Crash Test Corgi Analyzes Accidents in Arizona

Introduction

We used dataset from Kaggle based on accidents in the state of Arizona from 2012-2016. This presentation will cover:

1. How Federal Spending impacts Local Accidents – Alberto
2. Risky Driving Behavior Data – Priscilla
3. Monthly and Weekly Trends in Accidents based on Environment –Dean
4. Arizona County Accidents with Map Visualization – Joseph

Does Federal spending affect accidents in Az??

Alberto

Federal spending and location

How many accidents and where?

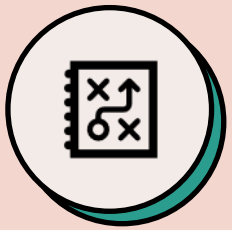
Utilize Kaggle Data

How much does the Govt spend locally?

Use USAspending.com API to trace money to counties

Charts

Graph data and Glean Insights

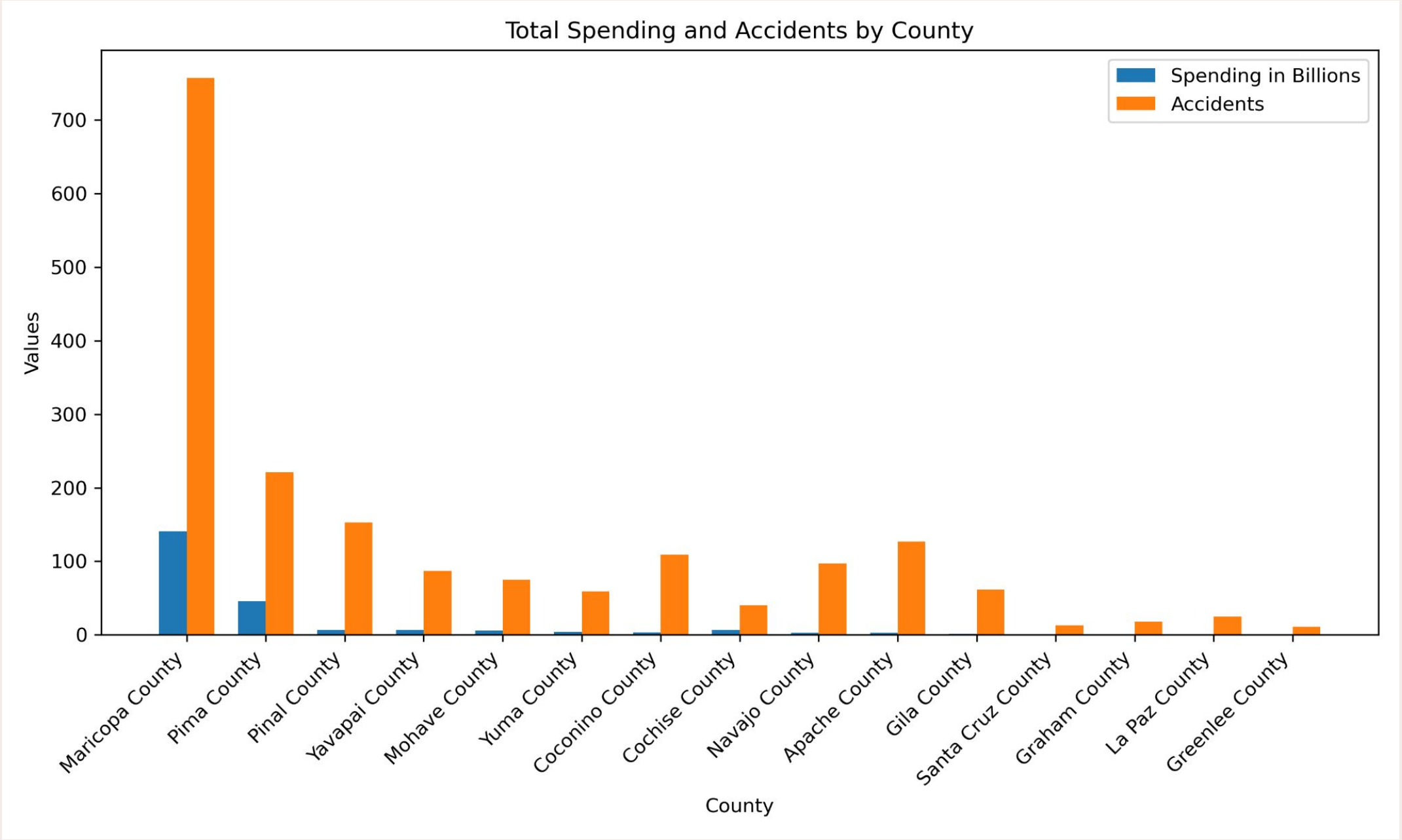


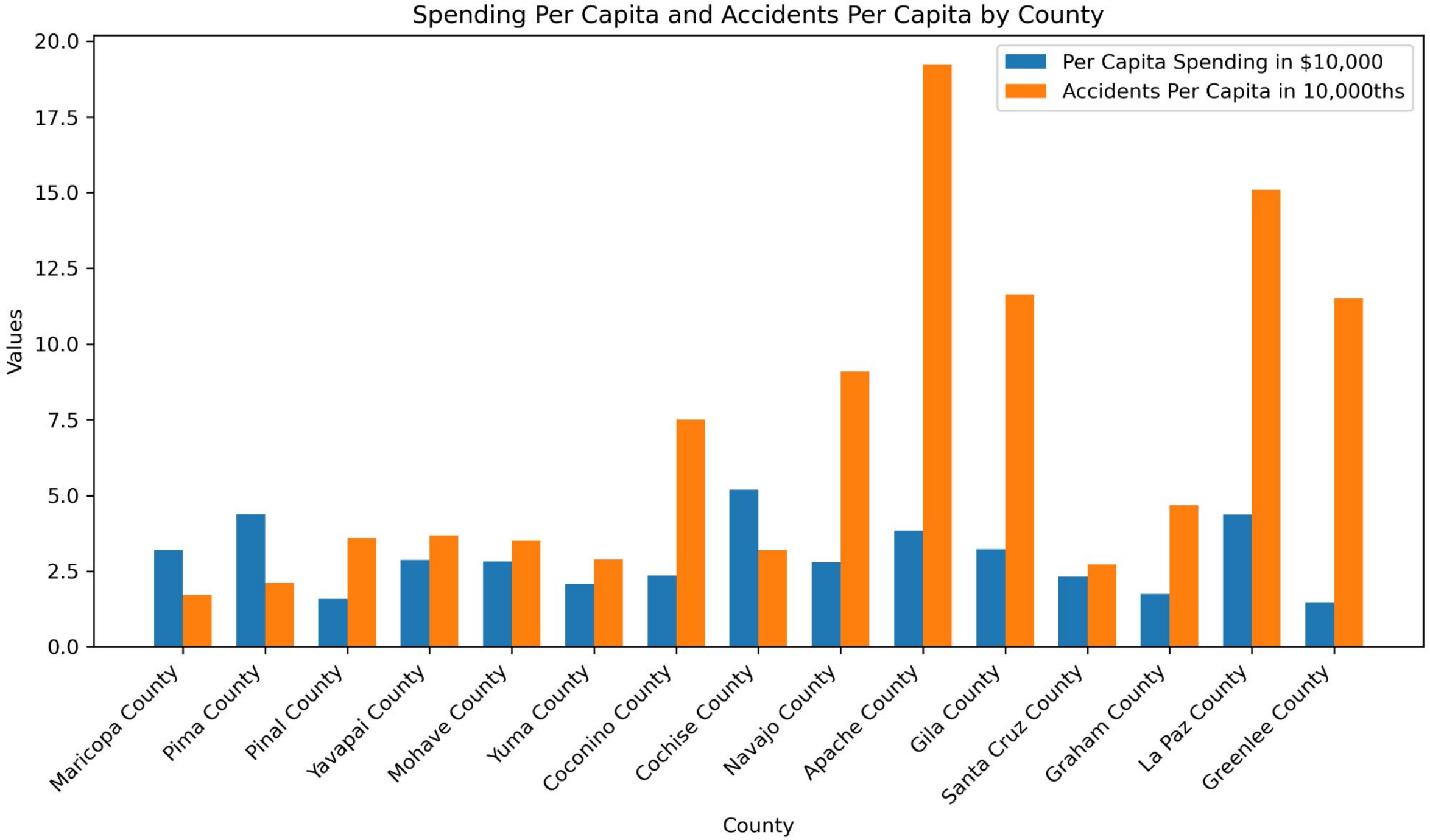
If I had more time....

