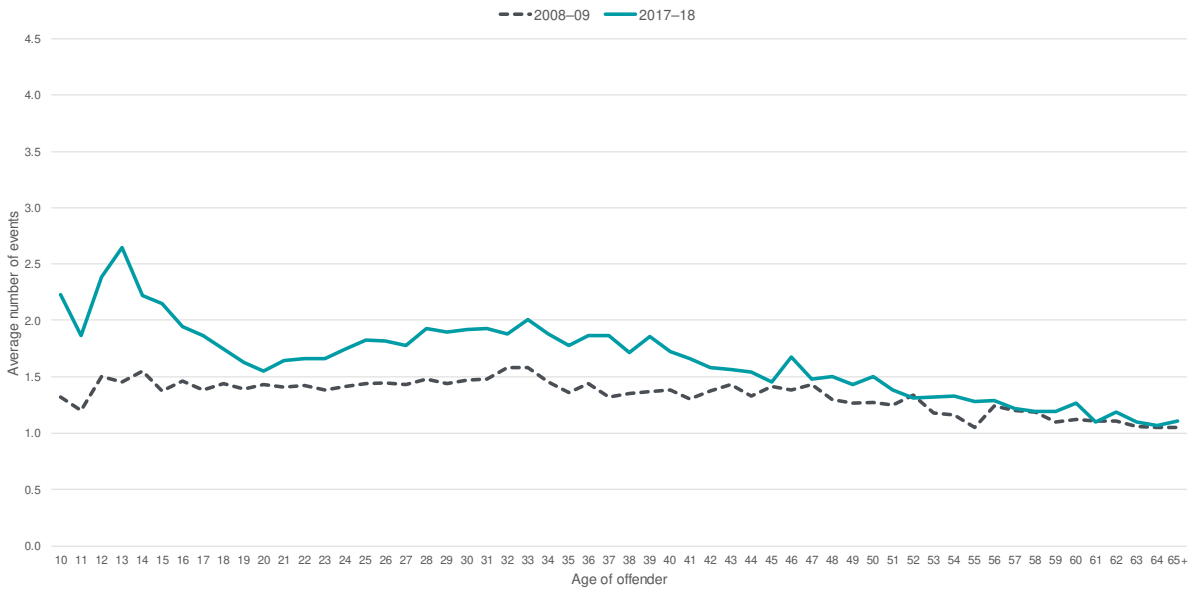
4.3.5. Increase in the frequency of female offending

Despite a decrease in the prevalence of female offenders (in terms of offender rates), the data indicate that offenders in 2017–18 were more prolific in terms of their offending frequency, when compared with those in 2008–09 (Table 2). The 25,633 unique female offenders in 2008–09 were responsible for 56,509 offences across 36,090 events. In 2017–18, the 28,714 female offenders were responsible for 82,912 offences (an increase of 46.7%) and 50,350 events (an increase of 39.5%).

As an aggregated group, female offenders in 2017–18 averaged more contact events with the police ($M = 1.75$, $SD = 1.71$), when compared with those in 2008–09 ($M = 1.41$, $SD = 1.17$).⁷ The average number of events for female offenders from 2008–09 and 2017–18 are presented in Figure 8. While not to the same degree as male offenders, female offenders in 2017–18 averaged more events than their 2008–09 counterparts until the figures converged during their early 50s.

⁷ The t -test results and Cohen's d_s indicate this is a statistically significant, but small effect between the two groups ($t(51,025) = 27.78$, $p < .001$, $d_s = 0.23$).

Figure 8 Average events by age of female offenders by age

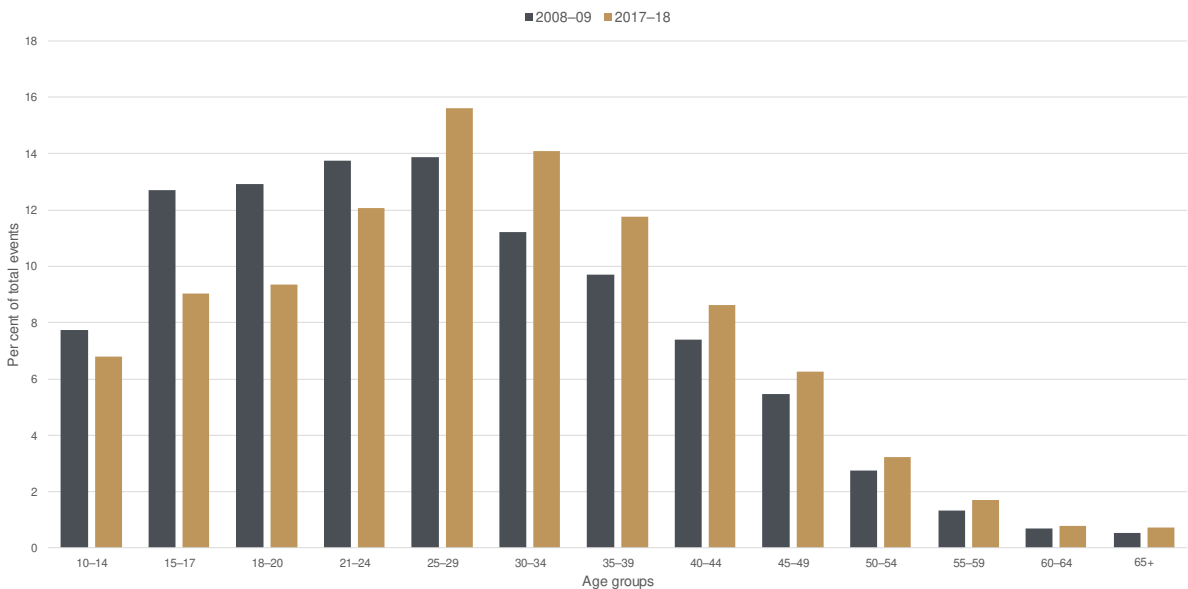


Source: QGSO estimates derived from unpublished QPS data; ABS 3101.0.

4.3.6. Young female offenders responsible for fewer female events

The age distribution of crime for female offenders is presented in Figure 9, indicating substantial change in the proportion of events that different age groups were responsible for. While the 25–29 age group was responsible for the largest proportion of crime by female offenders in both reference periods, the distributions differed in the younger age groups. In 2008–09, almost half of all events (47.1%) were for female offenders younger than 25 years of age. In 2017–18 the corresponding age groups were responsible for 37.2% of all events, with a greater proportion of all events within the older age groups of female offenders.

Figure 9 Age distribution of frequency of crime: female offenders



Source: QGSO, unpublished QPS data.

These results indicate that there have been changes in the offending patterns for both male and female offenders, when comparing 2008–09 with 2017–18. In the following section, we examine for changes in the patterns of offending for offenders by Indigenous status.

4.4. Offending patterns by Indigenous status

In this section, the offending patterns by the recorded Indigenous status of offenders over time are explored. Descriptive statistics for Indigenous and non-Indigenous offenders for 2008–09 and 2017–18 are provided in Table 3. There was a 20.2% increase in the number of unique Indigenous offenders in 2017–18 ($n = 19,701$) when compared with 2008–09 ($n = 16,397$). In contrast, there was a 2.3% decrease in the number of non-Indigenous offenders in 2017–18 ($n = 91,645$) compared with 2008–09 ($n = 93,787$) (see Table A1 in Appendix A: Additional tables for similar information by Indigeneity and age groups). However, when accounting for the increase in relevant populations over time, there was a decrease in the offender rate per 100,000 persons for both groups of offenders over time.

Table 3 Descriptive statistics of Indigenous and non-Indigenous offenders, 2008–09 and 2017–18

	Indigenous			Non-Indigenous		
	2008–09	2017–18	% change	2008–09	2017–18	% change
Offenders						
Number of unique individual offenders	16,397	19,701	20.2 ▲	93,787	91,645	-2.3 ▼
ERP (10 years and older) ^(a)	135,560	174,040	28.4 ▲	3,565,561	4,142,972	16.2 ▲
Offender rate (per 100,000 persons)	12,095.8	11,319.8	-6.4 ▼	2,630.4	2,212.1	-15.9 ▼
Offences and events			% change			% change
Total number of offences	53,557	77,364	44.5 ▲	207,438	256,662	23.7 ▲
Total number of events	33,647	43,832	30.3 ▲	131,709	153,231	16.3 ▲
Average system contact			Effect size ^(b)			Effect size ^(b)
Mean events per offender (SD)	2.05 (2.20)	2.22 (2.30)	Very small	1.40 (1.04)	1.67 (1.54)	Small
Offender age (in years)			Median change			Median change
Median age	25	27	2	25	30	5

(a) The mid-point ERP of both calendar years in the financial year is used to provide the most accurate estimate of the offender rate. These have been rounded up to the nearest full number.

(b) The magnitude of the difference between the means provided by Cohen's d_s effect size, where 0.2 represents a 'small' effect size, 0.5 a 'medium' effect size, and 0.8 a 'large' effect size. Detailed statistics for the t -test and effect size are presented in Table A5 (Appendix A: Additional tables).

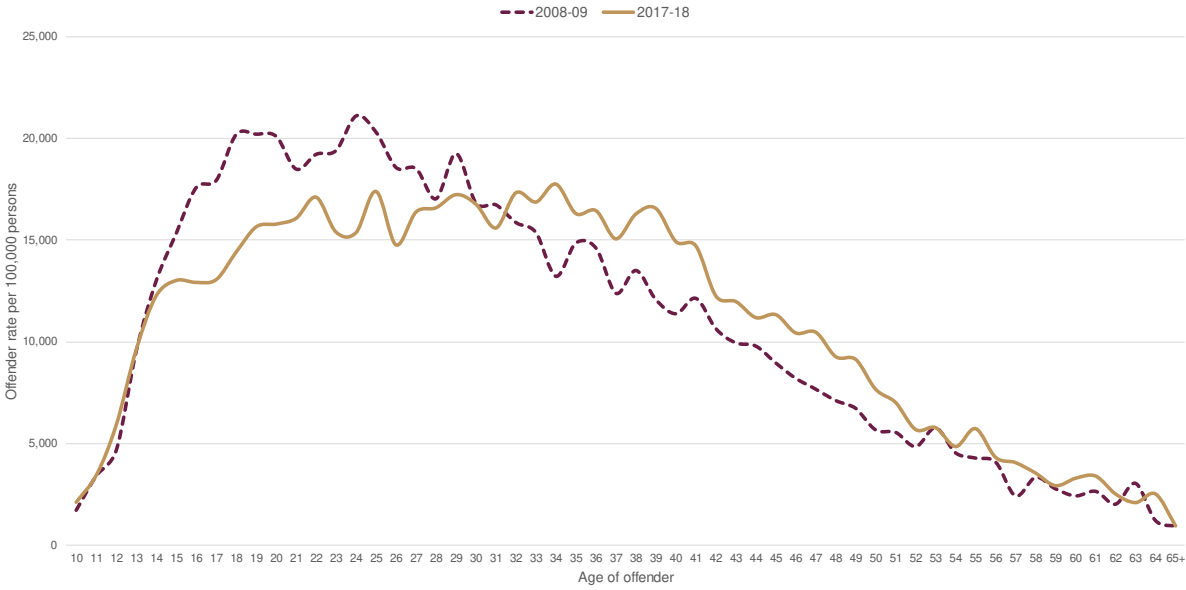
Source: QGSO estimates derived from unpublished QPS data, ABS 3101.0; ABS 3238.0, unpublished data.

The offending patterns for Indigenous and non-Indigenous offenders are explored in more detail below. These results show that there has been considerable change in offending patterns for both groups, including a decrease in young offenders with a corresponding increase in older offenders, an increase in the frequency of offending, but differing patterns of change between Indigenous and non-Indigenous offenders in the age distribution of frequency of crime events.

4.4.1. Decrease in the prevalence of Indigenous offenders

The age-crime curves for Indigenous offenders for 2008–09 and 2017–18 are presented in Figure 10. There is little change between the two reference periods in the age-specific rates of offending for Indigenous offenders between the ages of 10 and 14 years. However, between the ages of 15 and 20 years, the age-specific rates for 2017–18 are approximately 25% lower than in 2008–09. Overall, the recent distribution also shows a relatively flat peak between 20 and 40 years of age, which was not present in the 2008–09 age-crime curve. This suggests that, in 2017–18, there was a higher rate of older Aboriginal and Torres Strait Islander offenders when compared with 2008–09.

Figure 10 Age-specific rates of Aboriginal and Torres Strait Islander offenders



Source: QGSO, unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

The median age for Aboriginal and Torres Strait Islander offenders in 2008–09 was 25 years of age, and 27 years in 2017–18. This slight increase in median age further indicates that there has been a change in the age profile of Aboriginal and Torres Strait Islander offenders over time.

