1 Introduction

For almost two decades and in almost all corners of the western world, criminologists have observed a significant and sustained downward trend in crime. These declines have been documented from North America (Blumstein & Wallman, 2000; Zimring, 2007; Ouimet 2002), to the Asia-Pacific region (Mayhew, 2012; Weatherburn & Holmes, 2013), and in much of Western Europe (Aebi & Linde, 2010). Although the timing and magnitude of this so-called "crime-drop" has varied from country to country, one feature has emerged as internationally consistent. Specifically, the decline in aggregate crime rates has been most evident in youth populations (Andersen et al., 2016; Backman et al., 2014; Blumstein, 2006; Cook & Laub, 2002; Farrell et al., 2015; Kim et al., 2015; Morgan, 2014; Soothill et al., 2008; Von Hofer, 2014), so much so that contemporary analyses of the crime-drop have sought to rename the phenomena as the "youth crime-drop" to better convey the true nature of the decline and to focus researchers on its most likely causes (Matthews & Minton, 2018, p. 300).

In Australia, the crime-drop has also been a significant feature of the criminal justice landscape since 2001 (Weatherburn & Holmes, 2013) and has been the subject of multiple investigations. These studies have been almost exclusively conducted in the country's most populous state, New South Wales (NSW), where there has been a 50 percent drop in the rate of theft and a 33 percent drop in the rate of robbery. This, according to Clancey and Lulham (2014), has consequently produced a saving of $5.15 billion to the NSW community (as of 2014). Like elsewhere, the NSW crime-drop has been driven mainly by substantial declines in youth crime across most categories of offending (Hua et al., 2006; Payne et al., 2018).

Efforts to understand the crime-drop have focused almost entirely on changes to the aggregate crime rate, often presented as cross-sectional population standardized rates of offending by age (see Matthews & Minton, 2018). Essentially, this type of analysis seeks to quantify and interpret year-on-year changes to the age-crime curve and, in its most sophisticated form, attempts to parse out both period and cohort effects for their independent but complementary explanatory value. In the most recent study of this kind, Matthews and Minton (2018) examined the crime-drop using a visual analysis of shaded contour plots to compare changes in annual age crime curves generated from Scottish conviction data between 1989 and 2011. Their analysis compares the age-crime curves generated from twenty-two cross-sectional snapshots and the contour plots provide valuable insight into both period and cohort effects. Their data confirm that the Scottish crime-drop was similarly a youth phenomenon

that started first with a decline in property crime throughout the 1990s and was followed by substantial declines among other crime types in the late 2000s.

Although the empirical efforts of Matthews and Minton (2018) represent one of the largest cross-sectional studies of age-crime curves in the context of the crime-drop, their analysis is nonetheless limited by its cross-sectional design. In a state-of-the-art review on age-crime curve research, Loeber and Farrington (2014, p.13) caution against a reliance on macro-level cross-sectional comparisons because such efforts risk "confounding the influence of multiple cohorts" and obscuring the potentially important developmental differences that underlie changes in individual and population level offending (see also Berg et al., 2016; Jennings et al., 2016). It is here that the current study makes a novel contribution to the empirical analysis of the international crime-drop phenomenon.

Specifically, instead of comparing annual cross-sectional age-crime curves, as has been the case in the bulk of crime-drop research to date, we present a unique comparative analysis of cohort-level and individual-level longitudinal development using two Australian (NSW-born) birth cohorts – cohorts that-straddle, developmentally, the commencement of the NSW crime-drop in the year 2000. Our cohorts were born ten years apart. The first, born in 1984, experienced their entire adolescence (ten to seventeen years of age) at a time when crime in NSW was persistently increasing. The second cohort, born in 1994, traversed their adolescence at a time when crime in NSW was in rapid decline. This later cohort of young boys and girls turned ten years of age (the age of criminal responsibility in NSW, and the age at which formal crime records are first kept) three years after the crime-drop began. Although relatively rare, comparative birth cohort analyses of this kind have been instrumental in criminology (see Fabio et al., 2006; Farrington & Maughan, 1999; Tracy et al., 1990), especially in exploring some of the discipline's most contentious issues regarding the coexistence of stability and change over the life course (e.g., Jennings et al., 2016). In this analysis, we exploit the fact that our two cohorts are from developmentally distinct periods (pre and post crime-drop), which not only adds value to the landscape of existing birth-cohort analyses, but provides for an internationally unique insight into the possible developmental causes and consequences of this international phenomenon.