Ways to improve analysis to gain more insight

Next Speaker

Priscilla Miller


Total Spending and Accidents by County
Spending in Billions
Accidents
Values
0
100
200
300
400
500
600
700
Maricopa County
Pima County
Pinal County
Yavapai County
Mohave County
Yuma County
Coconino County
Cochise County
Navajo County
Apache County
Gila County
Santa Cruz County
Graham County
La Paz County
Greenlee County
County


Spending Per Capita and Accidents Per Capita by County
Per Capita Spending in $10,000
Accidents Per Capita in 10,000ths
Values
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Maricopa County
Pima County
Pinal County
Yavapai County
Mohave County
Yuma County
Coconino County
Cochise County
Navajo County
Apache County
Gila County
Santa Cruz County
Graham County
La Paz County
Greenlee County
County

Possible Next Steps

All Data Presented Spans 4 years 2012 thru 2016

- Breaking Down data by year may provide additional trend data
- Also Data can be broken down to recipient
  - Further Parsing data down to dept of transportation Might be more relevent

Risky Driving Behavior Data

Priscilla

Which risky behaviors most effect pedestrians?

Planning 1

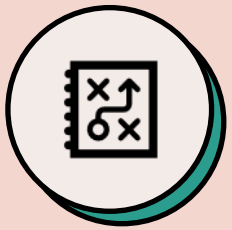
Discover which risky behaviors data is tracked

