

# *Crime Trends in Washington State*

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# Introduction

**Purpose:** Perform a thorough analysis of crime trends in Eastern and Western Washington State, delivering insightful findings for law enforcement, policymakers, and researchers. Additionally, provide essential information to Washington State residents regarding regional crime dynamics.

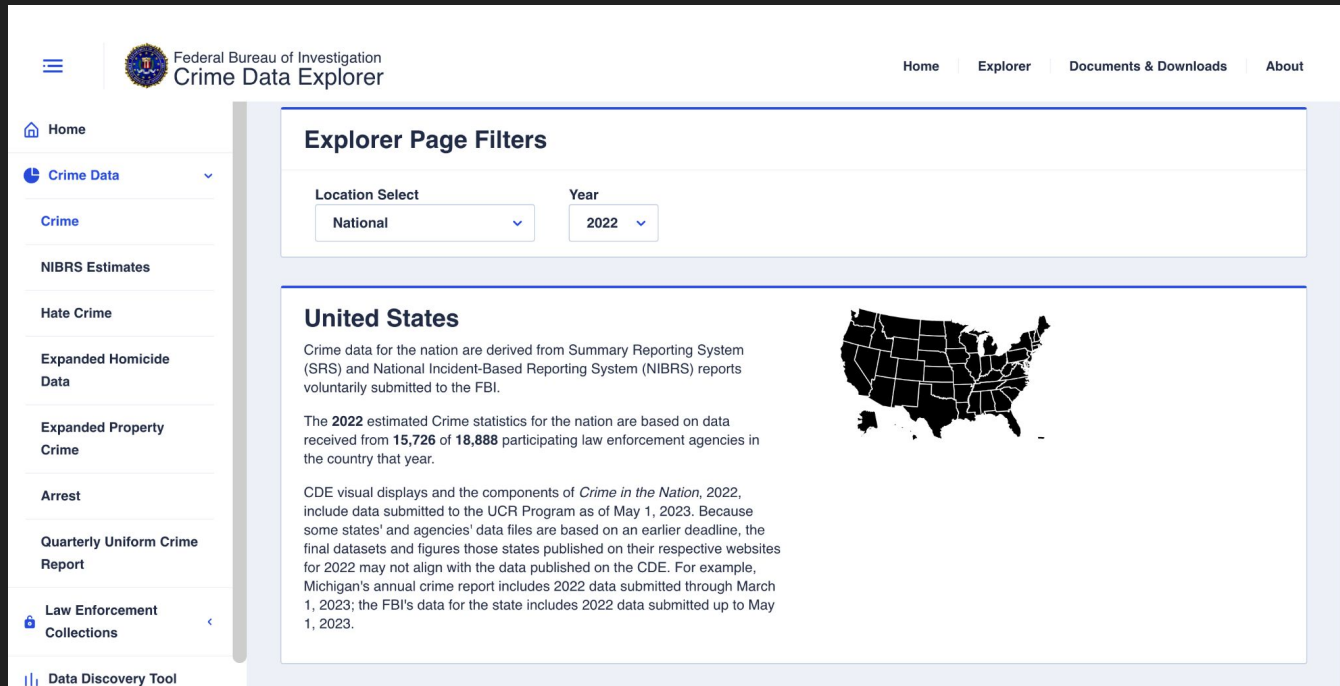
**Target Audience:** Law enforcement agencies, policymakers, researchers, and the general public in Washington State.

**Significance:** Strengthening public safety measures specific to the distinct challenges faced by each region, guiding policy development for Eastern and Western communities, fostering regional collaboration, and creating research opportunities that address the crime issues in Eastern and Western Washington.

# Source of Data

Federal Bureau of Investigation Crime Data Explorer

<https://cde.ucr.cjis.gov/LATEST/webapp/#/pages/home>



The screenshot displays the Federal Bureau of Investigation Crime Data Explorer (CDE) homepage. The header features the FBI logo and the text "Federal Bureau of Investigation Crime Data Explorer" on the left, and navigation links for "Home", "Explorer", "Documents & Downloads", and "About" on the right. A left sidebar contains a menu with options: "Home", "Crime Data" (selected), "Crime", "NIBRS Estimates", "Hate Crime", "Expanded Homicide Data", "Expanded Property Crime", "Arrest", "Quarterly Uniform Crime Report", "Law Enforcement Collections", and "Data Discovery Tool". The main content area is titled "Explorer Page Filters" and includes two dropdown menus: "Location Select" (set to "National") and "Year" (set to "2022"). Below the filters, the section "United States" is displayed, featuring a map of the United States and text explaining that crime data for the nation is derived from the Summary Reporting System (SRS) and the National Incident-Based Reporting System (NIBRS). The text states that the 2022 estimated Crime statistics are based on data received from 15,726 of 18,888 participating law enforcement agencies. A final paragraph notes that CDE visual displays and components of *Crime in the Nation, 2022*, include data submitted to the UCR Program as of May 1, 2023, and that some states' and agencies' data files are based on an earlier deadline, meaning final datasets and figures published on their respective websites for 2022 may not align with the data published on the CDE.

