Melchizedek Ackah-Blay

INST 462

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Gun Violence in America: Data-Driven Story

Introduction

Gun violence is a critical issue with far-reaching impacts on public safety and communities across the United States. For my final project, I set out to explore various aspects of gun violence, including trends over time, geographic patterns, demographic factors, and the types of firearms involved. Through in-depth data analysis and visualization, I aimed to uncover insights that could inform policy decisions and prevention efforts.

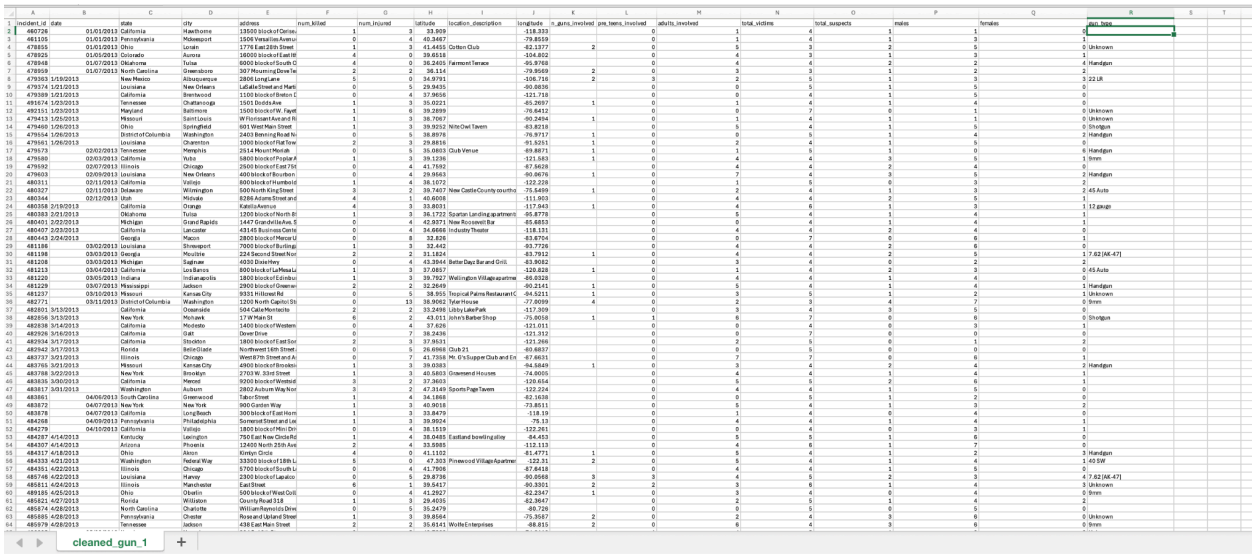
Research Questions

My initial research questions focused on understanding the general trends in gun-related incidents across time and geography, as well as identifying potential correlations between the number of guns involved and the severity of incidents. Specifically, I wanted to explore:

1. What are the general trends in gun-related incidents across time and geography?
2. Which states or cities report the highest number of incidents or casualties?
3. What correlations exist between the number of guns involved and incident severity?
4. Are there demographic patterns that suggest certain groups are more affected by gun violence?