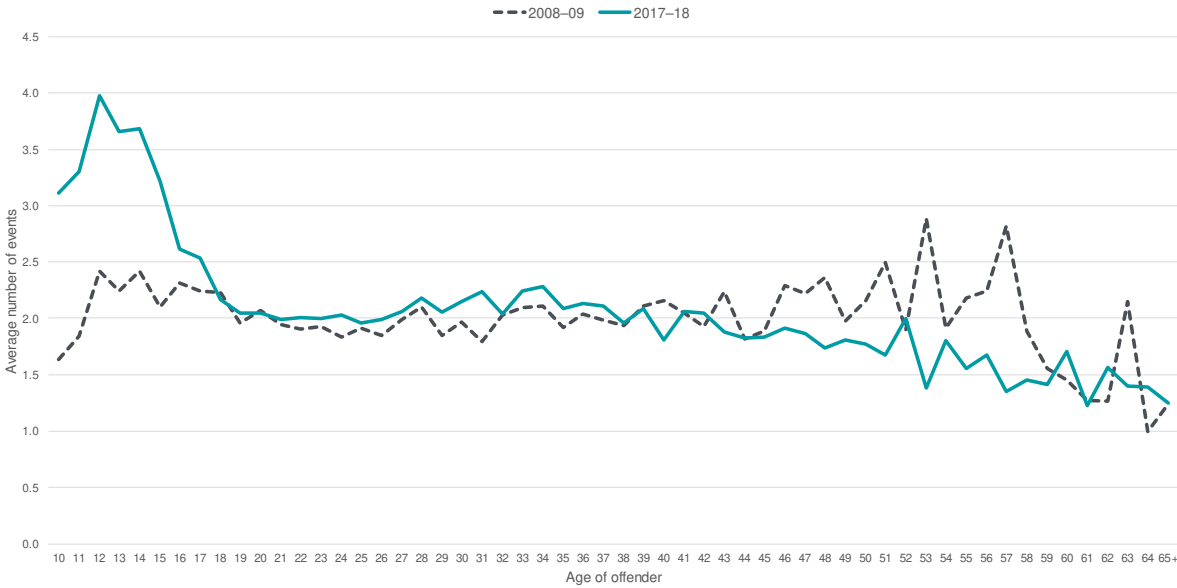
4.4.2. Increases in the frequency of Aboriginal and Torres Strait Islander youth offending

Indigenous offenders in 2017–18 were more prolific when compared with 2008–09, despite a decrease in the offending rate (Table 3). The 16,397 unique Aboriginal and Torres Strait Islander offenders in 2008–09 were responsible for 53,557 offences across 33,647 events. In 2017–18, the 19,701 Aboriginal and Torres Strait Islander offenders were responsible for 77,364 offences (an increase of 44.5%) and 43,832 events (an increase of 30.3%).

As an aggregated group, Aboriginal and Torres Strait Islander offenders in 2017–18 averaged slightly more contact events with the police ($M = 2.22, SD = 2.30$), when compared with all Aboriginal and Torres Strait Islander offenders in 2008–09 ($M = 2.05, SD = 2.20$).⁸ The average number of events for Aboriginal and Torres Strait Islander offenders by age for each reference period is presented in Figure 11. Between the ages of 10 and 15 years of age, young Aboriginal and Torres Strait Islander offenders averaged at least one more event in 2017–18, than in 2008–09. Both groups then averaged similar numbers of events from about age 17, through to their mid-40s.

⁸ The *t*-test results and Cohen's *d*_s indicate that while this is a statistically significant difference between the groups, it is not considered meaningful ($t(35,423) = 7.27, p < .001, d_s = 0.08$).

Figure 11 Average events by age: Aboriginal and Torres Strait Islander offenders

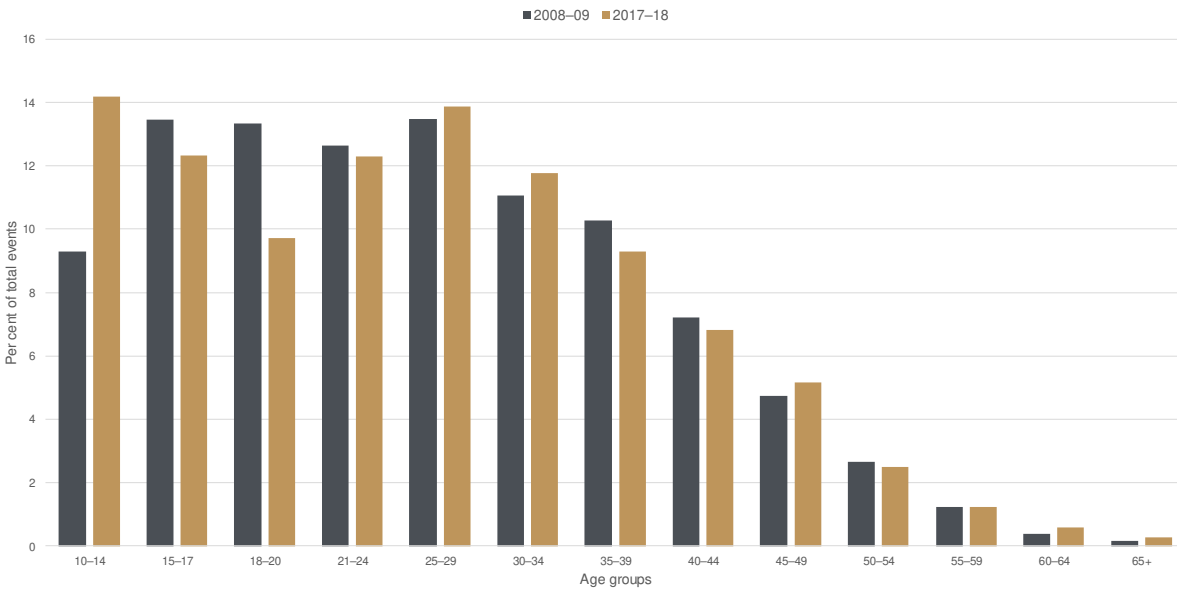


Source: QGSO estimates derived from unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

4.4.3. Very young Aboriginal and Torres Strait Islander offenders responsible for more Indigenous events

The growth in the average number of offences committed by very young Aboriginal and Torres Strait Islander people evident in Figure 11 above is reflected in the age distribution of crime presented in Figure 12, which shows that offenders aged 10–14 years accounted for 14.2% of events committed by Aboriginal and Torres Strait Islander offenders in 2017–18 compared with 9.3% of events in 2008–09. While the 18–20 years age group was responsible for a smaller proportion of all events in 2017–18 (9.7%) when compared with 2008–09 (13.4%), the age distribution remained relatively similar for other age groups.

Figure 12 Age distribution of frequency of crime: Aboriginal and Torres Strait Islander offenders

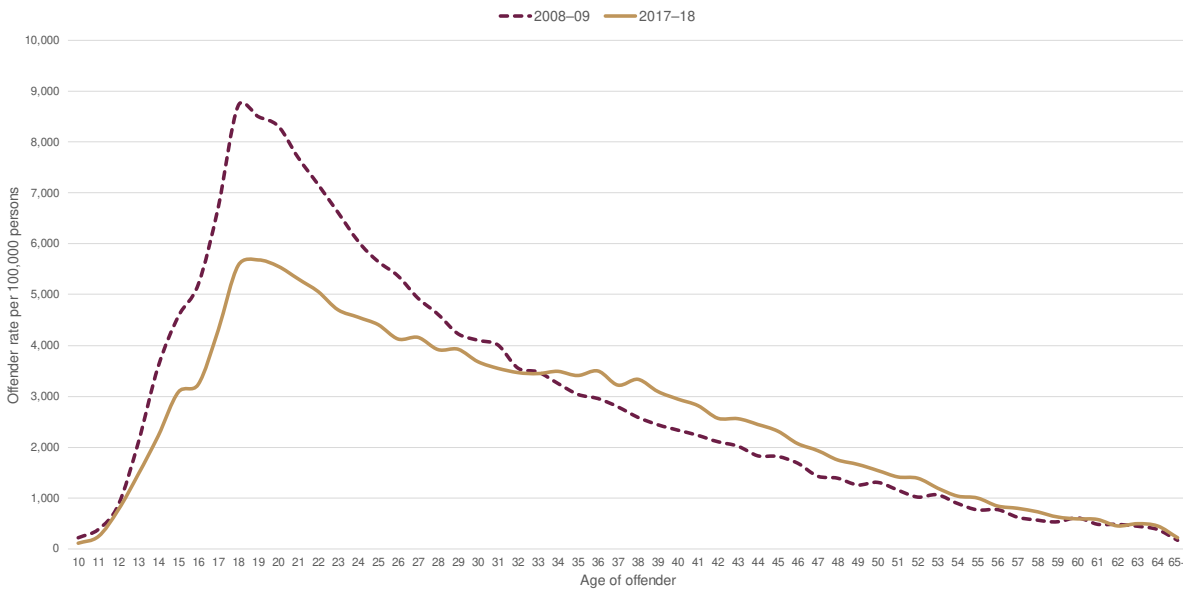


Source: QGSO, unpublished QPS data.

4.4.4. Reduction in the prevalence of non-Indigenous offenders

The age-specific rates of offending for both reference periods are presented in Figure 13. The shapes of these age-crime curves approximate the overall age-crime curves (Figure 1) and for male offenders (Figure 4), as over 80% of offenders in each reference period were recorded as being non-Indigenous.

Figure 13 Age-specific rates of non-Indigenous offenders



Source: QGSO, unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

The median age for non-Indigenous offenders in 2008–09 was 25 years of age and increased by 5 years so that the median age of non-Indigenous offenders in 2017–18 was 30 years of age. This substantial change in the median age for non-Indigenous offenders further highlights the change in age profile between 2008–09 and 2017–18.

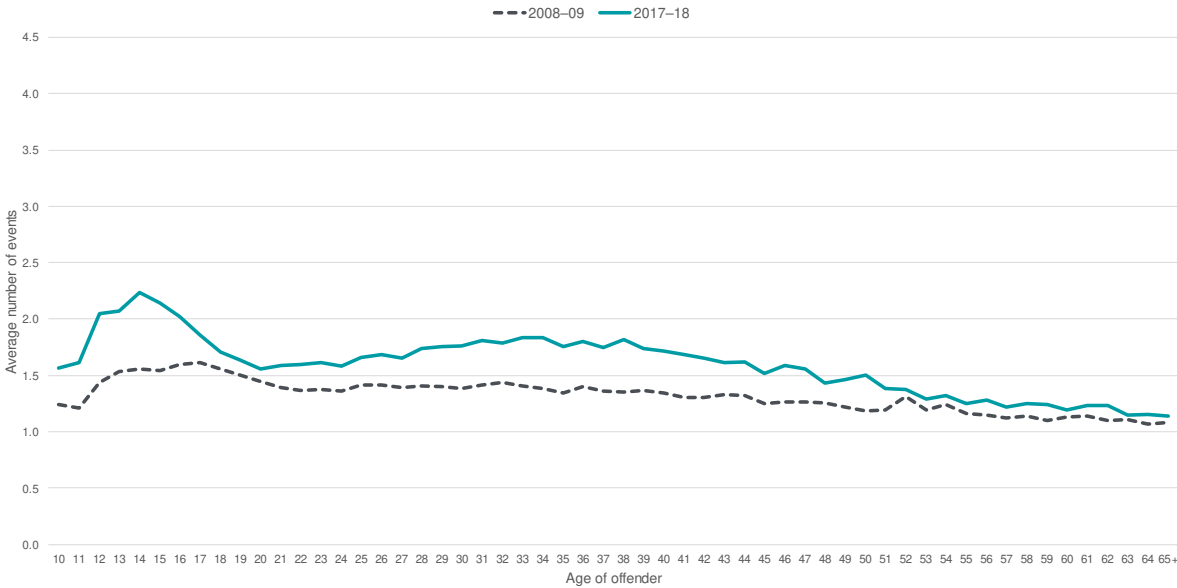
4.4.5. Increases in the frequency of non-Indigenous offending

Despite a decrease in both numbers of unique individuals and offending rate, non-Indigenous offenders in 2017–18 were more prolific when compared with non-Indigenous offenders in 2008–09 (Table 3). The 93,787 unique offenders in 2008–09 were responsible for 207,438 offences across 131,709 events. In 2017–18, the 91,645 non-Indigenous offenders were responsible for 256,662 offences (an increase of 23.7%) and 153,231 events (an increase of 16.3%).

As an aggregated group, non-Indigenous offenders in 2017–18 averaged more events with the police ($M = 1.67$, $SD = 1.54$), when compared with all non-Indigenous offenders in 2008–09 ($M = 1.40$, $SD = 1.04$).⁹ The average number of events by age for non-Indigenous offenders for 2008–09 and 2017–18 are displayed in Figure 14. The similar pattern of offenders in 2017–18 averaging more events than offenders in 2008–09 was observed, especially in the younger ages. While this difference was more prominent among younger offenders, there also appears to be an increase in the average number of events for non-Indigenous offenders more generally, but there is little difference between offenders aged in their 50s and older.