# Data Overview

**Data Processing:** Cleaning, organizing, and reshaping for analysis.

**Libraries Used:** ggplot2, plotly, lubridate.

## Technical Challenges:

- Trimming and merging different dataset with different cities.
- Changing format of the original dataset for R to process.
- Summarizing the Crime from different region and timeline. And reshaping the output into a more readable format.

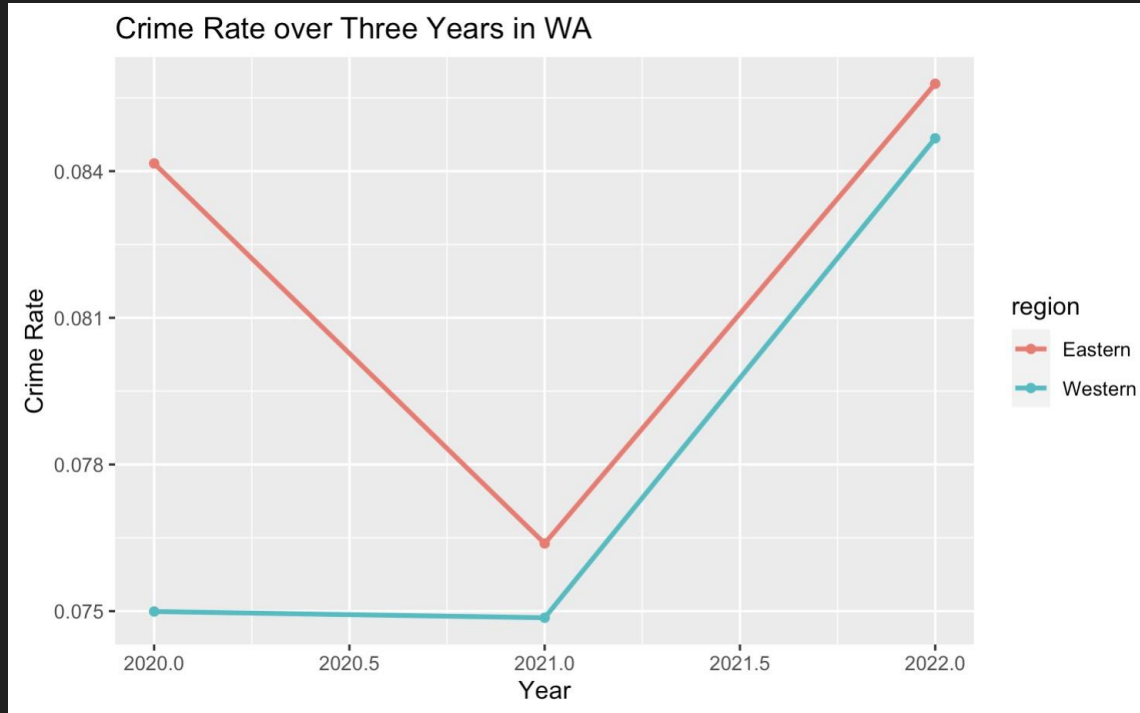
|    | A               | B                 | C                       | D                 | E                            | F                             | G                            | H                      | I                     | J                 | K            | L                    | M  | N                              | O                       | P                                | Q                      |       |
|----|-----------------|-------------------|-------------------------|-------------------|------------------------------|-------------------------------|------------------------------|------------------------|-----------------------|-------------------|--------------|----------------------|--|--------------------------------|-------------------------|----------------------------------|------------------------|-------|
| 1  | WASHINGTON      |                   |                         |                   |                              |                               |                              |                        |                       |                   |              |                      |  |                                |                         |                                  |                        |       |
| 2  | Offense Type    |                   |                         |                   |                              |                               |                              |                        |                       |                   |              |                      |  |                                |                         |                                  |                        |       |
| 3  | by Agency, 2020 |                   |                         |                   |                              |                               |                              |                        |                       |                   |              |                      |  |                                |                         |                                  |                        |       |
| 4  |                 |                   |                         |                   |                              |                               |                              | Crimes Against Persons |                       |                   |              |                      |  |                                |                         |                                  |                        |       |
| 5  | Agency Type     | Agency Name       | Population <sup>1</sup> | Total<br>Offenses | Crimes<br>Against<br>Persons | Crimes<br>Against<br>Property | Crimes<br>Against<br>Society | Assault<br>Offenses    | Aggravated<br>Assault | Simple<br>Assault | Intimidation | Homicide<br>Offenses | Murder and<br>Nonnegligent<br>Manslaughter | Negligent<br>Man-<br>slaughter | Justifiable<br>Homicide | Human<br>Trafficking<br>Offenses | Commercial<br>Sex Acts | Invol |
| 6  | Cities          | Aberdeen          | 16,744                  | 1,734             | 388                          | 1,005                         | 341                          | 346                    | 37                    | 267               | 42           | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 7  |                 | Algona            | 3,228                   | 138               | 25                           | 113                           | 0                            | 24                     | 3                     | 21                | 0            | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 8  |                 | Anacortes         | 17,735                  | 955               | 92                           | 652                           | 211                          | 81                     | 6                     | 67                | 8            | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 9  |                 | Arlington         | 20,825                  | 1,594             | 241                          | 1,010                         | 343                          | 222                    | 37                    | 159               | 26           | 3                    | 3  | 0                              | 0                       | 0                                | 0                      |       |
| 10 |                 | Auburn            | 82,779                  | 7,460             | 1,293                        | 5,273                         | 894                          | 1,171                  | 192                   | 964               | 15           | 10                   | 10   | 0                              | 0                       | 0                                | 0                      |       |
