Analysis of Los Angeles Police Department (LAPD) Activity with Demographic and Economic Implications

Demographic and Economic Implications

Limitations

LAPD Activity

Conclusion

QUESTIONS

Introduction

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Introduction

Job: ETL roughly eight million reports of LAPD activity and data on the City of LA's demographic and economic history

Data

Main Goals: Discover unique insights on
1) Significant instances of police activity in regards to geo-spatial and temporal data
2) Investigating the correlation of police activity to demographic and economic data in order to raise city awareness for larger issues affecting the community

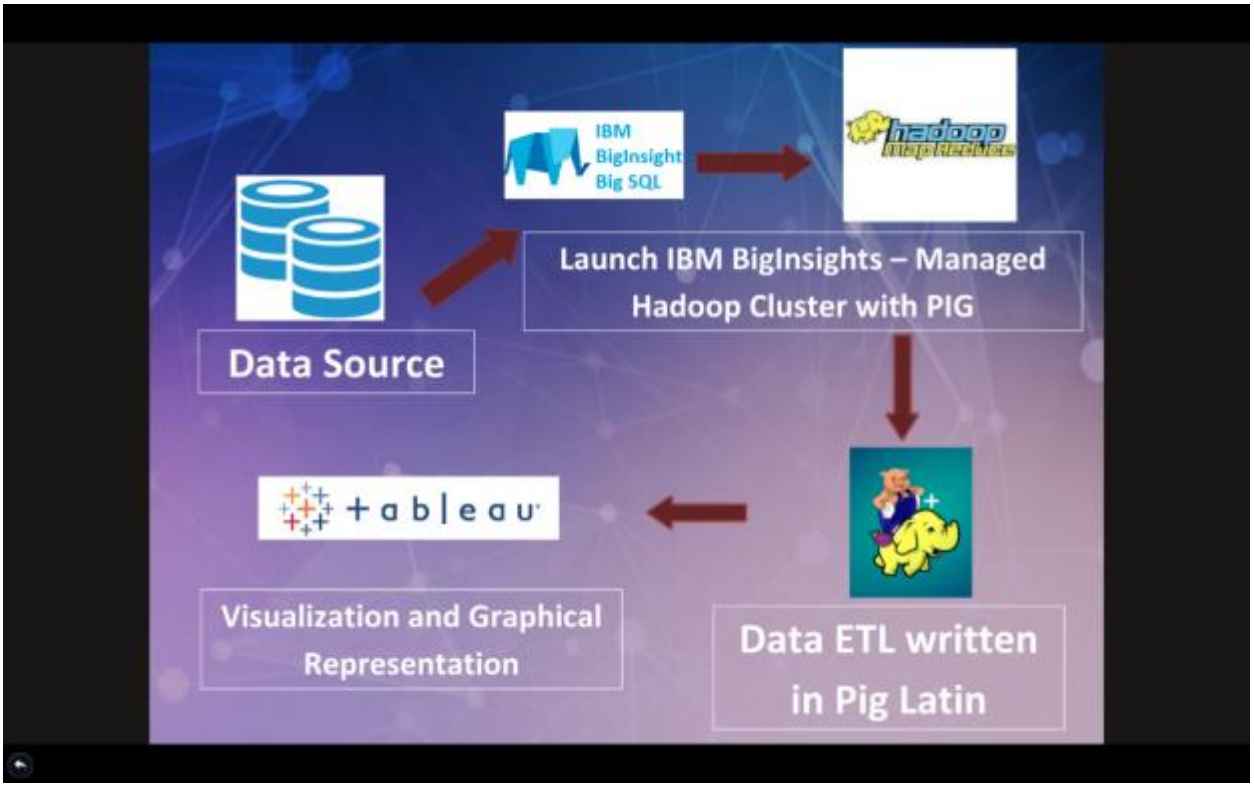
Experimental Specifications

WorkFlow Chart

Data Source URL/Data Size

Vehicle and Pedestrian Stop Data 2010 to Present	**Arrest Data from 2010 to Present**	**Crime Data from 2010 to Present**	**Demographic and Economic Statistics**
https://data.lacity.org/A-Safe-City/Vehicle-and-Pedestrian-Stop-Data-2010-to-Present/ci25-wgt7	https://data.lacity.org/A-Safe-City/Arrest-Data-from-2010-to-Present/yru6-6re4	https://data.lacity.org/A-Safe-City/Crime-Data-from-2010-to-Present/y8tr-7khq	https://controllerdata.lacity.org/Statistics/Demographic-and-Economic-Statistics/9z75-k9sy
550MB	200MB	370MB	50 KB

