The crime drop in South Africa: an exploratory research note

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Abstract

Research examining the crime drop has become increasingly popular with a plethora of studies showing how crime has declined since the 1990s. The vast majority of this research has, however, emanated from the United States and other 'Western' countries. In this study, we undertook a national-level analysis of crime trends in South Africa from 2010 to 2019 using official police data. Results showed that crime did drop marginally in the country over the study period although there is substantial variability in crime decline by crime type and geography. Moreover, various socio-demographic characteristics, such as income inequality, were found to possibly influence the temporal trends of crime in the country observed. These findings underscore the importance of context-specific analyses in understanding decadal crime trends and highlight the need for targeted, geographically nuanced approaches to crime prevention in South Africa.

Keywords Crime drop · South Africa · Police precinct · Mann–Kendall trend test · ANOVA

Introduction

The observed decrease in crime over the past few decades—the so-called crime drop—is a phenomenon experienced by a number of countries, notably in the Global North (see Ouimet 2004; van Dijk and Tseloni 2012; Tilley et al. 2015; Ganpat et al. 2022). Downward crime trends were first witnessed in the United States (US) in the early 1990s where crime began to decline rapidly and continued to do so for roughly two decades. Similarly decreasing trends in crime were subsequently

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observed in other developed countries, including Canada (Ouimet 2004), England and Wales (Ganpat et al. 2022), as well as Australia (Mayhew 2012), among many others. Rather unsurprisingly, the reasons provided for the crime drop are myriad and include, among others, increased incarceration (Levitt 2004), the legalization of abortion (Donohue and Levitt 2020), strong and/or expanding economies (Fernández-Molina and Gutiérrez 2020), immigration (Ignatans and Matthews 2017), as well as the implementation of various situational crime prevention measures (Farrell et al. 2011). These multitude of explanations led, in part, to Farrell et al. (2014) outlining four evidence-based standardized 'tests' that each explanation (hypothesis) needed to 'pass' in order to be considered a suitable reason for why crime has declined. These include the cross-national test (i.e., that the hypothesis can be applied across contexts); the prior crime increase test (i.e., that the hypothesis is consistent with the fact that crime was previously generally increasing); the e-crimes and phone theft test (i.e., that the hypothesis is consistent with the fact that some crimes have been increasing while others have fallen); and, finally, the variables trajectories test (i.e., that the hypothesis is compatible with the variation in the timing, trajectory, and composition of crime falls both between countries and between crime types). Based on an evaluation of seventeen of the most common hypotheses used to explain the crime drop, the security hypothesis was found to be the most likely explanation. Underpinned by crime opportunity theories, the security hypothesis argues that better and improved security is responsible for declining crime, with the greatest impact felt on property crime.

Regardless of the reasons provided, it is broadly accepted by criminological scholars that crime has decreased over the past 30 years or so, or, at least, has declined in all the countries in which the phenomenon has been investigated (see Ouimet 2004; Mayhew 2012; van Dijk and Tseloni 2012; Tilley et al. 2015; Ganpat et al. 2022). The vast majority of research examining the crime drop has, however, been undertaken in the developed world, with much less known outside this context, especially in Africa. Indeed, the African continent is usually represented by a limited number of countries in the so-called 'global studies' of the crime drop (see Tseloni et al. 2010; del Frate and Mugellini 2012) but with few finer details or peculiarities included. Only one other study has examined this phenomenon in Africa in any great detail and that is Dziwornu (2021) who examined crime rate trends in Ghana between 2000 and 2015 and found a significant decline in crime over the study period. The researcher found that the overall total crime rate decreased by roughly 38 percent although there were substantial variations across crime categories, with theft, for example, increasing by 136% over the fifteen-year study period. The present study aims to make a small but meaningful contribution in this regard by examining crime trends in southern Africa. Specifically, national crime trends in South Africa from 2010 to 2019 are examined and an attempt is made to identify which police precincts within the country experienced an increase or decrease in crime over the study period and why.