Data and Methodology

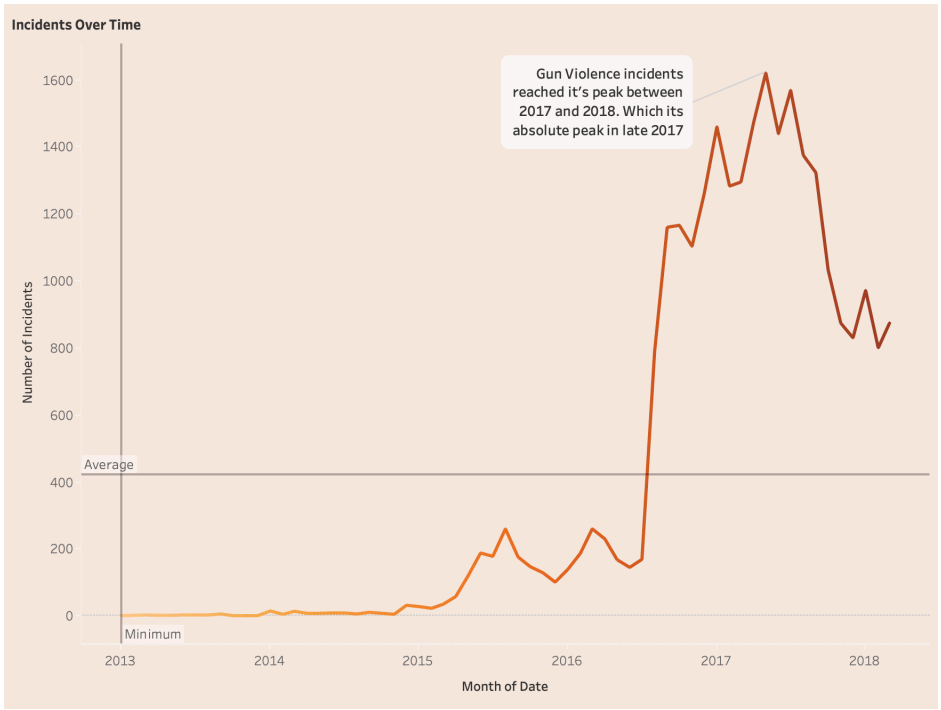
The dataset I used for this project includes over 26,000 gun-related incidents recorded across the United States from 2013 to 2017. The main fields captured include the date, location (state and city), details on the number of victims and suspects, demographic information, and the types of firearms used. To analyze this data, I used Tableau for data visualization and exploration. I started by looking at the overall trends in gun violence incidents over time, which revealed a concerning spike in activity between 2017 and 2018. The number of suspects and victims also increased exponentially during this period. Drilling down geographically, the data showed that several states including Illinois, California, Texas, and Florida - reported the highest total number of incidents. This aligns with their large populations, which appear to be a key factor driving gun violence levels. When examining the relationship between the number of guns involved and incident severity, the data indicated a positive correlation. Incidents with a higher average number of guns tended to result in more casualties. This suggests that limiting access to firearms, especially in high-risk situations, could be an effective prevention strategy The demographic analysis revealed that gun violence disproportionately affects certain groups. For instance, over 88% of individuals involved in gun incidents were male. There were also differences in the types of firearms used, with handguns being the most common choice for both male and female suspects. Below are screenshots from my tableau workbook as of now:



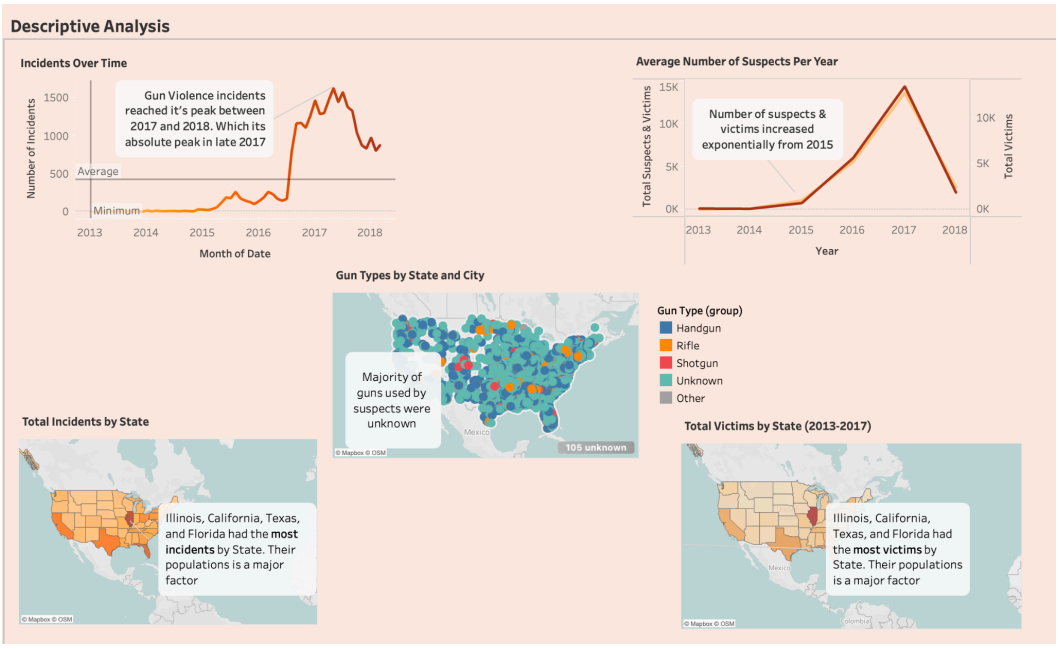
incident_id	date	state	city	address	num_killed	num_injured	latitude	location_description	longitude	n_guns_involved	pres_teens_involved	adults_involved	total_victims	total_suspects	males	females	gun_type
460726	01/01/2013	California	Hawthorne	13500 block of Cerise	1	3	33.909		-118.333		0	1	4	1	1	0	
461105	01/01/2013	Pennsylvania	Mckeesport	1506 Versailles Avenue	0	4	40.3467		-79.8559		0	1	4	1	3	1	
478855	01/01/2013	Ohio	Lorain	1776 East 26th Street	1	3	41.4455	Cotton Club	-82.1377	2	0	5	3	2	5	0	Unknown
478925	01/01/2013	Colorado	Aurora	16000 block of East 1st	4	0	39.6518		-104.802		0	4	3	1	3	1	
478948	01/07/2013	Oklahoma	Tulsa	6000 block of South C	4	0	36.2405	Fairmont Terrace	-95.9768		0	4	4	2	2	4	Handgun
478959	01/07/2013	North Carolina	Greensboro	307 Mourning Dove Te	2	2	36.114		-79.9569	2	0	3	3	1	2	2	
479363	1/19/2013	New Mexico	Albuquerque	2806 Long Lane	5	0	34.9791		-106.716	2	3	2	5	1	3	3	22 LR
479374	1/21/2013	Louisiana	New Orleans	LaSalle Street and Mark	0	5	29.9435		-90.0836		0	0	5	1	5	0	
479389	1/21/2013	California	Brentwood	1100 block of Breton C	0	4	37.9656		-121.718		0	0	4	1	5	0	
491674	1/23/2013	Tennessee	Chattanooga	1501 Dodds Ave	1	3	35.0221		-85.2697	1	0	1	4	1	4	0	
492151	1/23/2013	Maryland	Baltimore	1500 block of W. Fayet	1	6	39.2899		-76.6412		0	0	7	0	1	0	Unknown
479413	1/25/2013	Missouri	Saint Louis	W Florissant Ave and Ri	1	3	38.7067		-90.2494	1	0	1	4	1	1	0	Unknown
479448	1/26/2013	Ohio	Springfield	601 West Main Street	1	3	39.9232	Nite Owl Tavern	-83.8218		0	5	4	1	5	0	Shotgun
479554	1/26/2013	District of Columbia	Washington	2403 Benning Road Nv	0	5	38.8978		-76.9717	1	0	0	5	1	4	2	Handgun
479561	1/26/2013	Louisiana	Chalmette	1000 block of Flat Tow	2	3	29.8816		-91.5251	1	0	2	4	1	5	0	
479573	02/02/2013	Tennessee	Memphis	2514 Mount Moriah	0	5	35.0803	Club Venue	-89.8871	1	0	1	5	1	0	6	Handgun
479580	02/03/2013	California	Yuba	5800 block of Poplar A	1	3	39.1236		-121.583	1	0	4	4	3	5	1	9mm
479592	02/07/2013	Illinois	Chicago	2500 block of East 79t	0	4	41.7592		-87.5628		0	4	4	2	4	0	
479603	02/09/2013	Louisiana	New Orleans	400 block of Bourbon	0	4	29.9563		-90.0676	1	0	7	4	3	5	2	Handgun
480311	02/11/2013	California	Vallejo	600 block of Humbold	1	4	38.1072		-122.228		0	1	5	0	3	2	