Planning 2

Discover how the risky behavior effects total fatalities

Planning 3

Discover how the risky behavior effects pedestrian fatalities

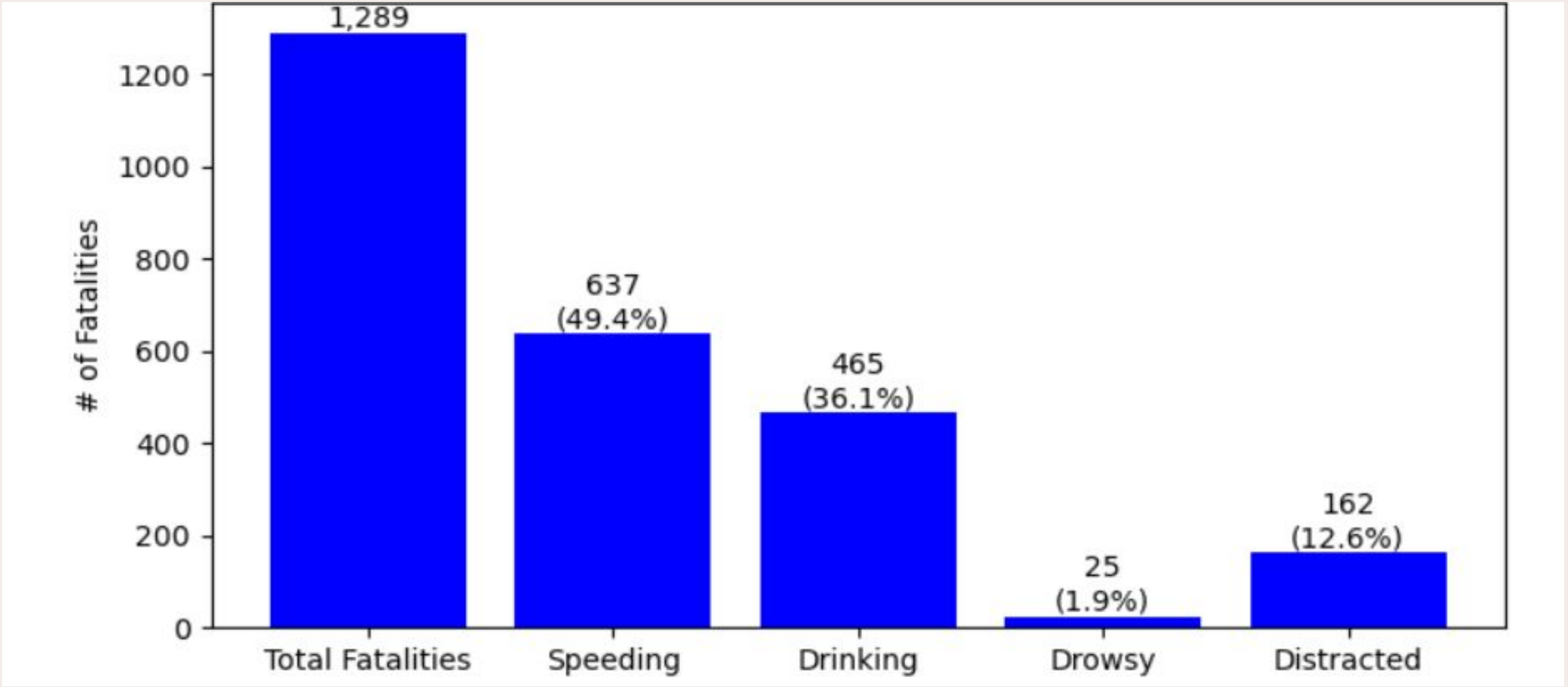


Strategy

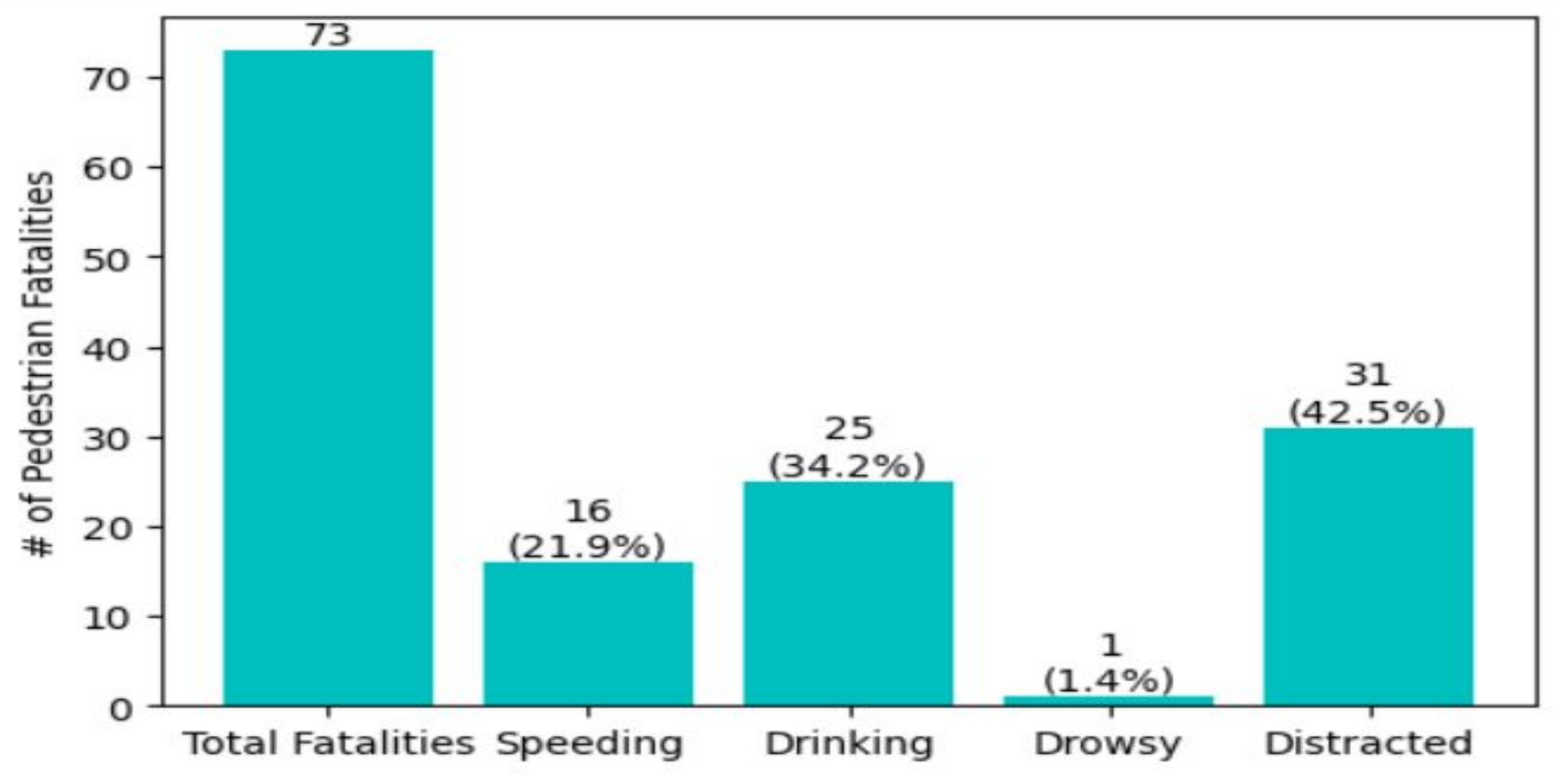
Factor out unknown cause fatalities

Results

Total Fatalities & Driver Factors Contributing to Fatalities



Pedestrian Fatalities & Driver Factors Contributing to Fatalities



Crashes Over Time

Dean

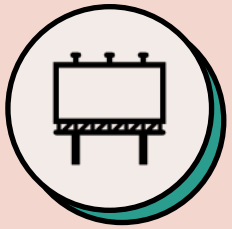
Timelines

Planning

Do more crashes happen on weekdays or weekends?

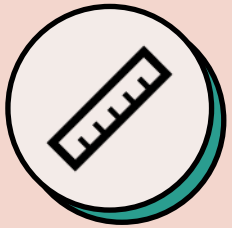
What types of crashes happen over the course of the day?

Does light conditions have any impact on fatalities?



