

Is Berlin a Dangerous City?

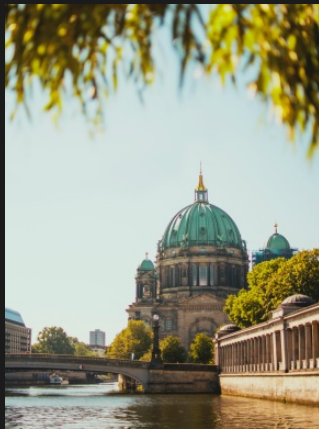
Berlin, the capital and largest city of Germany, stands out as the most populous city within the European Union. Renowned for its vibrant techno scene and rich multicultural landscape, Berlin attracts countless visitors and immigrants each year.

However, for those who call Berlin home, debates about the city's safety are a recurring topic. **Is Berlin truly a dangerous place to live?**

This project analyzes the small-scale distribution of crime across Berlin to provide insights into the..

Key questions:

- What is the Berlin area with the most small-scale crimes?
- Did crime increase from 2012 to 2019?
- Is there a correlation between different types of crime?



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Is Berlin a Dangerous City?	Exploratory Analysis - Correlation Matrix	Exploratory Analysis - Scatterplots	Linear Regression	Cluster Analysis	Cluster Analysis Results	Crimes in Berlin through time and by district	Final Results and Recommendations
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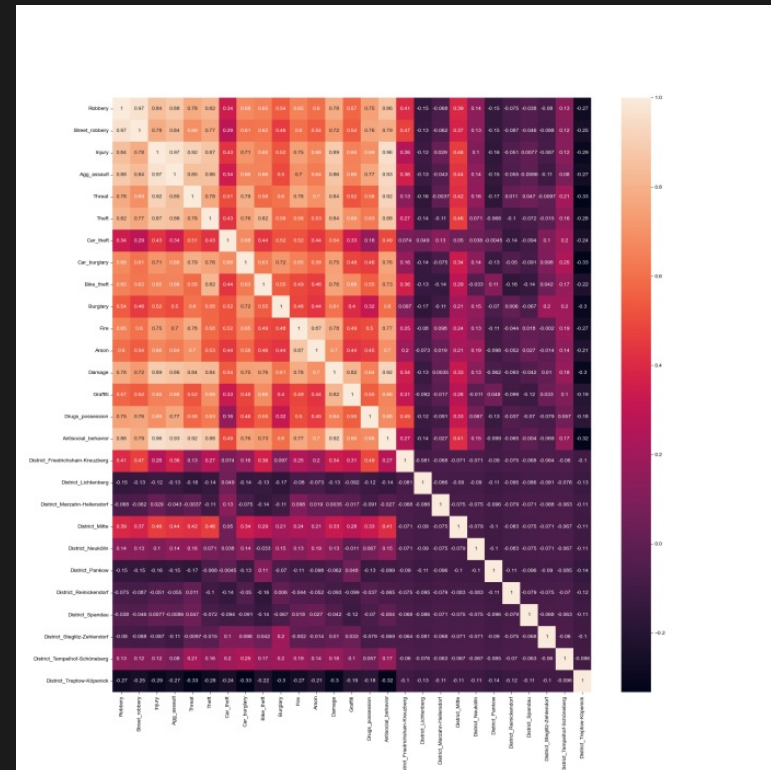
As an initial step in the exploratory analysis, I tried to find possible relationships between different crimes and certain Berlin districts, in order to then explore if there are linear relationships.

According to the correlation matrix, we can tell that there are strong positive relationships between:

- **Robbery and Street Robbery**
- **Threat and Aggravated Assault/Injury**
- **Fire and Arson**
- **Antisocial behavior and Damage, Aggravated Assault, Injury, Theft and Threat**

Basically, in these cases, if a crime increases, so will the other variable. The first 4 relationships aligned with expectations based on the nature of these crimes. However, one insight stood out: a notable correlation between antisocial behavior and multiple other crimes across different categories,, which will be further explored.

We can also see some strong negative relationships, mainly between every crime and the Treptow-Köpenick district, which leads us to believe that crimes decrease in this district.



