Video games as a new explanation for the crime drop

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Peer–review status

Scientific articles usually go through a peer–review process. This means that independent researchers evaluate the quality of the work, provide suggestions, and speak for or against the publication. Please note that the present article has not (yet) undergone this standard procedure for scientific publications (Wingen, Berkessel and Dohle, 2022)

Introduction

- ~~What the crime drop is~~
  - ~~When and where it happened~~
  - ~~What crimes it happened~~
- ~~Something about existing explanations~~
- ~~What the problem is with these explanations~~
- ~~What I propose that complements these~~
- ~~What implications this has for theory, literature, understanding, practice~~

The 'crime drop' describes the significant and rapid reductions in violent and property crime that took place in most Western countries during the early– to mid–1990s (Tseloni *et al.*, 2010; van Dijk and Tseloni, 2012; Farrall, 2017). For a number of decades prior to this many countries experienced a consistent and significant increase in multiple types of crime, so such rapid decreases were unexpected.

Naturally this has been the subject of inquiry over the last 30 years, with attempts made both to uncover the nature of these changes and explain the reasons behind them (Aebi and Linde, 2010; Pease and Ignatans, 2016). A number of hypotheses have been proposed to explain the sudden reduction in crime, ranging from it being a 'regression to the mean' (Tonry, 2014) to improvements in security technology, particularly vehicle security (Farrell *et al.*, 2011). Farrell,

Tilley and Tseloni (2014), for example, examine no less then seventeen hypotheses relating to the crime drop.

The security hypothesis, widely regarded as the most plausible hypothesis, makes significant strides towards explaining the crime drop (Farrell *et al.*, 2011), but these explanations focus on improvements to 'capable guardianship' or securing 'suitable' targets (Cohen and Felson, 1979). This paper argues that there was also a reduction in motivated offenders willing to commit acquisitive or violent crime caused, at least in part, by them choosing to spend more time playing video games.

Video games, for the first time, were marketed and targeted towards more mainstream audiences, gaining broader appeal. Instead of video games being the pursuit of younger children or enthusiasts, video games began to be consumed by wider audiences including, crucially, young men traditionally at the peak age of offending. People who might otherwise have offended instead began to spend their time in other ways. This hypothesis complements the security hypothesis in that both together account for both 'push' and 'pull' reasons for the crime drop.

This paper will first review the crime drop, provide a brief recap of the most plausible current hypotheses, and critically examine the remaining gaps in these explanations. Next it will outline the 'video game' hypothesis using contemporary data. In particular the paper will explore how changes in the social consumption of video games led to a reduction in motivated offenders, and how this complements existing hypotheses to offer a fuller explanation of the crime drop using routine activity theory. The paper will conclude by exploring implications for our understanding of young peoples' time use, and suggest future avenues of research to improve our empirical understanding of the crime drop.

Literature review

1. What is the crime drop?
2. What crimes dropped?
3. What time period(s) did this occur?
4. What current hypotheses are there to explain the crime drop?
5. Can video games help to explain the crime drop?

What is the crime drop

For several decades prior to the 1990s crime increased in many countries around the world. Then, in the mid–1990s, acquisitive and violent crime rapidly declined in these same countries. The 'crime drop' is the term used to describe this rapid decrease in crime that took place at this time (Tseloni *et al.*, 2010; van Dijk and Tseloni, 2012; Farrall, 2017). The crime drop was especially remarkable because: it occurred after decades of consistent increases in crime; it was unexpected; and it occurred almost simultaneously in most Western countries. Both violent

crime and property crimes (including burglary) experienced this 'drop' [Ganpat *et al.* (2022); pease_global_2016]. Countries included the United States, Canada, many South American countries, the United Kingdom, most of Europe, Japan, and Australia.