Cluster	Nodes	Memory Size	CPU Speed	Other
Apache Hadoop IOP 4.2	Management Node (1)	RAM 48GB	12 VCPU	Tableau v 10.4
Apache Pig v 0.15.0_IBM_14	Data Node (3)	RAM 24 GB DATA DISK 1TB SATA	4 VCPU	



LAPD Activity

LAPD Activity is broken down into reporting datasets collected from 2010-Present:

- Vehicles and pedestrian stops
- Crimes
- Arrests

The analysis aims to reveal themes and trends among relations found in each of the datasets

Which LAPD Reporting District Has the Most Reports of LAPD Activity

Which Months are Most and Least Affected by LAPD Activity

The Relation of Crimes to Arrests

Which LAPD Reporting District Has the Most Reports of LAPD Activity

Stops

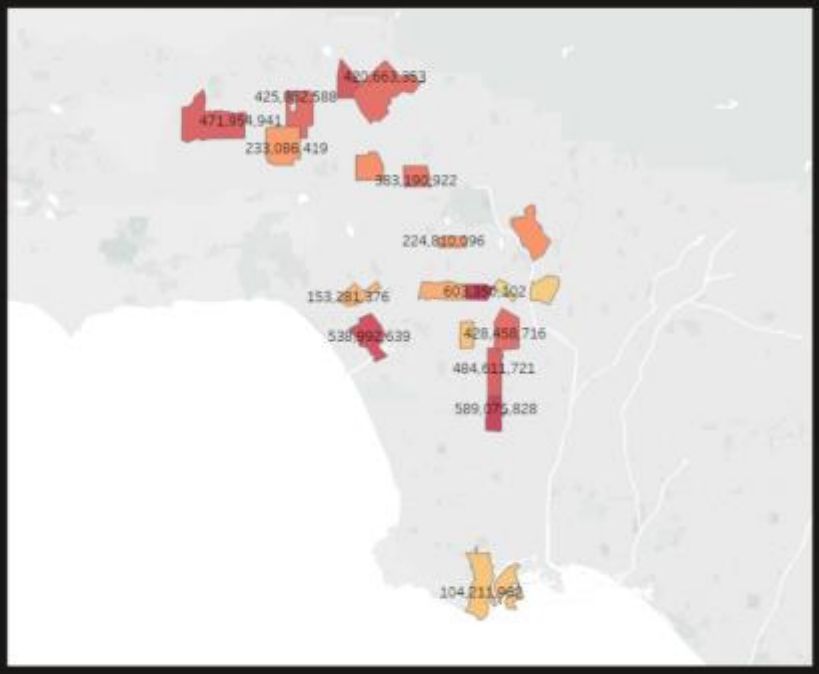
Crimes

Arrests

Map of LAPD Reporting Districts Having Reports of LAPD Activity
Insight: Reveals areas of interest that police resouces can be focused on

