

Dallas Police Arrests

SMU Data Science



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Disclaimer

- We are not criminologists, sociologists, or law-enforcement professionals. We are simply analyzing a public dataset on arrests, which included demographic variables. We are NOT in any way claiming that certain ethnic or racial group are more prone to commit certain crimes, get arrested, or be more dangerous to others. Rather, we are creating a data visualization dashboard for more qualified experts to draw their own conclusions. Our analysis and call-to-action is simply our take on the data and does not reflect any compelling statements, which some people may or may not take offense or take out of context. Please do NOT use our data to make any uninformed or misguided decisions about others.

Data Story



Larry is looking for internship



Officer James is looking for an intern



Larry offers to analyze arrest data as it relates to racial categories and the Dallas Police Department.



Officer James gives Larry the Data Analytics Internship

Plot.ly Dataset

	race	day	drugRelated	weapon	gender	year	genderCount	arrestCount	avgAge
0	American Indian or Alaska Native	Tue	No	None	Female	2014	1	1	50.0
1	American Indian or Alaska Native	Wed	No	None	Female	2014	2	2	39.0
2	American Indian or Alaska Native	Mon	Unknown	None	Female	2014	1	1	45.0
3	American Indian or Alaska Native	Wed	Unknown	None	Female	2014	1	1	46.0
4	Asian	Fri	No	None	Female	2014	1	1	59.0
...
4387	White	Sat	Yes	Unarmed	Male	2022	3	3	32.0
4388	White	Sun	Yes	Unarmed	Male	2022	2	2	44.0
4389	White	Thu	Yes	Unarmed	Male	2022	5	5	45.2
4390	White	Tue	Yes	Unarmed	Male	2022	2	2	25.5
4391	White	Wed	Yes	Unarmed	Male	2022	1	1	33.0

4392 rows × 9 columns

<https://www.kaggle.com/datasets/aaronnichowilliams/dallas-police-activity>

Leaflet Map Dataset

	address	zipcode	drugRelated	gender	race	LAT	LNG
0	500 E JEFFERSON BLVD	75203	No	Male	Hispanic or Latino	32.746823	-96.802681
1	4800 MAPLE AVE	75235	No	Female	White	32.832614	-96.849082
2	13165 N CENTRAL EXPY	75243	No	Male	Black	32.912633	-96.736637
3	1800 CADIZ ST	75201	No	Male	Middle Eastern	32.787760	-96.799427
4	2500 HICKORY ST	75226	No	Female	Black	32.782826	-96.776443
...
60852	1100 HOKE SMITH DR	75224	Yes	Male	Hispanic or Latino	32.711405	-96.838591
60853	2800 E LEDBETTER DR	75216	Yes	Male	Black	32.711324	-96.781215
60854	10025 SHOREVIEW RD	75238	Yes	Male	Black	32.878497	-96.707819
60855	1400 N BECKLEY AVE	75203	No	Male	Black	32.746823	-96.802681
60856	10110 TECHNOLOGY BLVD E	75220	No	Male	Hispanic or Latino	32.868529	-96.876118