480327	02/11/2013	Delaware	Wilmington	500 North King Street	3	2	39.7407	New Castle County courtho	-75.5499	1	0	2	4	1	3	2	45 Auto
480344	02/12/2013	Utah	Midvale	8286 Adams Street and	4	1	40.6008		-111.903		0	4	4	2	5	1	
480358	2/19/2013	California	Orange	Katella Avenue and	4	3	33.8031		-117.943	1	0	4	6	1	3	1	12 gauge
480383	2/21/2013	Oklahoma	Tulsa	1200 block of North El	1	3	36.1722	Spartan Landing apartment	-95.8778		0	5	4	1	4	1	
480401	2/22/2013	Michigan	Grand Rapids	1447 Grandville Ave, S	0	4	42.9571	New Roosevelt Bar	-85.6853		0	0	4	1	4	1	
480407	2/23/2013	California	Lancaster	43145 Business Cente	0	4	34.6868	Industry Theater	-118.131		0	4	4	2	4	0	
480443	2/24/2013	Georgia	Macon	2800 block of Mercer U	0	6	32.826		-83.6704		0	0	7	0	6	1	
481186	03/02/2013	Louisiana	Shreveport	7000 block of Burling	1	3	32.442		-93.7726		0	4	4	2	6	0	
481196	03/03/2013	Georgia	Moultrie	224 Second Street Nor	2	2	31.1824		-83.7932	1	0	4	4	2	5	1	7.62 (AK-47)
481208	03/03/2013	Michigan	Saginaw	4030 Dixie Hwy	0	4	43.3944	Better Days Bar and Grill	-83.9082		0	3	4	0	2	2	
481213	03/04/2013	California	Los Banos	800 block of La Mesa Lo	1	3	37.0857		-120.828	1	0	1	4	2	3	0	45 Auto
481220	03/05/2013	Indiana	Indianapolis	1800 block of Edinbur	1	3	39.7527	Wellington Village apartme	-86.0328		0	4	4	1	4	0	
481229	03/07/2013	Mississippi	Jackson	2900 block of Greenw	2	2	32.2649		-90.2141	1	0	5	4	1	4	1	Handgun
481237	03/10/2013	Missouri	Kansas City	9331 Hillcrest Rd	0	5	38.955	Tropical Palms Restaurant C	-94.5211	1	0	3	5	1	2	1	Unknown
482771	03/11/2013	District of Columbia	Washington	1200 North Capitol St	0	13	38.9062	Tyler House	-77.0099	4	0	2	3	4	7	0	9mm
482801	3/13/2013	California	Oceanside	504 Calle Montecito	2	2	33.2496	Libby Lake Park	-117.309		0	3	4	3	5	0	
482856	3/13/2013	New York	Mohawk	17 W Main St	6	2	43.011	John's Barber Shop	-75.0058	1	1	6	7	0	6	0	Shotgun
482838	3/14/2013	California	Modesto	1400 block of Western	0	4	37.626		-121.011		0	0	4	0	3	1	
482926	3/16/2013	California	Galt	Dover Drive	0	7	38.2436		-121.312		0	0	7	0	6	0	
482934	3/17/2013	California	Stockton	1800 block of East Sor	2	3	37.9531		-121.266		0	2	5	0	1	2	
482942	3/17/2013	Florida	Belle Glade	Northwest 16th Street	0	5	26.6968	Club 21	-80.6837		0	0	5	0	0	0	