| 11 |                 | Bainbridge Island | 25,561                  | 821               | 85                           | 722                           | 14                           | 80                     | 11                    | 52                | 17           | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 12 |                 | Battle Ground     | 21,669                  | 738               | 110                          | 579                           | 49                           | 93                     | 12                    | 63                | 18           | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 13 |                 | Beaux Arts        | 327                     | 8                 | 0                            | 8                             | 0                            | 0                      | 0                     | 0                 | 0            | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 14 |                 | Bellevue          | 150,548                 | 8,613             | 864                          | 7,174                         | 575                          | 826                    | 90                    | 550               | 186          | 6                    | 4  | 1                              | 1                       | 0                                | 0                      |       |
| 15 |                 | Bellingham        | 93,629                  | 8,108             | 870                          | 7,005                         | 233                          | 809                    | 131                   | 430               | 248          | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 16 |                 | Bingen            | 745                     | 48                | 4                            | 44                            | 0                            | 4                      | 1                     | 3                 | 0            | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 17 |                 | Black Diamond     | 4,858                   | 72                | 25                           | 37                            | 10                           | 24                     | 1                     | 18                | 5            | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 18 |                 | Blaine            | 5,717                   | 320               | 78                           | 192                           | 50                           | 70                     | 8                     | 39                | 23           | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 19 |                 | Bonney Lake       | 21,584                  | 930               | 126                          | 707                           | 97                           | 111                    | 25                    | 84                | 2            | 1                    | 1  | 0                              | 0                       | 1                                | 0                      |       |
| 20 |                 | Bothell           | 48,323                  | 3,169             | 205                          | 1,762                         | 1,202                        | 190                    | 23                    | 133               | 34           | 2                    | 1  | 0                              | 1                       | 0                                | 0                      |       |
| 21 |                 | Bremerton         | 41,817                  | 3,876             | 974                          | 2,215                         | 687                          | 941                    | 103                   | 572               | 266          | 1                    | 1  | 0                              | 0                       | 0                                | 0                      |       |
| 22 |                 | Brewster          | 2,355                   | 31                | 9                            | 22                            | 0                            | 9                      | 0                     | 9                 | 0            | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 23 |                 | Brier             | 7,055                   | 220               | 19                           | 193                           | 8                            | 19                     | 2                     | 15                | 2            | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 24 |                 | Buckley           | 5,663                   | 236               | 55                           | 131                           | 50                           | 50                     | 17                    | 33                | 0            | 0                    | 0  | 0                              | 0                       | 0                                | 0                      |       |
| 25 |                 | Burien            | 51,879                  | 4,094             | 580                          | 3,347                         | 167                          | 541                    | 138                   | 265               | 138          | 4                    | 4  | 0                              | 0                       | 0                                | 0                      |       |