Drops in both acquisitive and violent crime have been demonstrated in both recorded crime and victimisation surveys in many different countries, so are not just a 'recording problem' or a problem localised to one or two territories. van Dijk and Tseloni (2012) demonstrate significant declines in crime using the International Crime Victims Survey 1988–2010[1] (which includes many European countries, North America, Argentina, and South Africa (2012), pp. 12] and triangulate these with national crime victimisation surveys, including those from the United States, Netherlands, and United Kingdom (2012, pp. 19–21). They conclude that the trends in crime victimisation in most European countries during this time period were 'remarkably uniform' (van Dijk and Tseloni, 2012, p. 11).

Tseloni *et al.* (2010) examined aggregated crime trends between 1988–2004 for 26 countries and five main crime types using victimisation surveys. With this, they identified large reductions in many crime types, including: a 77.1% reduction in theft from cars; a 60.3% reduction in thefts from the person; a 26% reduction in burglaries; a 20.6% reduction in assault; and a 16.8% reduction in car theft between 1995–2004 (2010, p. 384).

Police recorded crime figures show a similar pattern as the International Crime Victims Survey and national victimisation surveys, but tend to underestimate the changes (van Dijk and Tseloni, 2012, pp. 21–22). Nevertheless, the trend is downwards and is evident in similar countries.

van Dijk and Tseloni (2012), p. 15 identify that, although some countries may peak earlier[2], the peak number of crimes for most European countries is around the year 1996, including the Netherlands, United Kingdom, Estonia, France, Switzerland, and Georgia. Sweden peaks later, in the year 2000.

England and Wales

In England and Wales, measures of violent crime offences from the Crime Survey for England and Wales dropped from a peak of over 4.5 million in 1995 to less than two million annually by March 2019 (Office for National Statistics, 2024). Similarly, counts of all theft (including domestic burglary, vehicle-related theft, and other household theft) decreased from a peak of over 12 million incidents in 1995 to under 4 million by March 2020, again using the Crime Survey for England and Wales victimisation survey (Office for National Statistics, 2024).

Figure 1 shows the decline for all theft between 1981 and 2020[3].

[1] Years used were: 1988; 1992; 1996; 2000; 2004–05; and 2010.

[2] Some countries, such as Belgium, have missing data during the mid–1990s (around 1996), so the peak number of crimes might have been later than is possible to see from the data available.

[3] Only data to March 2020 are shown here due to problems with the data after this point, including a break in the data from March 2020 – October 2021 due to the Coronavirus pandemic, a switch from 'calendar

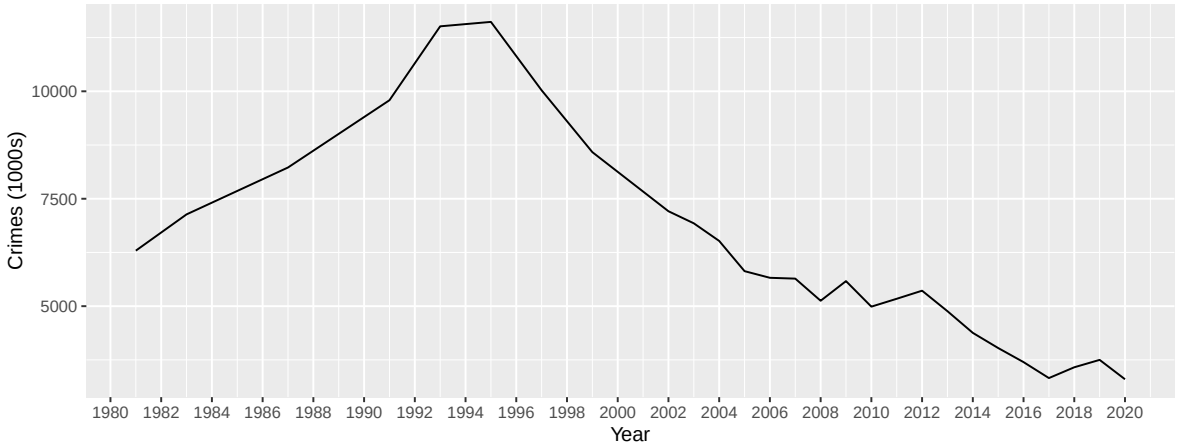

Figure 1: Long-term crime trend for all theft based on CSEW

Figure 2 similarly shows the decline for burglary between 1981 and 2020, again using victimisation data from the Crime Survey for England and Wales.