Consistent with the growing body of crime-drop research, our analyses presented herein show a significant fall in crime. Our youngest cohort was responsible for almost 50 percent fewer offenses than their peers born ten years earlier. Contrary to our expectations, however, this decline was disproportionally the result of the less crime committed by low-rate or adolescent-limited offenders and almost no change in the population prevalence or long-term offending trajectories of those offenders we have traditionally described as

early onset. Whatever caused the crime-drop seems not to have affected all offenders (or potential offenders) equally and this differential experience across the population provides fertile ground for theoretical and empirical reflection. In our view, the results suggest that the crime-drop was not the result of some purposeful effort to reduce the offending of frequent offenders (as has become a criminological mantra since Wolfgang and his colleagues (1972) identified the chronic recidivists in the first Philadelphia Birth Cohort study), but a wider social transformation that likely has restructured criminal opportunities making crime (relative to other activities) less likely. We see this result not as a rejection of the need for comprehensive interventions for high-risk youth, but as a promising reminder that crime-reduction strategies should not ignore the much larger number of less serious offenders whose crime may be more easily prevented and at lower cost.

The international "crime-drop"

It is difficult to pinpoint when and where the crime-drop was first identified and reported, largely because in the earliest phases some jurisdictional government reports of official crime statistics had documented the change in trend, but stopped short of naming it an official "drop" or "decline." In those early years, there was little reason to believe that the drop was any more than a statistical aberration. Criminologists now know that the crime-drop started in both the United States and Western Europe during the late 1980s and early 1990s (Blumstein, 2006; van Dijk & Tseloni, 2012), although the estimated starting point of the drop varied by jurisdiction and depended on the data source. In a seminal review, Blumstein (2006) showed that for the United States, the national decline in officially recorded murder and robbery offenses started in 1993 and persisted in a year-on-year decline until 2000.[1] By this time, both robbery and murder had fallen by 40 percent and have since plateaued at these historical lows. In Canada (see Farrell & Brantingham, 2013; Hodgkinson et al., 2016; Mishra & Lalumière, 2009; Ouimet, 1999, 2002), the experience was mostly consistent with the United States, although the drop in homicide, for example, appears to have started and plateaued a year or two earlier, while the magnitude of the decline was not as large (Mishra & Lalumière, 2009).

Across the Atlantic, the crime-drop in Western Europe also began in the early to-mid 1990s (van Dijk & Tseloni, 2012). Like in the United States, Scottish data suggest that the drop also started in 1993, but only if the measure of crime

[1] Van Dijk and Tseloni (2012) alternatively used self-reported victimization data from the International Crime Victimization Survey (ICVS). They show that the crime-drop in the United States is actually likely to have commenced somewhere between the 1988 and 1992 IVCS surveys.

uses the total quantum of official convictions for all offense types (Matthews & Minton, 2018). The actual number of convicted individuals was declining from as early as 1989, although the limits of the Scottish conviction data prohibit a more thorough and longer-term historical analysis. In an earlier study combining Scottish data with police statistics and self-reported victimization data from fourteen other Western European countries, Abei and Linde (2012) provide one of the most comprehensive regional studies of the crime-drop to date. Their analysis explores disaggregated crime trends in theft, burglary, and motor vehicle theft, as well as assault, robbery, homicide, and drug offenses. They conclude that in the combined experience of these Western European countries, the crime-drop was almost exclusively a property-crime phenomenon that commenced in 1992 and continued through to the end of the available data series in 2007. This was a shared experience for all three property-crime types, although the rate (and functional form) of the decline varied. Domestic burglary, for example, fell more quickly than either theft or motor vehicle theft in the mid-1990s, even though the overall decline (to 2007) in domestic burglary was not as great as it was for motor vehicle theft. By contrast, violent and drug crimes did not decline in Western Europe over the same period. Unlike in the United States, recorded assault rates and self-reported assault victimization increased from 1990 to 2007. For robbery, official rates remained unchanged between 1990 and 1998, then increased briefly through to 2002, only to return to the same levels seen in the mid-1990s. Self-reported robbery victimization data also evidenced an increase over the same period. The only exception was the recorded rate of homicide, which began to decline in 1993. Elsewhere in Europe, property crime was also in decline after the year 2000, according to results of the International Crime Victimization Survey (ICVS,) from former Communist countries of Estonia, Poland, and Georgia (van Dijk & Tseloni 2012).