⁹ The *t*-test results and Cohen's *d_s* indicates that this is a statistically significant, but small effect between the groups ($t(160,010) = 43.84$, $p < .001$, $d_s = 0.21$).

Figure 14 Average events by age: non-Indigenous offenders

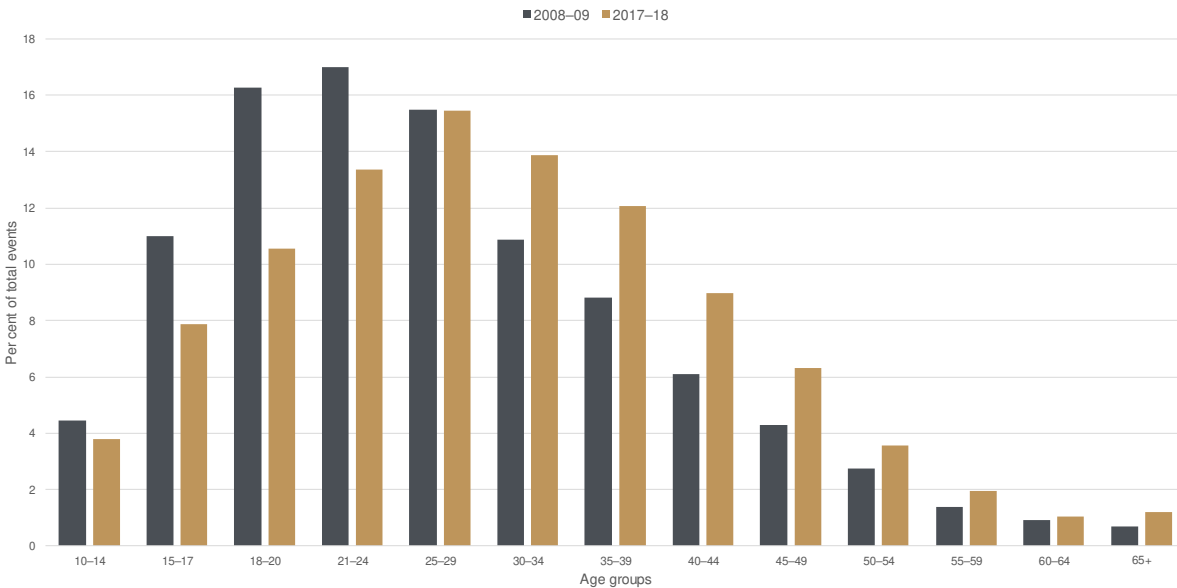


Source: QGSO estimates derived from unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

4.4.6. Younger non-Indigenous offenders responsible for fewer non-Indigenous events

The age distribution of crime for non-Indigenous offenders for both reference periods is presented in Figure 15, which shows a change in distribution over time. In 2008–09, offenders in the 21–24 years age group were responsible for the largest proportion of all events (17.0%), followed by offenders aged 18–20 years and 25–29 years (16.3% and 15.5%, respectively). In contrast, in 2017–18, offenders in the 25–29 years age group were responsible for the largest proportion of events (15.5%), followed by those aged 30–34 and 21–24 years (13.9% and 13.4%, respectively). These patterns differ from those for the age distribution of the frequency of crime by Aboriginal and Torres Strait Islander offenders (Figure 12), where the group of offenders aged 10–14 years accounted for the largest proportion of all events by Aboriginal and Torres Strait Islander offenders in 2017–18.

Figure 15 Age distribution of frequency of crime: non-Indigenous offenders



Source: QGSO, unpublished QPS data.

4.5. Offending patterns by gender and Indigenous status

In this section, the offending patterns of four groups of offenders based on gender and Indigenous status are explored: Aboriginal and Torres Strait Islander male offenders, Aboriginal and Torres Strait Islander female offenders, non-Indigenous male offenders and non-Indigenous female offenders. Descriptive statistics for each of these groups for 2008–09 and 2017–18 are provided in Table 4.

Table 4 Descriptive statistics of offenders by Indigenous status and gender, 2008–09 and 2017–18

	Indigenous male offenders			Indigenous female offenders		
	2008–09	2017–18	% change	2008–09	2017–18	% change
Offenders						
Number of unique individual offenders	11,310	13,311	17.7 ▲	5,085	6,382	25.5 ▲
ERP (10 years and older) ^(a)	66,310	85,782	29.4 ▲	69,250	88,258	27.4 ▲
Offender rate (per 100,000 persons)	17,056.3	15,517.3	–9.0 ▼	7,343.0	7,231.1	–1.5 ▼
Offences and events			% change			% change
Total number of offences	40,112	56,330	40.4 ▲	13,443	21,018	56.3 ▲
Total number of events	24,341	30,442	25.1 ▲	9,304	13,380	43.8 ▲
Average system contact			Effect size ^(b)			Effect size ^(b)
Mean events per offender (<i>SD</i>)	2.15 (2.33)	2.29 (2.36)	Very small	1.83 (1.86)	2.10 (2.19)	Very small
Offender age (in years)			Median change			Median change
Median age	25	27	2	26	28	2
	Non-Indigenous male offenders			Non-Indigenous female offenders		
	2008–09	2017–18	% change	2008–09	2017–18	% change
Offenders						
Number of unique individual offenders	74,341	69,660	–6.3 ▼	19,422	21,900	12.8 ▲
ERP (10 years and older) ^(a)	1,774,133	2,041,167	15.1 ▲	1,791,429	2,101,805	17.3 ▲
Offender rate (per 100,000 persons)	4,190.3	3,412.8	–18.6 ▼	1,084.2	1,042.0	–3.9 ▼
Offences and events			% change			% change
Total number of offences	165,917	195,241	17.7 ▲	41,473	61,292	47.8 ▲
Total number of events	106,041	116,594	10.0 ▲	25,635	36,533	42.5 ▲
Average system contact			Effect size ^(b)			Effect size ^(b)
Mean events per offender (<i>SD</i>)	1.43 (1.06)	1.67 (1.54)	Very small	1.32 (0.91)	1.67 (1.54)	Small
Offender age (in years)			Median change			Median change
Median age	25	30	5	25	30	5

(a) The mid-point ERP of both calendar years in the financial year is used to provide the most accurate estimate of the offender rate. These have been rounded up to the nearest full number.

(b) The magnitude of the difference between the means provided by Cohen's *d*s effect size, where 0.2 represents a 'small' effect size, 0.5 a 'medium' effect size, and 0.8 a 'large' effect size. Detailed statistics for the *t*-test and effect size is presented in Table A5 (Appendix A: Additional tables).

Source: QGSO estimates derived from unpublished QPS data, ABS 3101.0; ABS 3238.0, unpublished data.

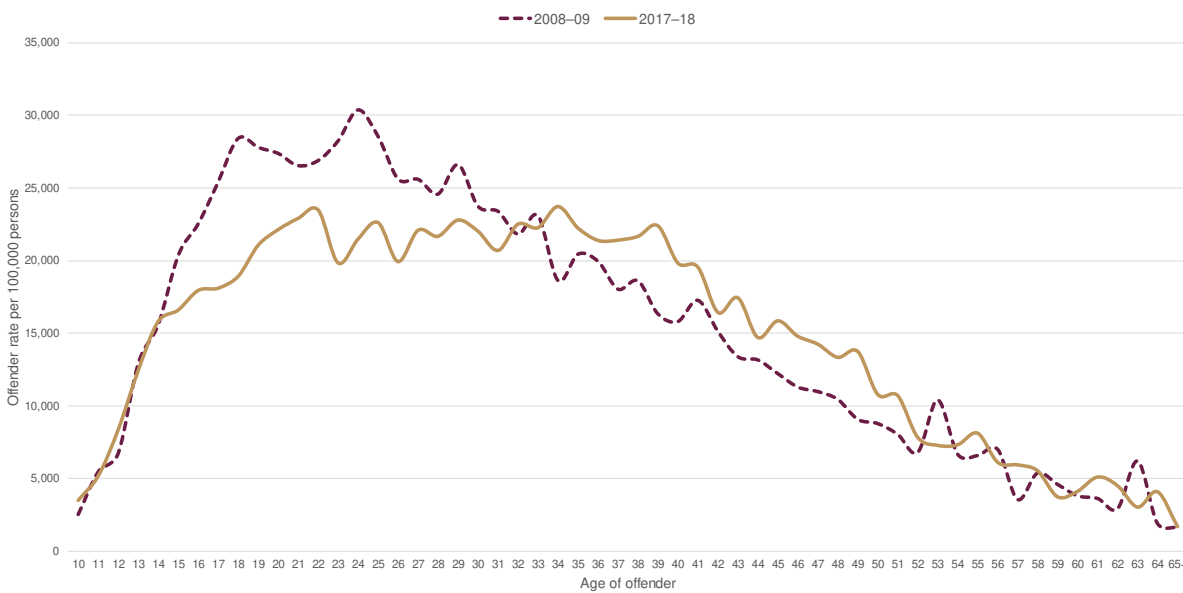
In terms of raw numbers, there was an increase in the number of unique offenders for 2017–18 when compared with 2008–09 for three of the four groups (see Table A1 in Appendix A: Additional tables for similar information by gender, Indigeneity and age groups). There was a 17.7% increase in the number of unique Aboriginal and Torres Strait Islander male offenders (13,311 compared with 11,310), an increase of 25.5% in Aboriginal and Torres Strait Islander female offenders (6,382 compared with 5,085), and an increase of 12.8% in non-Indigenous female offenders (21,900 compared with 19,422). The only group to record a decrease (–6.3%) in number was non-Indigenous male offenders (69,660 compared with 74,341).

When examining the offender rates per 100,000 persons, each of the four groups experienced a decrease in rates when comparing 2017–18 with 2008–09. Despite an increase in numbers for three of the groups, there was a greater proportional increase in the ERP during that time, resulting in decreased offending rates.

4.5.1. Decrease in the prevalence of Indigenous male offenders

The age–crime curves for Indigenous male offenders for each reference period are presented in Figure 16, indicating substantial change in the age-specific rates of offending over time. The offender rate for 2008–09 indicates that a first peak was at 18 years of age, which was then followed by a greater peak at 24 years, before slowly declining. In contrast, the offender rate for 2017–18 peaked initially at age 22 and another greater peak at 34 years of age, which resulted in a flatter, longer curve, before declining.

Figure 16 Age-specific rates of Aboriginal and Torres Strait Islander male offenders



Source: QGSO, unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

The median age for Aboriginal and Torres Strait Islander male offenders in 2008–09 was 25 years of age. In 2017–18, the median age of Aboriginal and Torres Strait Islander male offenders was 27 years of age, representing a slight increase.

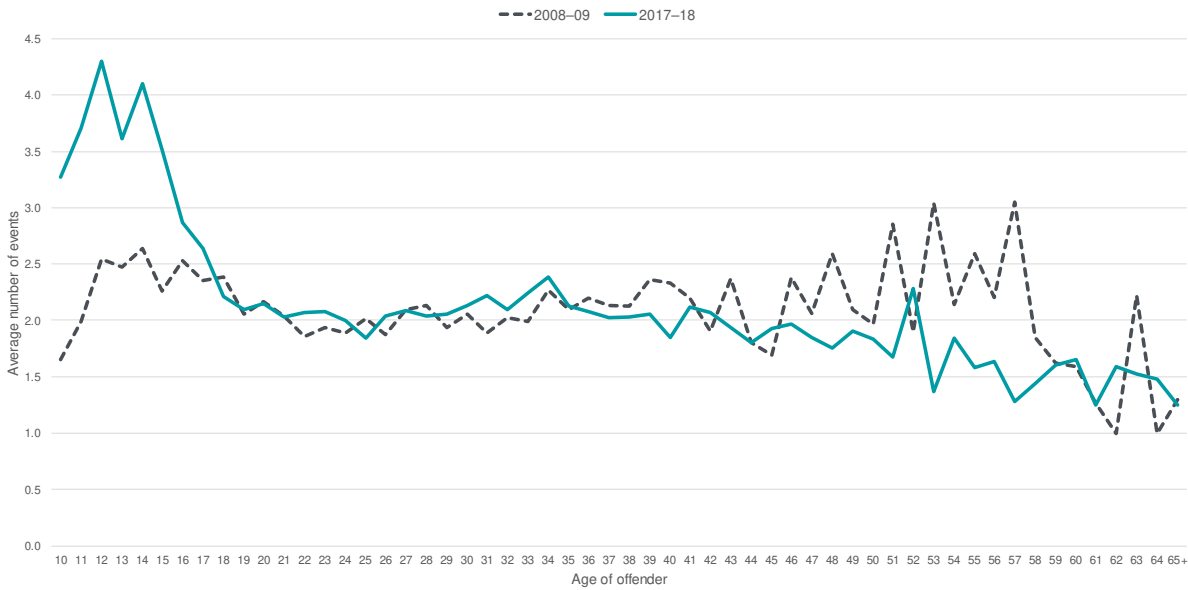
4.5.2. Increase in the frequency of young Aboriginal and Torres Strait Islander male offending

Aboriginal and Torres Strait Islander male offenders were more prolific in 2017–18 when compared with 2008–09, despite a decrease in the offending rate (Table 4). The 11,310 unique Aboriginal and Torres Strait Islander male offenders in 2008–09 were responsible for 40,112 offences across 24,341 events. In 2017–18, the 13,311 Aboriginal and Torres Strait Islander male offenders were responsible for 56,330 offences (an increase of 40.4%) and 30,442 events (an increase of 25.1%).