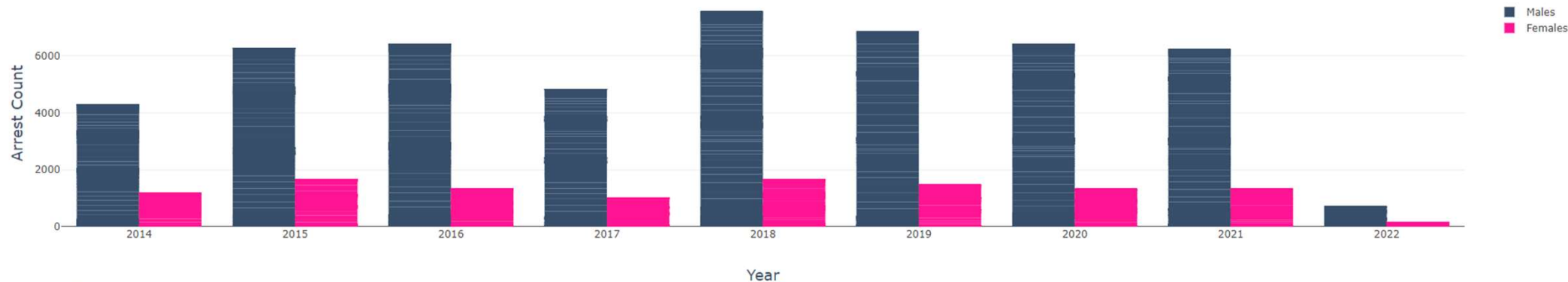
60857 rows × 7 columns

<https://www.kaggle.com/datasets/aaronnichowilliams/dallas-police-activity>

How do race and gender related to number of arrests?

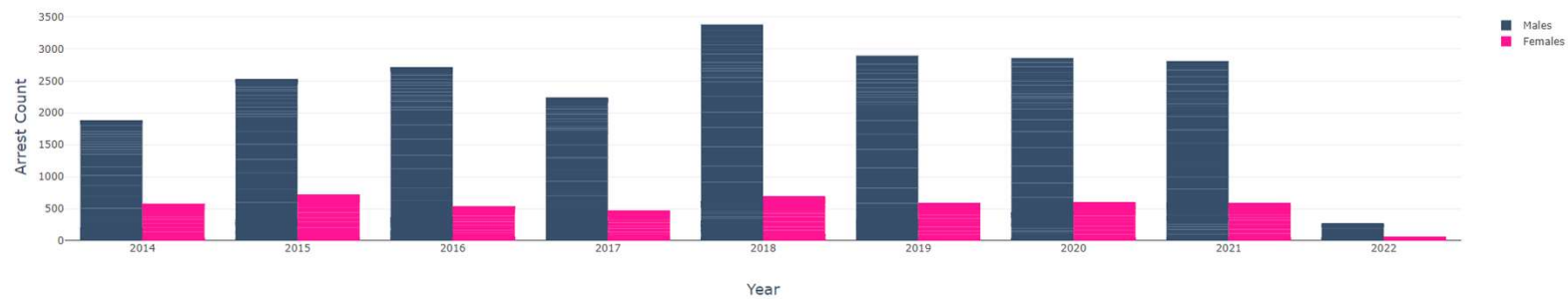
- **When considering all race categories, Males were arrested more frequently between 2014 and 2022 in Dallas, TX.**