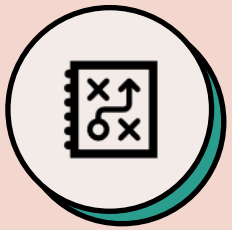
Cleaning the Data

Columns for every type with potential for multiples per crash



Design

Finding the best chart to display the data and tell the story



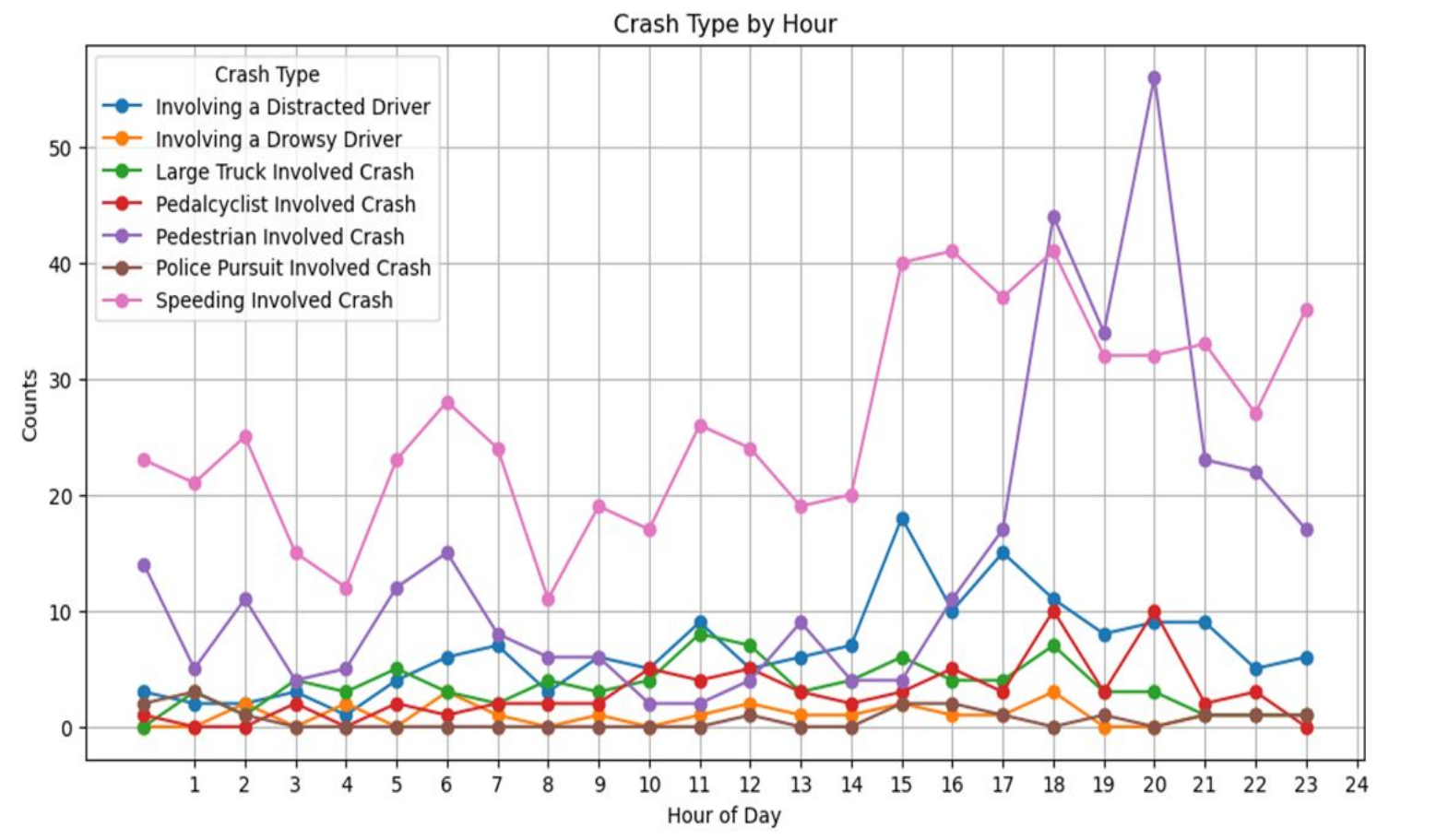
Strategy

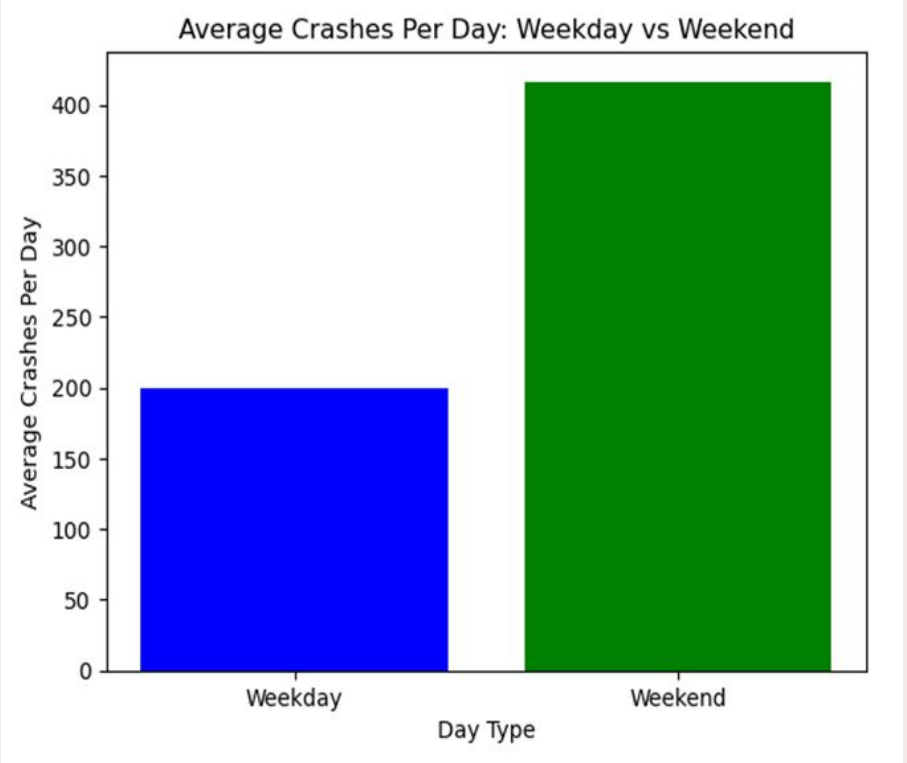
As PM I kept the questions and charts simple

Launch

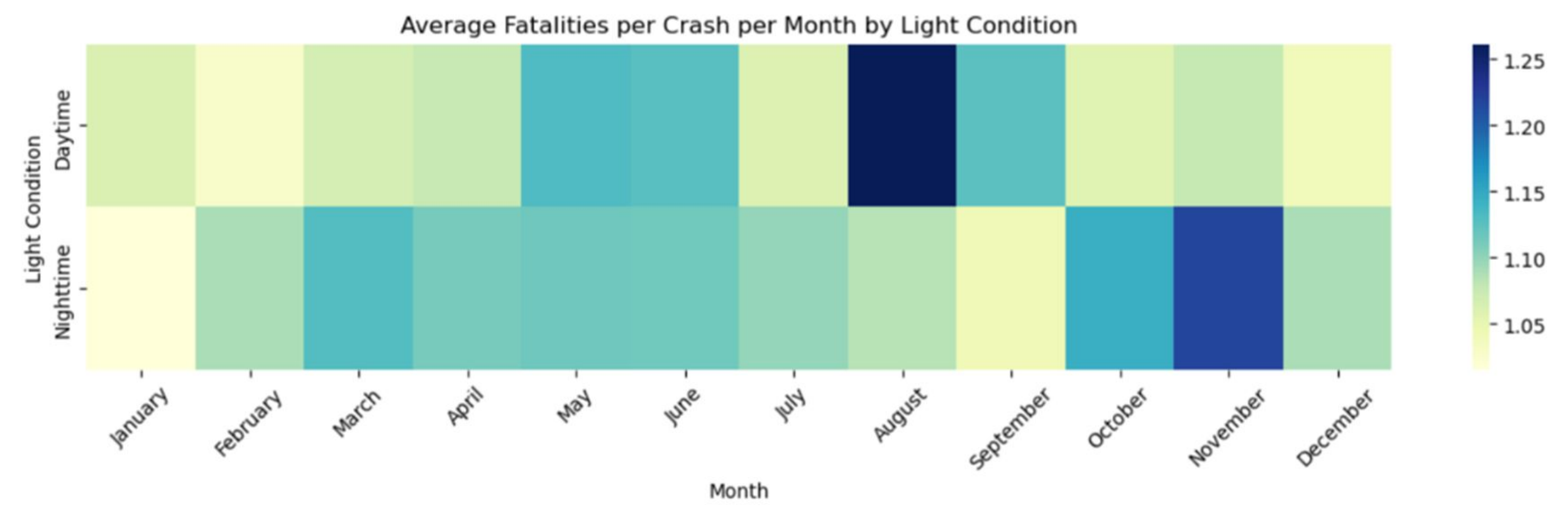
Learning and sharing how to handle git was important

By Hour and By Day





Heatmap


Average Fatalities per Crash per Month by Light Condition
Light Condition
Daytime
Nighttime
January
February
March
April
May
June
July
August
September
October
November
December
Month
1.25
1.20
1.15
1.10
1.05

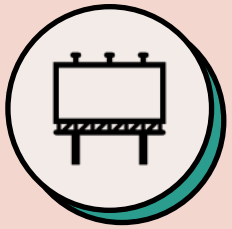
Topic 4

Map Visualizations of Accidents in Arizona

Visualizations of Fatal Accident Data in Arizona Between 2012 and 2016

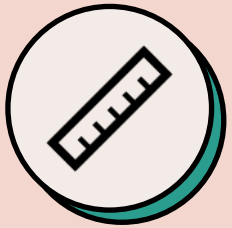
Planning

In which counties do the most accidents occur? How to visualize this? What factors could contribute to this?



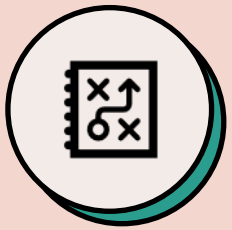
County Accidents

Visualization by county



Arizona Accidents Using Hvplot

What does the visualization using Hvplot tell us about where most of the accidents occurred