In the Asia-Pacific region, crime statistics and victimization surveys have also evidenced a decline in crime in Australia (BOCSAR 2019), New Zealand (Mayhew, 2012), as well as Japan, Taiwan, and Hong Kong (Sidebottom et al., 2018).[2] In both Japan and Taiwan, the crime-drop appears to have commenced in the mid-2000s, some ten years later than in North America and Europe (Sidebottom et al., 2018), while in Hong Kong the crime-drop has been substantial in size, but internationally anomalous insofar as the decline appears to have started earlier than elsewhere in the world, sometime between 1980 (motor vehicle theft) and 1985 (burglary). In Australia, crime-drop studies have been

[2] As part of the United Nations Survey on Crime Trends and Operations of Criminal Justice Systems, del Frate and Mugellini (2012) noted a decline in homicide rates in other East and South-East Asian countries such as Singapore, Bhutan, China, Myanmar, Cambodia, India, Thailand, and the Philippines.

limited to the analysis of crime rates in NSW, the country's most populous state and the site of the present study. In that state, the decline in robbery and other property crimes commenced in the early months of the year 2000 and have continued, largely unabated, through to even the most recent available data from 2018. Property offenses[3], for example, peaked in late 2000 at 650 incidents per 100,000 persons. By the end of 2017, the statewide property offense rate was approximately 60 percent lower at 230 incidents per 100,000 persons. Violent crime[4] has also declined in NSW, although the downward shift started later (in 2003) and the decline has not been as large (currently 85 incidents per 100,000, down 30 percent from its peak).

The Local "Crime-Drop'

The now considerable wealth of collective empirical evidence shows that the crime-drop has been an international phenomenon, experienced mostly, although not exclusively, by high-income industrialized countries from all corners of the globe. So widespread is the experience of the crime-drop that Farrell et al. (2014, p. 421) described it as the "most important criminological phenomenon of modern times" and few criminological or criminal justice trends have been so consistently documented. For the global criminological community, there is merit in conceptualizing the crime-drop as a far-reaching global experience because it focuses attention on the potential macro causes of crime and situates other global social phenomena as potential correlates. More importantly, it prompts exploration beyond specific local explanations for crime and instead (or in addition to) a consideration of the wider social and global contexts that likely underpin such a widespread experience. To be sure, most criminological theory is, itself, intended to offer a *universal* explanation for antisocial and criminal behavior. With this in mind, the crime-drop offers a rare and unique opportunity that demands scholarship with a global behavioral perspective.

It is also essential that we recognize the international experience of the crime-drop as neither a *universal* nor a *general* phenomenon. Widespread though it might be, the specific timing, location and experiences of the crime-drop are sufficiently heterogeneous to warn against its description as a truly universal or

[3] Includes break-and-enter dwelling, break-and-enter non-dwelling, motor vehicle theft, steal from motor vehicle, steal from retail store, steal from dwelling, steal from person, stock theft, other theft, and fraud.

[4] Includes murder, attempted murder, manslaughter, assault – domestic violence related, assault – non-domestic violence related, assault police, robbery without a weapon, robbery with a firearm, robbery with a weapon not a firearm, sexual assault and indecent assault / act of indecency / other sexual offenses.

general experience. In their study of the crime-drop, for example, van Dijk & Tseloni (2012, p. 37) caution readers from generalizing the crime-drop since in different parts of Europe the downward shift in crime manifested differently for different crime types and took effect at different times. A general cause would not likely produce such differential outcomes, they contended.

Elsewhere, scholars have also shown that different locations in close proximity, many of which share the same broad sociocultural characteristics, did not experience a drop in crime of equal measure or kind. Some experienced no drop at all. Even in Australia, not all states and territories have experienced a rapid decline in crime. In the mainland eastern states of NSW, Queensland, and Victoria, there has been a relatively consistent experience. In the Northern Territory and Western Australia, the decline has either not eventuated or been comparatively modest (ABS 2019).[5]

In our view, this heterogeneity itself serves as an important and rich source of empirical and theoretical exploration and we see value in defining the crime-drop as both a global and a local phenomenon. Without doubt, the decline in crime has been sufficiently widespread to consider the potential for some universal or general cause, yet the local experience appears meaningfully heterogeneous such that specific local contexts and potential causal mechanisms cannot be ignored. We believe that it is unlikely to be a coincidence that crime has declined in so many different parts of the world, but we also warn against overstating the potential for an all-encompassing explanation or being ignorant of the explanatory value of different local drivers.