In total, there was little difference between the average number of events for Aboriginal and Torres Strait Islander male offenders in 2017–18 ($M = 2.29, SD = 2.36$) and 2008–09 ($M = 2.15, SD = 2.33$).¹⁰ The average number of events for Aboriginal and Torres Strait Islander male offenders by age for each reference period is provided in Figure 17. As with the overall patterns, offenders in 2017–18 averaged more events, but only for younger offenders. In contrast to overall patterns, offenders from each year displayed similar numbers of events until the late 40s, when the 2017–18 offenders averaged fewer events when compared with offenders from 2008–09.

¹⁰ The t -test results and Cohen's d_s indicates that despite being statistically significant, the difference is not meaningful between the groups ($t(24,063) = 4.50, p < .001, d_s = 0.06$).

Figure 17 Average events by age: Aboriginal and Torres Strait Islander male offenders

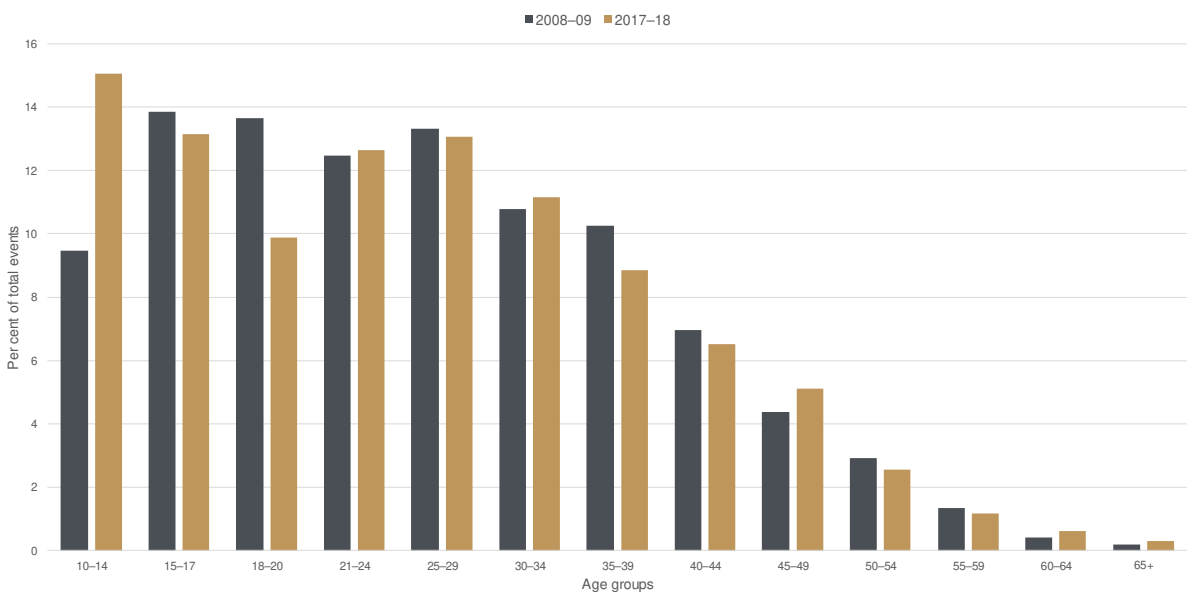


Source: QGSO estimates derived from unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

4.5.3. Very young Aboriginal and Torres Strait Islander male offenders responsible for more Indigenous male events

As with the age distribution of crime for Aboriginal and Torres Strait Islander offenders overall, similar patterns were observed for Aboriginal and Torres Strait Islander male offenders (Figure 18). Specifically, the changes in the age distribution of frequency of offenders between 2008–09 and 2017–18 were most evident in the 10–14 and 18–20 years age groups. Offenders aged 10–14 years were responsible for 9.5% of all events in 2008–09, and 15.0% in 2017–18, while offenders aged 18–20 years were responsible for 13.7% of all events in 2008–09, and 9.9% in 2017–18. All other age groups displayed similar proportions of events in the two reference periods.

Figure 18 Age distribution of frequency of crime: Aboriginal and Torres Strait Islander male offenders

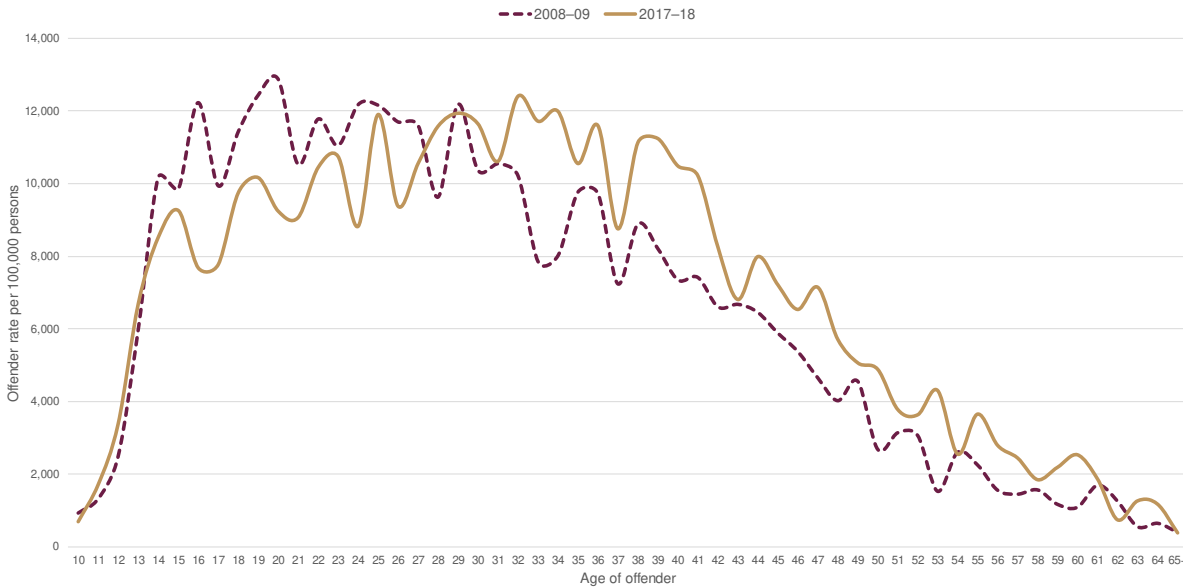


Source: QGSO, unpublished QPS data.

4.5.4. Decrease in the prevalence of Aboriginal and Torres Strait Islander female offenders

The age-specific rates of offending of Aboriginal and Torres Strait Islander female offenders are plotted in Figure 19, highlighting that in 2017–18 the peak offending age was older, did not reach the same magnitude in terms of offending rate, and extended into the mid-30s, when compared with 2008–09.

Figure 19 Age-specific rates of Aboriginal and Torres Strait Islander female offenders



Source: QGSO, unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

The pattern and change in relation to the median age of Aboriginal and Torres Strait Islander s female offenders over time are comparable to Aboriginal and Torres Strait Islander male offenders. The median age for Aboriginal and Torres Strait Islander s female offenders in 2008–09 was 26 years, increasing to 28 years in 2017–18.

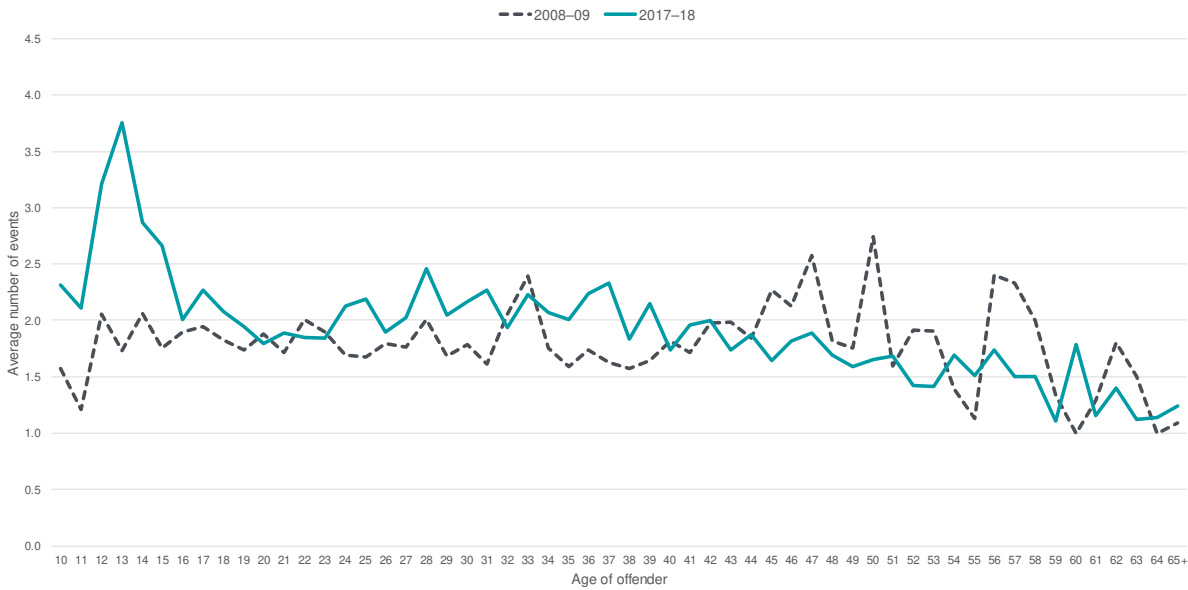
4.5.5. Increases in the frequency of Aboriginal and Torres Strait Islander female offending

The largest proportional changes in the frequency of offending between 2008–09 and 2017–18 across the four groups were observed for Aboriginal and Torres Strait Islander female offenders (Table 4). The 5,085 unique Aboriginal and Torres Strait Islander female offenders in 2008–09 were responsible for 13,443 offences across 9,304 events. In 2017–18, the 6,382 Aboriginal and Torres Strait Islander female offenders were responsible for 21,018 offences (an increase of 56.3%) and 13,380 events (an increase of 43.8%).

In total, Aboriginal and Torres Strait Islander female offenders averaged slightly more events with police in 2017–18 ($M = 2.10$, $SD = 2.19$) when compared with 2008–09 ($M = 1.83$, $SD = 1.86$).¹¹ However, in terms of frequency of offending by Aboriginal and Torres Strait Islander female offenders at specific ages, overall there were similarities between 2008–09 and 2017–18 (Figure 20). The notable exception was the large difference in the average number of events for young Aboriginal and Torres Strait Islander female offenders aged 12 and 13 years.

¹¹ Despite being statistically significant, the difference between the two groups is not considered meaningful ($t(11,415) = 7.05$, $p < .001$, $d_s = 0.13$).