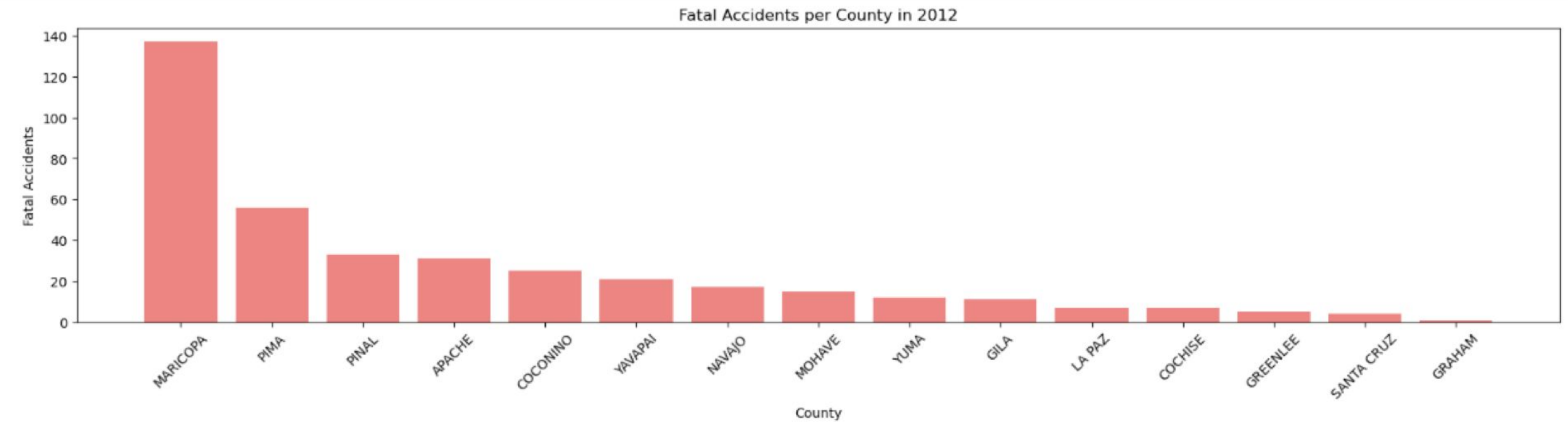


Difficulties Our Team Faced

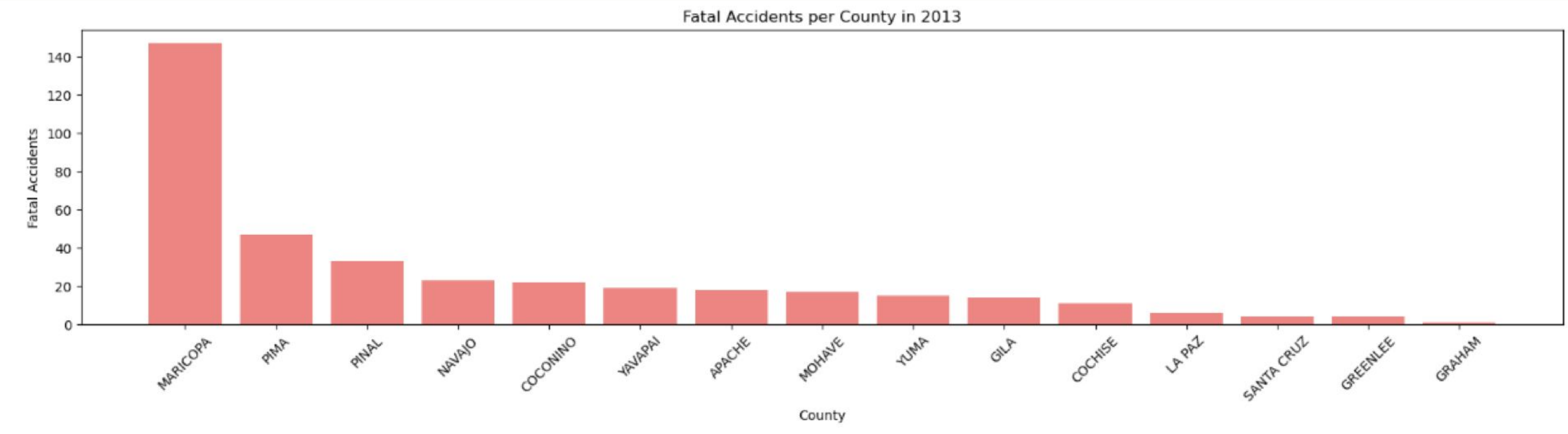
The data was not entirely clear + NHTSA API difficulties

Questions!?