Literature review

Investigating the crime drop is not new. A large body of work has examined how crime trends have varied temporally over the past few decades with the vast majority of researchers finding an overall decline in crime (see del Frate and Mugellini 2012; Baumer and Wolff 2014; LaFree et al. 2015; van Dijk et al. 2021). The vast majority of this work has been undertaken in the US where researchers have almost universally shown historical declines in violent and property crime since the early 1990s (see Blumstein and Wallman 2006; Tonry 2014; Zimring 2007). In Europe, researchers have most often grouped a large number of countries together and similarly found declining crime trends to those observed in the US (see van Dijk 2008; Rosenfeld and Messner 2009; Tseloni et al. 2010), with some exceptions (see Aebi and Linde 2010). In terms of national-level studies, Fernández-Molina and Gutiérrez (2020) found overall decreasing property- and violence-related juvenile crime trends in Spain from 2001 to 2016 but notable increases in certain types of crimes, including domestic violence and theft. Only partial evidence for the crime drop was, however, found in Turkey where Atak (2020) found notable declines for homicide but mixed evidence for other types of violent and property crimes from 1990 to 2016. Importantly, the researcher highlighted the difficulties of analyzing crime trends in social and political contexts where limitations on data are unavoidable. Other European country-specific studies have been undertaken in Finland (Elonheimo 2014), Scotland (Humphreys et al. 2014), Sweden (Svensson and Oberwittler 2021), and the Netherlands (van der Laan et al. 2021), among others, with similar overall declining trends observed, on average.

Studies examining the crime drop in countries outside the US and Europe are less forthcoming but include Sidebottom et al. (2018) who examined residential burglary and car crime trends in Hong Kong, Japan, and Taiwan and found similar patterns of crime reduction to that in other developed countries. The researchers did, however, note that the onset of the crime reductions varied considerably between countries with the general onset of crime reduction occurring later than those in more developed contexts. Ansari et al. (2015) examined crime trends in India from 1971 to 2011 and found that most crime categories showed a declining trend. Their findings were however inconsistent with global trends as the majority of the crime categories examined, including robbery, burglary, and rape, declined during the mid-1970s while the reduction in crime in the US and other developed countries occurred much later. In South America, Pereira et al. (2017) examined homicide trends in Brazil and found an overall drop in the homicide rate between 2000 and 2012 but noted that decreases observed were not uniform across the country. Other studies in less-developed countries include Argentina (van Dijk and Tseloni 2012) and Nicaragua (del Frate and Mugellini 2012).

Studies examining the crime drop in Africa are rare with researchers most often including a limited number of African countries, including Uganda, Nigeria, and Morocco, within broader 'global' examinations of crime trends (see Tseloni et al. 2010; del Frate and Mugellini 2012). Results of these studies do

largely confirm the crime drop in the small number of African countries included although there is some variability in the timing of crime decline as well as its magnitude, and geographic uniformity. For example, Tseloni et al. (2010) examined crime trends from 1988 to 2004 across 26 countries (including two countries from Africa, namely South Africa and Uganda) and found a fairly similar rate of crime decline for all the crime categories examined although the two African countries showed a steeper decline in burglary than their non-Western counterparts. Similarly, del Frate and Mugellini (2012) examined homicide trends among 100 countries, including 34 from the Americas, 24 from Asia, 35 from Europe, two from Oceania, and five from Africa. The African countries included in their study were South Africa, Egypt, Morocco, Nigeria, and Mauritius. The researchers found that changes in crime rates in Africa were variable with three countries (South Africa, Morocco, and Nigeria) experiencing a decrease in homicide from 1995 to 2010 while two countries (Mauritius and Egypt) experienced increases. Finally, van Dijk et al. (2021) found a substantial *increase* in levels of crime in 27 of the 35 African countries included in their study of crime trends over the period 2006–2019, with rises most pronounced in sub-Saharan countries. In fact, in their study, Africa emerged as the only world region where crime has gone up since 2006 (by an average 12%).

Notably absent in the plethora of crime drop literature, however, are national studies emanating from Africa. As previously mentioned, the only national study was undertaken by Dziwornu (2021) who examined crime rate trends across Ghana from 2000 to 2015 and found a significant decline in overall crime. The regional distribution of crime in the country conveyed a much different pattern however from the overall national trend with crime rate varying (increasing/decreasing) substantially by crime type and across certain geographic regions of the country. The dearth of crime drop research emerging from Africa in general, and southern Africa specifically is problematic because African countries have vastly different and complicated socio-economic and political realities than their Global North counterparts. As Dziwornu (2021) notes: "…mainstream Western explanatory paradigms tend to diminish the socio-political and cultural context of crime and punishment in Africa (p. 444)." As with most criminological theories, laws and axioms it is still largely unknown whether this phenomenon is applicable in a broader African context. This is important to ascertain as it provides a measure of academic credibility and generalizability to the "most important criminological phenomenon of modern times" (Farrell et al. 2014, p. 421).

