

Hate Crime Trends in the United States

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What is Hate Crime?

Hate Crime:

“A hate crime is a **traditional offense** like murder, arson, or vandalism **with an added element of bias**.

For the purposes of collecting statistics, the FBI has defined a hate crime as a “criminal offense against a person or property **motivated in whole or in part by an offender’s bias** against a race, religion, disability, sexual orientation, ethnicity, gender, or gender identity.”

- Federal Bureau of Investigation



Background and Methodology

- Hate crimes have been tracked since President H.W. Bush signed the Hate Crimes Statistics Act of 1990; expanded in 2009.
- The FBI Uniform Crime Reporting Program collects **voluntary** reports from local jurisdictions and provides data access through its Crime Data Explorer (CDE), which includes hate crimes.



Exploratory

- Time Frame: 1991-2017
- 194,194 Incidents
- 50 States + Guam
- 308 types of offenses*
- 117 locations of offense*
- 125 types of biases*
- 50 victim types*

**Many entries include various terminology for similar info as well as different combinations of info types into single entries.*



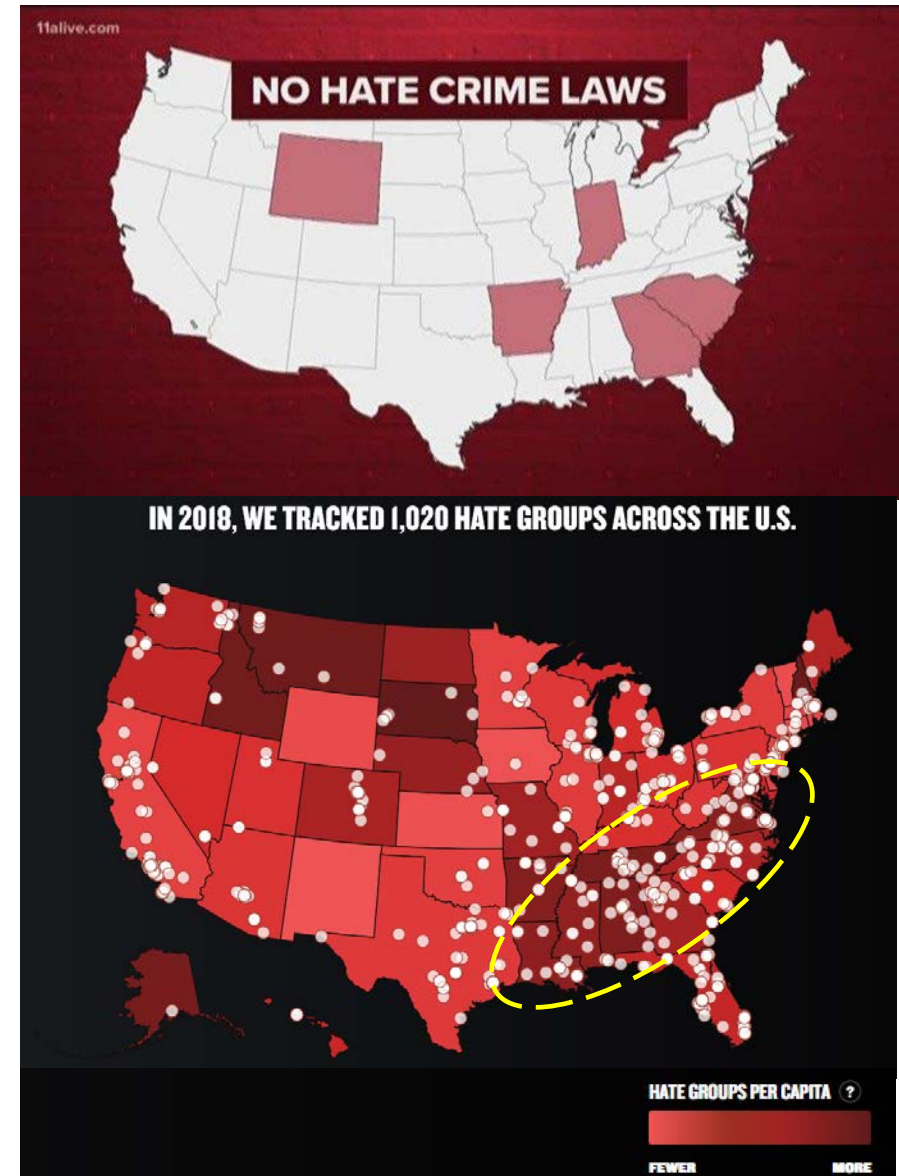
Limitations of FBI CDE Data

The FBI CDE Hate Crimes data set is robust, but most data is categorical, and some inconsistency of entries. Also, the data's representation of the population is limited and inconsistent.

The Bureau of Justice Statistics hate crime survey conducted in 2012 reported 293,800 hate crimes; 50x's FBI reported data that year. Why?

- Since FBI tracking in 1996, over 80% of jurisdictions reported 0 hate crimes; 88.4% reported 0 hate crimes in 2015
- Hate crime reporting to FBI voluntary, and many state, city, local police agencies do not collect nor disclose the data
- Police officers may not acknowledge a crime as hate crime, possibly due to no local hate crime laws, bias, etc..
- Not all hate crimes are reported to police possibly due to fear
- States without local hate crime laws have limited hate crimes reporting (AK, GA, SC, WY, IN)
- CA, NJ, and NY report a lot of hate crimes(>36% of total), while most deep South states don't report hate crimes

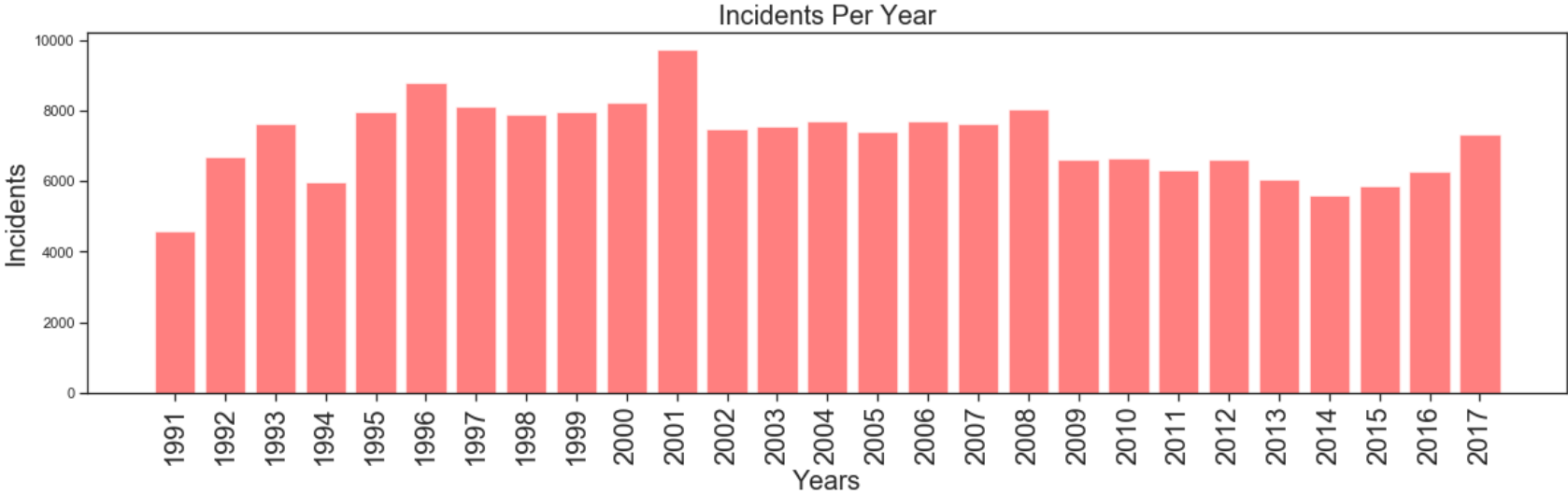
In contrast to reporting data, the Southern Poverty Law Center reports hate group concentration in South & East; pockets in West