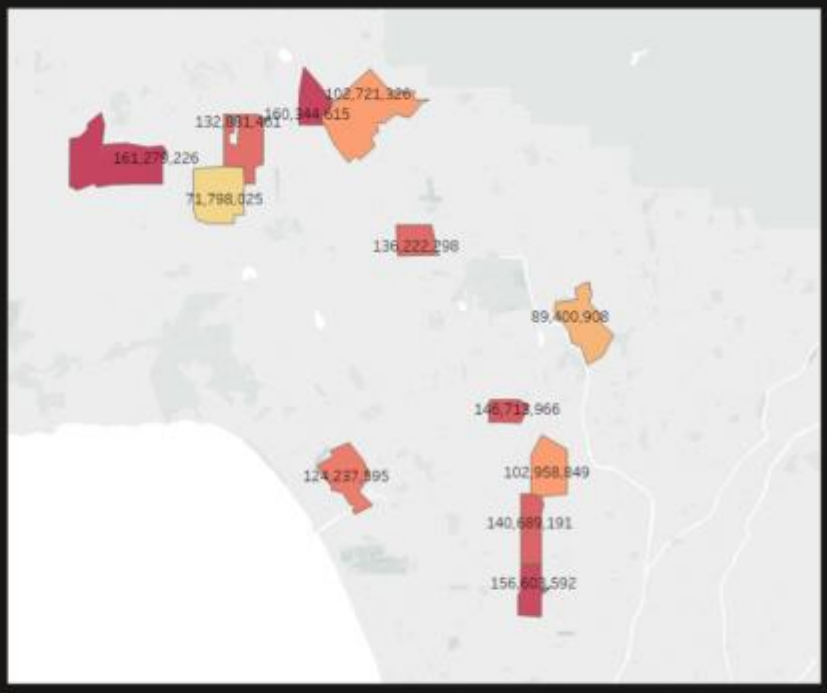
Stops

Top Districts
1) Olympic
2) Southeast
3) Pacific
4) 77th
5) Topanga



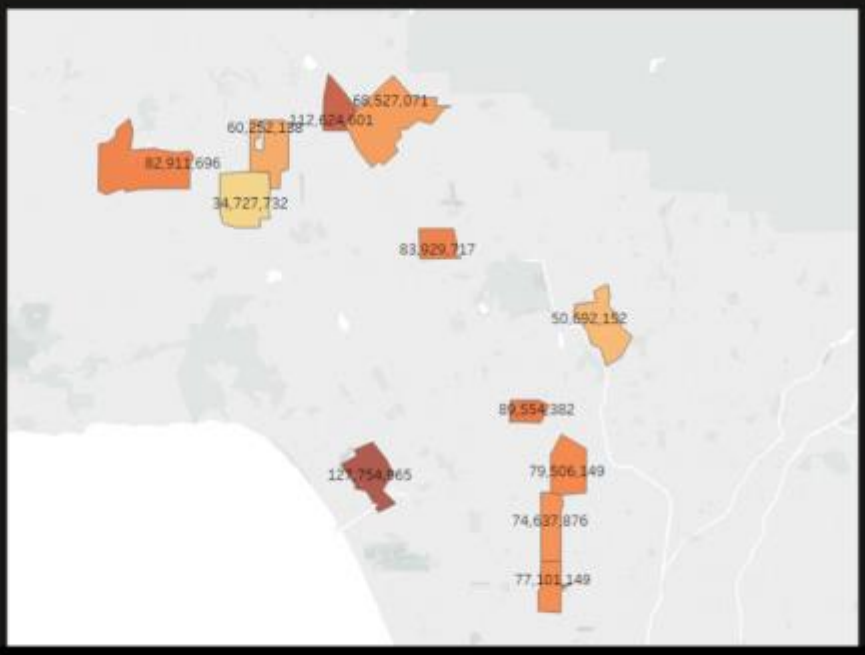
Crimes

Top Districts
1) Topanga
2) Mission
3) Southeast
4) Olympic
5) 77th



Arrests

Top Districts
1) Pacific
2) Mission
3) Olympic
4) N. Hollywood
5) Topanga



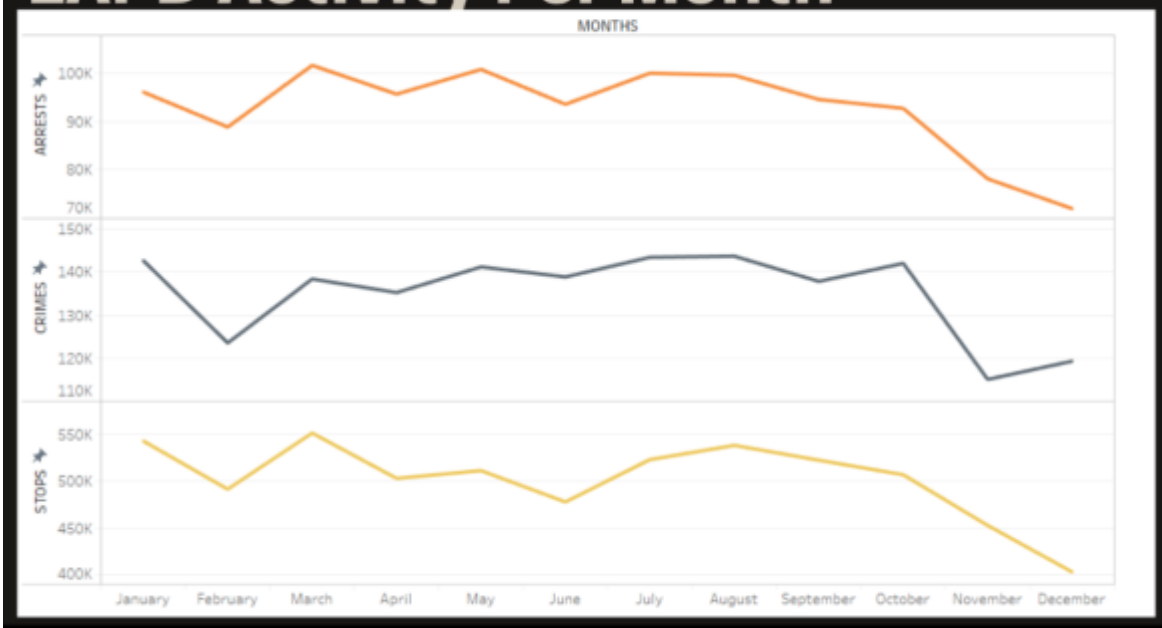
Which Months are Most and Least Affected by LAPD Activity

Total Average Reports of LAPD Activity Per Months for 2010-Present

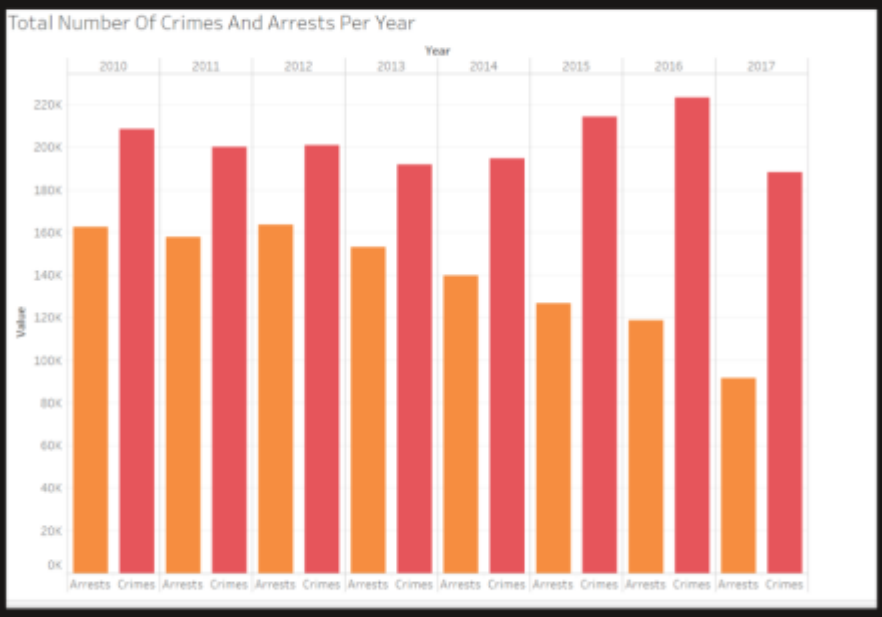
Insight: Reveals months that the police can expect to have high and low activity for resource allocation

LAPD Activity

LAPD Activity Per Month



Comparison of Total Reports of Crimes and Total Reports of Arrests



Demographic and Economic Implications

Here analysis is drawn from the combination of LAPD Activity data and the following datasets collected from the City of Los Angeles:

- Demographic and Economic Statistics
- 2010 Census Population by Zip Code

Demographic and economic implications are drawn from LAPD Activity in order to raise public awareness of correlations between police activity and socioeconomic issues.

