

# The Case of Police Shooting Fatality Rates in the US

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# Research Questions

1. Is there a relationship between race and the rate of police fatal shootings?
2. Are US police shooting fatalities lower in 2020 due to the COVID-19 pandemic?
3. Does the adoption of body cameras reduce the number of fatal shootings by police officers?

# Dataset

- 5826 records and 17 attributes (as of Nov. 17th 2020)
- Date of the fatal shooting
- Location of fatal shooting occurrence (city, state, latitude and longitude)
- Demographic information of the individual (age, gender, race)
- Circumstances of the individual (weapon armed, threat level, flee status, mental illness)
- Donning of body cameras on police officers at time of shooting

fatal-police-shootings-data

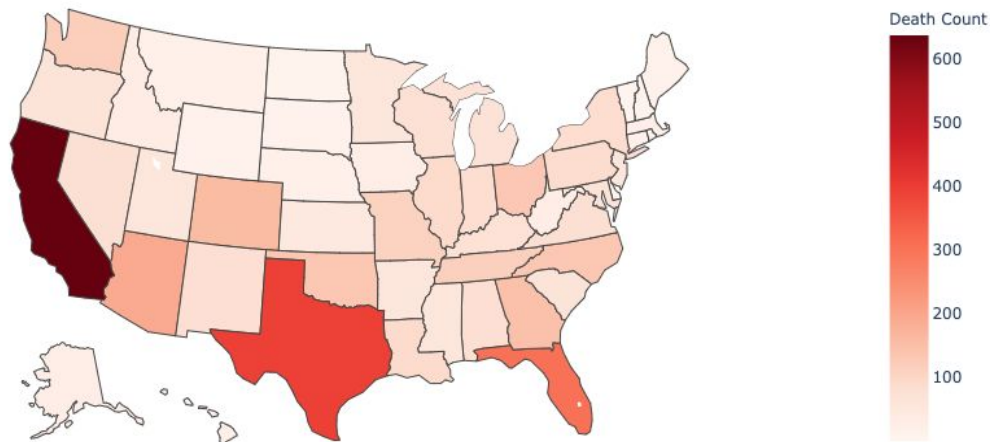
id	name	date	manner_of_death	armed	age	gender	race	city	state	signs_of_mental_illness	threat_level	flee	body_camera	longitude	latitude	is_geocoding_exact
3	Tim Elliot	2015-01-02	shot	gun	53	M	A	Shelton	WA	TRUE	attack	Not fleeing	FALSE	-123.122	47.247	TRUE
4	Lewis Lee Lembke	2015-01-02	shot	gun	47	M	W	Aloha	OR	FALSE	attack	Not fleeing	FALSE	-122.892	45.487	TRUE
5	John Paul Quintero	2015-01-03	shot and Tasered	unarmed	23	M	H	Wichita	KS	FALSE	other	Not fleeing	FALSE	-97.281	37.695	TRUE
8	Matthew Hoffman	2015-01-04	shot	toy weapon	32	M	W	San Francisco	CA	TRUE	attack	Not fleeing	FALSE	-122.422	37.763	TRUE
9	Michael Rodriguez	2015-01-04	shot	nail gun	39	M	H	Evans	CO	FALSE	attack	Not fleeing	FALSE	-104.692	40.384	TRUE
11	Kenneth Joe Brown	2015-01-04	shot	gun	18	M	W	Guthrie	OK	FALSE	attack	Not fleeing	FALSE	-97.423	35.877	TRUE
13	Kenneth Arnold Buck	2015-01-05	shot	gun	22	M	H	Chandler	AZ	FALSE	attack	Car	FALSE	-111.841	33.328	TRUE
15	Brock Nichols	2015-01-06	shot	gun	35	M	W	Assaria	KS	FALSE	attack	Not fleeing	FALSE	-97.564	38.704	TRUE
16	Autumn Steele	2015-01-06	shot	unarmed	34	F	W	Burlington	IA	FALSE	other	Not fleeing	TRUE	-91.119	40.809	TRUE
17	Leslie Sapp III	2015-01-06	shot	toy weapon	47	M	B	Knoxville	PA	FALSE	attack	Not fleeing	FALSE	-79.991	40.413	TRUE
19	Patrick Wetter	2015-01-06	shot and Tasered	knife	25	M	W	Stockton	CA	FALSE	attack	Not fleeing	FALSE	-121.299	37.93	TRUE
21	Ron Sneed	2015-01-07	shot	gun	31	M	B	Freeport	TX	FALSE	attack	Not fleeing	FALSE	-95.369	28.955	TRUE