Explaining the Crime-Drop

Not surprisingly, the macro-level data has inspired a number of significant phenomenological and theoretical contributions, each seeking to explain the crime-drop and the reasons underlying it (see for example, Farrell, 2013). Of these explanations, Kim et al. (2015) offer an organizing framework that delineates possible causes into two distinct but not mutually exclusive categories. These include *cohort effects*, or explanations that suppose an underlying change in the development of younger generations of potential offenders, and *period effects* that suppose some general exogenous environmental, cultural, or contextual factors that affect, albeit at varying degrees, all cohorts of offenders. Matthews and Minton (2018, p. 299)

[5] For Weisburd (2018), these seemingly micro-geographical trends complicate the crime-drop story and demand that we conceptualize crime beyond the analysis of individual-level criminal trajectories. Accordingly, a more fruitful understanding of the crime-drop may be found by treating the longitudinal experience of places, rather than individuals, as units of analysis (see also, Weisburd et al., 2004). Future research should consider this possibility, recognizing the difficulty in procuring such data over long periods of time for an entire area, state, even country.

add three additional classes of explanation, including *exogenous change* in demographics, immigration, and drug markets; *reduced opportunity* as a consequence of increased security or other target-hardening activities (see Farrell et al., 2014); and *shifting routine activities* of offenders that alter opportunity structures and patterns for offending (see also Aebi & Linde, 2010). A comprehensive study of each explanation is beyond the scope of this Element, so instead we offer a brief introduction here of potential crime-drop explanations as a prologue to our own view that developmental and life-course criminological theory offers another valuable organizing framework for theorizing the causes of the crime-drop and its potential long-term consequences.

Changing Data Recording

We begin with the simplest explanation of all – that the crime-drop is nothing more than a manifestation of changes – culturally, administratively, and ideologically – in the reporting and recording of crime and not the prevalence or incidence of actual antisocial or-rule breaking behavior. For decades, criminologists have studied the imperfect relationship between the actual occurrence of crime and its official recording (for example, Payne & Piquero, 2016; 2017). These studies most often conclude that while there is satisfactory concordance between self-reported and officially recorded crime, most criminal behavior is hidden from official view and is never recorded in the administrative apparatuses of the criminal justice system (National Academies of Sciences, 2016). The true extent of this "dark figure" (Biderman & Reiss, 1967) remains elusive and difficult to measure, but what is and is not officially recorded is not without administrative error and some systematic bias.

What contribution the underreporting and recording of crime has made to the crime-drop is unknown. Although we can only speculate, it is possible that the crime-drop reflects a wider global trend toward lower rates of reporting and recording of crime and the potential sources of this "administrative" decline in crime are many and varied. Perhaps crime victims have become complacent, apathetic, or unconvinced of the likely effectiveness of police to investigate crimes and so have simply stopped reporting them. Or, perhaps victims have found recourse and relief through online communities and social media platforms, satisfied with their digital community's validation of their victimization and thus feel less need to make official reports. Perhaps authorities have taken to responding differently to victimization reports, prioritizing only those reports with a high probability of resolution and discouraging claims that appear frivolous or difficult to investigate. It is also possible that law enforcement budgets and resources have been

readjusted or reallocated in recent decades toward more intensive investigative activities (such as terrorism, white collar, and organized crime) that leave less time to pursue less serious criminal offenses and offenders.

To claim that the crime-drop is more likely a data-recording phenomenon is not to deny its empirical existence. Rather, it seeks to pay due recognition to the fact that the foundation of our empirical understanding is intimately tied to a global system of imperfect information, and that these data (and their trends) cannot be divorced from the systems from which they are created. More importantly, it recognizes that the source of the crime-drop need not be a fundamental change in criminal or antisocial behavior, but a wider shift in the manner with which both law enforcement and the community respond to crime. With few exceptions, evidence of the crime-drop has been largely evidenced through official administrative data systems and self-report offending studies are largely absent from the literature. In fact, the International Crime Victimization Survey (ICVS; van Dijk et al., 1990) provides one of the only comparative self-report studies on this topic and, while it too shows evidence of a crime-drop, its focus on crime victimization, not offending, cannot account for wider changes in community attitudes or the reporting habits of crime victims.

What is important here is to remember that the crime-drop has been almost universally explored as a reduction in criminal offending, as opposed to a reduction in the official recording of crime. It is possible that changes in both community attitudes and law enforcement practices could combine to produce a seemingly international crime-drop phenomenon with specific local variation – including the absence of such a decline in places where it might be otherwise expected. A global shift in community attitudes about victimization and victimhood, as well as changing propensities to report crime, could manifest around the globe in an increasingly online global media and social context. This, in turn, could promote a gradual reconceptualization of the self and the community. Whether this translates into less crime reporting and, therefore, less recorded crime, may depend on very specific local perceptions of trust in government institutions and the effectiveness of law enforcement. Coupled with a differential shift in policing priorities to public safety, terrorism, and international organized crime (for example, in the wake of September 11), this has the potential to provide a foreground for local variation in the manifestation of an otherwise global shift. We see less merit in the argument that some, but not all, criminal justice systems of the world have gradually shifted their data recording practices such that less actual crime is recorded in data recording systems.