Data and method

Data collection

Official crime data to examine crime trends in the country was obtained from the South African Police Services (SAPS) (2024). Data were obtained annually from 2010 to 2019 (10 calendar years) for all nine provinces of the country and used in the analysis. An extension of this time period was not possible since this would then

have included the years during which the country was under various forms of lock-down due to the Covid-19 pandemic. Crime data at this spatial level of aggregation were not available to us prior to 2010. We are aware of the shortcomings of using official police data in South Africa in research (see Breetzke 2006 for more details) as well as the fact that previous studies use (and/or supplement) their data with other data sources, such as victimization surveys (see Levitt 2004, among many others). Victimization surveys were, unfortunately, not available to us at a spatial level of granularity required for space–time analysis and we ultimately felt that using the only official provider of spatially replete crime data in the country would provide a reasonably accurate portrayal of crime trends in the country, all things considered. Data were obtained from the SAPS at the police precinct unit of analysis. The country currently has 1140 police precincts which range in size from 1.9 km squared to 19,487 km squared. The size of the precinct is broadly determined by the under-lying population it serves. A separate sexual (rape, attempted rape, sexual assault, and indecent assault), violent (homicide, attempted homicide, culpable homicide, and assault), and property (burglary, motor vehicle theft, larceny theft) crime type was extracted from the original crime data and rates per 100,000 population were calculated per police precinct per year, per crime type. Several studies have shown that the direction and magnitude of crime trends are not uniform across crime types (Aebi and Linde 2010; Elonheimo 2014; Andresen et al. 2017; Dziwornu 2021), we aimed to determine whether this was also the case for South Africa. Descriptive statistics of the crime data used in this study are shown in Table 1.

Analysis

In terms of analysis, a simple stacked line graph was initially generated to show overall crime trends for the three crime categories over the ten-year study period. Next, space–time analysis was used to identify police precincts that experienced significant trends (increasing or decreasing) in crime from 2010 to 2019. Developed by Hägerstrand (1970), space–time analysis is a statistical technique that involves the calculation of a GI* statistic (Getis and Ord 1992) for each temporal window (one year in our case) in each user-defined location (police precinct). A Mann–Kendall trend test is then applied to the GI* statistics to indicate whether a location has experienced a statistically significant monotonic increase or decrease in volume (crime) over time. The technique has successfully been used to examine temporal trends across a range of phenomenon, including tornadoes (Allen et al. 2021), wildfires (Moanga et al. 2020), and traffic accidents (Kang et al. 2018). So, unlike much prior literature, we investigate whether crime decreased *significantly* per police precinct

Table 1 Descriptive statistics of annual crimes in South Africa between 2010 and 2019 (SAPS 2024)

	Min	Mean	Max	SD
Violent crime rate	34,22	909,92	54,239,13	1727,89
Property crime rate	21,64	1017,40	76,413,04	2704,66
Sexual crime rate	0	126,33	3641,30	149,12

over the ten-year study period, rather than simply declined in raw rate. This, to our knowledge, is one of the first uses of space–time analysis to examine temporal patterns of crime.