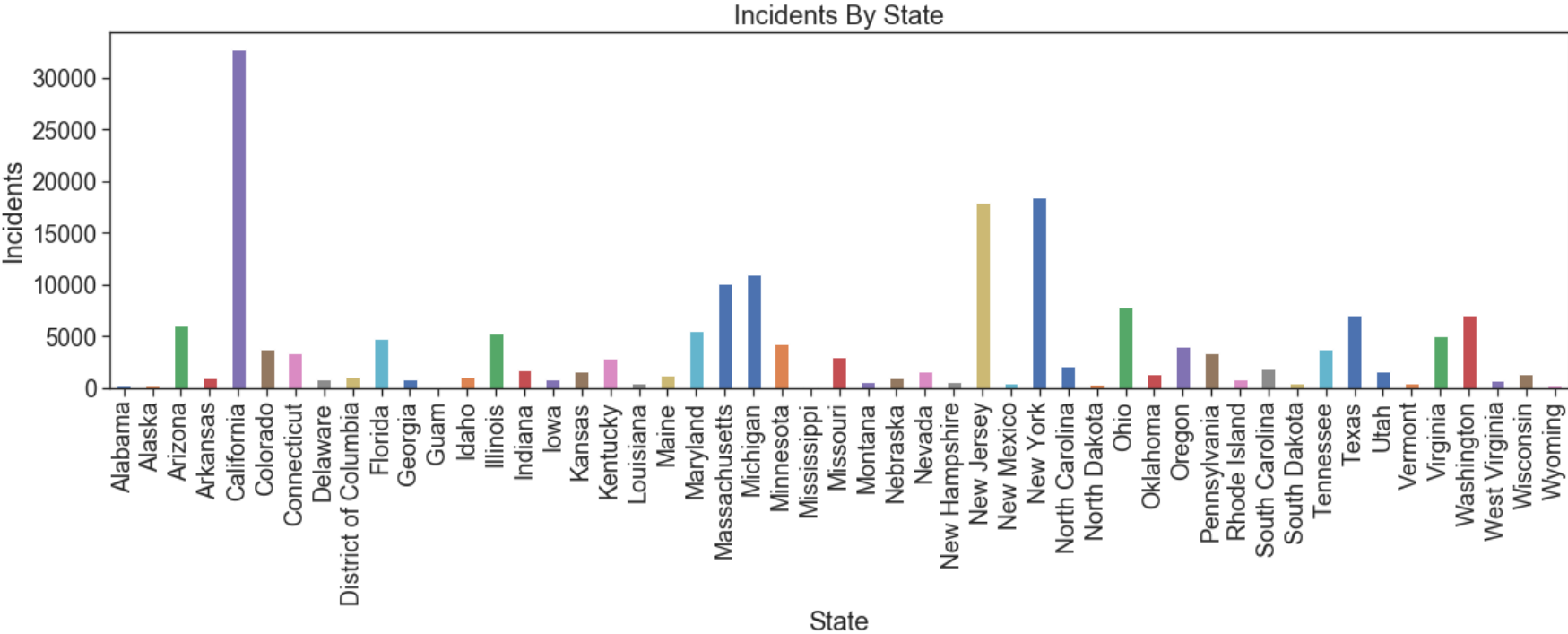


Overview

Based on
Time



Based on
Geography

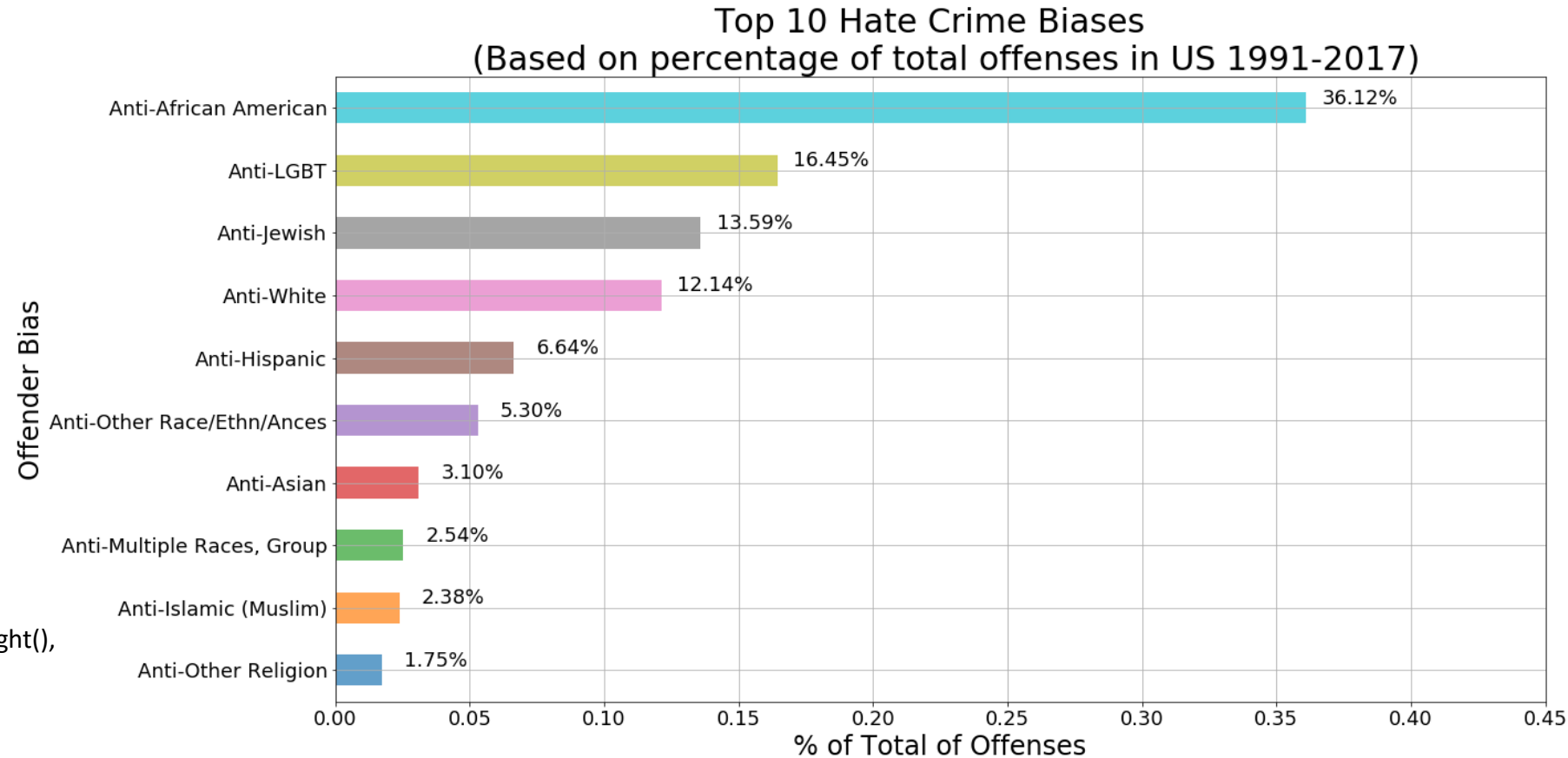


What are the top Hate Crime Biases against victims... in the US?