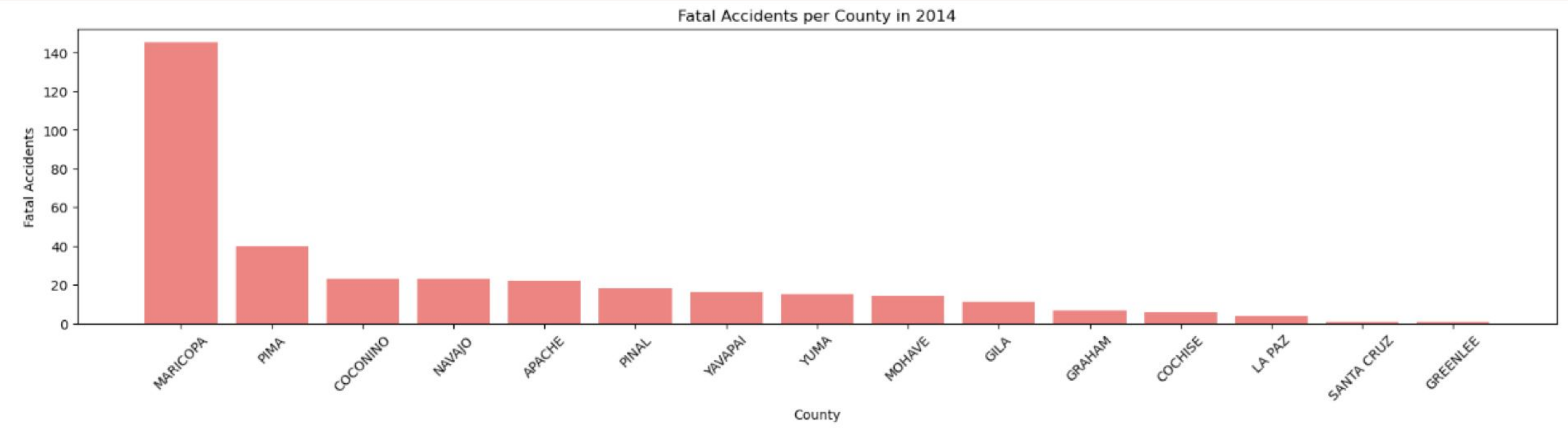
Fatal Accidents per County in 2012



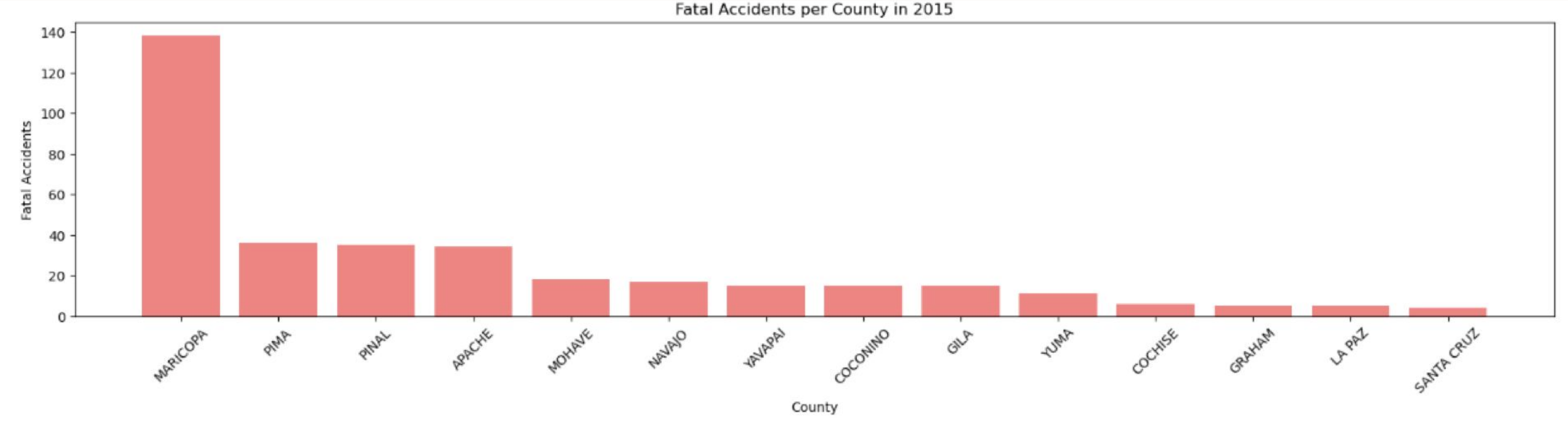
Fatal Accidents per County in 2013



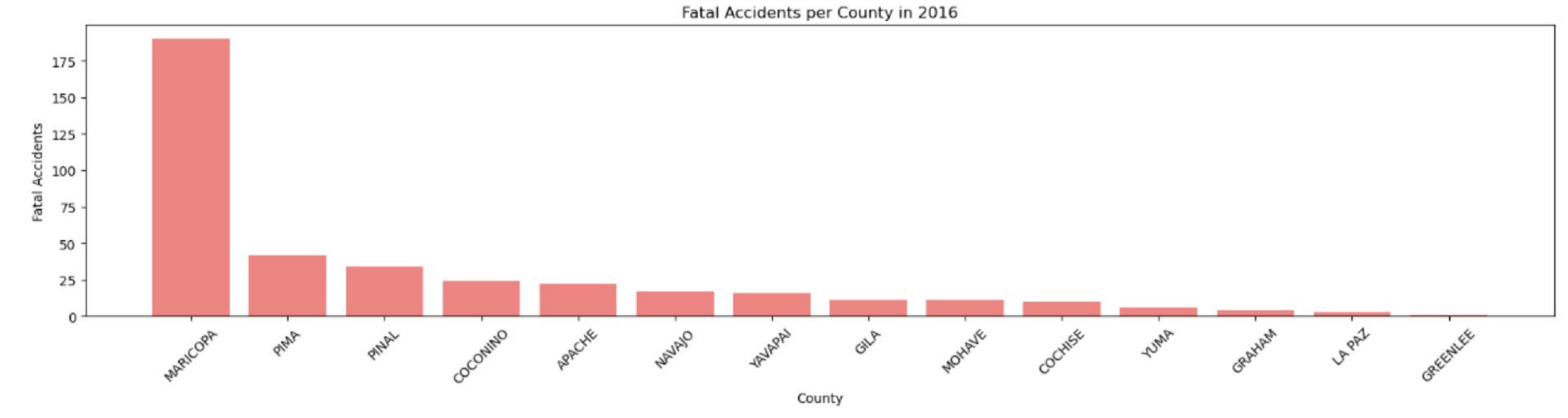
Fatal Accidents per County in 2014



Fatal Accidents per County in 2015

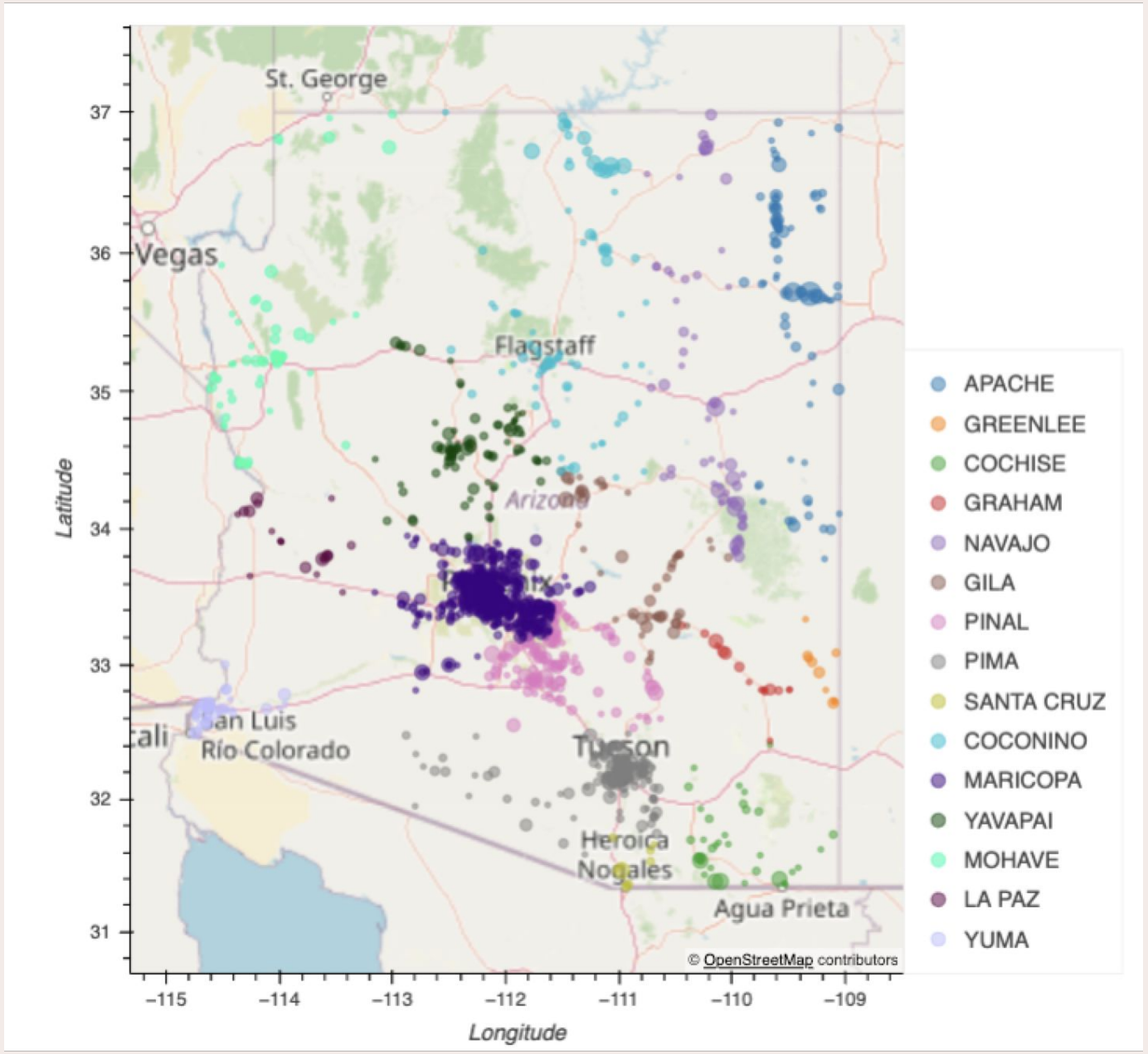


Fatal Accidents per County in 2016



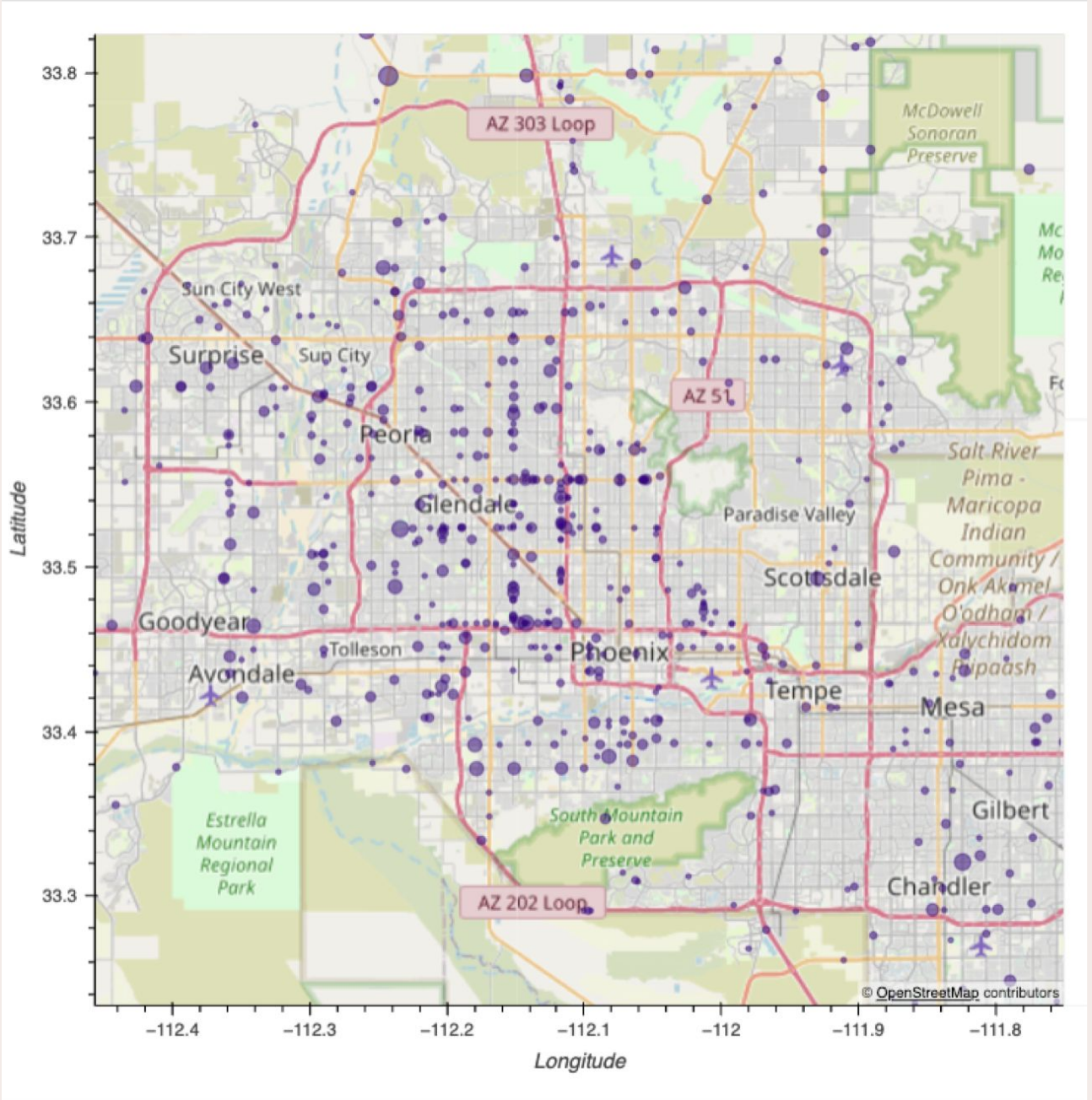
ARIZONA ACCIDENTS MAP

- Map was created using Hvplot
- Plot points' size is based on how many individuals were involved in each accident