Arrest Count vs. Year



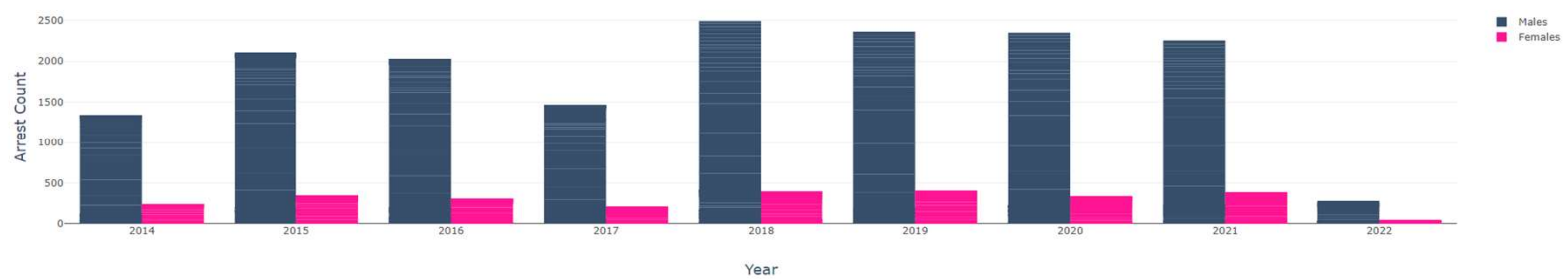
Black

Arrest Count vs. Year



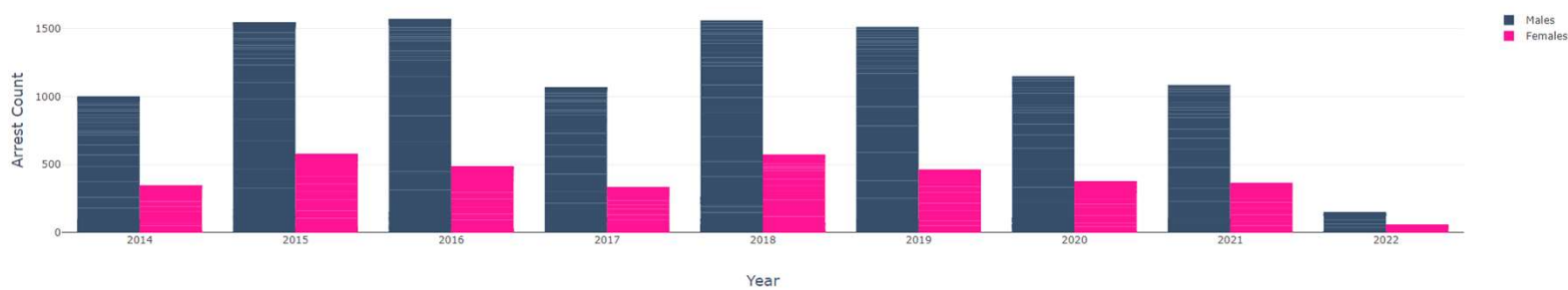
Hispanic or Latino

Arrest Count vs. Year



White

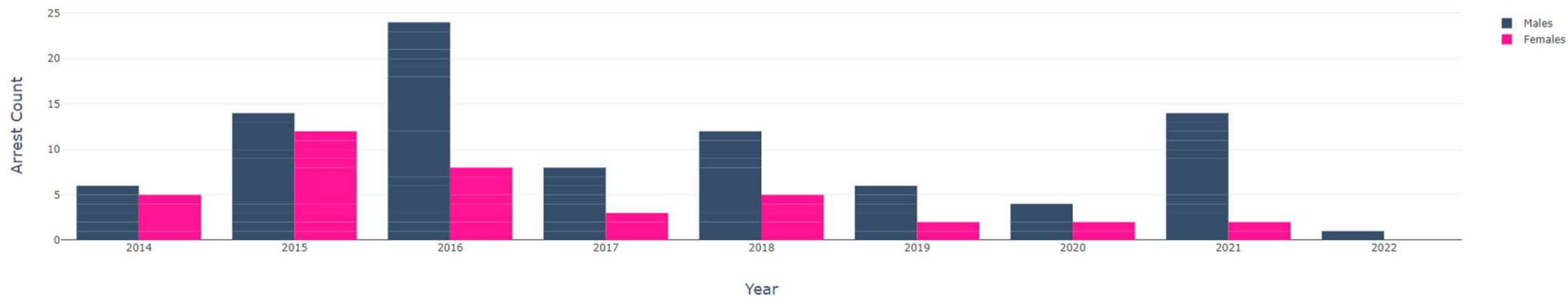
Arrest Count vs. Year



White, Black, and Latinos had the most Arrests Counts where as...