- Focused on biases (BIAS_DESC), which required data cleaning
- Refined top 10 with groupby, count & sort_values functions.
- Calculated percentage and used sort_values for bar chart
- Bar text thru for loop:

```
for p in axp.patches:  
    width = p.get_width()  
  
    plt.text(.02+p.get_width(),p.get_y()+0.8*p.get_height(),  
            '{:.2%}'.format(width),  
            ha='center', va='center')  
    plt.rc('font', size=18)
```

Some bias description data abbreviated in analysis for visualization:
Anti-LGBT = Anti-Lesbian, Gay, Bisexual, or Transgender (Mixed Group)
Anti-African American = Anti-African American, Anti-Black
Anti-Hispanic = Anti-Hispanic or Latino
Anti-Other Race/Ethn/Ances = Anti-Other Race/Ethnicity/Ancestry

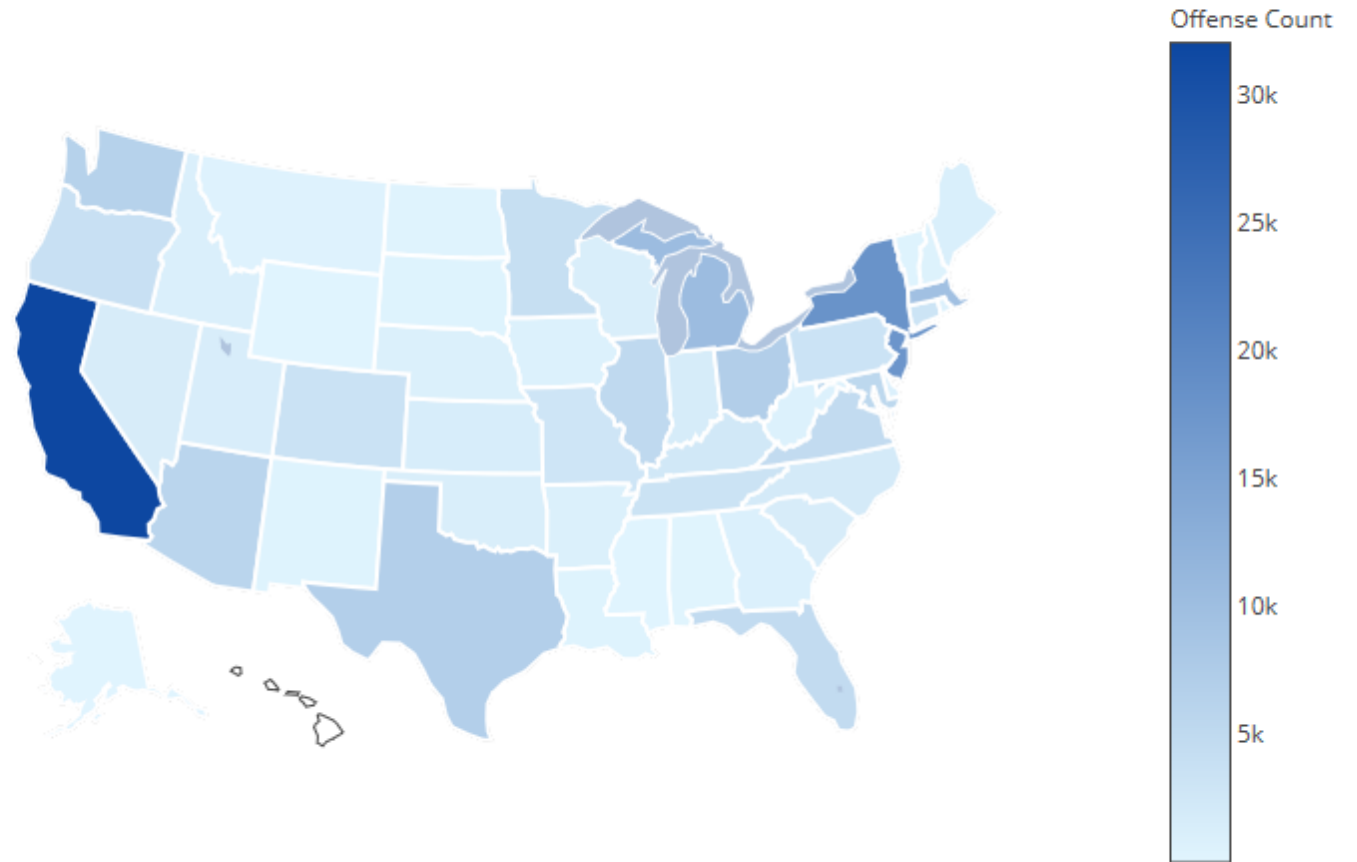


What are the top Hate Crime Biases against victims... By State?

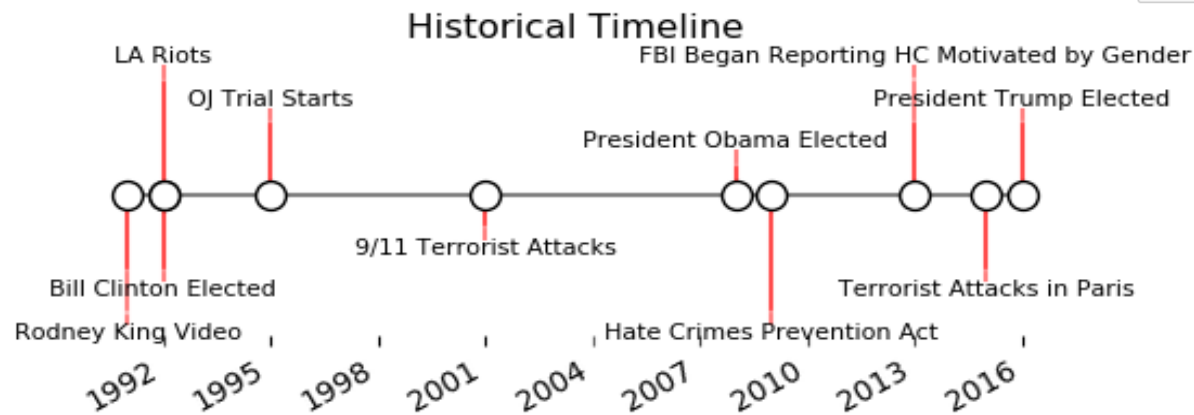
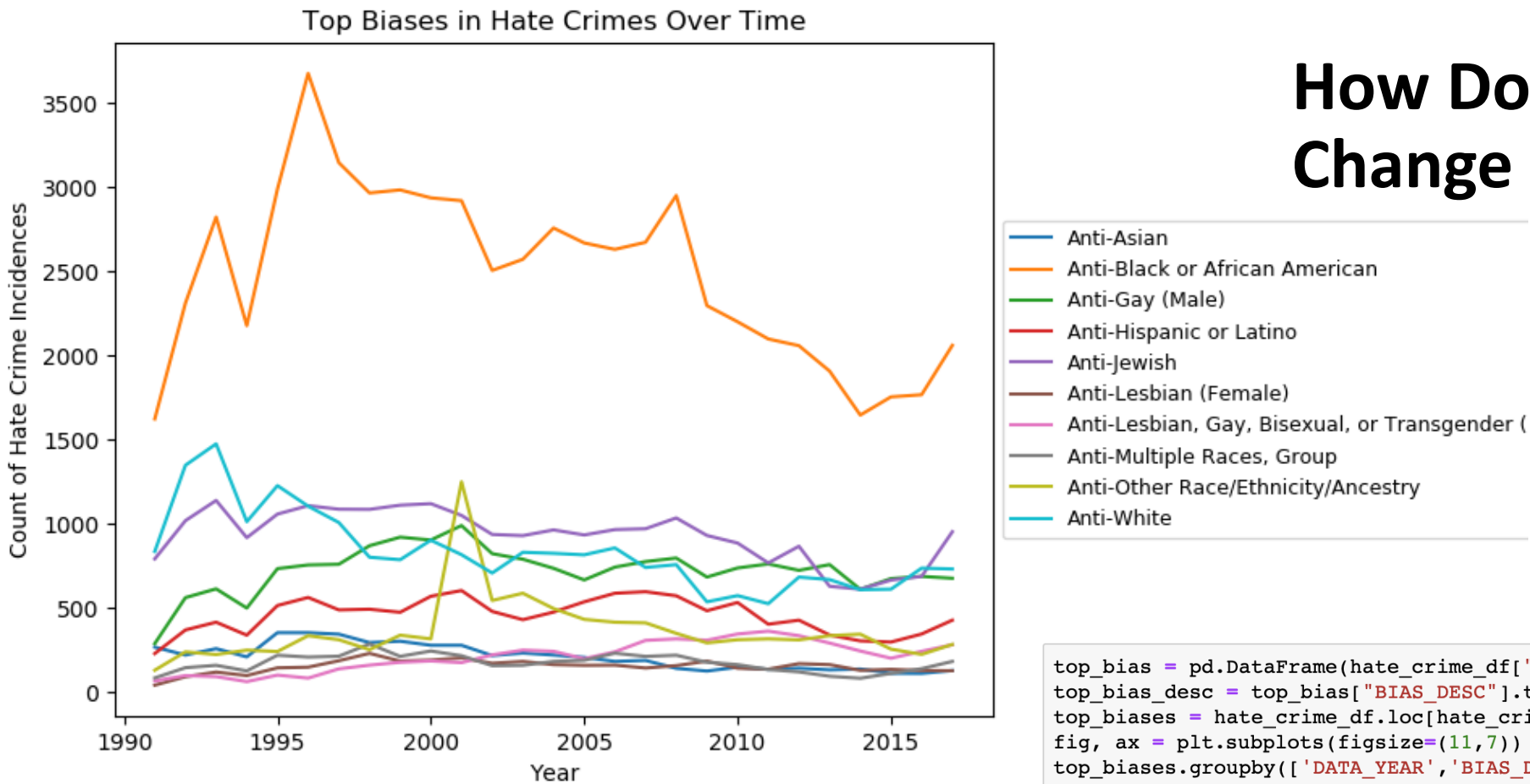