# Data Cleaning and Preprocessing

- Verified data types
- Extracted data up until October 2020 → 5743 records
- Missing data: 619 race values, missing IDs
- Transform Date into Month and Day of Year columns
- Renaming headers and elements
- Removed `name` column to preserve individual rights

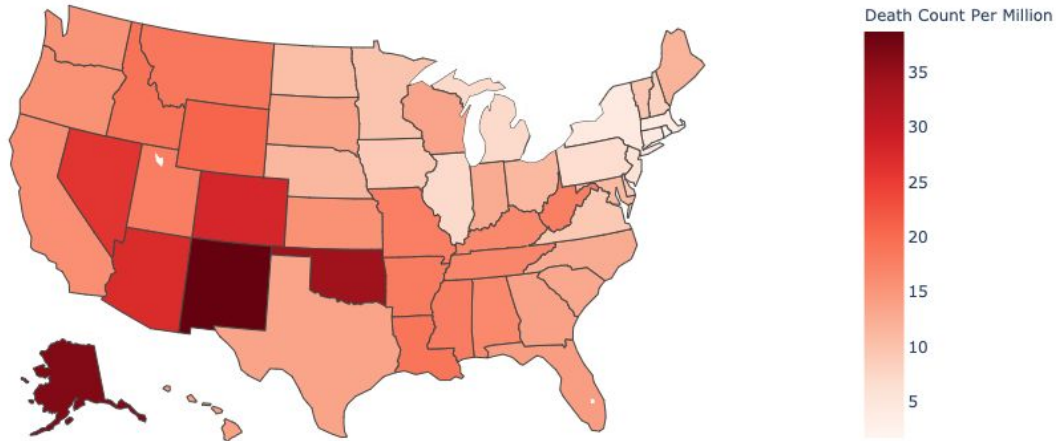
# Initial Exploration

Police Shooting Fatalities by US States

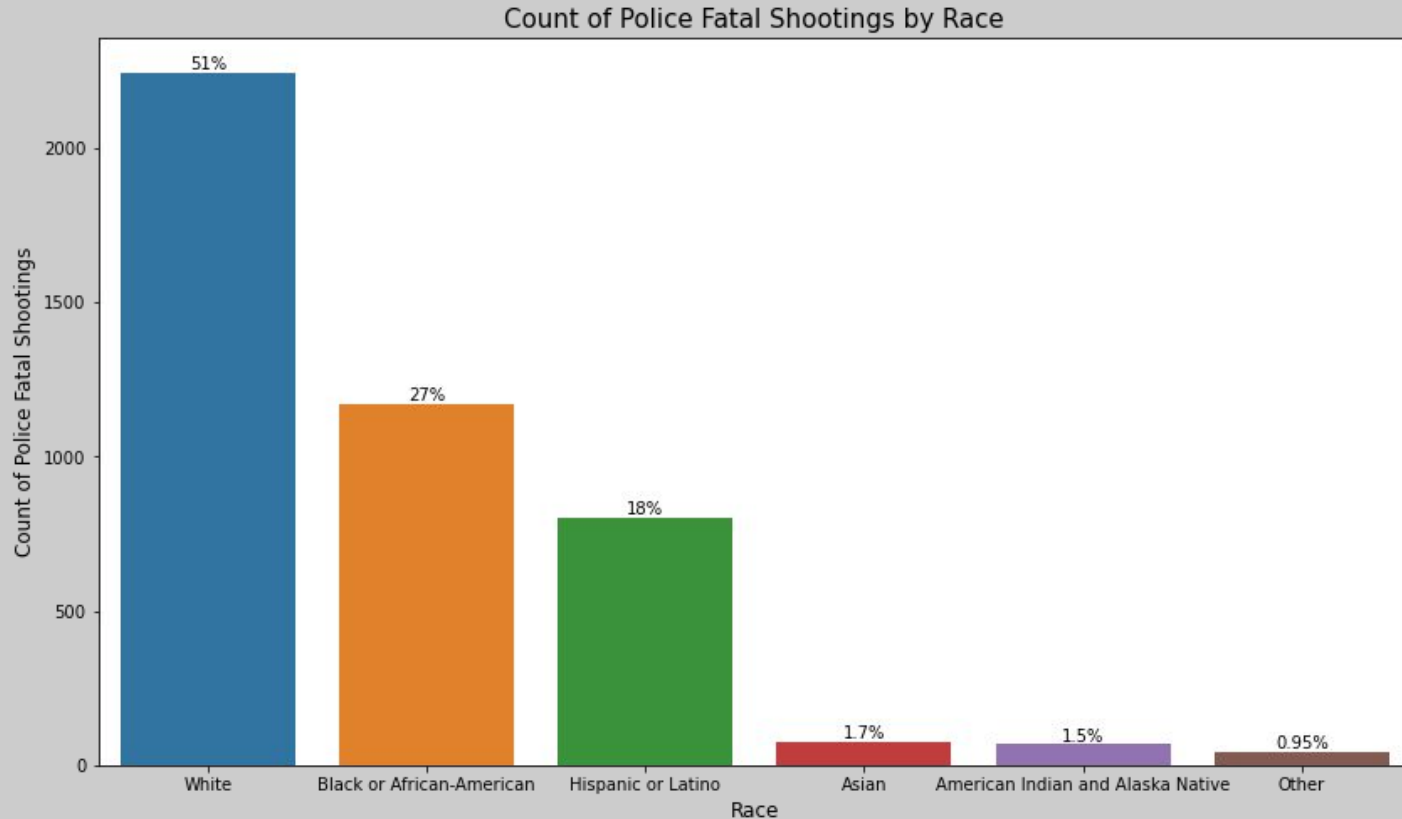


# Initial Exploration (cont'd)

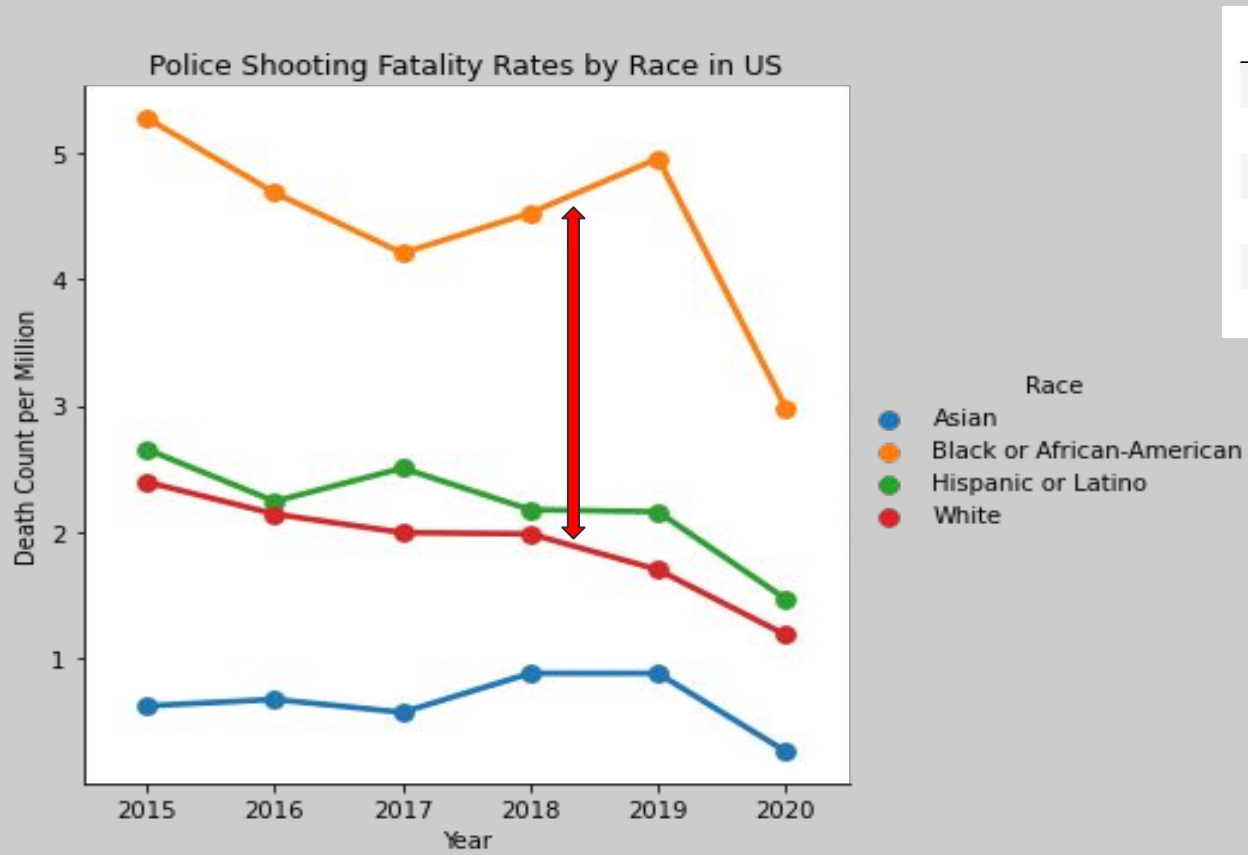
Police Shooting Fatality Rates by US States per Million People