Population Composition

Perhaps the most widely debated of the early crime-drop hypotheses was the proposition that crime has declined as a natural consequence of an ***aging population***. There is no other single and more stable correlate of crime than age (Hirschi & Gottfredson, 1983; Piquero et al., 2003), so it follows logically that crime should decline as the population age distribution of high-income industrialized countries edges upward. The inverted "asymmetrical bell shape" (Loeber & Farrington, 2014, p. 12) of the age-crime curve has been the object of empirical analysis since as early as Quetelet's study of French crime statistics in 1831 (2003 [1831]). The age-crime curve has since been described as "one of the brute facts of criminology" (Hirschi & Gottfredson, 1983, p. 555) and depicts the highest crime rates among those aged in their late teens and early twenties (Gottfredson & Hirschi, 1990; Loeber & Farrington, 2014). An aging population is one in which younger people comprise a diminishing proportion, either because a low birth rate has produced comparatively fewer young people (see Japan, for example) than in previous generations or because lengthening life expectancies have shifted population-level age distributions, and thus the denominator used for the calculation of crime rates.

This line of reasoning has been used in numerous studies to explain changes in violence (particularly homicide) in the United States in the 1980s and 1990s (see Fox & Piquero, 2003). During this period, homicide peaked around 1980, before declining in the early 1980s. It then rose again in the late 1980s, before falling sharply in the 1990s. Initially, a number of studies explained this trend in terms of the baby-boomer generation aging out of crime in the early 1980s, followed by their children reaching the peak age of offending in the late 1980s (Blumstein et al., 1980; Fox, 1978). However, these models proved to be less effective at explaining the decrease in violence from the early 1990s. Fox (2006) estimated that demographics explained about 10 percent of the crime-drop in the United States during the 1990s; similarly Levitt (1999) suggested that changes in the age structure accounted for no more than 1 percent per year of the fluctuations in crime rates.

Analyses elsewhere in the world have also produced mixed results. Trussler (2012) for example, found some support for a relationship between the homicide rate in Canada and the proportion of the population aged fifteen to twenty-nine years. In contrast, Hanslmaier et al. (2015) found that the population age structure in Germany explained very little of the annual variation in crime. In Australia, Weatherburn et al. (2016) argued that for the aging-population hypothesis to have sufficient merit, it would need to explain not only the crime-drop, but also the rapid increase in crime that predated it. In their conclusion,

they note that the population age distribution changes were too small and too slow to have had a meaningful impact on the rise in theft and robbery prior to 2001, not to mention the rapid declines that have followed. Further, Weatherburn et al. (2016) argue that the aging Australian population should have resulted in a decline in violence at the same time as property offending, given the overrepresentation of young people in such offending, but instead violent crime remained stable for several years while property crime was well in decline.

There has also been some lengthy discussion about the ***legalization of abortion*** in the United States in 1973 and its specific contribution to reducing the size of the youth cohort most likely to engage in crime (Donohue & Levitt, 2001). This argument supposes that abortion services are more likely to be demanded in lower socioeconomic communities, by single and/or teen parents whose children have elsewhere been shown to be involved in crime at higher rates (Nagin et al., 1997; van Vugt et al., 2016). Following this line of inquiry, Donohue and Levitt (2001) argued that the legalization of abortion in the mid-1970s fundamentally altered the composition (not necessarily the size) of the youth population and estimated that an increase of 100 abortions per 1000 live births was associated with a 12 percent reduction in homicide, a 13 percent decline in violent crime, and a 9 percent drop in property crime. Further, the overall crime rate was estimated to be between 15 and 25 percent lower in 1997 than it would have been had abortion not been legalized.

Donohue and Levitt's analysis has not been without criticism. Fox (2006) for example, considers their study to be an insufficiently narrow use of the available data, while Blumstein (2006) noted that age cohorts change far too slowly for this factor alone to explain the sharp declines throughout 1990s. Zimring's (2007) analysis of birth rates before and after 1973 indicated that the largest change in birth rates had actually occurred well before abortion was legalized and that after 1973 birth rates actually increased steadily. These trends suggested that any drop in US crime should have happened earlier and would have likely been shorter-lived. Zimring also showed that birth rates failed to decline among single parents aged fifteen to nineteen or among African American parents – the very groups that Donohue and Levitt argued should have experienced a decline in birth rates. Of course, the legalization of abortion in the United States does not help to explain the crime-drop as an international phenomenon where in similar countries like Australia abortion remains a criminal offense in some states and territories. In NSW, for example, abortion was only repealed from the NSW Crimes Act as recently as August 2016, although since 1971 Common Law has held that medical practitioners