- Determined top 5 hate crime bias' for each state as dataframe.
- Merged top 5 dataframe with a offence count by state.
- Utilized Plotly US Choropleth heat map for total offense count and hover capabilities for top 5 per state.
- Plotly coding utilizes a data object (data parameters) and a layout object (map parameters)

US Hate Crimes by State (1991-2017)
(Hover for State Crime Count and Bias breakout)



How Do Hate Crime Biases Change Over Time?



How Do Hate Crime Offenses Change Over Time?

```

dates = [datetime.strptime(ii, "%Y") for ii in dates]

levels = np.array([-.03, .03, -.02, .02, -.01, .01])
fig, ax = plt.subplots(figsize=(6, 2))

start = min(dates)
stop = max(dates)
ax.plot((start, stop), (0, 0), 'k', alpha=.5)

for ii, (iname, idate) in enumerate(zip(names, dates)):
    level = levels[ii % 6]
    vert = 'top' if level < 0 else 'bottom'

    ax.scatter(idate, 0, s=100, facecolor='w', edgecolor='k', zorder=9999)

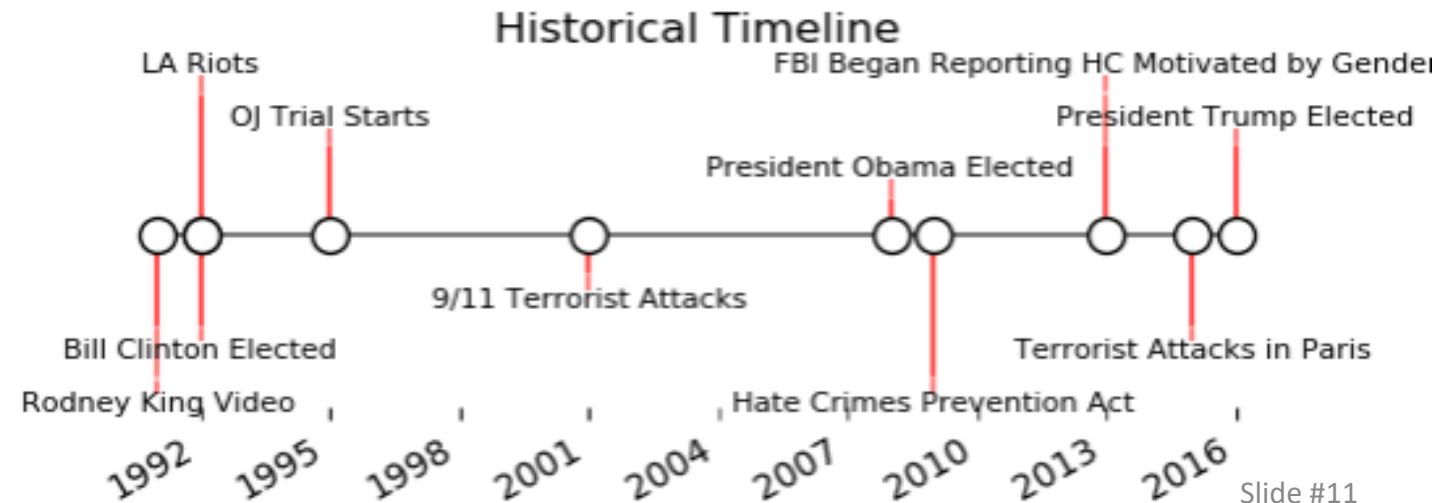
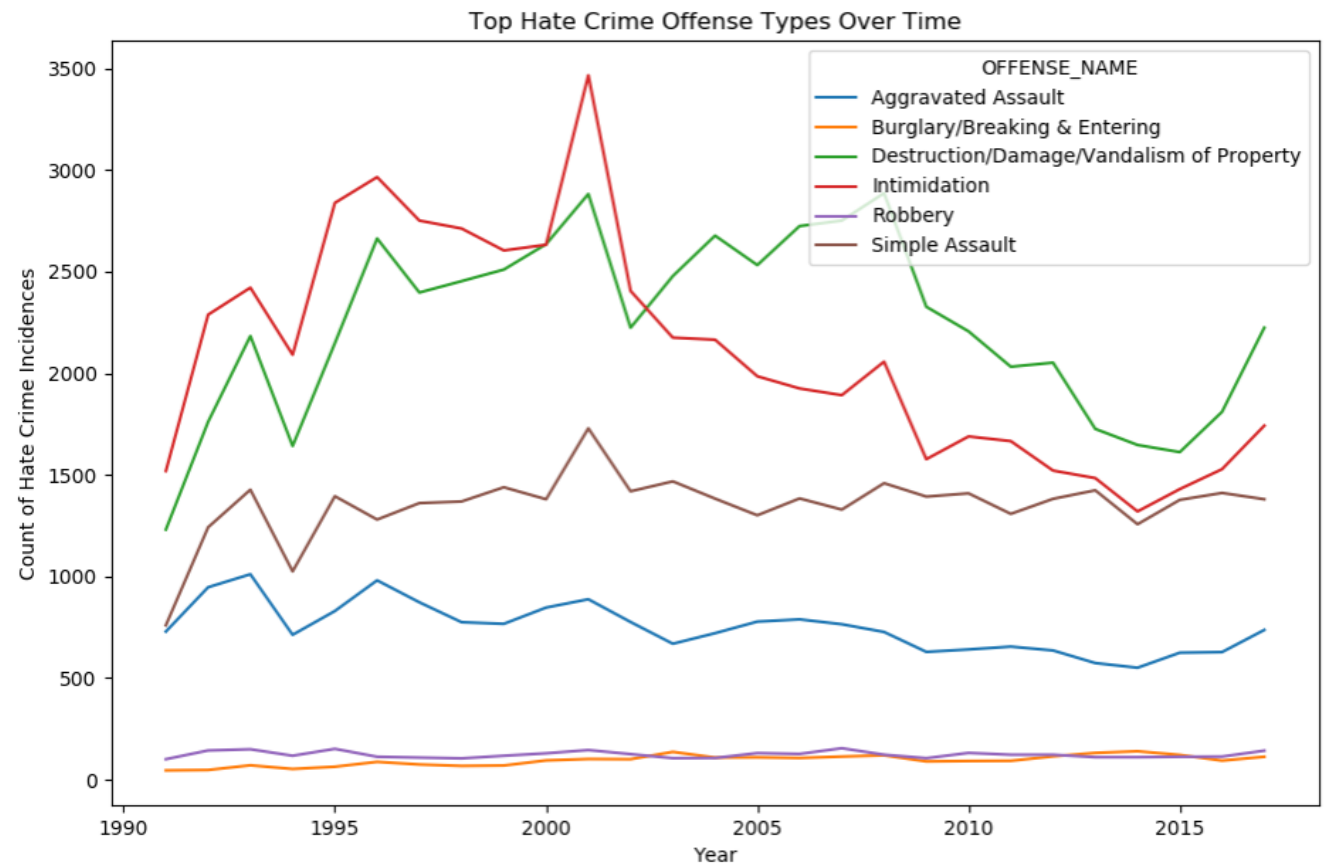
    ax.plot((idate, idate), (0, level), c='r', alpha=.7)

    ax.text(idate, level, iname,
            horizontalalignment='center', verticalalignment=vert, fontsize=8,
            backgroundcolor=(1., 1., 1., .3))
ax.set(title="Historical Timeline")

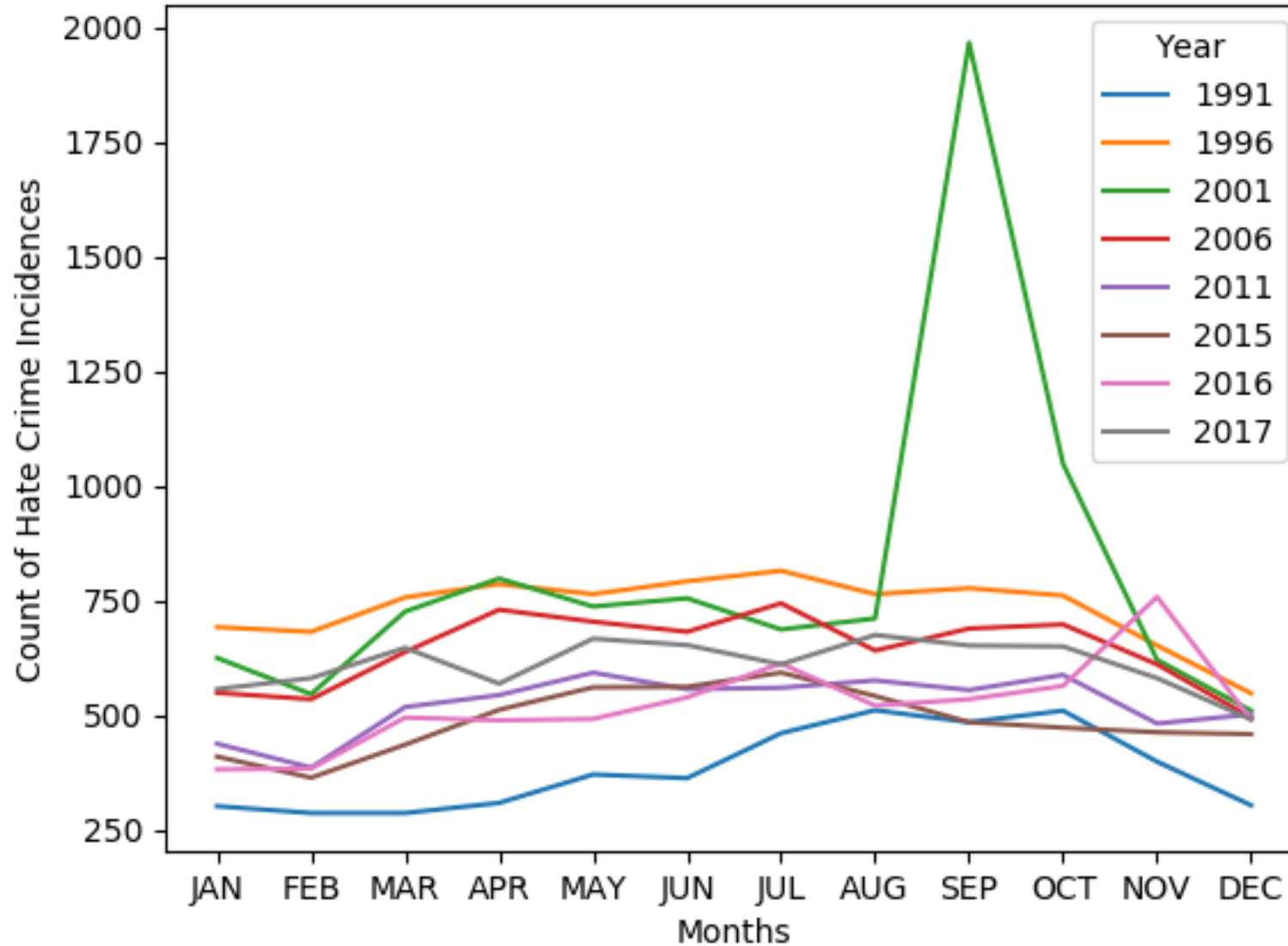
ax.get_xaxis().set_major_locator(mdates.YearLocator(3))
ax.get_xaxis().set_major_formatter(mdates.DateFormatter("%Y"))
fig.autofmt_xdate()

plt.setp((ax.get_yticklabels() + ax.get_yticklines() +
4/9/2016 ax.spines.values()), visible=False)