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Exploratory Analysis - Correlation Matrix

Exploratory Analysis - Scatterplots

Linear Regression

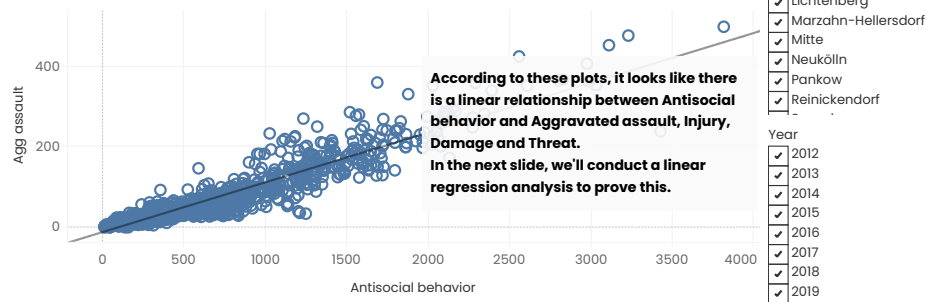
Cluster Analysis

Cluster Analysis Results

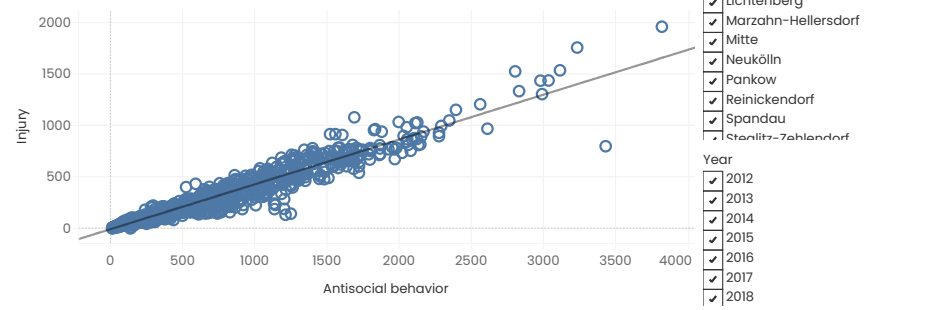
Crimes in Berlin through time and by district

Final Results and Recommendations

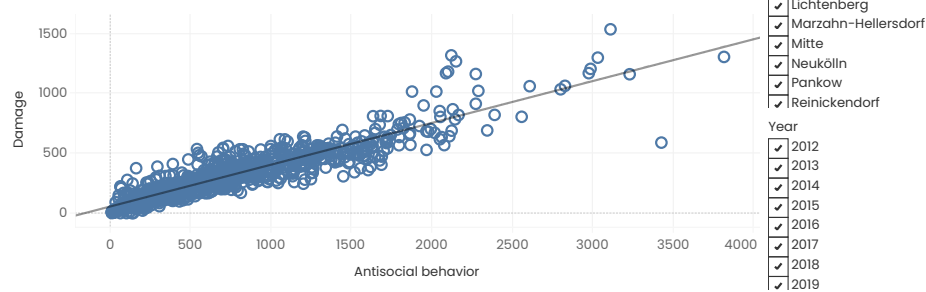
Correlation between Aggravated Assault and Antisocial Behavior in Berlin 2012-2019



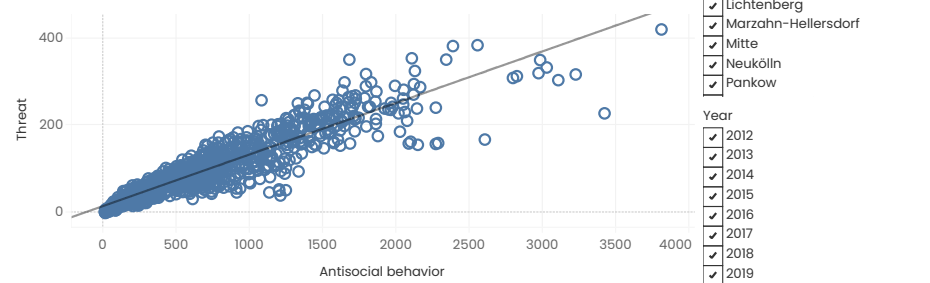
Correlation between Injury and Antisocial Behavior in Berlin 2012-2019