Finally, a number of socio-demographic variables were selected from Statistics South Africa's census of 2011 as input into an ANOVA to identify possible associations for the changing crime trends observed. These variables were operationalized at the police precinct level of spatial aggregation and include the population density (measured in people per km^2), the percentage of male residents, the percentage youth (defined as residents aged between 16 and 30), the percentage of the population that have completed school (defined as people with a matric certificate), the percentage of the population that are unemployed, and a measure of income spatial inequality (defined as the coefficient of variation of census tract incomes). The selection of variables was based on previous research which has found how crime trends vary based on a range of underlying socio-demographics factors (see Tcherni-Buzzeo 2019; Santos et al. 2019). Importantly, the aim of this study was not to empirically identify the determinants of observable decreases in crime in the country, rather we aimed to simply first identify whether the crime drop, in fact, exists, and then allude to their possible causes. A major limitation of the inclusion of these variables is that they are cross-sectional. Unfortunately, annual data on these variables are simply unavailable in the country and the last census, planned for 2021, was postponed due to the Covid-19 pandemic to 2022, and the results of this census have not yet been published to provide us with some semblance of how these indicators may have changed. Regardless, we felt the inclusion of these variables (and analysis) would provide some initial evidence to suggest which socio-demographics factors may be associated with declining crime in police precincts across the country, although we readily acknowledge that other exogenous environmental factors may also play a role. Descriptive statistics for the list of variables used in the study is shown in Table 2.

Results

Figure 1 shows the overall trends of crime across the three crime categories from 2010 to 2019. An overall marginal declining trend is evident across all categories with violent crime experiencing the most significant decline, down from 941.29 per

Table 2 Socio-demographic variables used in this study

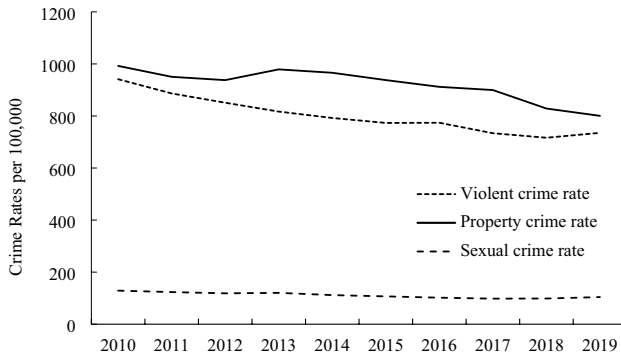| Variable	Min	Mean	Max	SD
Population density	0.08	1039.18	32,818.69	2676.63
% Male	13.08	49.52	75.78	3.74
% Youth	37.58	28.03	49.45	32,818.69
% Completed school	0	0.27	1.72	0.24
% Unemployed	0.32	9.50	37.58	4.53
Income inequality	0.29	0.88	2.64	0.28

Fig. 1 Crime trends per category (2010–2019) (SAPS 2024)

100,000 population in 2010 to 735.14 per 100,000 population in 2019. This was followed by property crime which declined from 992.33 per 100,000 population in 2010 to 800.51 per 100,000 population in 2019 and sexual crime, which dropped from 128.97 per 100,000 population in 2010 to 104.21 per 100,000 population in 2019.

Table 3 shows the number of police precincts per observed crime trend across crime categories which experienced significant changes ($p < 0.01$) in crime trends based on the space–time analysis. Roughly 39% of police precincts ($n = 446$) reported a significant decrease in violent crime over the study period, while only 12% of police precincts ($n = 140$) reported a significant increase in violent crime. In terms of property crime, a marginally higher percentage of police precincts experienced a significant increase in property crime (19%) compared with a decrease in property crime (18%). Finally, approximately 28% of police precincts ($n = 312$) reported a significant decrease in sexual crime compared with only 6% of police precincts ($n = 70$) who reporting a significant increase. All three crime types experienced significant spatial clustering with police precincts which experienced increasing or decreasing trends most often adjacent to other police precincts with the same

Table 3 Number of precincts per observed crime trend significant at 90% ($n = 1140$) (SAPS 2024)

	Increasing	Decreasing	Stable	Moran's I	*p* value
Violent crime					
Number of precincts	140	446	554	0.058	< 0.001
Percentage	12%	39%	49%		
Property crime					
Number of precincts	211	203	726	0.039	< 0.001
Percentage	19%	18%	63%		
Sexual crime					
Number of precincts	70	312	758	0.059	< 0.001
Percentage	6%	28%	66%		

trends. Interestingly, the results also show that most police precincts in South Africa did not exhibit any statistically significant trend in crime over the ten-year study period across all categories. So, while the country did experience an overall 'crime drop' across the three categories of crime examined between 2010 and 2019 in rate per 100,000 population (see Fig. 1), the degree of the decline varied between the categories and statistical significance was limited.