```



Is Hate Crime Affected by Time of Year?



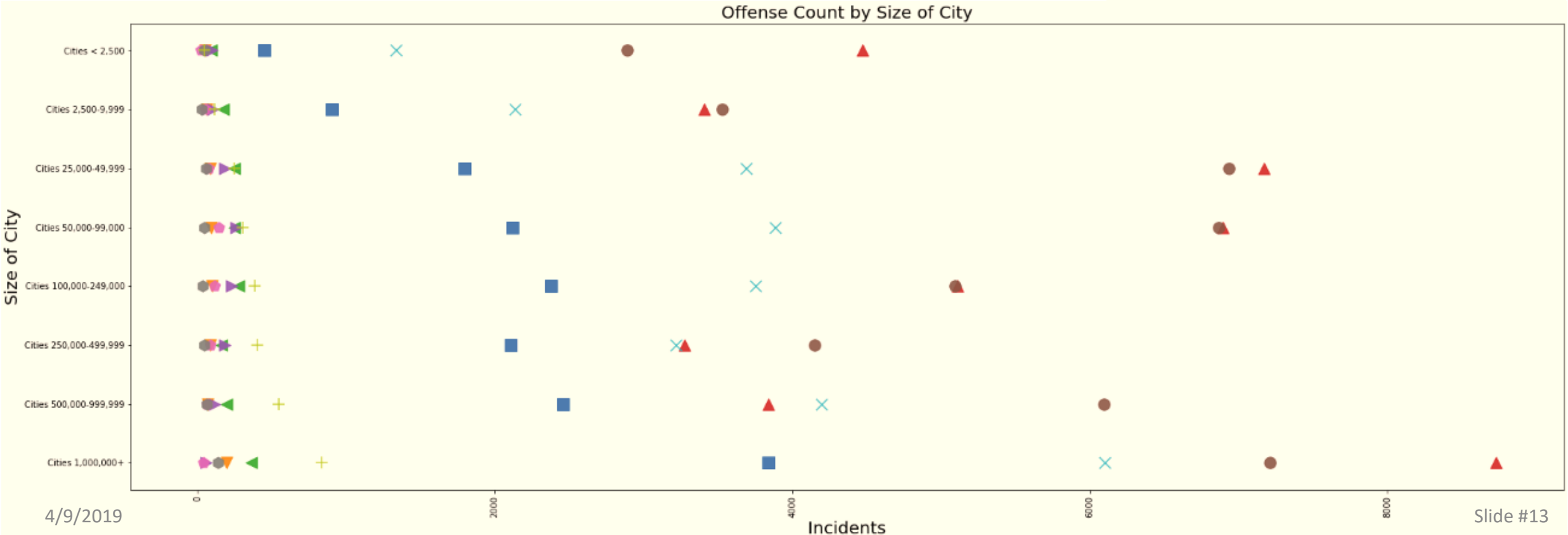
#Cleaned Up DataFrame
new.head(2)

