Crime and Covid Interim Report

Dylan Maguire
(dm4g17@soton.ac.uk/29176395)

I. Story Outline

The Covid-19 pandemic has been a large part of our lives now for at least the last 18 months at time of writing, the circumstances which it has brought has meant that social exposure for every human across the world has dramatically decreased. Therefore, I felt it would be fitting to analyse '**How does crime; a consequential aspect of our society, evolve through a world which is subject to a pandemic?**'.

There are many different questions we can seek to answer though looking at how crime has changed when put under different societal circumstances with an over encompassing objective of '**Does the total number of crimes committed and reported increase or decrease through a pandemic?**'.

I aim to initially explore how the number of crimes evolves over time for the regions the data offers, this will start with a wide picture of the EU. This will enable us to see whether crime is increasing or decreasing across the explored regions. Afterwards, I will delve deeper into more recent statistics which include timeframes both before and during the Covid-19 pandemic. When exploring how crime evolves through a pandemic I will direct attention towards the UK and Northern Ireland where sociocultural determinants are near identical when looking at the global stage. I feel this is an important factor to account for as crime is something which is very different across the world.

When exploring region specific data, I also hope to address '**Does the type of crimes committed change through a pandemic?**' and more specifically '**Does the type of crimes committed change when the region analysed is under the restrictions of a lockdown?**'. From this, we can see '**Which regions of the UK are the most dangerous overall?**' but also '**Which regions of the UK are the most dangerous according to each crime?**' on top of deducing whether lockdowns can have a positive effect on society with respect to crime. These are important questions to know the answers to as it can offer reasons to accurately direct government spending towards police forces which require them the most. This could include saving money from certain regions or giving more to others in an attempt to reduce overall crime in the future. We would also know if we were to go into another nation-wide lockdown that the crime circumstances change and how the respective police forces should adapt to maintain order.

Another interesting question to ask is '**Has online crime increased as a result of the Covid-19 pandemic and the government enforced lockdowns it has brought?**' This is important to explore as society moves more towards the online environment everyday whether it is for online payments, work-from-home jobs, social activity or gaming. The prompt to enquire about this question is the premise of being at home more often and if the psychological need for someone to commit a crime is there and they cannot do something in the real world then they may move online, examples of online crime would include payment fraud, computer misuse(hacking) and online harassment through social media platforms. The claim of increased online crime as a result of Covid-19 will have backing from the datasets described below and will follow Toulmin's model of argument when presented in the final report.

II. Dataset Detail

I have found a wide range of available data from varying sources which can be seen referenced below. Not only this but there is specific data which I have found hard to acquire.

The datasets that I have currently acquired I have conducted a purpose evaluation and while they are not completely ideal, they can be worked to address the questions which I will revolve this data story around. I intend on collating and merging all relevant data from the collected datasets into a more appropriate form to create charts from.

At the present time I have acquired a few different datasets that contain information regarding crime in England and Wales. The most important information from these datasets contains a breakdown of crimes with yearly figures from 2002 to 2021 and quarterly figures from 2019 to 2021 [1]. These quarterly figures are particularly useful as they begin prior to the Covid-19 pandemic, therefore we have reference crime figures to relate back to.

I also have datasets of crime within Northern Ireland [2] which I will believe the main focus will be on as the data starts with figures of each crime from 1998 through to 2021. This data can be harnessed to perform basic trend analysis before we go deeper into the details. There are also monthly total recorded crime figures from 2016 to 2021, and on top of this I also have crime figures by policing district which can be used to create an interactive heat map where the user can see a breakdown of crimes within the region they click on. This interactivity could also be used to show the %change in each direction of specific crimes before and during a period of countrywide lockdown while highlighting the crimes which have changed the most, aiding an answer to the headline question of '**How does crime; a consequential aspect of our society, evolve through a world which is subject to a pandemic?**'. This dataset also includes the outcomes of reported crimes as well as the demographic of people committing them which can be used to form complementing charts for the Northern Ireland visualisations which will be discussed in Visualisation Detail.

To present a broader picture of crime to the user at the beginning of this data story I intend on showing the crime index from multiple countries in Europe and how they have changed over the last decade. This data is not readily available in a dataset however so to acquire it I will write a python script to scrape this data of a public website [1] and

form a useable dataset when looking to create visualisations for this narrative.