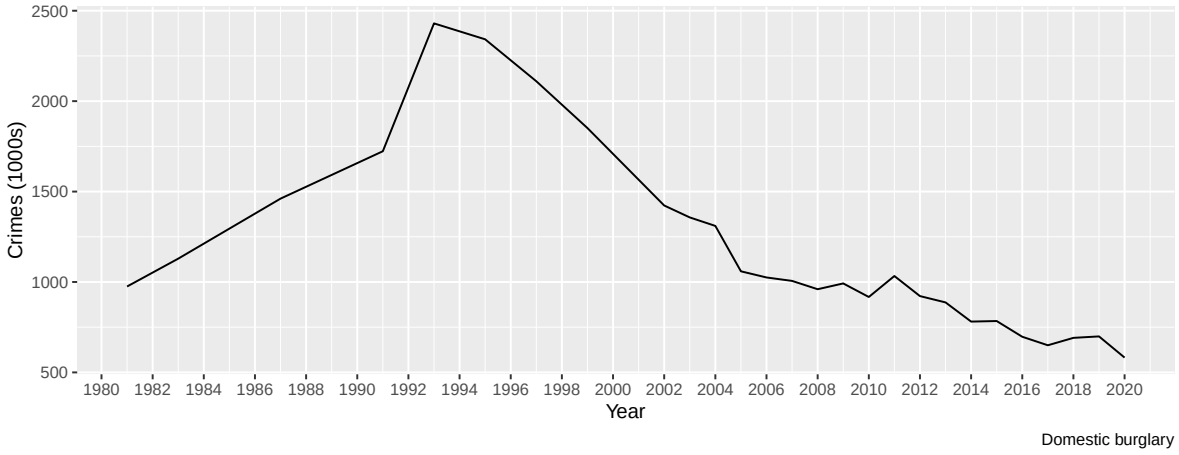

Figure 2: Long-term crime trend for burglary based on CSEW

It is worth noting that burglary starts to decline slightly from 1993, but both crime types begin to decline rapidly from 1995 onwards.

year' to 'previous 12 months' in March 2022 meaning the data before and after were not comparable, and data between September 2022 – September 2023 not being designated National Statistics. However, as our comparison is historical, mostly interested in the period 1990–2000 this does not affect our analysis.

Hypotheses and possible explanations

The crime drop is remarkable because it seems to have been unexpected, so has been the subject of a ongoing analysis attempting to explain why the change happened but is still not fully explained (Aebi and Linde, 2010). As such a number of hypotheses and explanations have been offered and explored by criminologists.

Tonry (2014) argue it was, in fact, the increase in crime that was the anomaly, and as such the crime drop was actually a 'regression to the mean' (that is, trends in violent crime have been reducing since the late Middle Ages, and the increase in violent crime was therefore the unexpected pattern). However, the year–on–year increases in crime suggest this was not just a statistical anomaly, so an explanation for this decrease is still warranted.

Perhaps the most prominent explanation is the 'security hypothesis', which attempts to explain the reduction of crime (especially vehicle–related theft) in terms of improved security technologies and measures (Farrell *et al.*, 2011).

TODO: Expand explanation of the security hypothesis. Change in the quantity and quality of security equipment has led to decreases (Farrell *et al.*, 2011, p. 147).

The security hypothesis is compelling, but when examining it through the lens of routine activity theorythe explanation is predominantly concerned with securing suitable targets and enhancing capable guardianship (Cohen and Felson, 1979). The security hypothesis works by increasing risk, increasing effort, or reducing reward for the offender (Farrell *et al.*, 2011, p. 151). These is less focus on the motivated offender, and any cultural or sociological processes that make the offender less motivated.