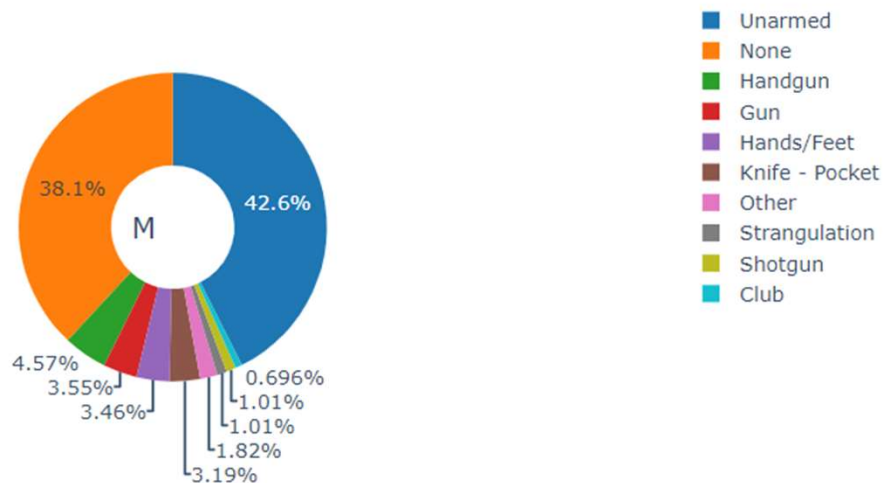
American Indian or Alaska Native ▼

Arrest Count vs. Year

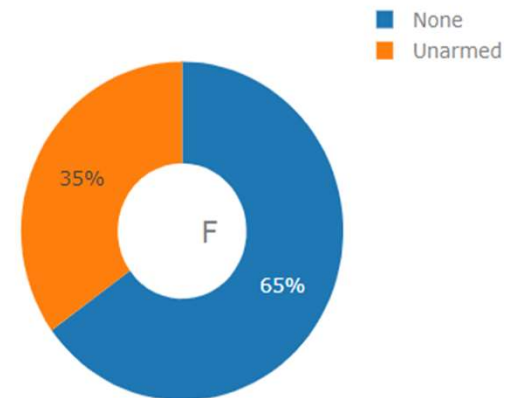


Middle Eastern Race and Weapon Type Divided by Gender

Male Gender and Weapon Type

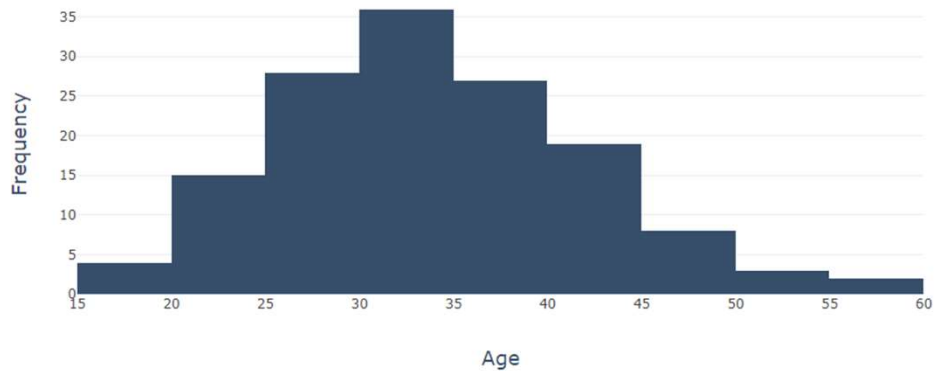


Female Gender and Weapon Type

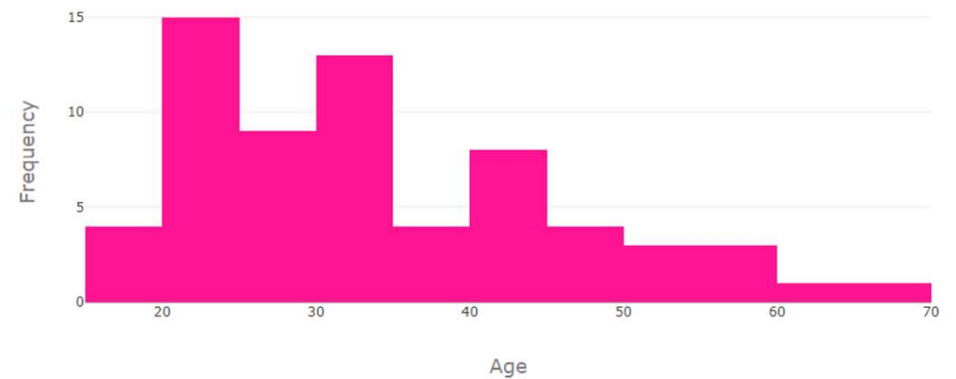


Asian Race and Age Frequency Divided by Gender

Male Age Histogram

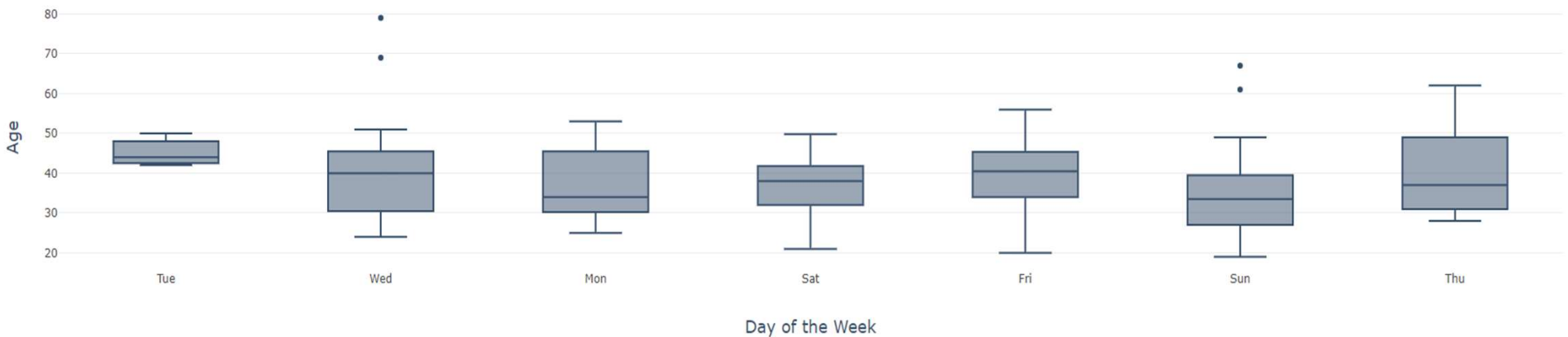


Female Age Histogram

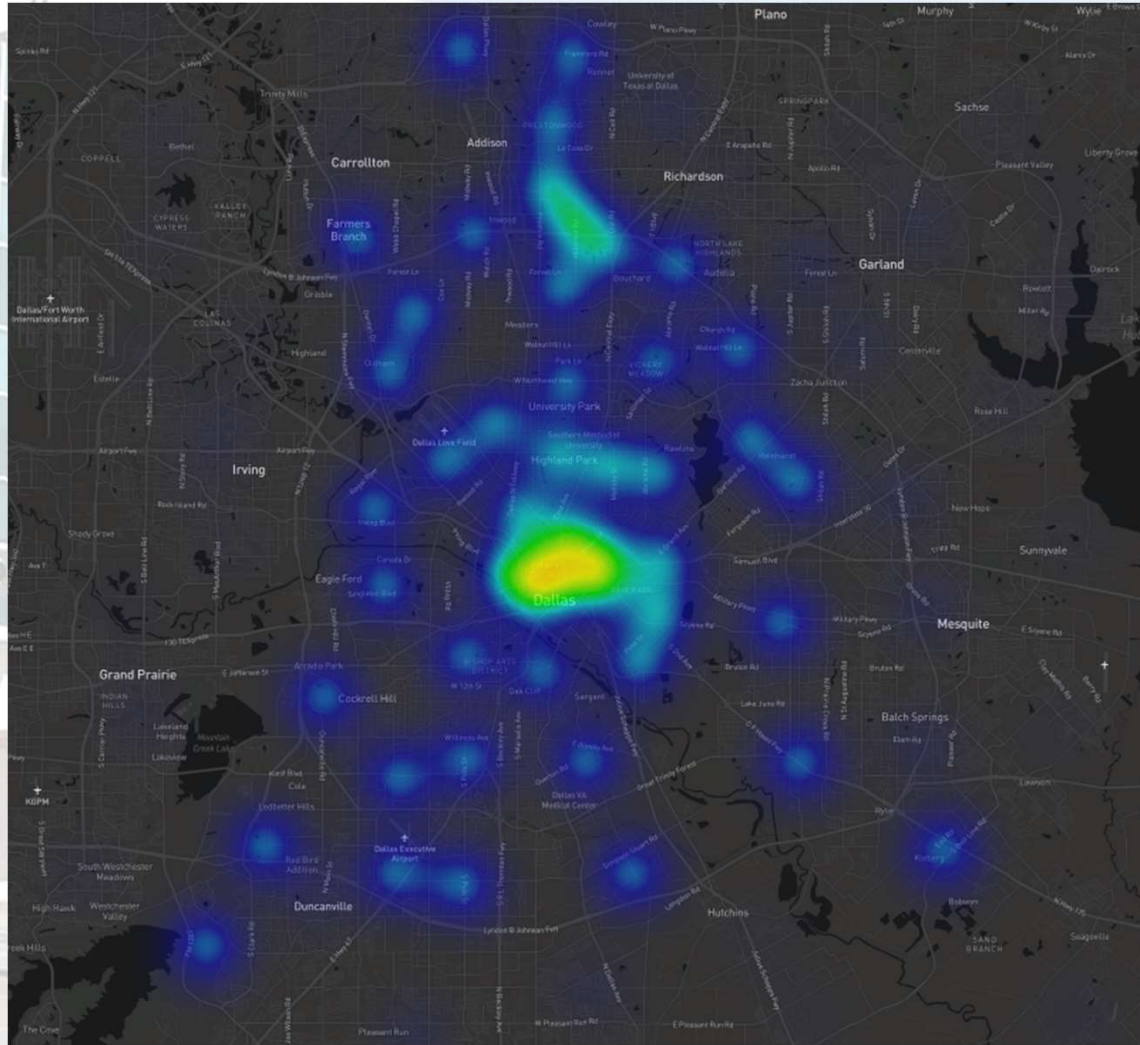


American Indian Arrestees and Days of the Week/Age

Day of the Week and Age Box Plot



It Heats-up in Downtown Dallas and at LBJ/I-75



Conclusions

- **Males are had higher prevalence of arrests than females**
- **In the dataset, Whites, Hispanics, and Blacks racial groups had higher arrest counts.**
- **In the dataset, downtown Dallas had higher arrest counts.**
- **Most of the weapons in arrests were None/Unarmed**
- **The average age of arrest was in the 30s**
- **The average age per days of the week had no consistent trend.**

Limitations