Which Demographic Profile is the Most Prevalent in LAPD Activity

The Economic Implications of Crimes per Year

Which Demographic Profile is the Most Prevalent in LAPD Activity

Descent

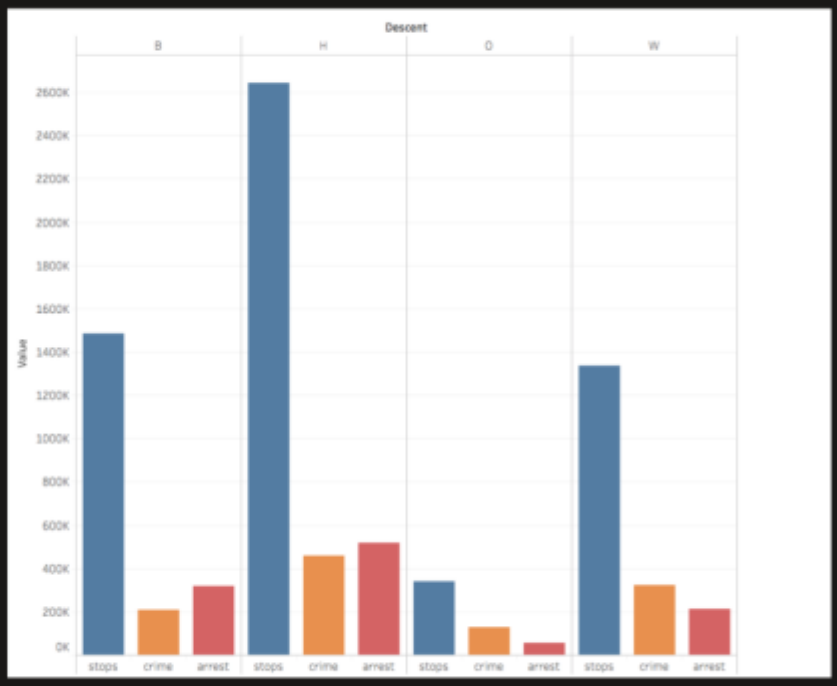
Age

Sex

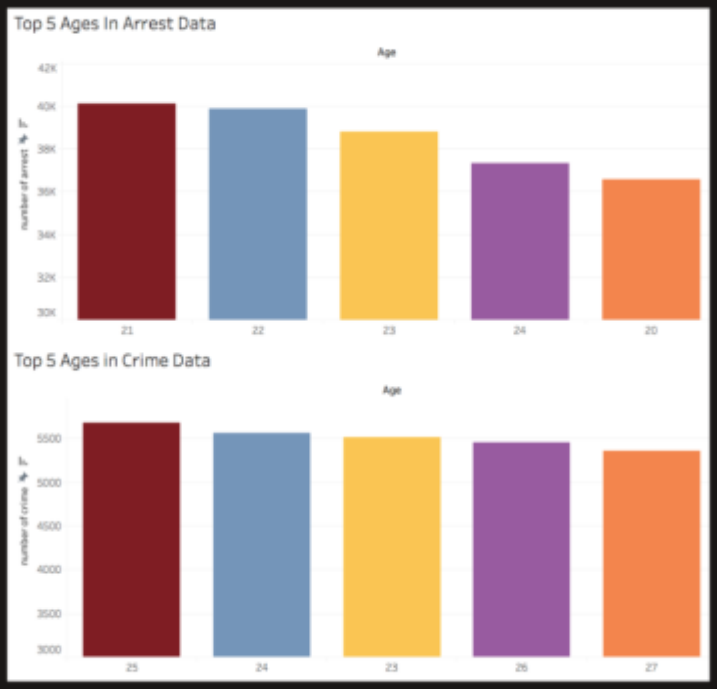
Reveals potential forces of changes in crime rates and warrants further study on causality of socioeconomic issues on public safety