It also does not fully explain the drop in violent crime, except as being 'induced' by reductions in other crime types (Farrell *et al.*, 2011, p. 147).

Video games and the substitution hypothesis

The central thesis of this paper is that, alongside improvements in security, there were social and cultural changes during the mid–1990s that led to fewer motivated offenders being 'available' to commit acquisitive or violent crime. Instead individuals who might have been previously motivated to offend spent more of their time on technologically–facilitated entertainment, including video games. If this is true, it helps to provide a more complete explanation of the crime drop, explaining the 'missing' element of routine activity theory and providing a more complete account for the reduction in violent crime that complements the security hypothesis.

It is worth pointing out at this stage that the proposed video game hypothesis is distinct from the 'internet' hypothesis, which has been somewhat discredited. Video games are worthy of separate study as an explanation because the timing of changes in video game consumption more closely matches the timing of the crime drop, something which the internet hypothesis

lacked (Farrell, Tilley and Tseloni, 2014). Changes in video games consumption occurred nearly simultaneously in many countries so may offer a new explanation worthy of exploration.

Current research relating video games to criminal activity tends to focus on the psychological effects of exposure to violent video games and if this relates to increased violent tendencies. Comparatively limited research on video games and crime trends exists (c.f. Markey, Markey and French (2015); Beerthuizen, Weijters and Van Der Laan (2017); and McCaffree and Proctor (2018)) and there have been calls to extend research into the 'substitution hypothesis' (Griffiths and Sutton, 2015), so this research fills an important gap in current knowledge.

The following section will outline the timing of these changes, particularly with regard to video games, to establish the correlation between this and the crime drop and offer evidence as to the extent this happened.

We propose that the reduction in crime takes place concurrently with the rapid increases in computer and video game console ownership, and that this changed three aspects of crime opportunity:

- Fewer potential victims on the street (reduction in suitable targets)
- Fewer people wishing to commit crime at any given moment (fewer motivated offenders)
- Greater levels of capable guardianship, through greater numbers of people in their homes for longer periods of time.

Data sources

We use data from three main sources:

- *Family Expenditure Survey and Living Costs and Food Survey Derived Variables*, 1968–2017 (Oldfield *et al.*, 2020).
- *Family Expenditure Survey*, primarily sweeps 1995–2001 (Central Statistical Office, 1997; Office for National Statistics, 1999, 2000a, 2000b, 2001, 2002)
- Units shipped of the Sony PlayStation video game console, 1995–2001 (Sony Computer Entertainment Inc., 2011)[4].

Family expenditure Survey and Living Costs and Food Survey Derived Variables, 1968–2017

There are between 11512 and 16054 respondents each year between 1985 and 2017.

[4]Accessed through the Internet Archive's *Wayback Machine*, snapshot 22 July 2011.

PC ownership

Figures show the years 1984–2006 across all variables even if there is not data for all years. This is to show a consistent time frame so all Figures are directly comparable.

Data about personal computer ownership is missing between 1985–1986 and there is no data 1993–1995, so I present here complete data that is available from 1987–2002. Data 1993–1995 are interpolated based on surrounding data points.

Personal computer ownership steadily increases from approximately 19.26% in 1987 to 21.86% in 1992, but jumps to 30.27% in 1996. From 1996 onwards PC ownership grows steadily to greater than 59.29% from 2002 onwards.