- **Our data set is limited in time, territorial jurisdiction, amount of numeric data.**
- **No statistical tests were done of the data**
- **Leaflet map is based on zip code, not address.**



Larry's Call-to-Action



- **He calls on criminologists, sociologists, or law-enforcement professionals to focus on reducing crime in Downtown Dallas as well as near LBJ/I-75.**
- **Larry recommends that they find methods to identify violent crime and respond to them over non-violent crime.**
- **Larry urges public officials to create advertisement campaigns against unlawful activity and promote good citizenship among the community.**
- **The Dallas Police Department's Internal Affairs should investigate potential bias in arrests of minority racial groups by police officers, given that African Americans and Latino civilians out proportionately are arrested more than other groups like White civilians.**

Future Work

- **Add API for live updates/incidents.**
- **Add more filter to map and graphs like drug related incidents or non-drug related**
- **Add filter for weapon type and year/time/day.**
- **Perform statistical test to validate racial bias in arrests.**

Good Job
Larry! You're
hired!



References

- 1. Change row name in Pandas: <https://www.geeksforgeeks.org/python-change-column-names-and-row-indexes-in-pandas-dataframe/>
- 2. Round numbers in Pandas: <https://pandas.pydata.org/docs/reference/api/pandas.DataFrame.round.html>
- 3. UK Police Dataset: <https://public.tableau.com/app/profile/laurentghesquiere/viz/UKPoliceData/UKPoliceIncidentsDashboard>
- 4. Plot.ly Pie Chart: <https://plotly.com/javascript/pie-charts/>
- 5. PLOT.ly Histogram: <https://plotly.com/javascript/histograms/>
- 6. Pandas Dataframe to HTML: <https://www.geeksforgeeks.org/how-to-render-pandas-dataframe-as-html-table/>
- 7. Plot.ly Box Plot: <https://plotly.com/javascript/box-plots/#box-plot-styling-outliers>
- 8. Our Dataset: <https://www.kaggle.com/datasets/aaronnichowilliams/dallas-police-activity>

Thank you!

- **Alexander, Ed, other Instructional Staff, Support Staff, and the class for your attention and time.**
- **Special thanks to the City of Dallas and Dallas Police Department for their public service.**





Questions/Comments?