Correlation between Damage and Antisocial Behavior in Berlin 2012-2019

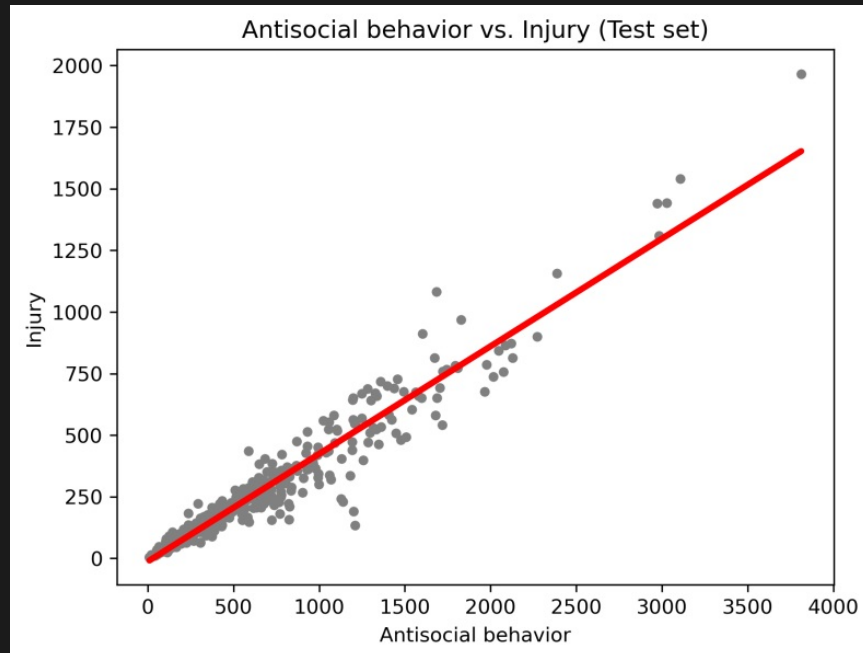


Correlation between Threat and Antisocial Behavior in Berlin 2012-2019



Hypothesis: In Berlin, if the crimes of antisocial behavior increase, so do the crimes of injury.

(We could apply the same hypothesis to the crimes of aggravated assault, damage, threat and theft, but we decided to focus on one variable, since their correlations seemed similar).



The model indicates a positive trend between "antisocial behavior" and "injury" crimes, but its predictions deviate significantly from actual values, especially at higher levels.

This suggests the relationship may not be purely linear and could be influenced by unconsidered factors, such as population density or social conditions.

Additionally, assumptions of correlation equaling causation and potential biases in data reporting could further distort the model's reliability, indicating the need for a deeper analysis of external influences and data quality.

Let's try another approach.

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Exploratory Analysis - Correlation Matrix

