# Analysis of crime indicators before and after cities abolished gang database

## Method

* Interrupted time series analysis – tests for before and after differences of a one-time intervention while accounting for any trends in the outcome before the intervention.
* Linear regression
* Accounted for autocorrelation (e.g., time points tend to be correlated with one another) using an autoregressive correlation structure.
* Key assumptions of this approach:
  + Without the intervention (abolishing the database), the pre-intervention trend in crime rates would have continued unchanged into the post-intervention period.
  + There are no other interventions that occurred at the same time that would impact crime trends.

## Portland

* Portland abolished its gang database effective October 15, 2017.
* Time period of interest: October 15, 2016 through October 15, 2018
* Crime data source: <https://public.tableau.com/app/profile/portlandpolicebureau/viz/New_Monthly_Neighborhood/MonthlyOffenseTotals>
* Crime definitions (crime incidents reported to the police):
  + Total crime: All NIBRS Group A offenses
  + Violent crime: Assault, homicide, human trafficking, kidnapping/abduction, sex offenses
  + Property crime: Arson, bribery, burglary, counterfeiting/forgery, embezzlement, extortion/blackmail, fraud, larceny, motor vehicle theft, robbery, stolen property, vandalism
* **Finding: Abolishing the Portland gang database was not associated with any statistically significant changes in the slope of rates of total crime, violent crime, or property crime. The only statistically significant change associated with abolishing the database was a drop in violent crime immediately following intervention date.**

**Total crime (Portland)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Estimate | Standard error | p-value |
| Pre-intervention intercept | 169.65 | 4.21 | 0.0000 |
| Pre-intervention slope | 0.02 | 0.02 | 0.2860 |
| Change in intercept | -1.02 | 5.71 | 0.8585 |
| Change in slope | -0.03 | 0.03 | 0.2712 |

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**Violent crime (Portland)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Estimate | Standard error | p-value |
| Pre-intervention intercept | 26.89 | 0.86 | 0.0000 |
| Pre-intervention slope | 0.02 | 0.00 | 0.0000 |
| Change in intercept | -3.73 | 1.21 | 0.0021 |
| Change in slope | 0.00 | 0.01 | 0.4394 |

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**Property crime (Portland)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Estimate | Standard error | p-value |
| Pre-intervention intercept | 134.58 | 3.63 | 0.0000 |
| Pre-intervention slope | 0.00 | 0.02 | 0.7729 |
| Change in intercept | 4.37 | 4.93 | 0.3758 |
| Change in slope | -0.02 | 0.02 | 0.3731 |

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## Chicago

* Chicago abolished its gang database effective September 7, 2023.
* Time period of interest: September 7, 2022 through September 7, 2024
* Crime data source: <https://data.cityofchicago.org/Public-Safety/Crimes-2001-to-Present/ijzp-q8t2/data>
* Crime definitions (crime incidents reported to the police):
  + Total crime: All crime offenses
  + Violent crime: Assault, battery, criminal sexual assault, homicide, human trafficking, kidnapping, offenses involving children, sex offenses, stalking
  + Property crime: Arson, burglary, criminal damage, deceptive practice, motor vehicle theft, robbery, theft
* **Finding: Abolishing the Chicago gang database was not associated with any statistically significant changes in the slope of rates of total crime, violent crime, or property crime. The only statistically significant changes associated with abolishing the database was a drop in total crime and violent crime immediately following intervention date.**

**Total crime (Chicago)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Estimate | Standard error | p-value |
| Pre-intervention intercept | 747.37 | 14.36 | 0.0000 |
| Pre-intervention slope | 0.18 | 0.07 | 0.0084 |
| Change in intercept | -54.56 | 19.84 | 0.0061 |
| Change in slope | -0.07 | 0.10 | 0.4925 |

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**Violent crime (Chicago)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Estimate | Standard error | p-value |
| Pre-intervention intercept | 217.08 | 5.08 | 0.0000 |
| Pre-intervention slope | 0.13 | 0.02 | 0.0000 |
| Change in intercept | -26.31 | 7.09 | 0.0002 |
| Change in slope | -0.05 | 0.03 | 0.1448 |

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**Property crime (Chicago)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Estimate | Standard error | p-value |
| Pre-intervention intercept | 424.83 | 9.40 | 0.0000 |
| Pre-intervention slope | 0.01 | 0.04 | 0.8686 |
| Change in intercept | -21.19 | 13.05 | 0.1049 |
| Change in slope | 0.00 | 0.06 | 0.9626 |

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