Table 4 shows the results of a simple ANOVA used to assess whether the differences in socio-demographic factors by crime trend were significant. In terms of violent crime, the only significant difference was found for income inequality with police precincts that experienced significant decreases in violent crime (crime drop) exhibiting lower levels of income inequality than police precincts that experienced significant increases in violent crime or stable crime trends. A number of significant differences were, however, found with property crime with police precincts that experienced significant decreases in property crime (crime drop) exhibiting higher population densities, but lower percentages of youth and unemployment, on average, than police precincts that experienced significant increases in property crime or stable crime trends. Again, police precincts that experienced significant decreases in property crime exhibited lower income inequality. Results were

Table 4 ANOVA of crime by type of police precinct (SAPS 2024)

	Increasing	Decreasing	Stable	p value
Violent crime				
Population density (pop/km^2)	1385.28	1111.06	899.43	NS
Male, %	49.09	49.45	49.61	NS
Youth, %	27.56	27.91	28.22	NS
Unemployed, %	10.02	9.54	9.33	NS
Completed school, %	27.4	28.5	25.9	NS
Income inequality	0.89	0.82	0.83	<0.05
Property crime				
Population density (pop/km^2)	1064.11	1667.58	860.49	<0.001
Male, %	49.34	49.92	49.46	NS
Youth, %	28.51	25.95	28.45	<0.001
Unemployed, %	10.31	9.15	9.36	<0.05
Completed school, %	23.6	38	25.1	<0.001
Income inequality	0.86	0.77	0.85	<0.01
Sexual crime				
Population density (pop/km^2)	1053.59	1946.39	668.51	<0.001
Male, %	49.26	49.52	49.55	NS
Youth, %	30.65	26.74	28.30	<0.001
Unemployed, %	9.61	10.64	9.02	<0.001
Completed school, %	24.9	33	24.9	<0.001
Income inequality	0.9	0.79	0.85	<0.01

NS not significant

almost identical between property crime and sexual crime with the same differences observed although the magnitude of difference between variables stratified by crime trend type were marginally greater overall for sexual crime.

Discussion

The results of this study are consistent with previous international research that has found a decline in crime over the past few decades (see Mayhew 2012; van Dijk and Tseloni 2012; Tilley et al. 2015). Overall, crime in South Africa did drop during the course from 2010 to 2019. A decreasing crime trend was observed across all three crime categories with violent crime showing the most significant decline followed by property crime and sexual crime. Closer examination of the data however showed substantial geographic variability in crime decline with less than 40% of police precincts across all three crime categories recording statistically significant decreases in crime. In fact, most police precincts experienced no statistically significant trend in crime either way. Given the overall decline in crime observed across the country (see Fig. 1), this seems to suggest that police precincts that did experience a decline in crime over the study period experienced big declines, while precincts that experienced an increase in crime, experienced relatively smaller increases. The possible socio-demographic factors that may be associated with these observed trends were investigated using ANOVA with a number of factors found to be significantly higher in precincts that experienced increasing crime trends, such as the percentage youth and the percentage unemployed. These factors have previously been found to be associated with increased crime risk in the country (see Breetzke 2010, 2012). Income inequality, on the other hand, was the only socio-demographic variable that was found to be significantly associated with a decline in crime across all crime categories. That is, police precincts which exhibited significant decreases in crime from 2010 to 2019 also had significantly lower levels of income inequality compared to police precincts which exhibited significant increases in crime or stable crime trends. One possible reason for this, highlighted by Farrell et al. (2014) as being the most likely explanation for the crime drop globally, could be the implementation of various situational crime prevention measures (viz-a-viz the security hypothesis) in these precincts. In our study, police precincts with lower levels of income inequality were, on average, much more affluent than police precincts with higher levels of income inequality. In fact, there was a perfect gradient in mean income by income inequality quartile. One security measure that has increased dramatically over the past decade in the country, and which is almost exclusively the purview of the affluent in South Africa, is the uptake of private security. South Africa currently has one of the largest private security sectors in the world, with an estimated annual turnover of roughly US$6-billion (Private Security Industry Regulatory Authority (PSIR) 2022). Private security is no longer considered a 'nice to have' but rather a 'need to have' in a country with crime rates approximating a war zone (Breetzke 2020). Rather astonishingly, there are currently over 11,500 registered private security businesses across the country employing over 2.5 million security officers (PSIR 2022). This amount is nearly double the size of the SAPS and South African