Exploratory Analysis - Scatterplots

Linear Regression

Cluster Analysis

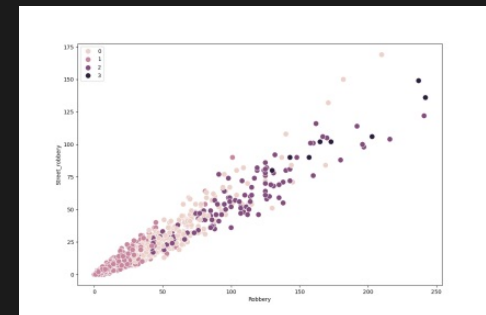
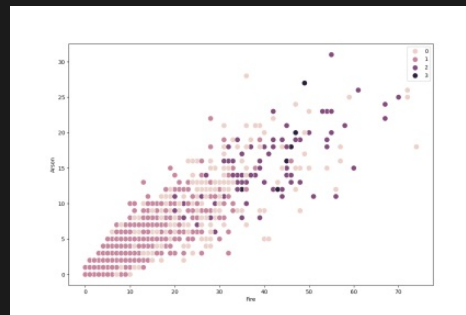
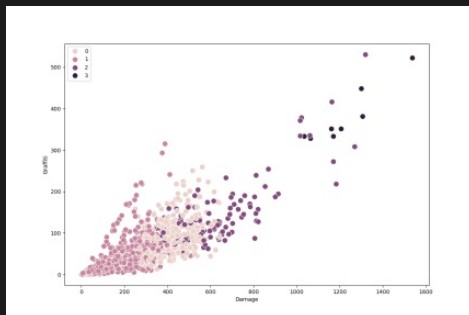
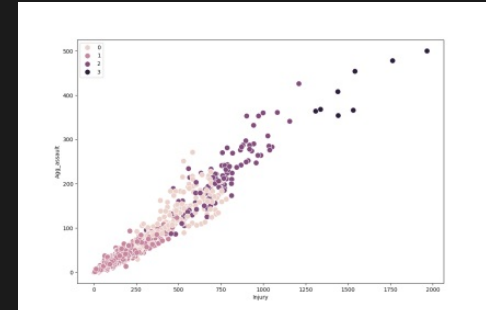
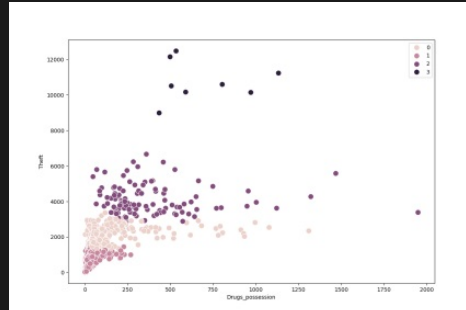
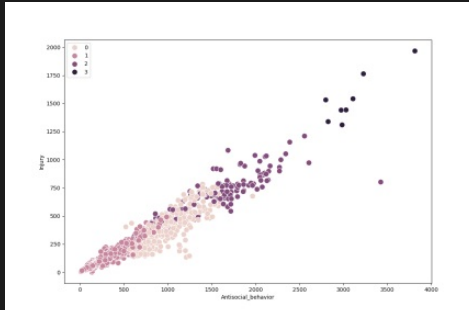
Cluster Analysis Results

Crimes in Berlin through time and by district

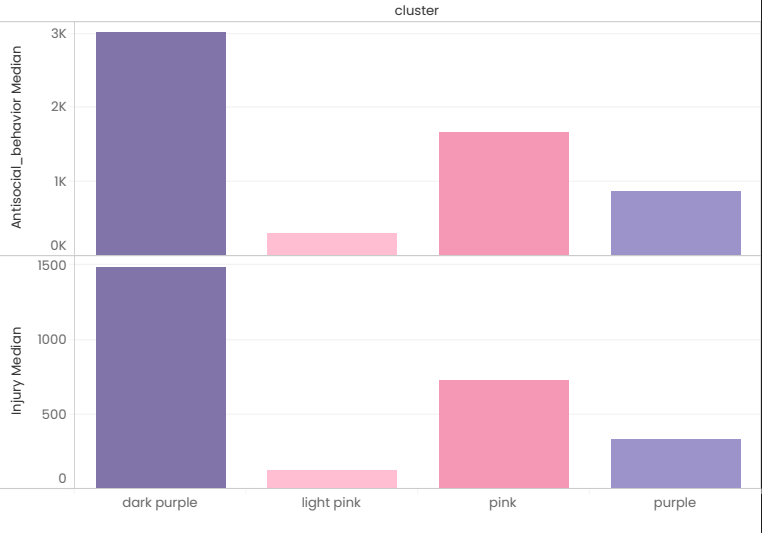
Final Results and Recommendations

Since a linear regression analysis wasn't successful, we decided to try a different non-linear approach: cluster analysis.

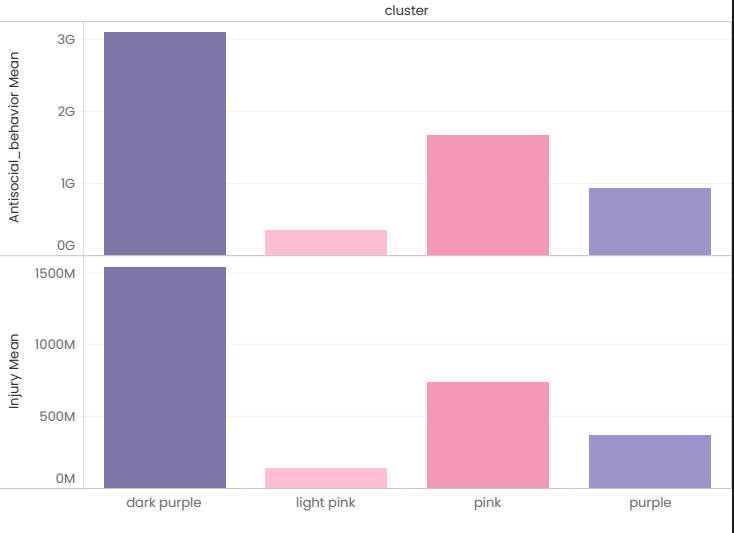
Here, we can see the 4 clusters, number that was decided after visualizing the elbow curve of the data.