- As represented in the previous charts and shown here, the highest levels of accidents occurred in Maricopa, Pinal, and Pima counties
- Since the highest levels of accidents occurred in Maricopa county, we will look at that specifically



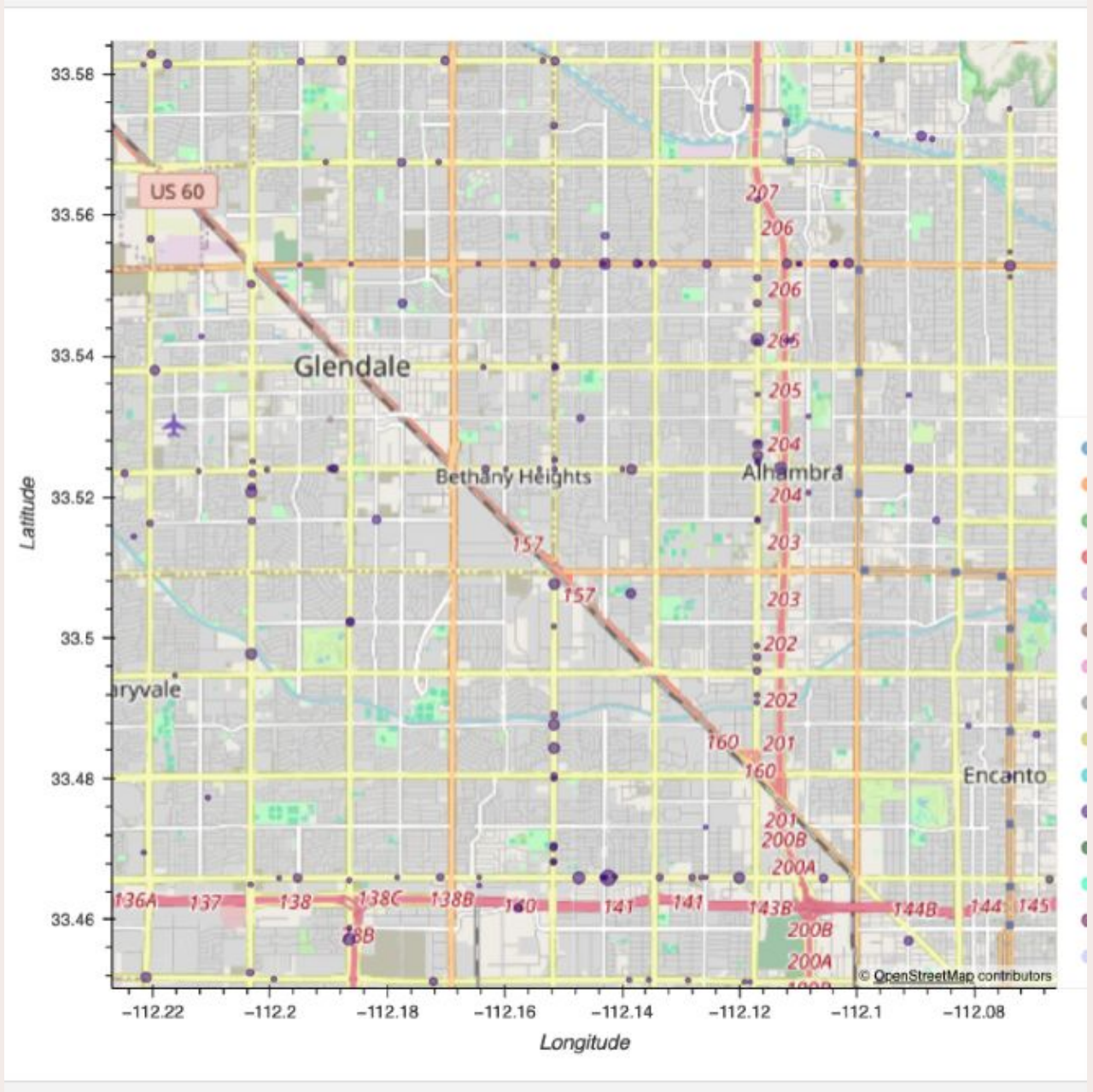
MARICOPA ACCIDENTS MAP

- From the years 2012 to 2016, Maricopa county population rose from 3.92 million to 4.17 million, which made up about 60% of the total population of Arizona
- Based on the Maricopa county map data, although there were some fatal accidents on highways/freeways, most of the fatal accidents occurred on city streets