Insight: Reveals insight into most affected demographic profiles

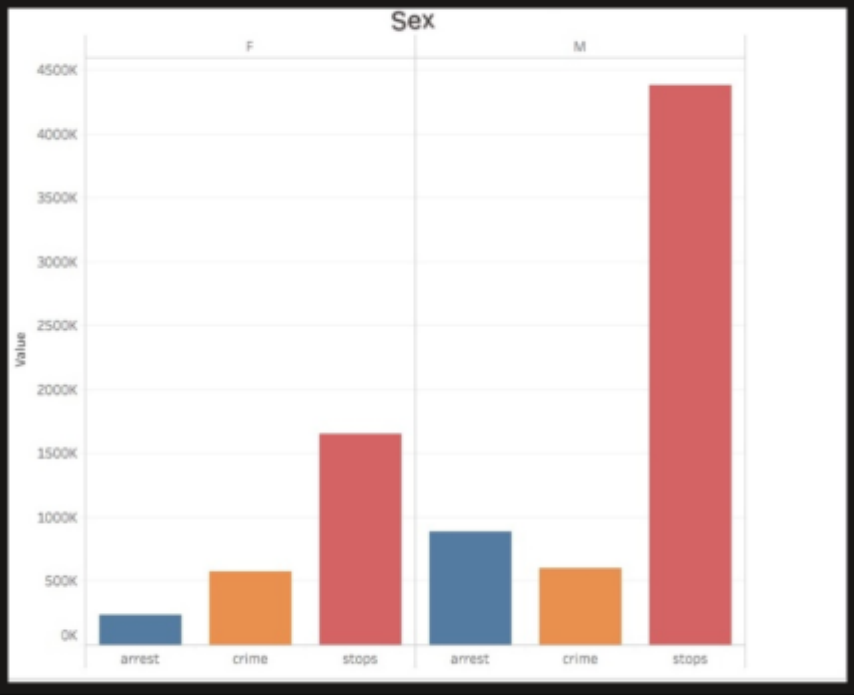
Descent



Age


Top 5 Ages In Arrest Data
Age
42K
40K
38K
36K
34K
32K
30K
number of arrest
21
22
23
24
20
Top 5 Ages in Crime Data
Age
5500
5000
4500
4000
3500
3000
number of crime
25
24
23
26
27

Sex


Sex
F
M
4500K
4000K
3500K
3000K
2500K
2000K
1500K
1000K
500K
0K
Value
arrest
crime
stops
arrest
crime
stops

The Economic Implications of Crimes per Year

The correlation of socioeconomic features to crimes

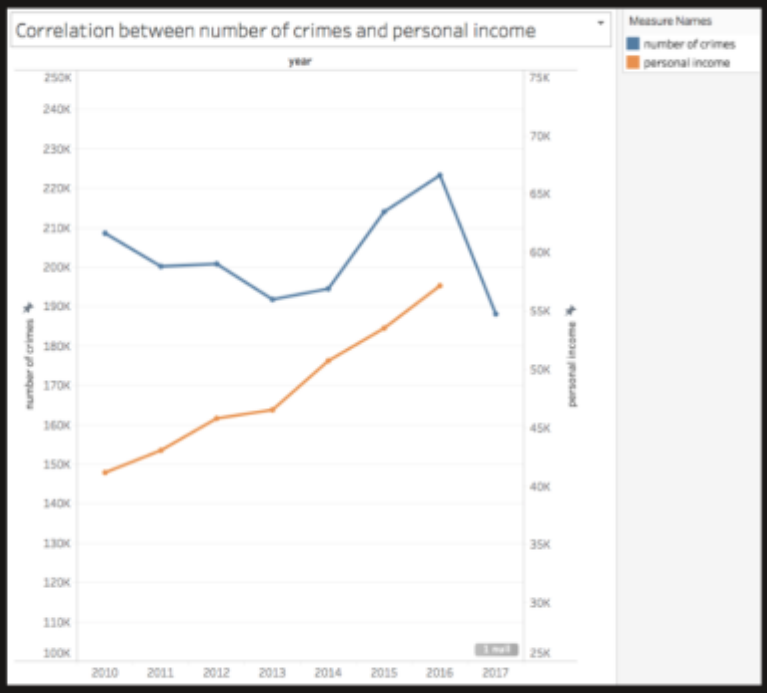
Insight: Reveals potential forces of changes in crime rates and warrants further study on causality of socioeconomic issues on public safety