Trends of Hate Crime Offense by Size of City

	Cities 1,000,000+	Cities 500,000- 999,999	Cities 250,000- 499,999	Cities 100,000- 249,000	Cities 50,000- 99,000	Cities 25,000- 49,999	Cities 2,500- 9,999	Cities < 2,500
Aggravated Assault	3841.0	2457.0	2105.0	2378.0	2120.0	1794.0	905.0	448.0
Arson	198.0	67.0	87.0	100.0	95.0	86.0	62.0	55.0

```
#Create Scatterplot
fig = plt.figure(figsize=(30, 10))
lst = list(new.index)
for crime in lst:
    mark=["s","v","<","^",">","o","p","h","+","x"]
    y = new.loc[crime].index
    x = new.loc[crime].values
    plt.scatter(x, y, label=crime,alpha=0.9,s=180,linewidths=1,marker=mark[lst.index(crime)])
```

- Aggravated Assault
- Arson
- Burglary/Breaking & Entering
- Destruction/Damage/Vandalism of Property
- Destruction/Damage/Vandalism of Property;Intimidation
- Intimidation
- Intimidation;Simple Assault
- Not Specified
- Robbery
- Simple Assault



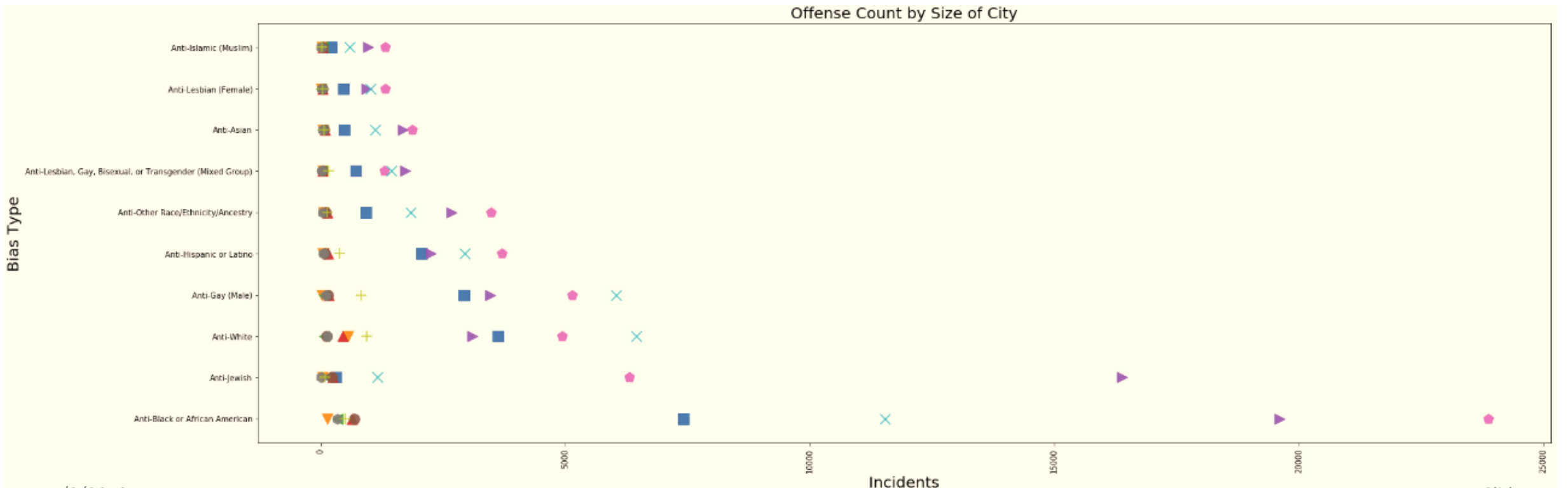
#Cleaned Up DataFrame
new.head(2)

Trends of Hate Crime Offense by Bias

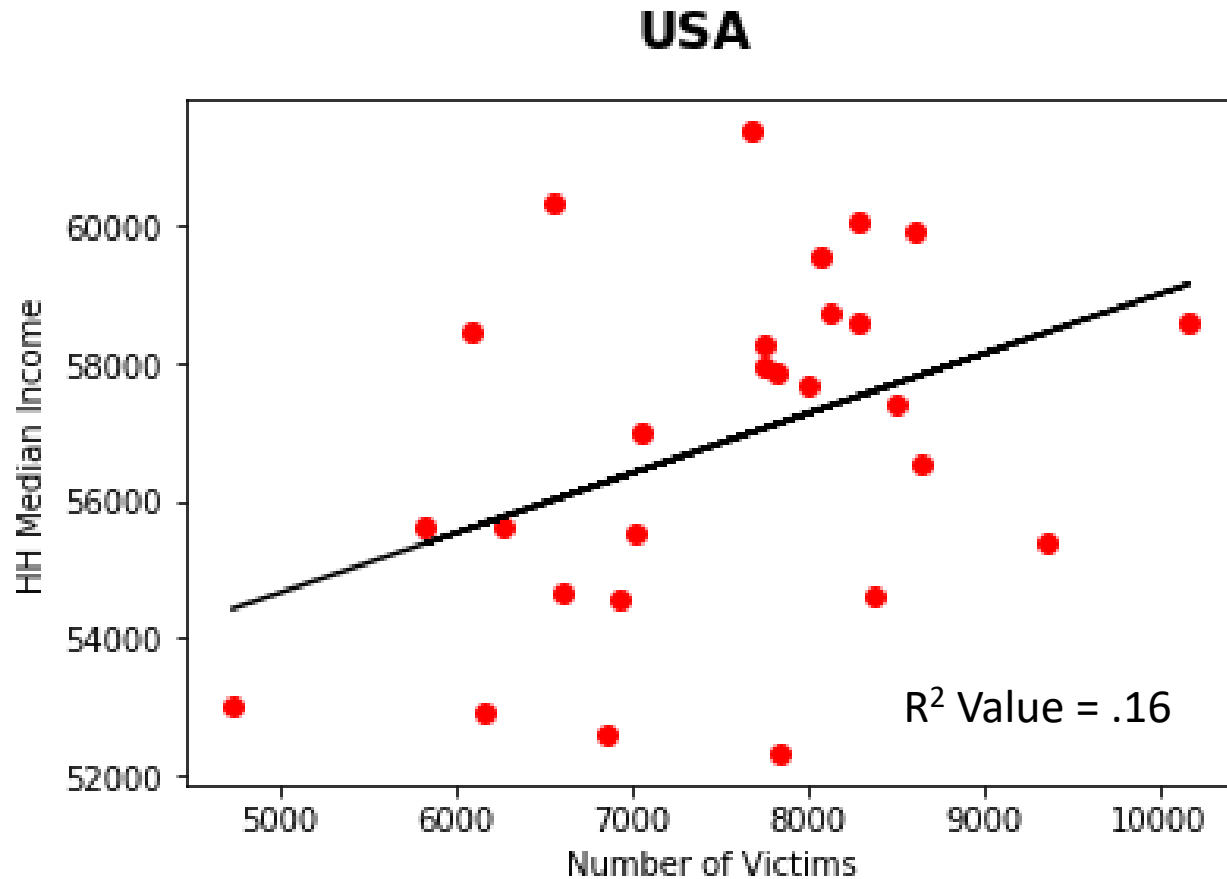
	Anti-Black or African American	Anti-Jewish	Anti-White	Anti-Gay (Male)	Anti-Hispanic or Latino	Anti-Other Race/Ethnicity/Ancestry	Anti-Lesbian, Gay, Bisexual, or Transgender (Mixed Group)	Anti-Asian	Anti-Lesbian (Female)	Anti-Islamic (Muslim)
Aggravated Assault	7417.0	309.0	3621.0	2923.0	2064.0	920.0	718.0	487.0	472.0	219.0
All Other Larceny	128.0	37.0	553.0	30.0	38.0	60.0	39.0	34.0	13.0	28.0

```
#Create Scatterplot
fig = plt.figure(figsize=(30, 10))
lst = list(new.index)
for crime in lst:
    mark=["s","v","<","^",">","o","p","h","+","x"]
    y = new.loc[crime].index
    x = new.loc[crime].values
    plt.scatter(x, y, label=crime,alpha=0.9,s=180,linewidths=1,marker=mark[lst.index(crime)])
```