Figure 20 Average events by age: Aboriginal and Torres Strait Islander female offenders

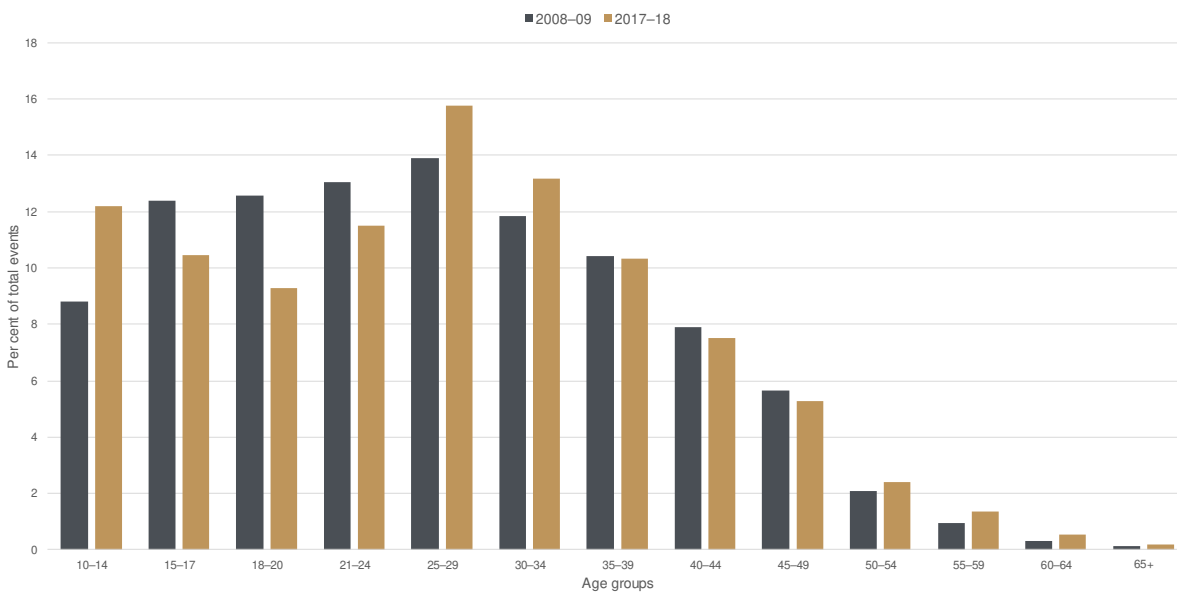


Source: QGSO estimates derived from unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

4.5.6. Very young Aboriginal and Torres Strait Islander female offenders responsible for more Indigenous female events

The age distribution of crime for Aboriginal and Torres Strait Islander female offenders is presented in Figure 21. The data suggest that differences in the proportion of events that offenders were responsible for were only apparent for those under 35 years of age. In particular, the 10–14 age group in 2017–18 was responsible for a greater proportion of all events by Aboriginal and Torres Strait Islander female offenders when compared with 2008–09. In contrast, the 15–17, 18–20 and 21–24 years age groups were responsible for a smaller proportion of events in 2017–18 when compared with 2008–09.

Figure 21 Age distribution of frequency of crime: Aboriginal and Torres Strait Islander female offenders

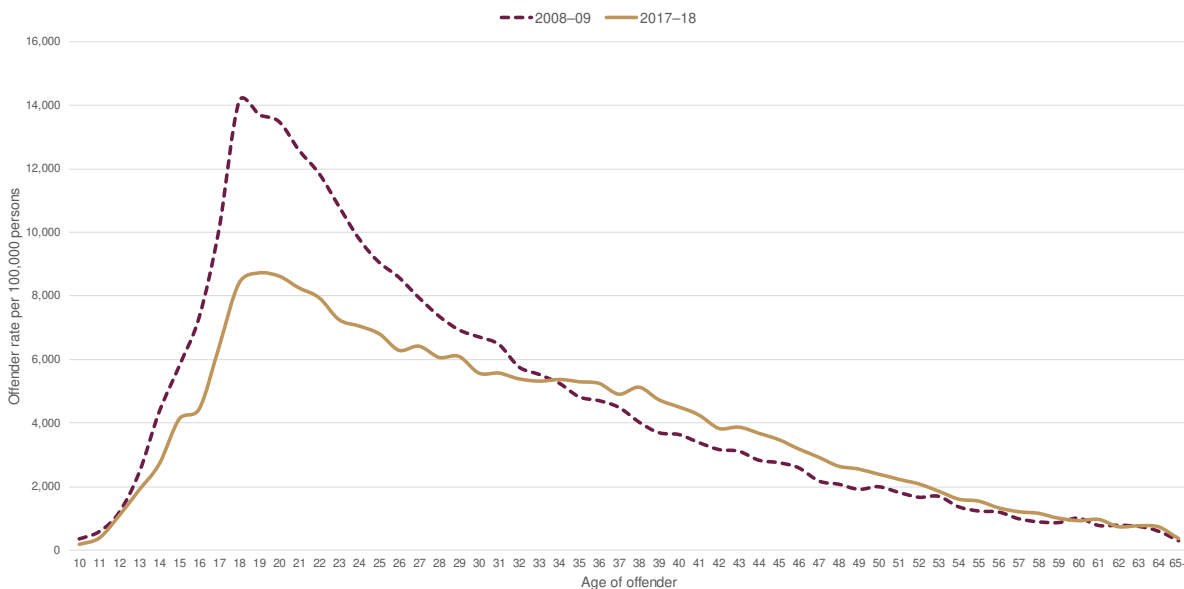


Source: QGSO, unpublished QPS data.

4.5.7. Decrease in the prevalence in non-Indigenous male offenders

The age-crime curves for non-Indigenous male offenders for each reference period are presented in Figure 22. In 2008–09, the offending rate for non-Indigenous male offenders peaked at 18 years of age (14,133 per 100,000 persons), declining steeply until about age 32, before declining at a slower rate. In contrast, the peak age of offending in 2017–18 was slightly older at 19 years, but at a much lower rate (8,718 per 100,000 persons), with a slow rate of decline before a period that plateaus between ages 30 and 40 years, before continuing the slow decline.

Figure 22 Age-specific rates of non-Indigenous male offenders



Source: QGSO, unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

The median age for non-Indigenous male offenders in 2008–09 was 25 years. In 2017–18, the median age was 30 years, representing an increase of five years.

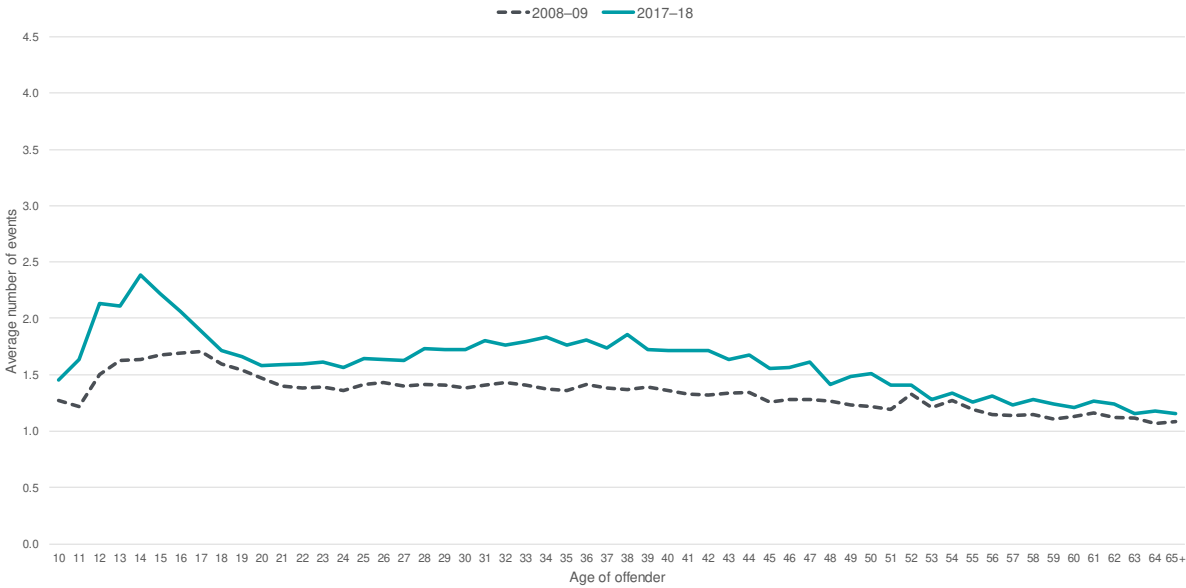
4.5.8. Increase in the frequency of non-Indigenous male offending

Despite being responsible for the majority of all contact events with police, non-Indigenous male offenders recorded the smallest proportional increase in frequency of offending between 2008–09 and 2017–18 (Table 4). The 74,341 unique non-Indigenous male offenders in 2008–09 were responsible for 165,917 offences across 106,041 events. In 2017–18, there were fewer offenders ($n = 69,660$), but they were responsible for 195,241 offences (an increase of 17.7%) and 116,594 events (an increase of 10.0%).

As an aggregated group, non-Indigenous male offenders in 2017–18 averaged slightly more contact events with the police ($M = 1.67$, $SD = 1.54$) when compared with 2008–09 ($M = 1.43$, $SD = 1.06$).¹² The largest differences in the average number of events for non-Indigenous male offenders between the two reference periods were between the ages of 12 and 14 years (Figure 23). While the average number of events for offenders in 2017–18 was higher at every age than for offenders in 2008–09, these differences were small.

¹² Despite being statistically significant, the difference between the two groups is just short of the threshold of being considered meaningful ($t(122,911) = 35.24$, $p < .001$, $d_s = 0.18$).

Figure 23 Average events by age: Non-Indigenous male offenders

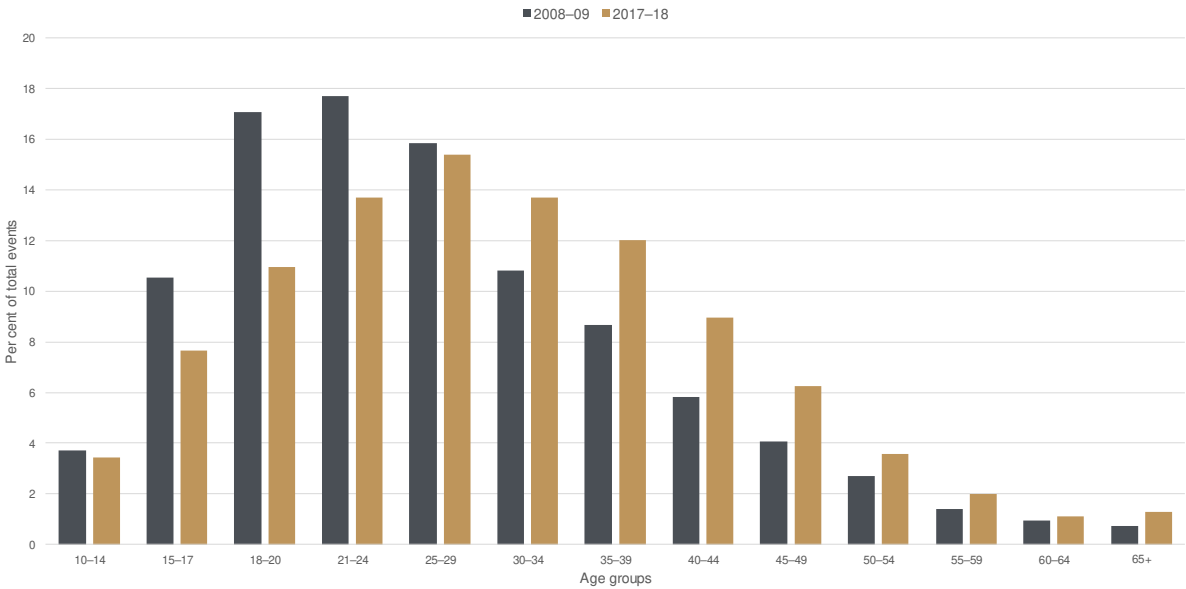


Source: QGSO estimates derived from unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

4.5.9. Younger non-Indigenous male offenders responsible for fewer non-Indigenous male events

The data indicate that the age distribution of crime for non-Indigenous male offenders changed over time (Figure 24). Each of the age groups under 30 years were responsible for a larger proportion of events in 2008-09, when compared with 2017-18. In contrast, offenders aged 30 years and over were responsible for a larger proportion of events in 2017-18, when compared with 2008-09.

Figure 24 Age distribution of frequency of crime: Non-Indigenous male offenders

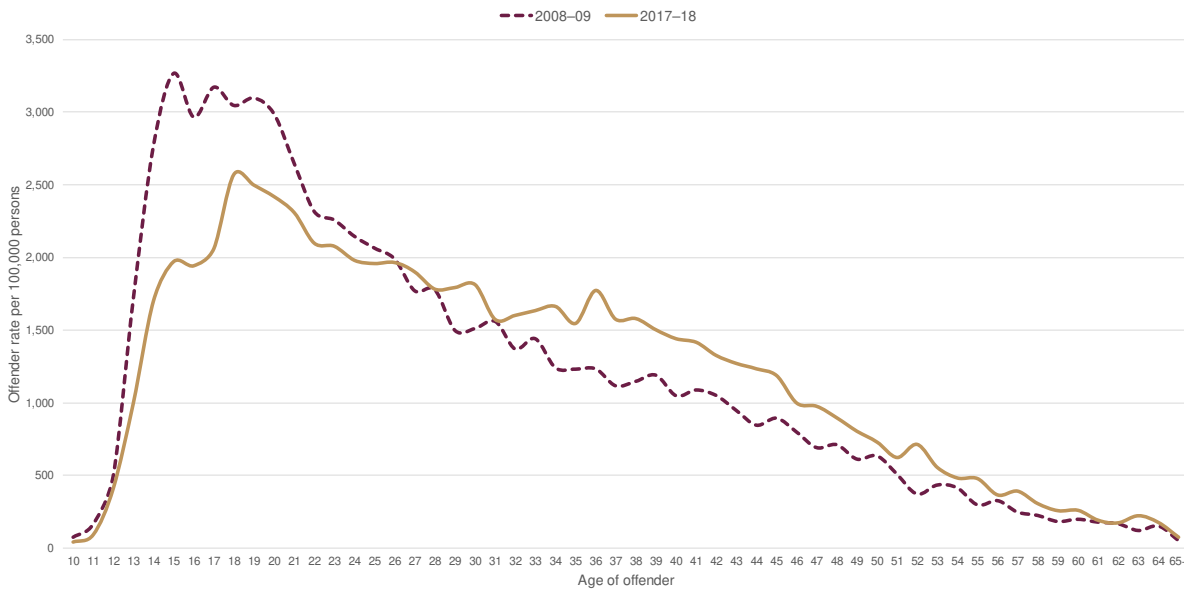


Source: QGSO, unpublished QPS data.