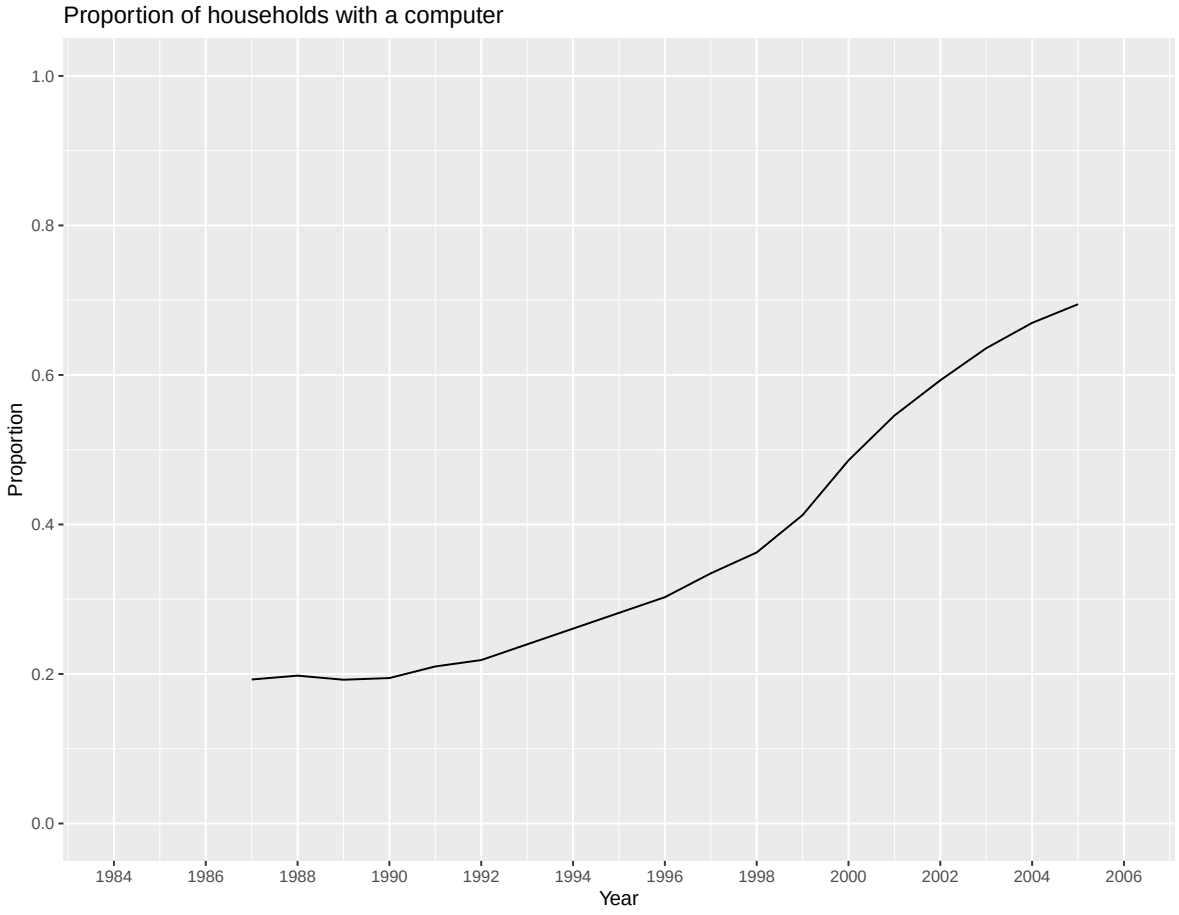

Figure 3

Figure 4 is a reminder of all theft during the comparison period, 1984–2006. This is the same as Figure 1 just with the x–axis matched for direct comparison.

