



# Analyzing the relation between a disordered environment and crime in Los Angeles

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# Outline

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Introduction

Used Data

Analysis

Result

# Introduction

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# Main Idea

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Broken Window theory (1980s, Wilson and Kelling): Visible signs of disorder encourage further crimes

Can we show a correlation between disorder and crimes?

*Do reported signs of disorder,  
such as graffiti,  
correlate with crime in Los  
Angeles in 2023?*

# Disorder and Crimes

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## SIGNS OF DISORDER

Graffiti

Waste dumping

Homeless encampments

Broken streetlights

## CRIMES

Violent

Property-related

Fraud

Disorder-related (Excluded)

Other

# Used Data

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# Used Data (I)

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## Crime Data

(L.A. Police Department)

Crm Cd	Type of crime (Code)
Crm Cd Desc	Type of crime (description)
Zipcode	

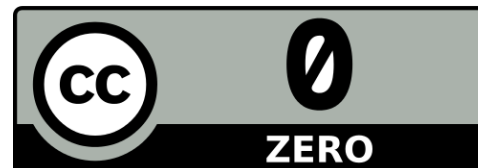
Rows	510,477
Valid	99.7%

## Disorder Data

(MyLa311 - Plattform where citizens can report disorder)

RequestType	Type of disorder
Zipcode	

Rows	214,564
Valid	99.8%





# Used Data (II)

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Population Data (Census 2020)

Zipcode
Population

Valid

100%



# Analysis

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# Preprocessing

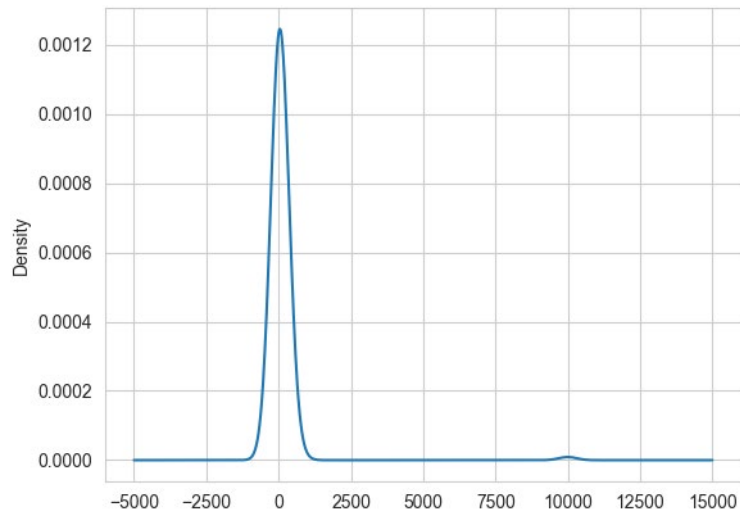
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- Assignment of crime categories
- Calculation of ,rate' (occurrences per 1000 people) for each ZIP code and type of crime/disorder

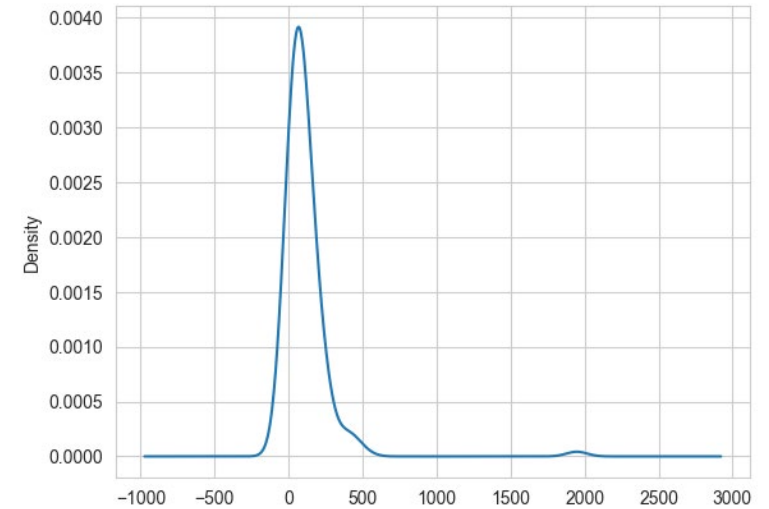
$$rate = \frac{\#incidents}{population} * 1000$$