4.5.10. Decrease in the prevalence of non-Indigenous female offenders

The age-specific rates of offending for non-Indigenous female offenders for both reference periods are presented in Figure 25. In 2008–09, the peak age of offending was 15 years (3,264 per 100,000 persons), although there were high rates of offending up to 19 years of age, before a period of sharp decline until about age 30 years, before a steady decline. In contrast, the peak age of offending during 2017–18 was 18 years (2,572 per 100,000) and declined at a slower rate to extend until offenders were approximately 40 years of age, before continuing to decline.

Figure 25 Age-specific rates of non-Indigenous female offenders



Source: QGSO, unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

The pattern and change in relation to the median age of non-Indigenous female offenders between the two reference points mirrors that of non-Indigenous male offenders. The median age for non-Indigenous female offenders in 2008–09 was 25 years, while it increased to 30 years in 2017–18.

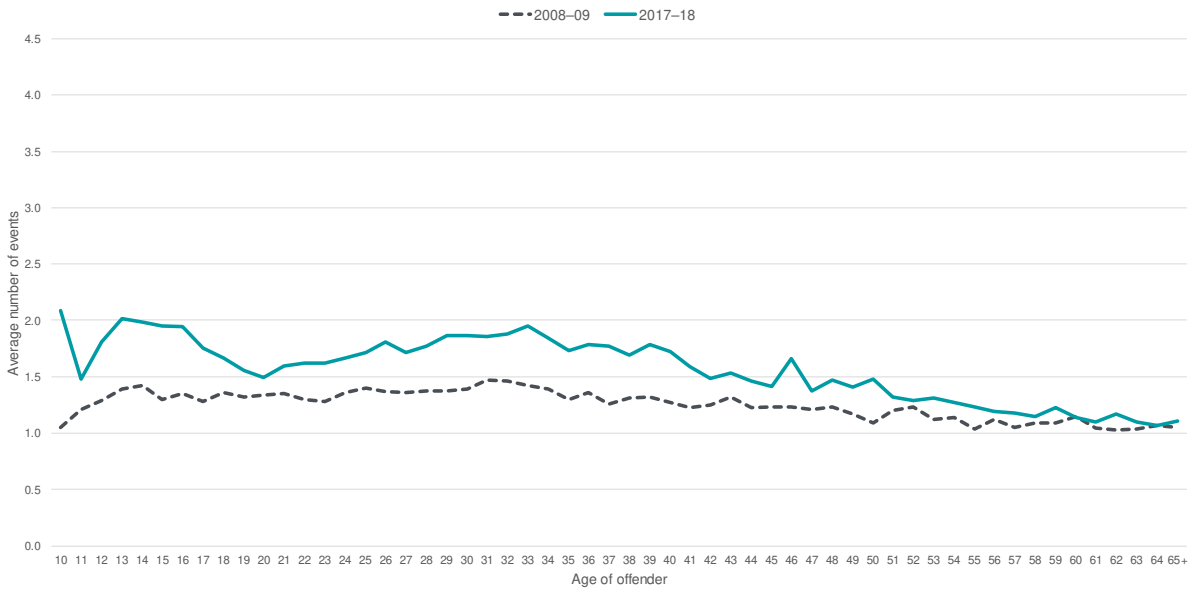
4.5.11. Increases in the frequency of non-Indigenous female offending

Much like Indigenous female offenders, there were large proportional changes in the frequency of offending between 2008–09 and 2017–18 for non-Indigenous female offenders (Table 4). The 19,422 unique non-Indigenous female offenders in 2008–09 were responsible for 41,473 offences across 25,635 events. In 2017–18, the 21,900 non-Indigenous female offenders were responsible for 61,292 offences (an increase of 47.8%) and 36,533 events (an increase of 42.5%).

In total, non-Indigenous female offenders averaged slightly more events with police in 2017–18 ($M = 1.67, SD = 1.54$) when compared with 2008–09 ($M = 1.32, SD = 0.91$).¹³ The average number of events for non-Indigenous female offenders by year of age for both reference periods is presented in Figure 26. Up until 60 years of age, offenders from 2017–18 averaged more events than offenders from 2008–09, although the difference between the two groups was not large.

¹³ The t -test results and Cohen's d_s indicates this is a statistically significant, but small effect between the groups ($t(36,218) = 28.35, p < .001, d_s = 0.27$).

Figure 26 Average events by age: Non-Indigenous female offenders

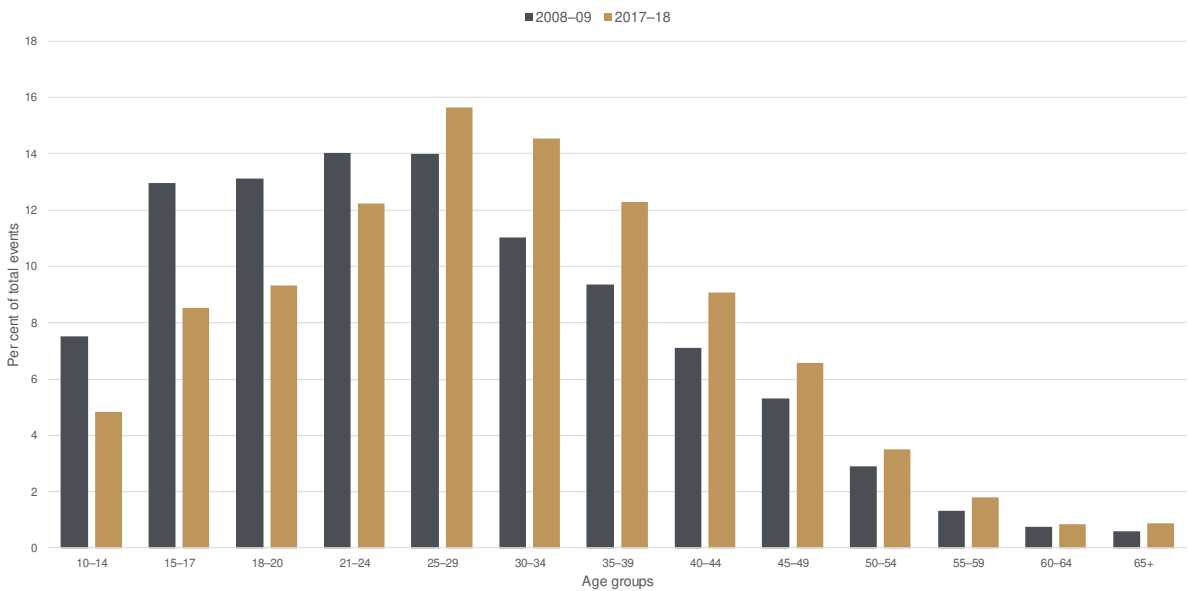


Source: QGSO estimates derived from unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

4.5.12. Young non-Indigenous female offenders responsible for fewer non-Indigenous female events

The data indicate that the age distribution of crime for non-Indigenous female offenders changed over time (Figure 27). Each of the age groups under 25 years was responsible for a larger proportion of events in 2008-09, when compared with 2017-18. In contrast, offenders aged 25 years and over were responsible for a larger proportion of events in 2017-18, when compared with 2008-09.

Figure 27 Age distribution of frequency of crime: Non-Indigenous female offenders



Source: QGSO, unpublished QPS data.

5.0 Discussion

The research presented in this report sought to examine if there had been observable changes in the age distribution of crime in Queensland. Police administrative data were used to construct age–crime curves to compare the age-specific rates of offending, the average number of events, and the age distribution of crime of offenders proceeded against by police in relation to 2008–09 and 2017–18. These analyses allowed an examination for changes in the prevalence and frequency of offending at each reference period for all offenders, and for groups of offenders based on demographics.

5.1. Key findings

Much like the recent literature that has examined age–crime patterns for change over time (Farrell, Laycock and Tilley 2015; Matthews and Minton 2018; Payne, Brown and Broadhurst 2018; Trimboli 2019; Weatherburn, Freeman and Holmes 2014), the research findings demonstrated substantial changes in the age distribution of crime in Queensland. The findings of the research report are summarised below.

5.1.1. Fewer offenders, but not for all sub-groups

The existing research has indicated that changes in the age–crime curve over time have been borne out of a reduction in offender numbers, specifically young offenders (Farrell, Laycock and Tilley 2015; Matthews and Minton 2018; Payne, Brown and Broadhurst 2018). While the data showed that there has been a reduction in the total number of offenders who had been proceeded against by police in 2017–18 compared with 2008–09, this reduction in numbers was not consistent across groups of offenders based on demographic characteristics.

Such findings align with other research indicating that while there may be fewer young people, it may be that there are fewer offenders within certain sub-groups (Fernández-Molina and Bartolomé Gutiérrez 2018). In the case of the current research, it was only the group of non–Indigenous male offenders who decreased in number. However, it is also important to remember that it is this group of offenders who have the most contact with the police. In 2017–18, non–Indigenous male offenders accounted for the majority (62%) of all offenders who came into police contact and were responsible for most offences (58%) and events with the police (59%).

5.1.2. A decrease in the prevalence of offending for all sub-groups

Despite the change in raw number of offenders, the data show that the prevalence rate has decreased for all groups of offenders. Even where the number of unique offenders increased over time (for Aboriginal and Torres Strait Islander male and female offenders and non–Indigenous female offenders), the increases did not exceed the relative increase in population for each group. As a result, each group demonstrated a decrease in the offending rate per 100,000 persons.

5.1.3. A decrease in prevalence, but increase in frequency, of offending

The research findings demonstrated that, while there were fewer unique individuals who had contact with police during 2017–18 when compared with 2008–09, they tended to offend more frequently (in terms of averaging more events). This meant that while the rate of offending declined, the number of reported offences increased between the two years examined. The observed increases in offending frequency are consistent with those from research conducted in NSW which compared the criminal trajectories of two cohorts born 10 years apart (Payne, Brown and Broadhurst 2018). The NSW research showed that for each group of offenders based on demographic characteristics, there was an increase in the average number of crime events in 2017–18 when compared with 2008–09.

5.1.4. Offending has extended later, producing a plateau in the age–crime curve

When compared with 2008–09, this research showed that the age–crime curves for 2017–18 were flatter in their peak, but extended further, highlighting an increase in the prevalence of offenders aged in their 30s and 40s. The findings mirror those found in other research, which also show an overall decrease in the prevalence of young offenders, and an increase in the prevalence of older offenders (Farrell, Laycock and Tilley 2015; Kim, Bushway and Tsao 2016; Matthews and Minton 2018).

5.1.5. Younger people responsible for fewer crime events

The changing age distribution of crime has meant that younger people were responsible for fewer crime events. In 2008–09, almost half of all crime (48.4%) events were attributed to offenders aged under 25 years, while this proportion decreased to 38.4% in 2017–18. However, these patterns were not consistent for all groups of offenders; there was an

increase in the proportion of all events by Aboriginal and Torres Strait Islander offenders accounted for by very young Aboriginal and Torres Strait Islander offenders (especially those within the 10–14 years age group).

5.2. Explaining changes in youth offending patterns

The research found changing patterns in the age distribution of crime in Queensland which are consistent with trends found to be occurring in other jurisdictions. These changes included a reduction in the number of youth offenders and an increase in the number of older offenders. While to date there is a lack of research that has provided an explanation for the increase in older offenders¹⁴, some of the most commonly offered (inter-related) explanations for the reduction in young offenders are described below.

5.2.1. Factors contributing to reductions in youth offenders

There is an increasing body of research that has found a reduction in youth offending, although these studies primarily focus on a period of declining crime (Farrell, Laycock and Tilley 2015; Kim, Bushway and Tsao 2016; Matthews and Minton 2018; Payne, Brown and Broadhurst 2018).¹⁵ These studies often refer to the security hypotheses to explain the 'crime drop' that has been experienced across a number of countries worldwide (Farrell et al. 2011). Put simply, the security hypothesis proposes that increased security measures designed to reduce the opportunity for crime (such as car immobilisers and home security systems) are responsible for a large part of the drop in crime (Farrell, Tilley and Tseloni 2014; Farrell et al. 2011; Van Dijk, Tseloni and Farrell 2012). Because of the increase and improvements in security, there are suggestions that this may have prevented some young offenders from entering the criminal justice system at all (Farrell et al. 2011), or that these reduced opportunities for offending may have prevented offences that tend to be the debut offence for the small number of offenders who engage in a prolific criminal career (Farrell, Laycock and Tilley 2015).