483737	3/21/2013	Illinois	Chicago	West 87th Street and A	0	7	41.7358	Mr. G's Supper Club and En	-87.6631		0	7	7	0	6	1	
483765	3/21/2013	Missouri	Kansas City	4960 block of Brooklyn	1	3	39.0383		-94.5849	1	0	3	4	2	4	2	Handgun
483788	3/22/2013	New York	Brooklyn	2703 W. 33rd Street	1	3	40.5803	Gravesend Houses	-74.0005		0	4	4	1	4	1	
483835	3/30/2013	California	Merced	9200 block of Westside	3	2	37.3603		-120.654		0	5	5	2	5	1	
483817	3/31/2013	Washington	Auburn	2802 Auburn Way Nor	3	2	47.3149	Sports Page Tavern	-122.224		0	4	4	1	5	0	
483861	04/06/2013	South Carolina	Greenwood	Tabor Street	1	4	34.1868		-82.1638		0	0	5	1	2	0	
483872	04/07/2013	New York	New York	900 Garden Way	1	3	40.9018		-73.8511		0	0	5	1	3	2	
483878	04/07/2013	California	Long Beach	300 block of East Hom	1	3	33.8479		-118.19		0	1	4	0	4	0	
484268	04/09/2013	Pennsylvania	Philadelphia	Somerset Street and Lei	1	3	39.9924		-75.13		0	0	4	1	4	1	
484279	04/10/2013	California	Vallejo	1800 block of Mini Dri	0	4	38.1519		-122.261		0	0	4	0	3	1	
484287	4/14/2013	Kentucky	Lexington	750 East New Circle Rd	1	4	38.0485	Eastland bowling alley	-84.453		0	5	5	1	6	0	
484307	4/14/2013	Arizona	Phoenix	12400 North 25th Ave	2	4	33.5985		-112.113		0	4	6	1	7	0	
484317	4/18/2013	Ohio	Akron	Kimlyn Circle	4	0	41.1102		-81.4771	1	0	5	4	1	2	3	Handgun
484333	4/21/2013	Washington	Federal Way	33300 block of 18th Ll	5	0	47.303	Pinewood Village Apartmer	-122.31	2	0	5	4	1	4	1	40 SW
484351	4/22/2013	Illinois	Chicago	5700 block of South Lo	0	4	41.7906		-87.6418		0	4	4	1	5	0	
485746	4/22/2013	Louisiana	Harvey	2300 block of Lapalco	0	5	29.8736		-90.0568	3	0	4	5	2	3	4	7.62 (AK-47)
485811	4/24/2013	Illinois	Manchester	East Street	6	1	39.5417		-90.3301	2	2	3	6	1	4	3	Unknown
489185	4/25/2013	Ohio	Obetin	500 block of West Coll	0	4	41.2827		-82.2347	1	0	3	4	0	4	0	9mm
485821	4/27/2013	Florida	Williston	County Road 318	1	3	29.4035		-82.3647		0	2	5	1	4	2	
485674	4/28/2013	North Carolina	Charlotte	William Reynolds Drive	0	5	35.2479		-80.726		0	0	5	0	5	0	
485685	4/28/2013	Pennsylvania	Chester	Rose and Upland Street	1	3	39.8564		-75.3587	2	0	2	4	3	6	0	Unknown
485979	4/28/2013	Tennessee	Jackson	438 East Main Street	2	2	35.6141	Wolfe Enterprises	-88.815	2	0	6	4	3	6	0	9mm