- Aggravated Assault
- ▼ All Other Larceny
- ◀ Arson
- ▲ Burglary/Breaking & Entering
- ▶ Destruction/Damage/Vandalism of Property
- Destruction/Damage/Vandalism of Property;Intimidation
- ◊ Intimidation
- Intimidation;Simple Assault
- + Robbery
- × Simple Assault



How Hate Crime Correlates with Median HH Incomes

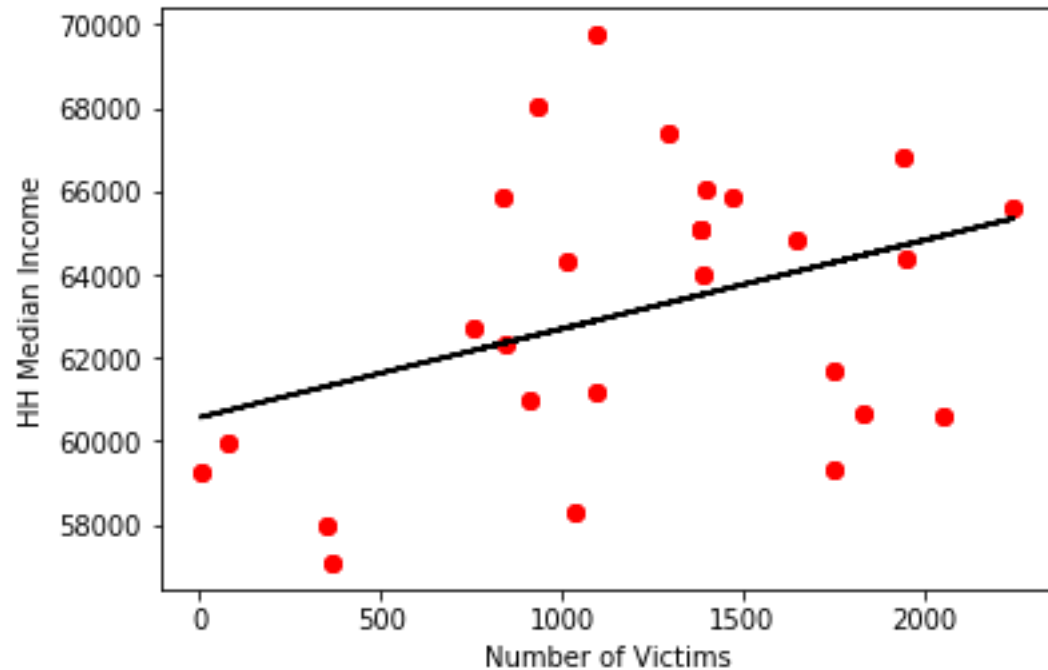


Note: Income reported in 2017 dollars.

- Overall there is a slight positive correlation between rising household incomes and the rate of violent crimes.
- However, this correlation is not significant enough for us to confirm our hypothesis.
- How does this relationship compare at lower levels of geography?