Others have noted that the reduction in youth offenders might reflect a displacement in offending, from the traditional crime contexts to locations where there are fewer guardians to observe crime, such as opportunities provided by the internet and new technologies like smartphones (McAra and McVie 2018; Payne, Brown and Broadhurst 2018). Thus, it is possible that rather than a reduction in youth offending, official data are not capturing the true extent of recent youth offending.

There has also been speculation that a decrease in the number of youth offenders might be impacted by the introduction of less intrusive interventions used for children with behavioural and conduct disorders. This explanation is based on the idea that children displaying problem behaviour in the past were more likely to have been drawn into the formal components of the criminal justice system through more punitive measures (Payne, Brown and Broadhurst 2018).

5.2.2. The impact of fewer younger offenders

Some researchers have observed that the decrease in young offenders has resulted in a criminal justice system characterised by more chronic and complex offenders. For example, Payne, Brown and Broadhurst (2018) noted that with fewer young people entering the criminal justice system, those who remain are likely to be more serious and possibly more long-term offenders. The findings presented in this report showed more prolific offending, especially among those aged 10–16 years.

There are also indications that those young offenders who have remained in the system are those with more concentrated complex needs, including challenging behaviours, extensive histories of trauma and abuse and mental health issues (McAra and McVie 2018). Queensland-based research has highlighted the complex needs of young offenders, showing that young people who averaged the most court appearances were those who also had contact with the child protection system or hospital for a mental health issue (Stewart 2018).

¹⁴ The increase in the number of older offenders may be partly explained by legislative changes that may have brought more people to the attention of the criminal justice system than in the past. One example is the introduction of the *Domestic and Family Violence Protection Act 2012*, which broadly aimed to place greater responsibility for the use of violence on people perpetrating domestic and family violence (DFV). It did this through changing the definition of what constitutes DFV, placing an obligation on police to investigate DFV and increasing penalties for breaching domestic violence orders (Queensland Parliament 2012).

¹⁵ The *Changing patterns in the age distribution of crime in Queensland* research project examines a period characterised by reduced crime rates but increasing crime events.

5.3. Future research

The findings presented in the *Changing patterns in the age distribution of crime in Queensland* research report highlighted areas that would benefit from further research in the Queensland context. These include:

- Inspect age-specific rates of offending across locations.*

Given that there are different opportunities for offending across locations, such as those living in rural or remote locations, information related to changes in age-specific rates of offending across locations could help identify areas that might benefit from place-based responses to crime. Recent research indicated that there were differences in the age-specific rates of offending when comparing regional and metropolitan locations for a range of offences (Trimboli 2019).
- Examine for changes in age-specific rates of offending across different types of offences.*

Recent research from NSW found differences in the age-specific rates of offending for different offences over time (Matthews and Minton 2018; Trimboli 2019; Weatherburn, Freeman and Holmes 2014).
- Explore the drivers of the increase in the prevalence of older offenders.*

Most scholarly attention related to age and offending is focused on the first part of the age–crime curve (that is, the onset, escalation and peak of offending during adolescence), and little on understanding the desistance from crime by older offenders (Doherty and Bersani 2018). While the increase in prevalence of offending among adults found in this project is consistent with other research (Farrell, Laycock and Tilley 2015; Kim, Bushway and Tsao 2016; Matthews and Minton 2018), there is limited information about the factors contributing to this finding (Stavrou 2017). It would therefore be beneficial to understand what has been driving this change in offending patterns.
- Investigate the possible impact of changing offender profiles on prisoner numbers.*

The changing patterns of crime found by the research coincides with increasing incarceration rates and growth in the number of people held in custody. For example, the adult imprisonment rate grew from 158 per 100,000 persons in 2012 to 226 in 2018, and the total number of persons in custody increased by 58.0% over the same time period (QGSO 2019b). Further research could explore sentencing outcomes to determine if some of this growth is potentially explained by more prolific offending and/or longer criminal histories.
- Identify factors contributing to the increasing number of female offenders.*

The findings from this research that there was an increase in the number of female offenders over time is consistent with existing literature that has explored changing offending patterns by gender (Bäckman et al. 2014; Beaton, Kidd and Machin 2018; Matthews and Minton 2018). While other research has begun to examine factors contributing to the growing number of non-Indigenous and Aboriginal and Torres Strait Islander female offenders (see for example Bartels, Easteal and Westgate 2019), there is benefit in better understanding the factors potentially contributing to this trend in the Queensland context.
- Longitudinal data to better examine the criminal careers of offenders.*

As the current research employed the use of cross-sectional snapshots of offending data, the extent to which individuals had contact with police over time was not able to be examined. Longitudinal data, such as that used in NSW by Payne, Brown and Broadhurst (2018) to compare two birth cohorts, would allow examining whether there were fewer low-rate offenders and more chronic offenders over time.

5.4. Conclusion

The research project has shown substantial changes in the age distribution of crime in Queensland which has important implications for the design and implementation of criminal justice programs. Findings suggest fewer youth offenders, offending more frequently, which highlights the importance of targeted interventions that address factors contributing to prolific offending behaviour given the research showing a relationship between chronic youth offending and long-term criminal trajectories (Livingston et. al, 2008). Investment in effective programs early is likely to offer substantial social and cost benefits (Australian Institute of Criminology, 2007). The ageing nature of the offender population warrants further investigation to determine factors potentially contributing to this trend and measurement of the impact on the management of offenders sentenced to sanctions requiring supervision (Stavrou 2017).

The increasing number of female and Aboriginal and Torres Strait Islander offenders observed by the study also highlights the importance of designing and implementing appropriate programs for these populations. Less is known about responding to female offending when compared with male offending, given that female offenders constitute a relatively small proportion of the overall offender population (ADCQ, 2019; Bartels, 2010). Effective programs for women are likely to require ensuring that the specific needs of women are considered, with research showing that many female



offenders have experienced sexual and/or physical abuse, high mental health care needs (often as a result of domestic and family violence), high levels of drug and alcohol dependency, and family care responsibilities (ADCQ, 2019). Other work has highlighted the importance of implementing culturally appropriate community-led programs for Aboriginal and Torres Strait Islander people coming into contact with the criminal justice system (Australian Law Reform Commission, 2017).

Glossary and explanatory notes

Glossary

Age–crime curve: refers to a graphical representation of the broad relationship between age and crime, which usually plots the crime rate or offence count by age of the offender. In this report, age–crime curves plot the age-specific rate of offending at aggregate levels. See *age-specific rate*.

Age distribution of crime: differentiated from the similar concept of the age–crime curve by Britt (2019) and refers to the distribution of crime by age and includes only individuals with at least one crime. These can be differentiated between the participation (proportion of offenders at each age) and frequency (proportion of all crime committed by each age group of offenders) of crime. The current report only examines the distribution of frequency (see *age distribution of frequency of crime*).

Age distribution of frequency of crime: refers to the distribution of all offences committed by different age categories among offenders. This displays the proportion of all crime that each age group is responsible for but may not distinguish how many offences an individual had committed. See *age distribution of crime*.

Age-specific rate: a statistical method that calculates the rate for each specific age (or age group) by dividing the number of events by the respective population, and then multiplying the resulting number by 100,000. In the current research, the age-specific rate of groups of offenders was plotted to graphically display an age–crime curve. See *age–crime curve*.

Cohen's d_s : is an appropriate effect size for the comparison between two means and is often provided when reporting the results of a *t*-test. Cohen (1988) offered benchmarks to refer to effect sizes as 'small' ($d_s = 0.2$), 'medium' ($d_s = 0.5$), and 'large' ($d_s = 0.8$). This indicates that if the effect size is not 0.2 or higher, the difference between the two means is trivial, even if it is statistically significant. See *effect size* and *t-test*.

Cohort: refers to a group that shares common historical or social experiences, such as people who share their year of birth.

Cohort effect: refers to something that might explain variations over time among a group of individuals in a cohort, resulting from their characteristics. See *cohort*.

Criminal justice system: refers to the government agencies and institutions whose role is to address offending by people in the community and administer justice. In Queensland, the three components of the system are the police, courts and corrective services.

Cross-sectional data: refers to data that has been collected about many subjects at a single point in time, to provide a 'snapshot' or 'cross-section' of the data. In this research, two cross-sections of data have been used: offenders who were proceeded against by police for an offence in 2008–09, and separately in 2017–18. As the data may contain different individuals at each snapshot, it is not possible to make conclusive observations about the direction of any given relationship between variables. See *proceeded against by police*.

Effect size: provides an objective measure of the importance of the relationship between two variables, by assessing the magnitude of the effect. A statistical test might indicate if there is a statistically significant difference or relationship between two variables, but this does not mean that the difference is meaningful (as very small differences may be statistically significant when there is a large number of cases). Cohen's d_s is an example of an effect size that provides information about the magnitude of the difference between groups of cases. See *Cohen's d_s* .

Estimated resident population (ERP): the official measure of the population of Australia based on where people usually live. This figure is used as the denominator in the calculation of offence rates for locations. Calculations of the ERP for Queensland are published by QGSO.

Event: where police action was taken against an offender on a specific date, regardless of the action taken, or if there were multiple actions taken against the offender on the same date.

Frequency: the number of times that something occurs within a particular period of time. In the current research, the frequency of offending refers to the number of times that an offender had been proceeded against by police during the financial year.

Longitudinal data: refers to data that tracks the same individuals on multiple occasions over a period of time. This produces multiple measures on some item(s) related to the same person. By collecting information from the same individuals, you can better assess the patterns of a variable over time.

Mean: a measure of central tendency (also referred to as average) which is calculated by summing all of the data values and then dividing by the total number of data points or observations.

Median: a measure of central tendency which represents the middle value of a dataset. To find a median value, the data are ranked in order from smallest to largest, and the median is the value that has an equal number of values above it and below it. The median is the preferred measure of central tendency to show the centre point of the data when they are skewed. See *skewness*.

Offender: a person aged 10 years or over who, through the clearance of an offence, is alleged to be responsible for committing that offence.

Period effect: refers to something that might explain variations over time among a group of individuals, resulting from an event that occurred during a specific period of time (for example, a natural disaster, stock market crash or the introduction of a specific piece of legislation might influence the amount of crime reported between two comparison periods).

Prevalence: refers to how commonly something occurs within a specific population; in this report, it refers to how common it is for someone within a group or population to have been proceeded against by police for an offence.

Proceeded against by police: where some type of action has been taken by police against an offender (e.g. arrest, summons, warrant, caution, restorative justice conference or other action).

Reported offences: offences which have been reported to or detected by police. Also referred to as recorded offences.

Skewness: data are skewed when there are not equal values on both sides of a distribution – when it is not symmetrical. A typical age–crime curve tends to follow a skewed distribution, as the peak offending age is younger and therefore is skewed right with most of the data on the left side of the graph. When the data are skewed the median value best represents the centre value of the data. See *median*.

Standard deviation: provides a measure about how spread out the values are among a group, by expressing how much the members of a group differ from the mean value for the group. The larger the standard deviation, the more spread out or dispersed the values are.

Statistical significance: a result has statistical significance when it is unlikely, or only a very small chance (usually set at a pre-determined figure such as 1% or 5%), that the result has occurred by chance only, and can therefore be considered a genuine effect.

t-test: a type of statistical technique which can be used to determine if there is a statistically significant difference between the mean values of two groups on a variable. See *Cohen's d*, *effect size*, and *statistical significance*.

Notes

Unique offender counts are based on a count of the single person identifier (SPI) within QPRIME. The SPI is a unique identifier for the offender responsible for the crime.

Rates are calculated to show the frequency of an event (e.g. crime) occurring for a population during a period. Rates are calculated per 100,000 persons, using the ERP of the specified region, published by the ABS. As ERPs provide estimates as at 30 June, financial year ERPs were used in the calculation of offence rates and obtained by calculating the average or mid-point ERP as at 31 December (i.e. the average of ERP in the June preceding, and the June following).

The **age-specific offender rate** is calculated as:

$$\frac{\text{number of unique offenders}}{\text{ERP}} * 100,000$$

where the number of unique offenders and the ERP relate to the group under examination. For example, the age-specific offender rate for male offenders aged 10 years is calculated by taking the total number of unique offenders who were proceeded against by police at 10 years of age and dividing it by the ERP of all boys aged 10 years in Queensland in that year. The resulting figure is then multiplied by 100,000.