Figure 4: Crime trend for all theft 1984–2006

Television

Television data in demographic data is missing between 1993–1995, inclusive. Outside of these dates, the data seems inconsistent as between 1985–1992, and 1996–2000, inclusive, about 10% of respondents say they have a TV, but from 2001 onwards it's $> 98\%$. I suspect the measurement of this variable changed in 2001, from (I guess) does the individual have a TV personally to is there one in the household. I expect it's not comparable longitudinally so cannot be used.

```
prop.table(table(ifs$year, ifs$tv), margin = 1)  # row percentage
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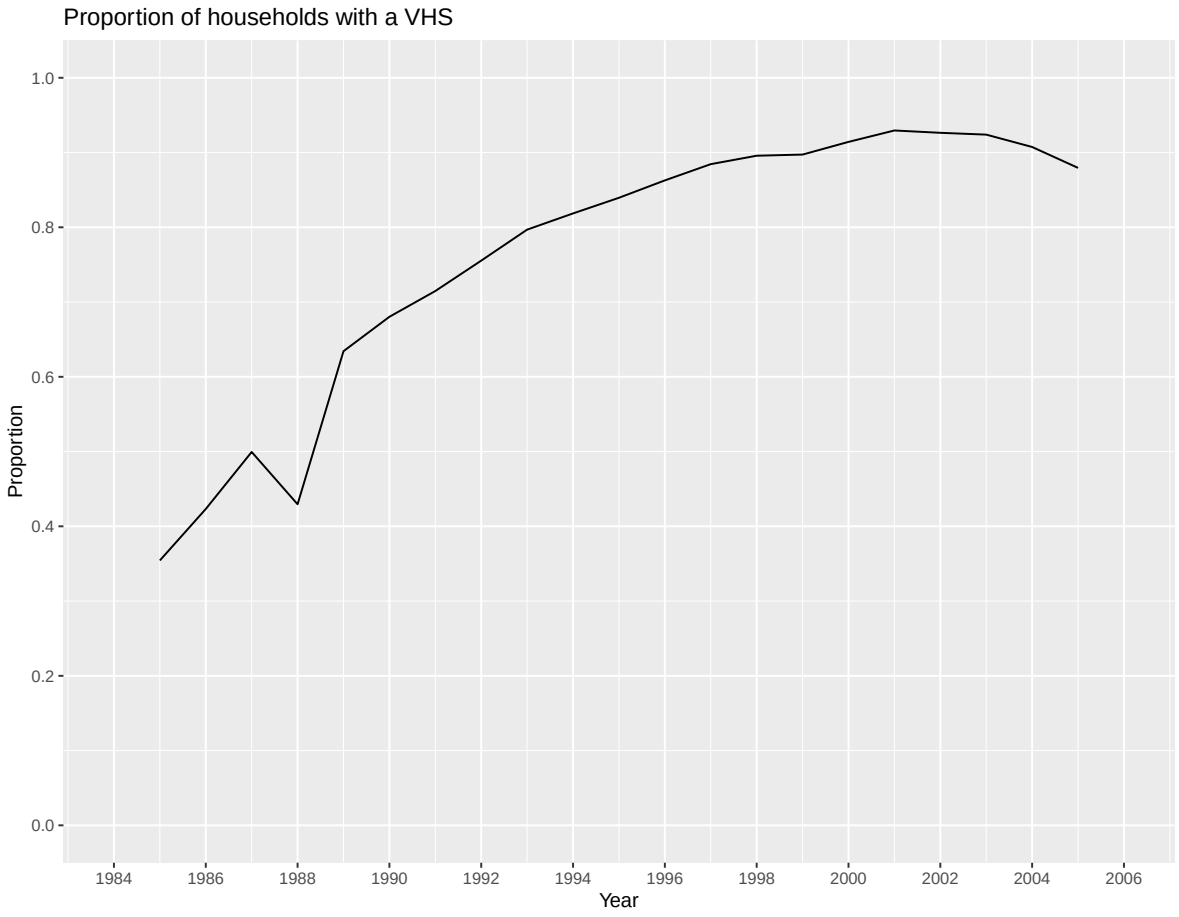
VHS

The proportion of respondents with a video (VHS) player doubles between 1985 and 1991 (from approximately 35.43% to 71.47%). From 1992 the proportion of respondents with a VHS/video player grows from approximately 75.54% to a peak of approximately 92.95% in 2001. From 2002 this gradually decreases.



Video games

The main source of data is derived from the Family Expenditure Survey (FES), which ran from 1961–2001[5]. In these, members of the household made diary records of expenditure[6]. The diaries covered fourteen days. Each household member aged 16 or over was asked to record all expenditure made during the 14 days[7]. Children aged between 7 and 15 were also asked to complete simplified diaries of their daily expenditure. Data from the children's diaries was included in the survey results for the first time in 1998-99.

`SET114` and `view114` are the summary (aggregated) versions of the diaries[8]:

[5]Living Costs and Food Survey replaced the FES from 2001 onwards
[6]https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=3783
[7]Prior to 1973, 15 year olds also completed a diary
[8]https://doc.ukdataservice.ac.uk/doc/3963/mrdoc/pdf/3963udb.pdf

instead of having a separate row for every instance of expenditure, there are now only two rows for each person for each separate expenditure code and each transaction type: one row represents the total expenditure by that person on that code in week 1 and the other represents the expenditure in week 2.