A limitation of the current datasets I have collected is that they do not have aligned timeframes. To minimise the creation of misleading visualisations from this data, I intend on guiding the user through different time periods and geographical regions to help present a background for the story before ultimately developing conclusions. These conclusions may be region specific, however basic intuition can extrapolate these conclusions into the greater picture as sociocultural factors remain extremely similar if not the same for all regions presented.

III. Visualisation Detail

I intend on exploring and experimenting with the different types of visualisation mentioned below, to try find out the best way to convey specific information while minimising the chance for the visualisation to appear misleading to the reader.

A. Basic Charts

The first visualisations I plan create will use basic charts such as bar charts to show the crimes which occur the most and least often within the UK and Northern Ireland. This will take advantage of the compare [3] narrative design pattern.

Line charts can also be made use of to help visualise the temporal patterns of committed crimes before and during pandemic times.

To explore potential outliers of specific crimes within the UK or Northern Ireland I intend on creating various scatter plot visualisations this information could then be used to aid the data story and provide extra narrative for other visualisations.

It may be more appropriate to use area (under the curve) charts to visualise which crimes occur the most over time in addition to highlighting how specific crimes increase or decrease over time. This can frame the idea and provoke an emotional response by using the addressing-the-audience [3] narrative design pattern.

B. Advanced Charts

To include some advanced charts in my visualisations I hope to use the hairball effect and brushing plot to show European crime indexes over the last decade. The UK will be highlighted in this as it is the focus of this assignment however the other European countries will be shown as well to initially establish a broader picture for the reader using the compare [3] narrative design pattern.

I can avail of geographical choropleth maps to split the UK into separate policing regions and provide the crime index of each region. To do this I would first have to calculate the crime index of each region using the data which I have collected. With this information I can answer '**Which regions of the UK are the most dangerous overall?**' and then look to answer, '**Which regions of the UK are the most dangerous according to each crime?**'.

Subsequently, I can do the same with Northern Ireland as I have the appropriate data collected to create this visualisation.

Some further visualisations which I may create if time permits include using parallel sets to show the victim demographic in terms of age or gender for each crime subset within Northern Ireland. This information can be extrapolated in an attempt to aid answering '**Has online crime increased as a result of the Covid-19 pandemic and the government enforced lockdowns it has brought?**' as it is easy to hypothesise the younger generation are more at fault with online crime as they would be more familiar with online systems. Conversely it would make sense to predict that the younger generation are more liable to be victim of online crime as they may be more complacent online but also more susceptible to abuse from their peers.

IV. Summary

To summarise this interim report, a clear urgency has been shown through the data story outline to not only educate about crime but also how it evolves through time and more specifically through different social circumstances which are unprecedented during our lifetime

I have found a wide range of data from complimenting sources and conducted exploratory analysis on them, however I intend on still looking for more data which may provide a better overall picture and help guide the data story in an informative manner.

The intended visualisations are open to modification, while new types of visualisation may be added to further advance the data story. These visualisations will adhere to appropriate narrative design patterns as briefly mentioned, in a strong attempt to convey the important subject of crime within our society.

V. Preliminary Conclusions

The Covid-19 pandemic is far from over which means that countrywide lockdowns could also come back into effect. With the advantage of using this data story and its visualisations, hopefully it will be evident the effect that Covid-19 and lockdowns have on crime. Organisations with the power to do so can act on this information through the reallocation of police department resources, the change in structure of crime awareness initiatives which can aid in prevention and decrease crime both at the totality level but also on a crime-specific level.

References

[1] N. Stripe, "Crime in England and Wales: year ending June 2021," Office for National Statistics, 2021.

[2] PSNI Statistics Branch, "Police Recorded Crime in Northern Ireland Update to 31st October 2021," Northern Ireland Statistics and Research Agency, Belfast, 2021.

[3] B. Bach, M. Stefaner, J. Boy, S. Drucker, L. Bartram, J. Wood, P. Ciuccarelli, Y. Engelhardt, U. Koeppen and B. Tversky, "Narrative Design Patterns for Data-Driven Storytelling," CRC Press, 2018.

[4] Numbeo, "Europe: Crime Index by Country 2021," [Online]. Available: https://www.numbeo.com/crime/rankings_by_country.jsp?title=2021&region=150. [Accessed 5 12 2021].