cleaned_gun_1

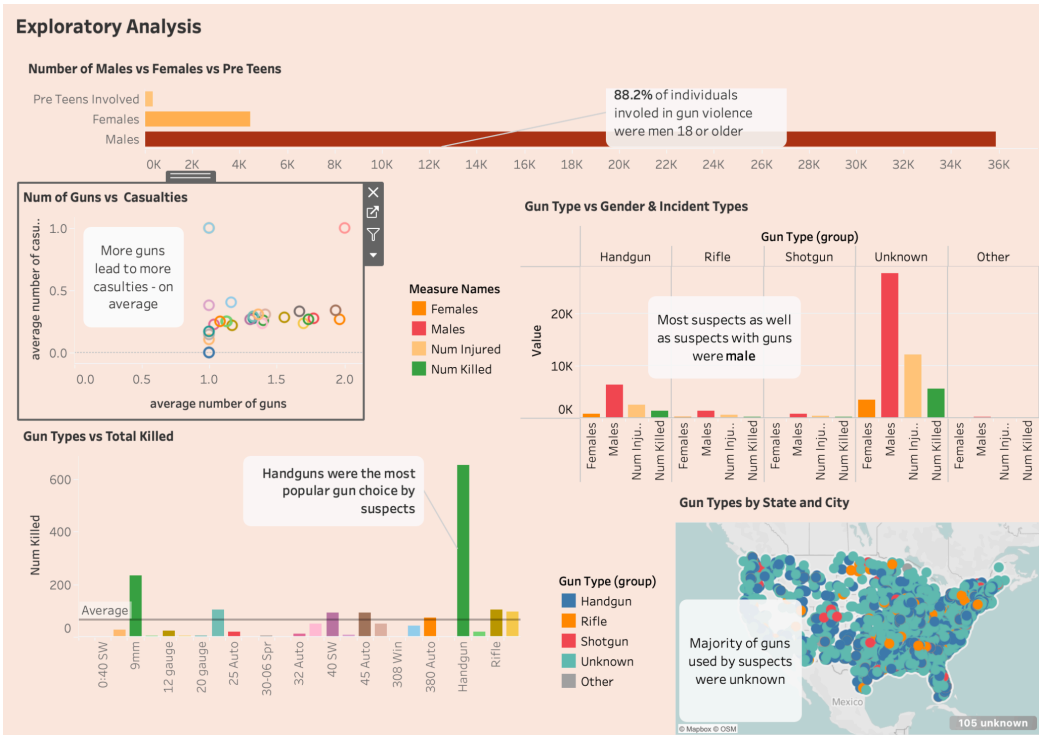
the cleaned version of the dataset



gun incident trends



Descriptive Analysis Dashboard



Exploratory Analysis Dashboard

Challenges and Opportunities

One of the main challenges I faced was the sheer volume of data and the need to distill it into a coherent narrative. There were many potential angles to explore, from geographic patterns to demographic trends, and I had to select the most impactful insights to focus on carefully. Another challenge was finding the right balance between providing sufficient context and keeping the visualizations clear and concise. I wanted to ensure that even a data novice could understand the key takeaways, while still conveying the nuances and complexities of this issue. Despite these challenges, the data also presented several opportunities to uncover meaningful insights. By looking at trends over time, I was able to identify critical inflection points and understand how the landscape of gun violence has evolved. The geographic and demographic analyses also shed light on the populations most affected, which could inform targeted intervention and prevention efforts.

Conclusion

Through this data-driven exploration of gun violence in America, I aimed to provide a comprehensive and objective perspective on this complex issue. By analyzing trends, patterns, and correlations, I hope to contribute to the ongoing dialogue and inform evidence-based policymaking and community-level initiatives.

While the findings are sobering, I believe this project highlights the power of data to drive meaningful change. By continuing to study and understand the root causes and dynamics of gun violence, we can work towards a safer and more equitable society for all.

Next Steps Moving forward, I would like to expand the scope of this project in several ways:

1. Incorporate more up-to-date data to analyze the most recent trends and identify any shifts in the landscape of gun violence.
2. Conduct a deeper dive into the demographic factors, exploring how characteristics like age, race, and socioeconomic status intersect with gun violence.
3. Investigate the potential impacts of different gun control policies and interventions, using the data to evaluate their effectiveness.
4. Explore the role of mental health, substance abuse, and other societal factors that may contribute to gun violence.
5. Engage with local communities and stakeholders to better understand the on-the-ground realities and tailor the analysis to address their specific needs and concerns.