**SMU Data Analytics Bootcamp | Project 4 Group 1: Write-Up**

**Title: -** Homicides More than 52,000 criminal homicides over the past decade in 50 US cities

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**Homicide - Definition**

Homicide is the killing of a person by another with intent to cause death or serious injury, by any means. It excludes death due to legal intervention and operations of war.

In addition, [1] A homicide requires only a volitional act or omission that causes the death of another, and thus a homicide may result from accidental, reckless, or negligent acts even if there is no intent to cause harm.[2] Homicides can be divided into many overlapping legal categories, such as murder, manslaughter, justifiable homicide, assassination, killing in war (either following the laws of war or as a war crime), euthanasia, and capital punishment, depending on the circumstances of the death. These different types of homicides are often treated very differently in human societies; some are considered crimes, while others are permitted or even ordered by the legal system.

**Studies of homicide consequences**

Beyond its direct impact, homicide has serious negative effects on the lives of surviving family members, particularly children. Psychological effects include anxiety, depression, post-traumatic stress disorder, aggression, guilt and a heightened sense of vulnerability. Socio-occupational effects include problems in school and at work. Homicide may also lead families to incur expenses they can ill afford, such as funeral costs and lawyer fees. If the victim was a breadwinner, families may no longer be able to cope financially. Homicide can generate a sense of insecurity in society, and when high rates occur in countries with weak, inefficient and corrupt criminal justice systems, can contribute to undermining social and economic development.

**Studies of homicide risk factors**

Homicide is caused by mix of factors at the individual, relationship, community and societal levels. Demographic structure is a well-established risk factor for homicide. Societies where young people – particularly young males – make up a greater share of the population tend to have higher homicide rates. Transitions in political regimes may also be associated with increased homicide. The fall of Communism in Eastern Europe, apartheid in South Africa, and dictatorship in Brazil all saw rapid increases in homicide rates. Homicide rates may increase in the absence of good governance and effective rule of law. Homicide rates tend to be lower where states have legitimacy in the eyes of citizens, can deliver key political goods such as justice based on the rule of law, and have low levels of corruption. Poverty, economic inequality, ethnic fractionalization, and the availability of guns and alcohol are also risk factors for homicide.

**Examples of strategies and interventions**

This section contains examples of strategies that is required to minimize or eliminate

1. Community-based awareness
2. Safety educations

**DATA**

**Source –**

1. <https://github.com/washingtonpost/data-homicides.git>
2. <https://www.kaggle.com/datasets/joebeachcapital/homicides?select=homicide-data.csv>
3. homicide-data.csv
4. Read the story: <https://www.washingtonpost.com/graphics/2018/investigations/where-murders-go-unsolved/>
5. See the maps: https://www.washingtonpost.com/graphics/2018/investigations/unsolved-homicide-database/

**DATA Description / Scope** – Homicides - More than 52,000 criminal homicides over the past decade in 50 US cities

**About Dataset / Data Collection**

The Washington Post collected data on more than 52,000 criminal homicides over the past decade in 50 of the largest American cities.

The data included the location of the killing, whether an arrest was made and, in most cases, basic demographic information about each victim.

Reporters received data in many formats, including paper, and worked for months to clean and standardize it, comparing homicide counts and aggregate closure rates with FBI data to ensure the records were as accurate as possible.

In some cases, departments provided only partial information about the homicides, so reporters consulted public records, including death certificates, court records and medical examiner reports, to fill in the gaps. The data is more specific than the federal homicide data gathered annually by the FBI from police agencies nationwide.

The Post mapped each homicide, identifying arrest rates by geography in each city, sharing the analysis with the local police department prior to publication.

**Definitions**

When possible, The Post followed definitions used in the FBI’s Uniform Crime Reporting Program. In that program, homicides include murder and non-negligent manslaughter but exclude suicides, accidents, justifiable homicides and deaths caused by negligence.

The Post considered a homicide to be closed by arrest when police reported that to be the case.

Cases were counted as closed without arrest if they were reported by police to be “exceptionally cleared.” Those are cases in which there is sufficient evidence but an arrest is not possible, for example, if the suspect has died.

All other cases were classified as having no arrest.

Mass shootings or terrorist attacks in the cities of Las Vegas, Dallas, the District and San Bernardino, Calif., were included on the maps but not factored into annual local arrest rates.

**The Cities**

The 50 police departments were selected based on the size of the city and their violent crime reported to the the FBI in 2012, the middle of the survey period. Most departments provided a decade of data, ending in 2017. New York City, however, provided only two years.

**Mapping Methodology**

To explore the geography of homicide arrests, The Post created grids of almost 2 million uniformly sized squares over the cities. A kernel density analysis was used to estimate the arrest rate for each square based on the homicides and arrests in its vicinity.