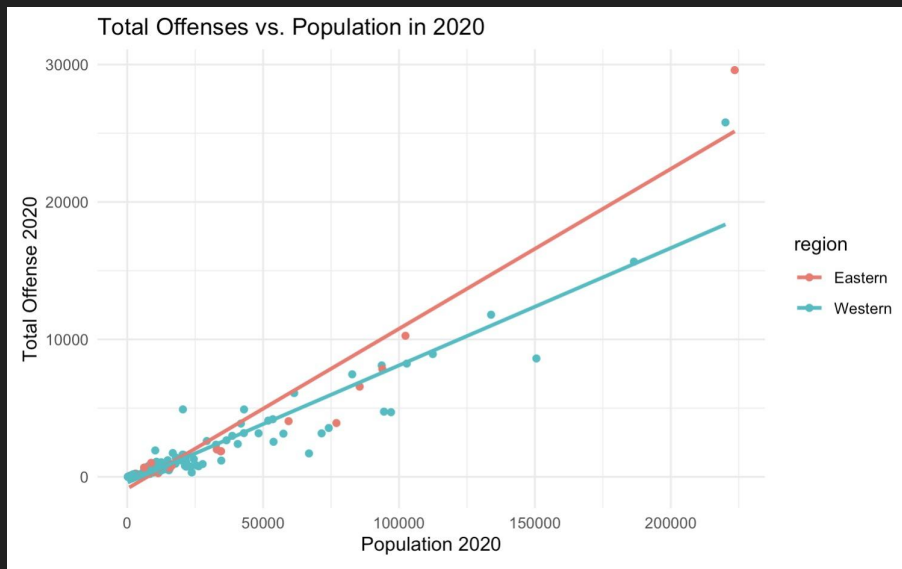
# Research Questions

- How do crime rates vary over time in Washington states?
- How do crime statistics vary between Western and Eastern Washington?
- Do the most prevalent types of crimes in Washington State vary by region?
- What specific categories of criminal activity should law enforcement prioritize their efforts toward?

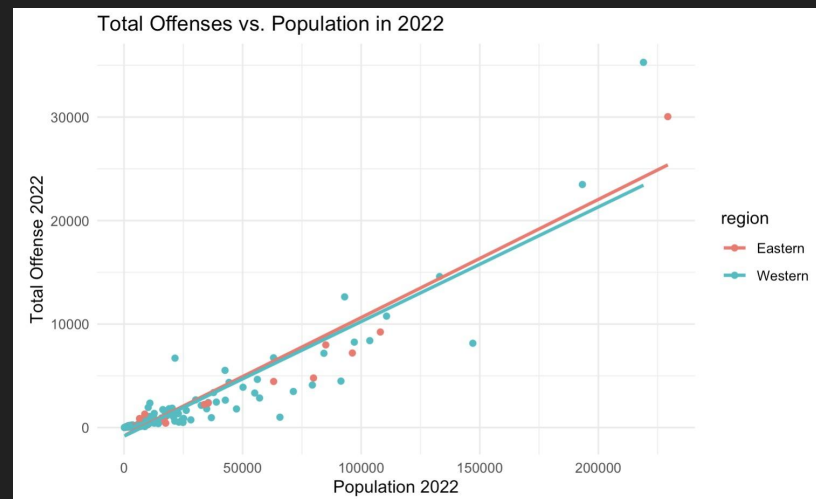
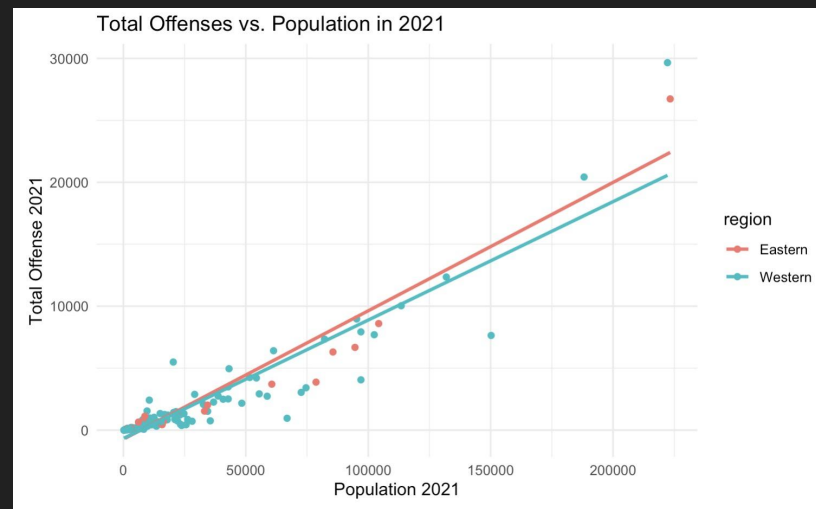
# Major Findings

→ How do crime rates vary over time in Washington states?