Years present in the data (earlier years are available, but do not contain expenditure codes for video game consoles and software):

- 1995–96 dataset (SN: 3635)
- 1996–1997 dataset (SN: 3783)
- 1997–1998 dataset (SN: 3963)
- 1998–99 dataset (SN: 4071)
- 1999–2000 dataset (SN: 4315)
- 2000-2001 dataset (SN: 4490)

The data sets contain the following variables:

Variable	Description
`caseno`	Household ID
`persno`	Person within the household
`xdtemamt`	Amount (£)
`ditemcod`	Expenditure type
`expwk114`	Week 1 or 2 of the diary
`year`	Year

See: UKDA-3478-spss/mrdoc/pdf/a3478uab.pdf

There are 3766030 records in total, equating to between 522173 and 560132 expenditure records per year. In each year there are between 6406 and 7093 unique households completing diaries.

Expenditure on games

1995–96 sweep onwards asks about computer cartridges and games consoles:

- `.12.01.12` Computer software and game cartridges
- `.12.01.13` Console computer games

`ditemcod` codes are:

- `120112` - Computer software and games ca[rtidges]
- `120113` - Console computer games

Proportion of households spending on computer console games

Figure 5 shows that percentage of households by sweep which spent any money on video game consoles or console software (`ditemcod` 120112 or 120113). It is **not** the percentage of their income spent.

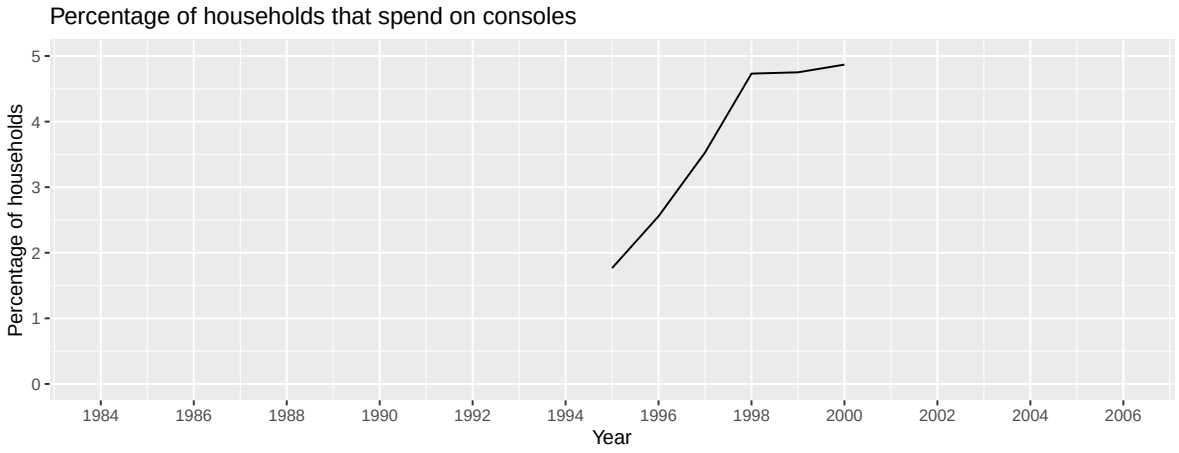


Figure 5: Percentage of households that spend on consoles

- 5% steady
- Broader appeal
- Becomes normalised

PlayStation unit sales

The original PlayStation launched on the following dates by territory (Sony, 2024):

Territory	Launch Date
Japan	3 December 1994
North America	9 September 1995
Europe	29 September 1995

Figure 6 shows the cumulative number of PlayStation units sold (in 100,000s) in Europe between launch (i.e. 29 September 1995) and the end of 2005 (by which point sales had trailed off, and been overwhelmingly replaced by the PlayStation 2).

The cumulative number of units sold to the end of 2005 was approx. 40,000,000.

- The dates on the x–axis match those of the crime data, for easier direct comparison.