Because the shading takes into account homicides inside of a square and nearby, a square may contain no homicides but be shaded.

The methodology is commonly used by police departments to visualize crime patterns. The algorithm was taken from the CrimeStat Spatial Statistics Program from the National Institute of Justice.

Areas shaded in orange are places where fewer than one-third of the homicides resulted in an arrest. The overall arrest average for these areas nationally was 14 percent.

Areas shaded in blue are where two-thirds or more of the homicides resulted in an arrest. The national arrest rate for these areas was 89 percent.

Maps may also include zones with high concentrations of killings, outlined in orange or blue. Unsolved zones, outlined in orange, had more than eight killings and an arrest rate of less than 30 percent. Zones outlined in blue had more than eight killings and an arrest rate of greater than 70 percent.

To provide information about homicides in your area, send us an email at unsolved@washpost.com. To explore the data further, download it from GitHub.

**Data limitations?**

* homicide rate by gun related or non-gun related
* intentional homicide

**GITHUB location: -**

[**GitHub - AnnLy2023/SMU-Project-4---Homicide: Capstone Project**](https://github.com/AnnLy2023/SMU-Project-4---Homicide)

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Here our analysis ~2-4 pages

Screen shots and materials to be added

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**What is the strongest predictor of future criminal behavior?**

Family dimensions are the most important developmental predictors of general offending. There is a constellation of multisystemic factors explaining persistence in crime.

You’ve undoubtedly read detective novels or watched crime TV episodes where criminal investigators toil for months to try and solve murders and other cases.

They spend countless hours poring over current and archived data, trying determinedly to connect the dots and figure it out. Unfortunately, all that hard work always doesn’t pay off. Then, the cases go “cold” as law enforcement officials decide to suspend investigations for those still-unsolved incidents.

However, today’s law enforcement officials have a technology to use that wasn’t available in previous eras: big data analytics. Let’s look at how it helps solve murders and other crimes.

**Processing More Data Than Humans Could**

One of the primary advantages of big data analytics software is that it can evaluate huge quantities of data much faster than humans can, plus spot trends they’d likely miss. So, from a crime-solving point of view, data analytics could help catch criminals who are trying to evade arrest.

For example, some communities in Colorado installed license plate readers that record the plate numbers of every vehicle that enters or leaves those places.

A Denver police chief who’s in favor of using the technology mentioned 70% of all crimes committed involve vehicles. However, some people worry about what this technology means for privacy, especially if cybercriminals obtain the data.

The speed of data analytics software and the assortment of ways that law enforcement officials have for collecting the data open new opportunities for digging into information much more efficiently and with a significantly reduced human resource demand than previous methods required. The University of Tennessee at Knoxville even has a Murder Accountability Project, where a group developed an algorithm to help with serial homicide cases.

Moreover, it’s essential to keep in mind that the information collected by data analytics tools can help prevent crime, too. Police in India are among those using data analytics like that. They incorporate criminal behavior patterns, crime anniversaries, parole dates and conditions and more as they rely on data to help them detect useful patterns that could keep people safer.

**Additional reading materials**

Historic European (Source – Wikipedia.org)

In the mid-second millennium, local levels of violence in Europe were extremely high by the standards of modern developed countries. Typically, small groups of people would battle their neighbors using the farm tools at hand, such as knives, sickles, hammers, and axes. Mayhem and death were deliberate. The vast majority of Europeans lived in rural areas as late as 1800. Cities were few, and small in size, but their concentration of population was conducive to violence and their trends resembled those in rural areas.[35] Across Europe, homicide trends show a steady long-term decline.[36][37] Regional differences were small, except that Italy's decline was later and slower. From about 1200 AD through 1800 AD, homicide rates from violent local episodes, not including military actions, declined by a factor of ten, from approximately 32 deaths per 100,000 people to 3.2 per 100,000. In the 20th century, the homicide rate fell to 1.4 per 100,000. Police forces seldom existed outside the cities; prisons only became common after 1800. Before then, harsh penalties were imposed for homicide (severe whipping or execution) but they proved ineffective at controlling or reducing the insults to honor that precipitated most of the violence.[38] The decline does not correlate with economics or measures of state control. Most historians attribute the trend in homicides to a steady increase in self-control of the sort promoted by Protestantism, and necessitated by schools and factories.[35]: 127–32  Eisner argues that macro-level indicators for societal efforts to promote civility, self-discipline, and long-sightedness are strongly associated with fluctuations in homicide rates over the past six centuries.[39]

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| Estimated homicide rates in Europe | Deaths per year per 100,000 population |
| 13th–14th centuries | 32 |
| 15th century | 41 |
| 16th century | 19 |
| 17th century | 11 |
| 18th century | 3.2 |
| 19th century | 2.6 |
| 20th century | 1.4 |