Cohen's d_s is an effect size based on the standardised mean difference between two groups of independent observations, and is calculated using the means, standard deviations, and sample size of the two groups:

$$d_s = \frac{M_1 - M_2}{\sqrt{\frac{(n_1 - 1)SD_1^2 + (n_2 - 1)SD_2^2}{n_1 + n_2 - 2}}}$$

where M_1 is the mean, SD_1 is the standard deviation and n_1 is the sample size for the first group, and M_2 , SD_2 , and n_2 is the mean, standard deviation and sample size for the second group.

Cohen (1988) provided some general thresholds for assessing the magnitude of an effect. According to these rules, an effect size of 0.2 should be considered a 'small' effect, 0.5 a 'medium' effect, and 0.8 a 'large' effect. An effect size less than 0.2 should therefore not be considered meaningful, even if the t -test indicates that the difference between the two groups is statistically significant.

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Appendix A: Additional tables

This appendix contains five tables. Four tables contain the number of unique offenders within aggregated age groups for 2008–09 and 2017–18, and the per cent change in numbers. The age groups are those used to plot the age distribution of the frequency of offending (10–14, 15–17, 18–20, 21–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64 years and 65 years and over). The final table contains information related to each of the independent samples *t*-tests (e.g., means, standard deviations, *t*-statistic, significance level and Cohen's *d*, effect sizes) which were conducted to examine if there were statistically significant differences in the mean number of events between groups of offenders, when comparing 2008–09 with 2017–18.

The tables in this section include the following:

- Table A1** Number of unique offenders by age groups for 2008–09 and 2017–18 and per cent change
- Table A2** Number of unique offenders by age groups for 2008–09 and 2017–18 and per cent change, by offender gender
- Table A3** Number of unique offenders by age groups for 2008–09 and 2017–18 and per cent change, by offender Indigeneity
- Table A4** Number of unique offenders by age groups for 2008–09 and 2017–18 and per cent change, by offender gender and Indigeneity
- Table A5** Descriptive and test statistics related to differences in the mean number of events between groups of offenders

Table A1 Number of unique offenders by age groups for 2008–09 and 2017–18 and per cent change

	2008–09	2017–18	% change
Ages 10–17 years	16,723	12,628	-24.5 ▼
10–14 years	5,346	4,519	-15.5 ▼
15–17 years	11,377	8,109	-28.7 ▼
Ages 18–29 years	53,242	45,140	-15.2 ▼
18–20 years	16,844	12,201	-27.6 ▼
21–24 years	19,050	15,791	-17.1 ▼
25–29 years	17,348	17,148	-1.2 ▼
Ages 30–39 years	23,057	26,765	16.1 ▲
30–34 years	12,450	14,253	14.5 ▲
35–39 years	10,607	12,512	18.0 ▲
Ages 40–49 years	13,143	17,707	34.7 ▲
40–44 years	7,585	9,960	31.3 ▲
45–49 years	5,558	7,747	39.4 ▲
Ages 50–59 years	5,524	7,447	34.8 ▲
50–54 years	3,550	4,652	31.0 ▲
55–59 years	1,974	2,795	41.6 ▲
Ages 60+ years	2,296	3,330	45.0 ▲
60–64 years	1,276	1,569	23.0 ▲
65+ years	1,020	1,761	72.6 ▲
Total (all ages)	113,985	113,017	-0.8 ▼

Source: QGSO, unpublished QPS data.

Table A2 Number of unique offenders by age groups for 2008–09 and 2017–18 and per cent change, by offender gender

	Male offenders			Female offenders		
	2008–09	2017–18	% change	2008–09	2017–18	% change
Ages 10–17 years	11,599	8,877	-23.5 ▼	5,121	3,739	-27.0 ▼
10–14 years	3,481	3,063	-12.0 ▼	1,862	1,450	-22.1 ▼
15–17 years	8,118	5,814	-28.4 ▼	3,259	2,289	-29.8 ▼
Ages 18–29 years	42,948	34,354	-20.0 ▼	10,275	10,736	4.5 ▲
18–20 years	13,551	9,330	-31.1 ▼	3,287	2,864	-12.9 ▼
21–24 years	15,520	12,148	-21.7 ▼	3,523	3,619	2.7 ▲
25–29 years	13,877	12,876	-7.2 ▼	3,465	4,253	22.7 ▲
Ages 30–39 years	17,830	19,803	11.1 ▲	5,225	6,939	32.8 ▲
30–34 years	9,774	10,554	8.0 ▲	2,676	3,687	37.8 ▲
35–39 years	8,056	9,249	14.8 ▲	2,549	3,252	27.6 ▲
Ages 40–49 years	9,747	12,938	32.7 ▲	3,394	4,762	40.3 ▲
40–44 years	5,630	7,278	29.3 ▲	1,953	2,678	37.1 ▲
45–49 years	4,117	5,660	37.5 ▲	1,441	2,084	44.6 ▲
Ages 50–59 years	4,314	5,580	29.3 ▲	1,210	1,864	54.0 ▲
50–54 years	2,750	3,473	26.3 ▲	800	1,178	47.3 ▲
55–59 years	1,564	2,107	34.7 ▲	410	686	67.3 ▲
Ages 60+ years	1,887	2,653	40.6 ▲	408	674	65.2 ▲
60–64 years	1,049	1,223	16.6 ▲	227	344	51.5 ▲
65+ years	838	1,430	70.6 ▲	181	330	82.3 ▲
Total (all ages)	88,325	84,205	-4.7 ▼	25,633	28,714	12.0 ▲

Source: QGSO, unpublished QPS data; ABS 3101.0.

Table A3 Number of unique offenders by age groups for 2008–09 and 2017–18 and per cent change, by offender Indigeneity

	Indigenous offenders			Non-Indigenous offenders		
	2008–09	2017–18	% change	2008–09	2017–18	% change
Ages 10–17 years	3,416	3,641	6.6 ▲	12,985	8,805	-32.2 ▼
10–14 years	1,385	1,704	23.0 ▲	3,880	2,747	-29.2 ▼
15–17 years	2,031	1,937	-4.6 ▼	9,105	6,058	-33.5 ▼
Ages 18–29 years	6,725	7,697	14.5 ▲	45,040	36,695	-18.5 ▼
18–20 years	2,147	2,042	-4.9 ▼	14,286	9,911	-30.6 ▼
21–24 years	2,235	2,685	20.1 ▲	16,275	12,812	-21.3 ▼
25–29 years	2,343	2,970	26.8 ▲	14,479	13,972	-3.5 ▼
Ages 30–39 years	3,604	4,316	19.8 ▲	18,664	22,219	19.0 ▲
30–34 years	1,867	2,355	26.1 ▲	10,175	11,787	15.8 ▲
35–39 years	1,737	1,961	12.9 ▲	8,489	10,432	22.9 ▲
Ages 40–49 years	1,935	2,785	43.9 ▲	10,591	14,684	38.6 ▲
40–44 years	1,190	1,554	30.6 ▲	6,073	8,293	36.6 ▲
45–49 years	745	1,231	65.2 ▲	4,518	6,391	41.5 ▲
Ages 50–59 years	586	991	69.1 ▲	4,562	6,320	38.5 ▲
50–54 years	392	634	61.7 ▲	2,946	3,943	33.8 ▲
55–59 years	194	357	84.0 ▲	1,616	2,377	47.1 ▲
Ages 60+ years	131	271	106.9 ▲	1,945	2,922	50.2 ▲
60–64 years	86	178	107.0 ▲	1,084	1,337	23.3 ▲
65+ years	45	93	106.7 ▲	861	1,585	84.1 ▲
Total (all ages)	16,397	19,701	20.2 ▲	93,787	91,645	-2.3 ▼

Source: QGSO, unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

Table A4 Number of unique offenders by age groups for 2008–09 and 2017–18 and per cent change, by offender gender and Indigeneity

	Indigenous male offenders			Indigenous female offenders		
	2008–09	2017–18	% change	2008–09	2017–18	% change
Ages 10–17 years	2,362	2,513	6.4 ▲	1,053	1,124	6.7 ▲
10–14 years	949	1,178	24.1 ▲	435	524	20.5 ▲
15–17 years	1,413	1,335	–5.5 ▼	618	600	–2.9 ▼
Ages 18–29 years	4,687	5,263	12.3 ▲	2,037	2,430	19.3 ▲
18–20 years	1,503	1,401	–6.8 ▼	644	640	–0.6 ▼
21–24 years	1,571	1,881	19.7 ▲	664	802	20.8 ▲
25–29 years	1,613	1,981	22.8 ▲	729	988	35.5 ▲
Ages 30–39 years	2,431	2,831	16.5 ▲	1,173	1,485	26.6 ▲
30–34 years	1,287	1,528	18.7 ▲	580	827	42.6 ▲
35–39 years	1,144	1,303	13.9 ▲	593	658	11.0 ▲
Ages 40–49 years	1,294	1,838	42.0 ▲	641	947	47.7 ▲
40–44 years	795	1,014	27.5 ▲	395	540	36.7 ▲
45–49 years	499	824	65.1 ▲	246	407	65.4 ▲
Ages 50–59 years	437	668	52.9 ▲	149	323	116.8 ▲
50–54 years	292	431	47.6 ▲	100	203	103.0 ▲
55–59 years	145	237	63.4 ▲	49	120	144.9 ▲
Ages 60+ years	99	198	100.0 ▲	32	73	128.1 ▲
60–64 years	65	126	93.8 ▲	21	52	147.6 ▲
65+ years	34	72	111.8 ▲	11	21	90.9 ▲
Total (all ages)	11,310	13,311	17.7 ▲	5,085	6,382	25.5 ▲
	Non-Indigenous male offenders			Non-Indigenous female offenders		
	2008–09	2017–18	% change	2008–09	2017–18	% change
Ages 10–17 years	9,065	6,239	–31.2 ▼	3,918	2,559	–34.7 ▼
10–14 years	2,492	1,843	–26.0 ▼	1,386	900	–35.1 ▼
15–17 years	6,573	4,396	–33.1 ▼	2,532	1,659	–34.5 ▼
Ages 18–29 years	37,183	28,511	–23.3 ▼	7,839	8,141	3.9 ▲
18–20 years	11,772	7,736	–34.3 ▼	2,508	2,170	–13.5 ▼
21–24 years	13,546	10,043	–25.9 ▼	2,722	2,749	1.0 ▲
25–29 years	11,865	10,732	–9.5 ▼	2,609	3,222	23.5 ▲
Ages 30–39 years	14,857	16,815	13.2 ▲	3,805	5,382	41.4 ▲
30–34 years	8,198	8,949	9.2 ▲	1,977	2,826	42.9 ▲
35–39 years	6,659	7,866	18.1 ▲	1,828	2,556	39.8 ▲
Ages 40–49 years	8,023	10,924	36.2 ▲	2,567	3,753	46.2 ▲
40–44 years	4,623	6,173	33.5 ▲	1,449	2,116	46.0 ▲
45–49 years	3,400	4,751	39.7 ▲	1,118	1,637	46.4 ▲
Ages 50–59 years	3,597	4,815	33.9 ▲	965	1,502	55.6 ▲
50–54 years	2,299	2,988	30.0 ▲	647	954	47.4 ▲
55–59 years	1,298	1,827	40.8 ▲	318	548	72.3 ▲
Ages 60+ years	1,616	2,356	45.8 ▲	328	563	71.6 ▲
60–64 years	901	1,061	17.8 ▲	183	274	49.7 ▲
65+ years	715	1,295	81.1 ▲	145	289	99.3 ▲
Total (all ages)	74,341	69,660	–6.3 ▼	19,422	21,900	12.8 ▲

Source: QGSO, unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

Table A5 Descriptive and test statistics related to differences in the mean number of events between groups of offenders

Offenders	2008–09		2017–18		Test statistic and effect size		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i> statistic	<i>Cohen's d_s</i>	Effect
Total offenders	1.48	1.28	1.76	1.70	43.32***	0.19	Very small
Gender							
Male offenders	1.51	1.31	1.76	1.70	34.64***	0.17	Very small
Female offenders	1.41	1.17	1.75	1.71	27.78***	0.23	Small
Indigeneity							
Indigenous offenders	2.05	2.20	2.22	2.30	7.27***	0.08	Very small
Non-Indigenous offenders	1.40	1.04	1.67	1.54	43.84***	0.21	Small
Gender x Indigeneity							
Indigenous male offenders	2.15	2.33	2.29	2.36	4.50***	0.06	Very small
Indigenous female offenders	1.83	1.86	2.10	2.19	7.05***	0.13	Very small
Non-Indigenous male offenders	1.43	1.06	1.67	1.54	35.24***	0.18	Very small
Non-Indigenous female offenders	1.32	0.91	1.67	1.54	28.35***	0.27	Small

Note: *** $p < .001$. Cohen's d_s : 0.2 represents a 'small' effect size, 0.5 a 'medium' effect size, and 0.8 a 'large' effect size.

Source: QGSO, estimates derived from unpublished QPS data; ABS 3101.0; ABS 3238.0, unpublished data.