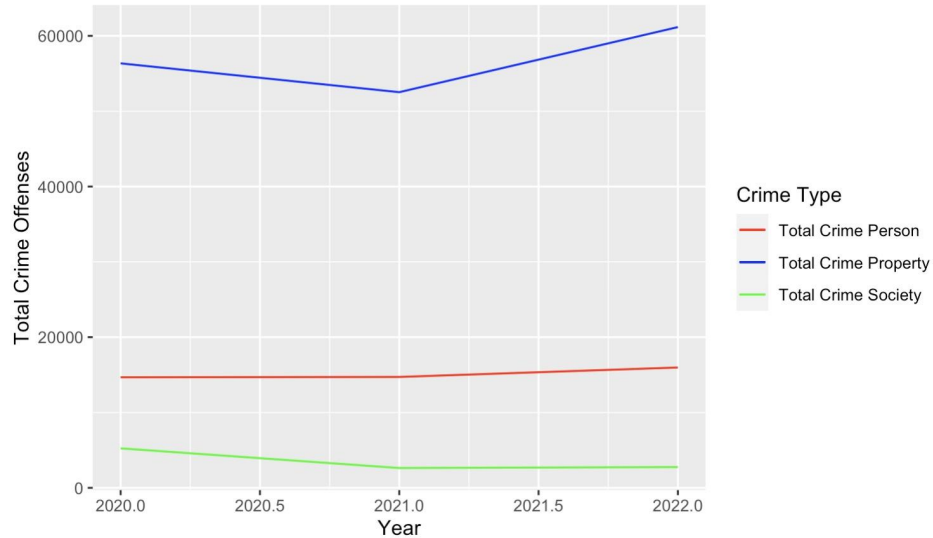


→ How do crime statistics vary between Western and Eastern Washington?

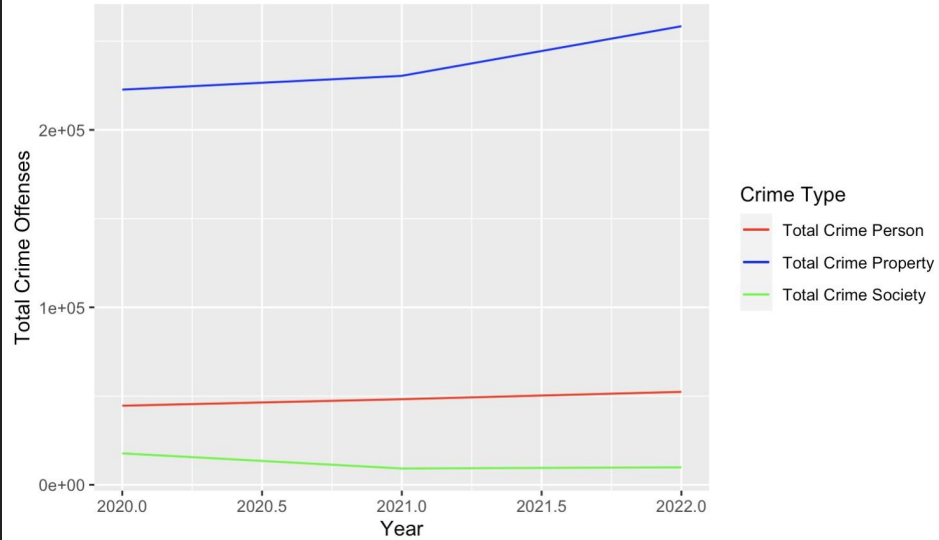




Eastern Region: Total Population and Total Offenses Over Years



Western Region: Total Population and Total Offenses Over Years



- Do the most prevalent types of crimes in Washington State vary by region?
- What specific categories of criminal activity should law enforcement prioritize their efforts toward?

# Conclusion

- Crime rates over time( 2020-2022) in Washington states?
  - 2020: Eastern part higher than Western part
  - 2021: Easter part drops
  - 2022: Both increase
- Crime statistics between Western and Eastern Washington?
  - Corresponding to the Graph 1- Crime\_rate\_over\_time
  - Significant difference of number of cities
- Types of crimes in Eastern and Western part of Washington?
  - Similar pattern in both region
    - Highest: against Property
    - Medium: against Person
    - Lowest: against Society
- Law enforcement's future step?
  - Prioritize efforts towards:
    - Property

*Thank You!*