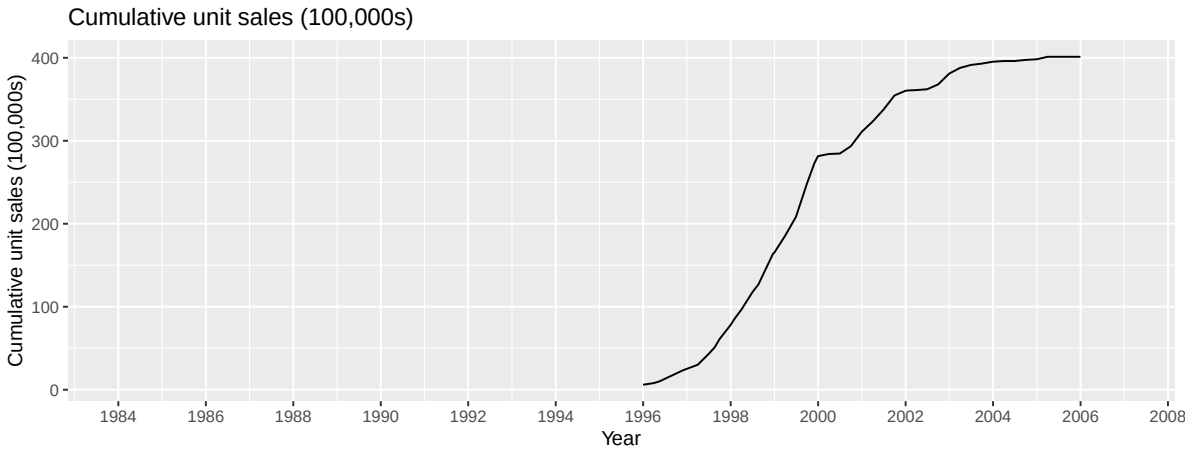


Figure 6

- Cumulative sales are used because hardware such as a PlayStation is not typically bought again once obtained: once obtained the person continues to have use of it without the need to purchase again. Cumulative sales are, therefore, a proxy for the number of units available.

Testing the hypotheses

Any explanations as to why crime dropped need to account for changes that occurred across many countries simultaneously (or at least not contradict explanations in other countries) (Farrell, 2013).

Farrell (2013, p. 2) outlines five tests for a theory of the crime drop that a proposed hypothesis must meet (or at least, not contradict).

Our own hypothesis is that video games and computer gaming can account, at least in part, for the crime drop.

Prior research in this area is scant, tending to focus on psychological effects of playing 'violent' video games (Beerthuizen, Weijters and Van Der Laan, 2017). The very limited research on this area (McCaffree and Proctor, 2018) states that routine activity theory (Cornish and Clarke, 1986) could explain reduced crime in three ways: a removal of potential victims from areas of victimisation (i.e. they are indoors playing video games, so are less likely to be the victim of a violent crime); a reduction in the number of motivated offenders who are no longer looking to engage in criminal activity); and the increases presence of a 'capable guardian' (i.e. people inside make homes less likely to be burgled).

how they contributed to the crime drop, to what extent this happened, and if it can offer a more complete explanation for the reduction in violent crimes that

Do I need to answer the 'phone theft test' (Farrell *et al.*, 2011)? I.e. why did phone theft increase while other thefts declined?

Emily comments:

- Wider debates about people spending more time at home
- 'Lad' culture?
- Alcohol consumption indoors?
- Generational replacement/cohort changes as people grow up/socialised into this new norm of spending time at home

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