Cluster results - Median



Cluster results - Mean



- The **dark purple cluster** has the highest medians and means for both antisocial behavior and injury crimes, indicating areas with consistently high crime levels, but also representing the highest number of outliers.
- The **pink cluster** shows moderate crime levels, while the **purple cluster** represents lower but still noticeable crime activity.
- The **light pink cluster** has the lowest crime levels, suggesting minimal activity.
- The positive trend across clusters supports a correlation between antisocial behavior and injury crimes, with external factors likely influencing these patterns.

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Cluster Analysis Results

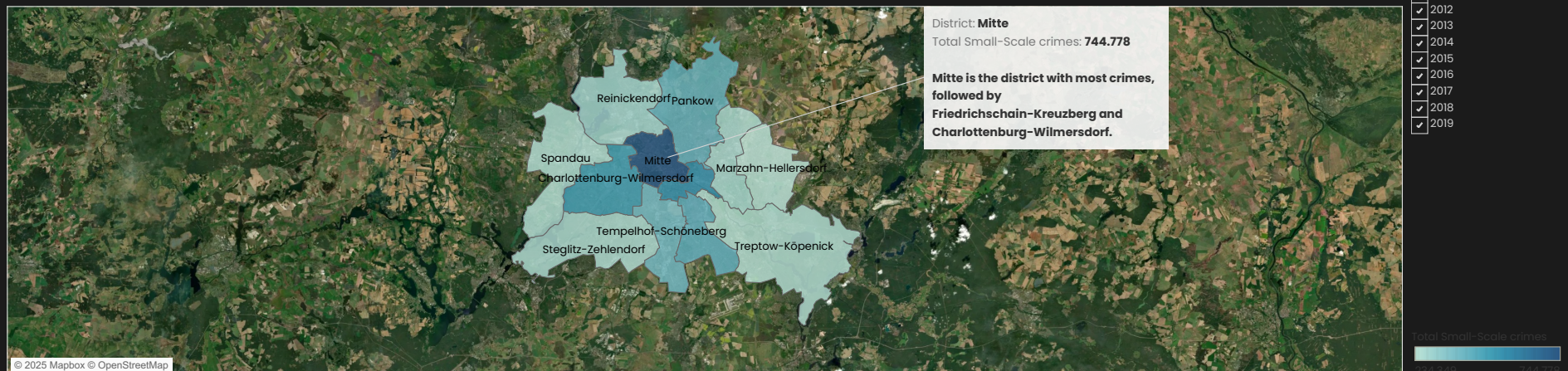
Crimes in Berlin through time and by district

Final Results and Recommendations

Low-scale crimes growth in Berlin 2012-2019



Low-scale crime Berlin Map (2012-2019)



Final Results and Recommendations

- Analysis have shown that the correlations between different crimes in Berlin is not as linear as they may look at a first glance, which leads us to think we should take into account external factors that might influence the number of crimes in the city.
- Even so, we can find a positive relationship between antisocial behavior and crimes such as damage, threat, aggravated assault, injury and theft.
- From 2012 to 2016, small-scale crime in Berlin was increasing, but it decreased from 2016 to 2019, which means Berlin is not as dangerous as it once was. However, for a more accurate analysis, I would suggest further research where we compare these numbers to crime numbers from other European capitals.
- The district with most crime overall is Mitte, followed by Friedrichschain-Kreuzberg and Charlottenburg-Wilmersdorf.
- I would recommend comparing the number of low-scale crimes in Berlin with socio-economic indicators, demographic information and tourism numbers to see if these have an impact on the number of crimes.
- It's important to refer there were some data limitations in this project, such as being unable to incorporate the more recent data into my analysis due to time constraints and limited proficiency in German.



Photo by [Tim Hüfner](#) on [Unsplash](#)