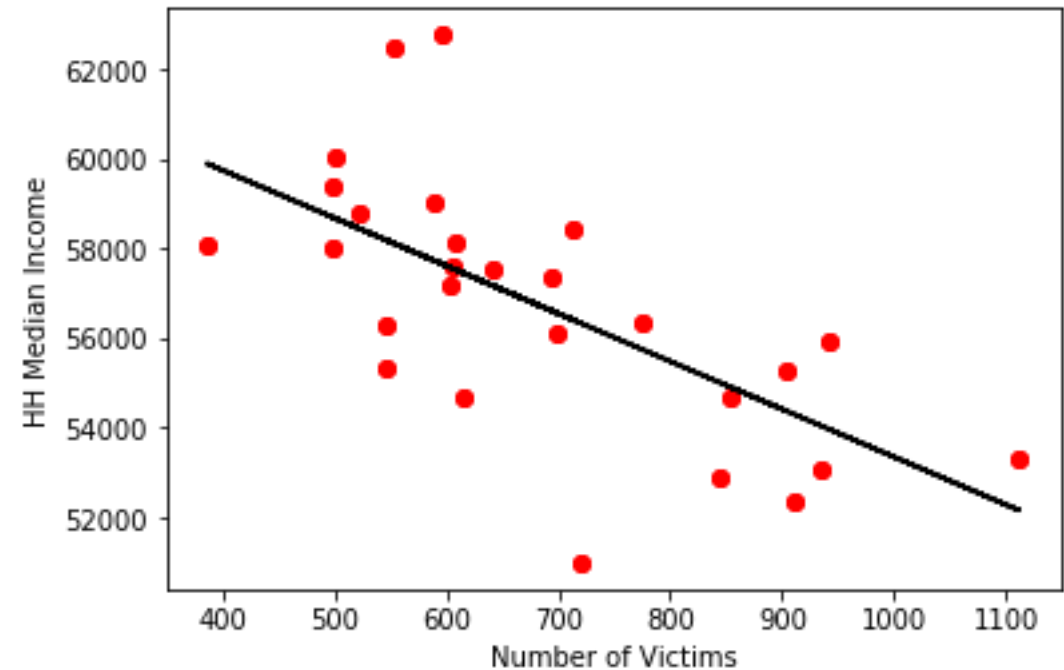
Hate Crime by State Level Comparisons

California



R^2 Value = .14

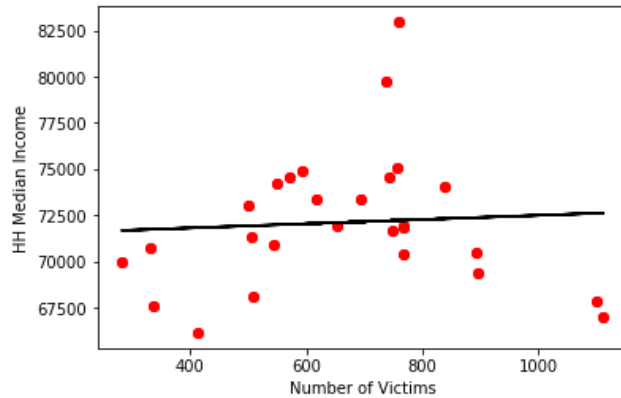
New York



R^2 Value = .42

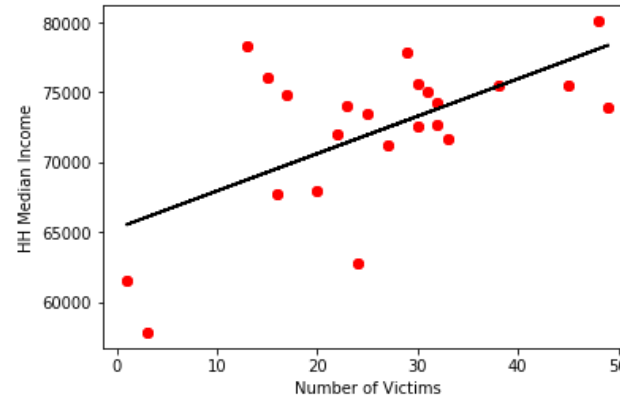
Hate Crime by State Level Comparisons

New Jersey



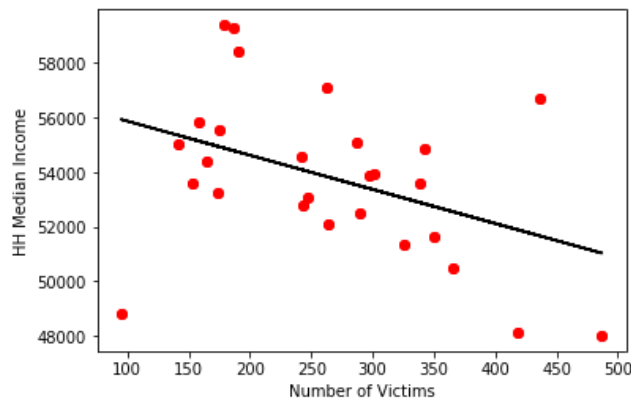
R^2 Value = .01

New Hampshire



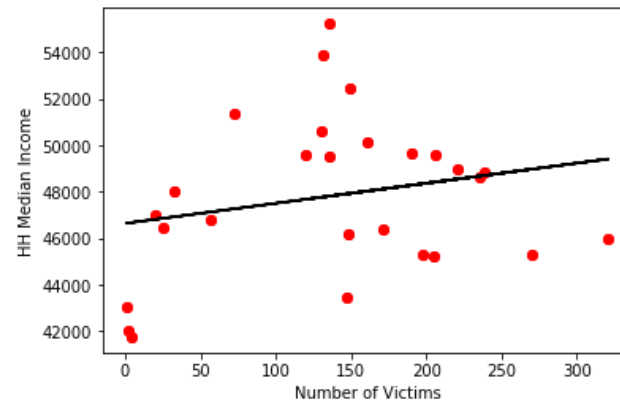
R^2 Value = .37

Texas



R^2 Value = .17

Tennessee



R^2 Value = .05

for location in location:

```
temp_df = final_df.loc[final_df["Location"] == location]
vics = temp_df.loc[:, "Victims"]
inc = temp_df.loc[:, "Income"]
```

```
fig, ax = plt.subplots()
```

```
fig.suptitle(location, fontsize=16, fontweight="bold")
```

```
ax.set_ylabel("HH Median Income")
```

```
ax.set_xlabel("Number of Victims")
```

```
# Set line
```

```
(slope, intercept, _, _, _) = linregress(vics, inc)
```

```
fit = slope * vics + intercept
```

```
slope, intercept, r_value, p_value, std_err = scipy.stats.linregress(vics, inc)
```

```
r_squared = r_value**2
```

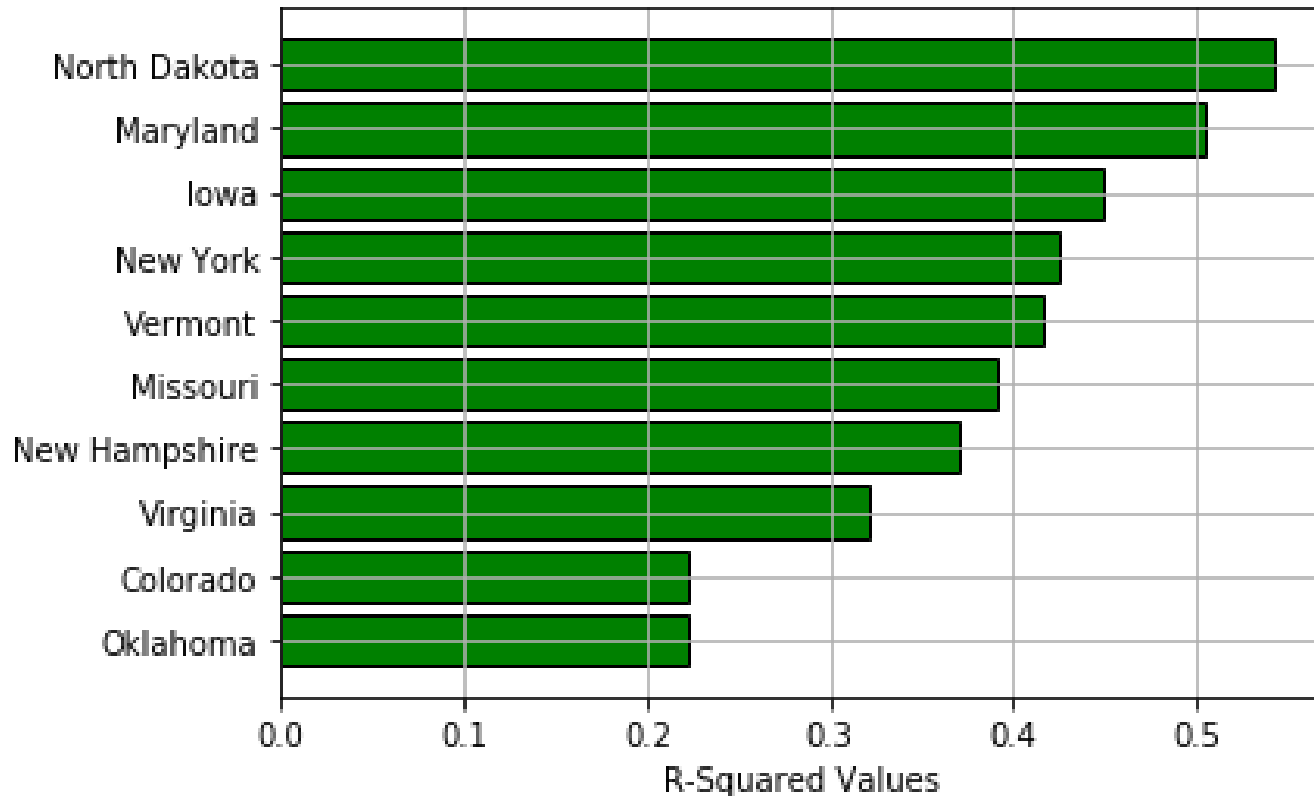
```
name.append(location)
```

```
r_sqr.append(r_squared)
```

```
p_val.append(p_value)
```

States With Highest Correlation

TOP TEN STATES
Correlation Between Hate Crimes
and HH Median Income



- Among the top 10 states, Maryland and North Dakota correlated the highest with our violent crime data set.
- If there is a relationship between crime data and median HH income data, it is not demonstrated in our analysis.
- In other words, the data suggests that the 'null' argument is still valid.

Conclusions

- Data hampered by limited reporting, but clear trends emerge with offender biases and bias variations throughout the US. For example, bias against African Americans is 2x's greater nationally than next largest group and top bias in every State except two, NY & AR.
- Certain biases that motivate hate crimes, as well as hate crime offense types, do appear to fluctuate over time. Particularly, the most prevalent types of hate crime biases and offense types experience the most fluctuation and sensitivity to significant world events.
- The size of city showed different levels of hate crime offenses. In the second visualization, hate crime offense type was very different based of the group of people targeted.
- Income correlates slightly with violent crime rates but results are mixed and vary by state.

Resources

Data Source:

- FBI Crime Data Explorer :

<https://crime-data-explorer.fr.cloud.gov/downloads-and-docs>

- Median Household Income by State: 1984 to 2017:

U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplements. For information on confidentiality protection, sampling error, non-sampling error, and definitions

<https://www2.census.gov/programs-surveys/cps/techdocs/cpsmar18.pdf>

Articles:

Hailey Middlebrook, “The fascinating, if unreliable, history of hate crime tracking in the US,” CNN, November 14, 2017

<https://www.cnn.com/2017/01/05/health/hate-crimes-tracking-history-fbi/index.html>

Hate Maps (annually tracked mapping of hate groups in US), Southern Poverty Law Center

<https://www.splcenter.org/>