National Defense Force combined. In fact, there are now approximately four private security guards for every police officer in the country. The insidious growth of the private security industry has raised a number of questions about what this means for the authority and legitimacy of the SAPS in South Africa (see Diphoorn 2016). Nominally, and constitutionally, the SAPS are in charge of policing the country; however, the SAPS since its inception (in 1995) has been plagued with allegations of maleficence and corruption (see Faull 2007; Newham and Faull 2011). In fact, roughly two-thirds of South Africans believe that the most corrupt government officials in South Africa are located in the national police service (South African Social Attitudes Survey (SASAS) 2013). Concerns have also been expressed about how privatized security services perpetuate existing deep divisions within South African society drawn, almost predictably, along racial lines (see Shearing and Kempa 2009; Kempen 2022). Private security services offered by companies in South Africa include, among others, mobile patrols, guarding, escorting, and armed response, with security officers, most often, being well-armed. The provision of these security services in locations will necessarily result in a reduction in crime or at least act as a deterrent to crime, but whether they are "well-designed, unobtrusive, and publicly acceptable forms of security" (as outlined by Tseloni et al. 2017, p. 2)—characteristic of the security hypothesis—is open to debate. Of course, we readily acknowledge that there may be a plethora of other exogenous factors, specifically related to situational crime prevention, that could potentially explain the crime drop observed in certain police precincts but many of these are difficult, if not impossible, to empirically investigate at a national scale given the data limitations inherent in the country.

Importantly, the results of the research provide further evidence for the crime drop in certain countries in Africa but we are weary of making any definitive conclusions regarding its applicability across the continent more broadly. Indeed, the challenges of obtaining accurate crime data in Africa in general, and South Africa specifically means that any nuanced interpretation of the broader trends we observed in this study are difficult to make and/or investigate. This means that we do not have easy answers to the questions that may arise based on the results of this study. Questions like has crime fallen to the same extent across different demographic groups in South Africa? Is the fall in crime driven by a reduction in victimization risk or crime concentration? And so forth. More recent developments in the crime drop literature have focused on examining the impact of crime disaggregation (Skott 2019), cybercrime (Farrell and Birks 2018), and crime variability by demographic (Weiss et al. 2016), among others, on crime trends. At this point providing greater insight into what has driven the crime drop among certain police precincts in the country is simply not possible, neither will it be in the near future.

Conclusion

The main aims of this research were to determine whether there was a crime drop in South Africa and to identify any possible associations between crime trends and a limited number of socio-demographic factors. The study has made the following important contributions to the existing literature: First, there is evidence of a 'crime

drop' in South Africa. It is clearly evident—based on the existing literature—that there is an overrepresentation of more developed countries in the analysis of the crime drop with much less research emanating from less-developed contexts. This study, in part, addressed this imbalance. Second, the study demonstrated significant levels of geographic variability in terms of declining crime trends with a number of police precincts experiencing significant increases in crime over the study period; there was also variability shown across crime types. Finally, we determined the significance of the temporal trends of crime observed in the study. That is, rather than simply noting whether raw crime figures increased or decreased over time, we assessed the significance of these trends using space–time analysis. This provides a measure of statistical credibility to our results. Moreover, various socio-demographic characteristics of police precincts, such as income inequality, were found to possibly influence the temporal trends of crime in the country observed.

Future research on crime trends in South Africa could build upon the findings of this study by employing more advanced spatial analytical methods to better understand the geographic variability in crime patterns and the influence of socio-demographic factors like income inequality. Additionally, expanding the scope to investigate other socio-economic characteristics would offer a more comprehensive view of the factors driving crime trends. Research could also explore the role of situational crime prevention measures, such as law enforcement practices or community interventions, in shaping crime dynamics. Further, comparative studies across different African countries or developing regions could provide valuable insights into the broader applicability of the crime drop phenomenon. By integrating these approaches, future studies can offer a deeper and more nuanced understanding of crime trends, contributing to more effective crime prevention policies in less-developed contexts.

Declarations

Competing interests The author/s have no competing interests to declare.

Ethical approval The research was undertaken based on the ethical rules and regulations of the corresponding author's affiliated institution.

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