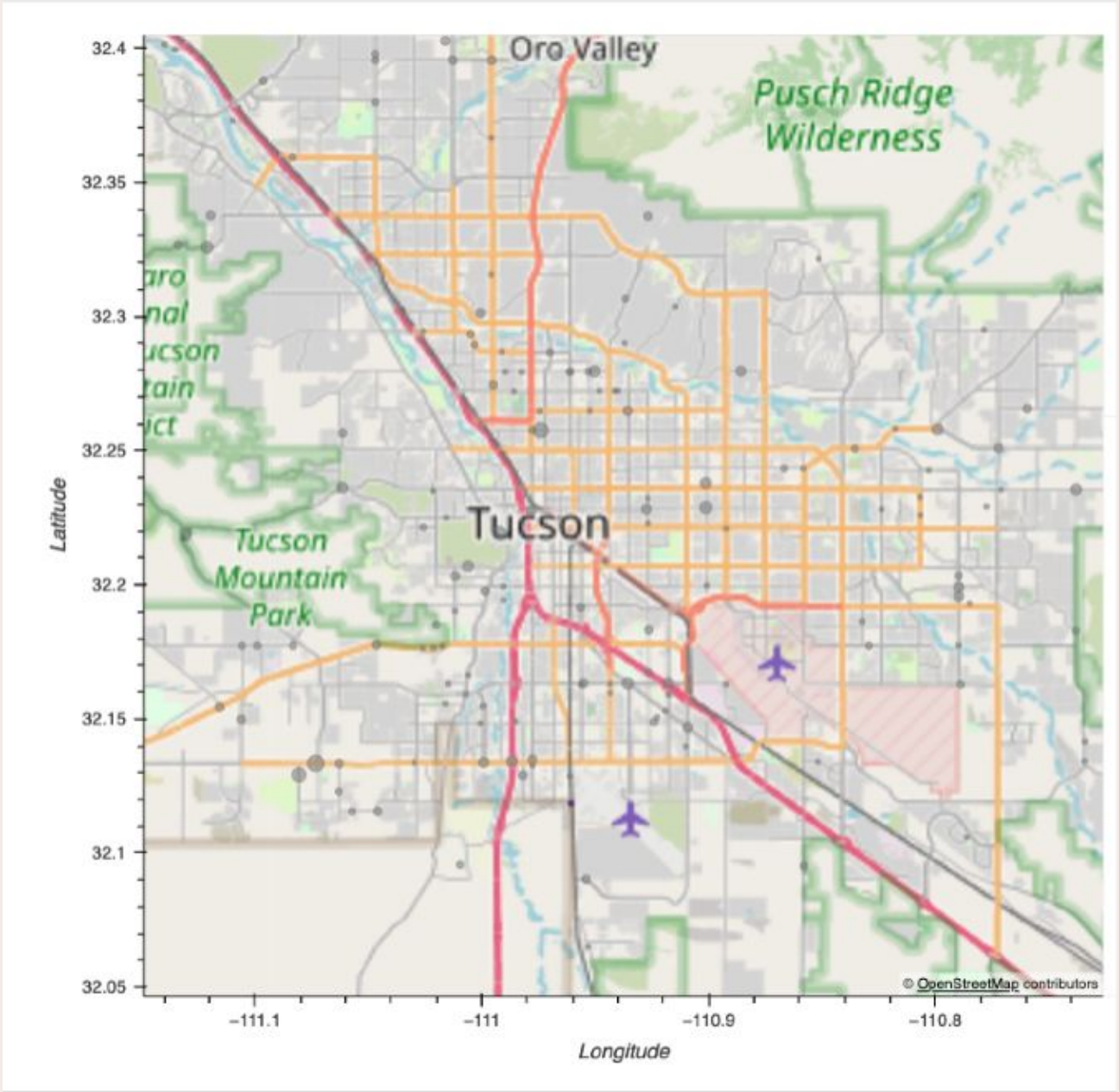
MARICOPA COUNTY: CITY STREET ACCIDENTS - ZOOMED

- Zooming in on a map point in Maricopa County where there was a high level of accidents that occurred, it becomes more clear that although the plot points initially looked like they may be nested on highways and freeways, they are actually on city streets.
- Now we will see if this is consistent when looking at other counties with the highest amount of accidents



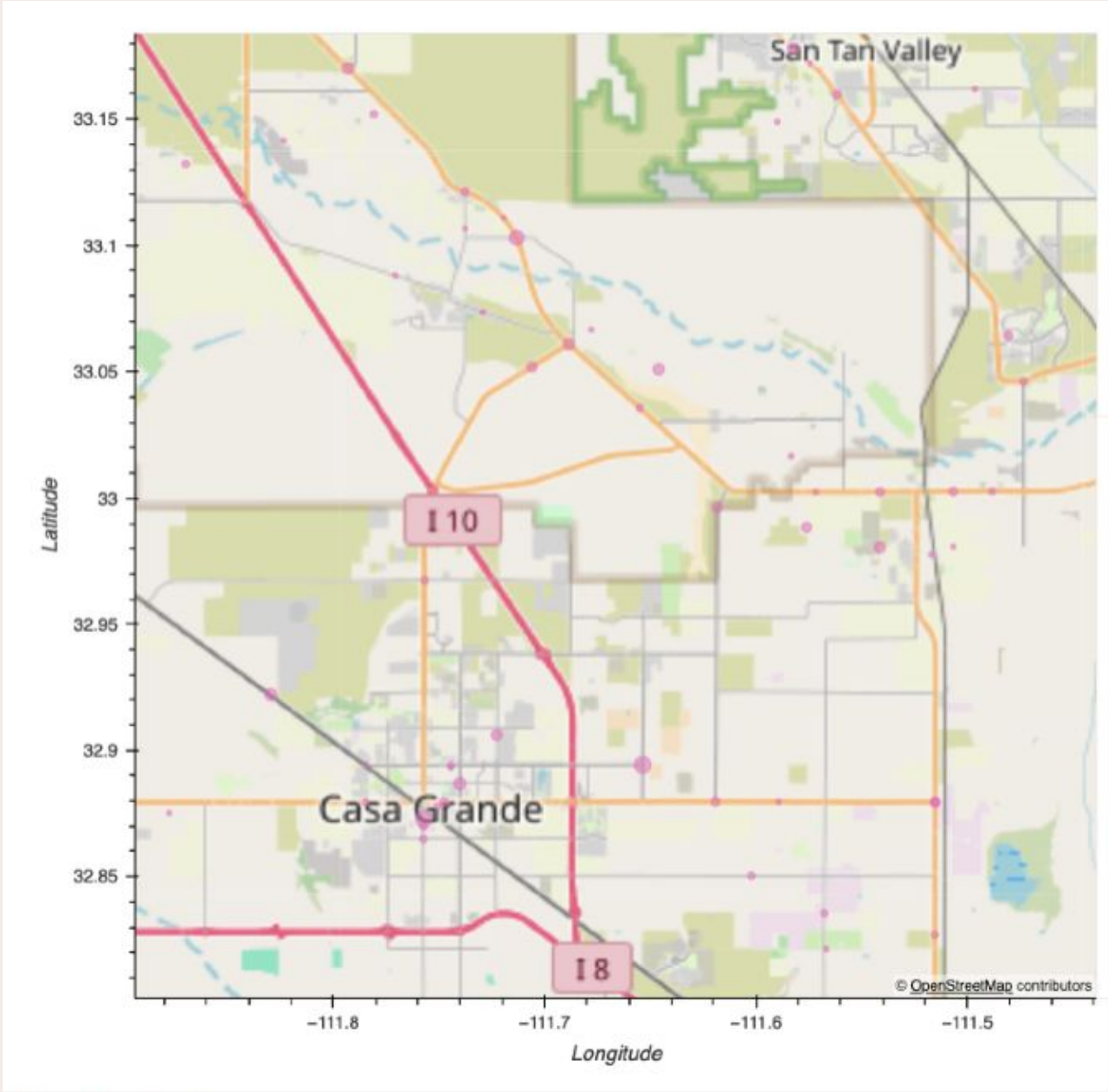
PIMA COUNTY: CITY STREET ACCIDENTS - ZOOMED

- Looking closely at Pima County, which experienced the second highest amount of fatal accidents between 2012-2016, we see a similar visualization as the Maricopa County map - that most of the accidents did not occur on highways and freeways, but on city streets.
- The population density of both Maricopa and Pima counties would most likely be a factor for this reason.



PINAL COUNTY: CITY STREET ACCIDENTS - ZOOMED

- Looking at Pinal County, which on average was the third highest county for fatal accidents between 2012-2016, we see a different trend - that more of the accidents did occur on highways and freeways.
- In comparison to Maricopa and Pima County, Pinal County is considered rural, with less population density, which could contribute to why most accidents were along the highways and freeways.



Thank you!
Questions?