The Relation of Personal Income Per Capita to Crimes

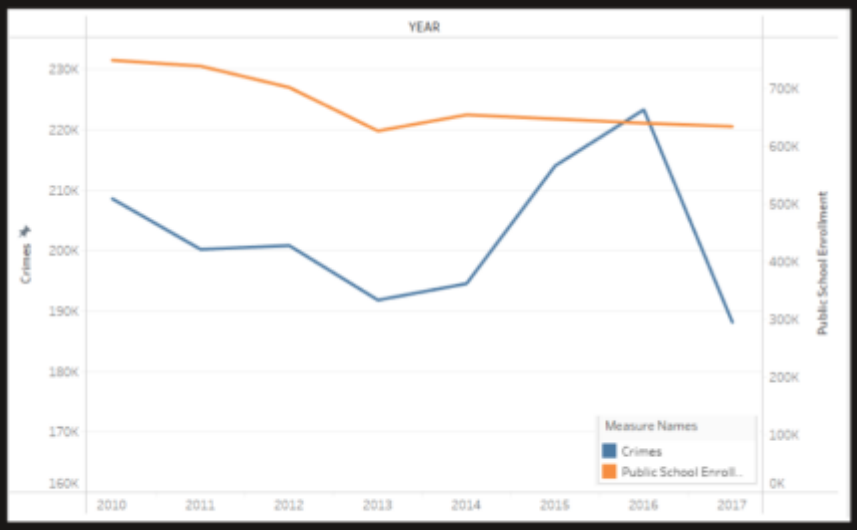
The Relation of Public School Enrollment to Crimes

The Relation of Unemployment Rate to Crimes

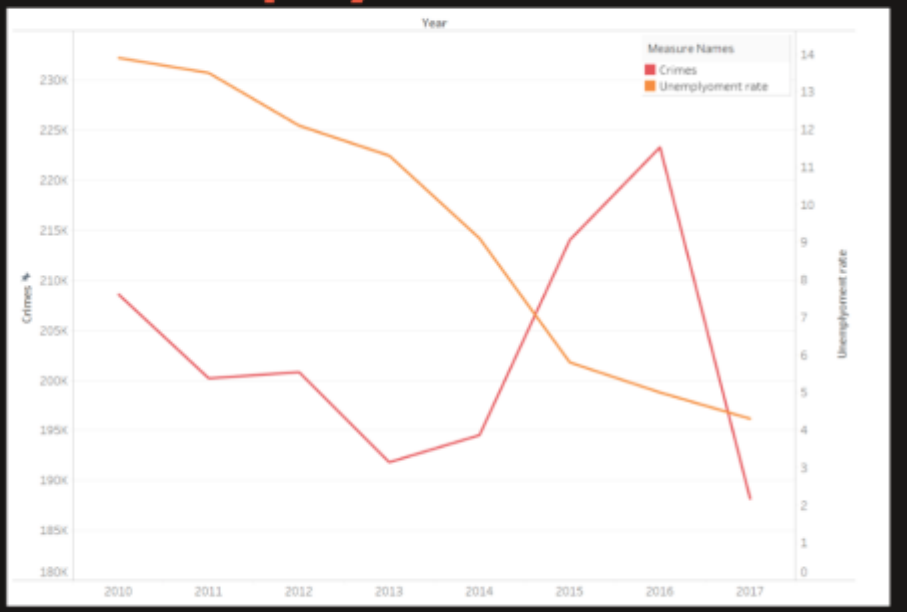
The Relation of Personal Income Per Capita to Crimes



The Relation of Public School Enrollment to Crimes



The Relation of Unemployment Rate to Crimes



Conclusion

Analysis into "LAPD Activity" provides insight into significant times and locations where police can focus valuable resources including budgeting, manpower, energy, etc.

Analysis into "Demographic and Economic Implications" provide justification behind political and socioeconomic initiatives that may be sought after by policymakers and leaders in the community.

It continues the on the key themes of public safety, open transparency, accountability, civic engagement, public benefit from government open source, integrity of services, and public resilience.

Limitations

For the purposes of CIS5200, this project could not use predictive analysis and regression tools for causality. MatLab was attempted but there was not enough data for curve fitting. Correlations were made by side by side graphical comparisons and estimations.

These correlations should warrants further study on the implications of police activity and variable socioeconomic factors in any given city using similar tools and methods.

Github: https://github.com/actejas/Project-CIS5200/tree/fe81193e6a798ce770e74eb732c2c0596421c04d

QUESTIONS
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