# General Data Structure

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Distribution (total crime rate)



Distribution (total disorder rate)

~Gaussian distribution with outliers

# Correlation (total rates)

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- Correlation between total crime rate and total disorder rate
  - Methods yield values from -1 (negative correlation) to +1 (Positive correlation)
- Spearman's correlation was chosen as primary method upfront due to its insensitivity to outliers  
→ used for further analysis

Method	Value	Interpretation
<b>Spearman's correlation</b>	<b>0.77</b>	<b>Strong correlation</b>
<i>Pearson correlation coefficient (PCC)</i>	<i>0.54</i>	<i>Moderate to strong correlation</i>

# Correlation (per Type)

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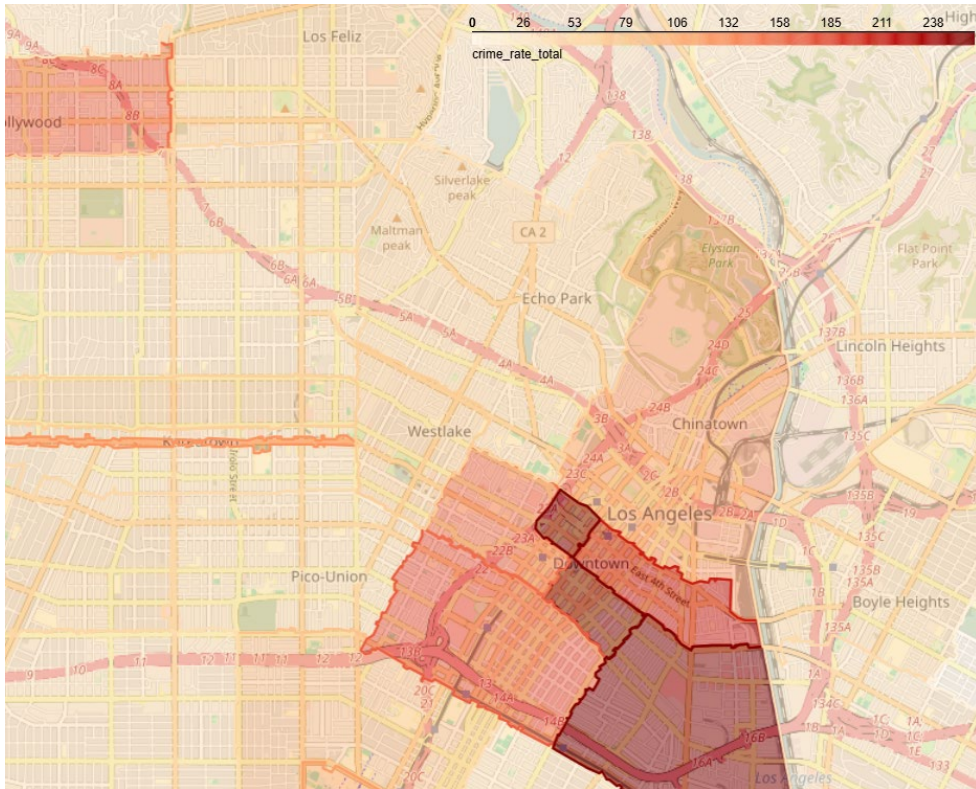
No correlation between  
population and total crime  
rate (0.05)

Weak correlation between  
population and total  
disorder rate (0.3)

Strong correlation between  
total disorder rate and  
total crime rate (0.77)

- For all subtypes of crime except Fraud
- Type of disorder seems to have no big effect

# Geographic interpretation



High rates  
of crime and  
disorder in  
business  
districts

- E.g. Arts District, Downtown (with Skid row area)

Some  
statistical  
effects

- E.g Hollywood Studios, University of Los Angeles

# Conclusion

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# Conclusion

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- Correlation between disorder and crime
- Limitations
  - All kinds of disorder treated equally
  - Rates calculated using number of people living in the area (visitors/tourists not considered)  
→ further research might take differences between housing districts and business districts into account
  - Only reported cases of disorder/crimes are considered