# Research Question 1: Is there a correlation between the racial composition and the rate of police fatal shootings?



Research Question 1: There is a **strong** correlation between racial composition versus officer fatal shooting rates.



	race	population_in_million	%
0	White	197.128	60.1
1	Black or African-American	43.952	13.4
2	Hispanic or Latino	60.680	18.5
3	Asian	19.352	5.9
4	American Indian and Alaska Native	4.264	1.3
5	Other	2.624	0.8

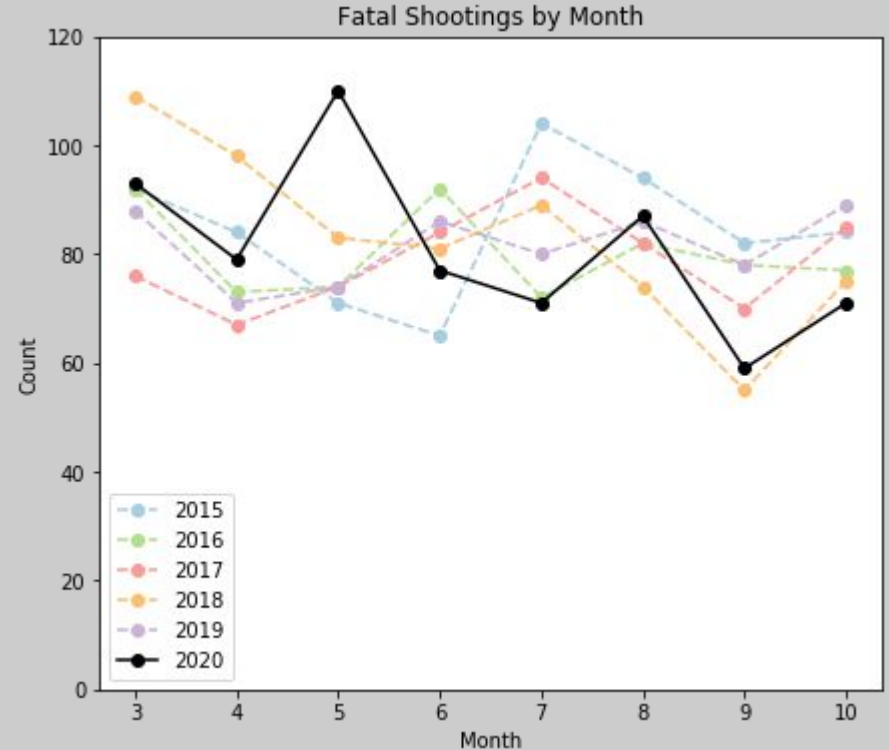
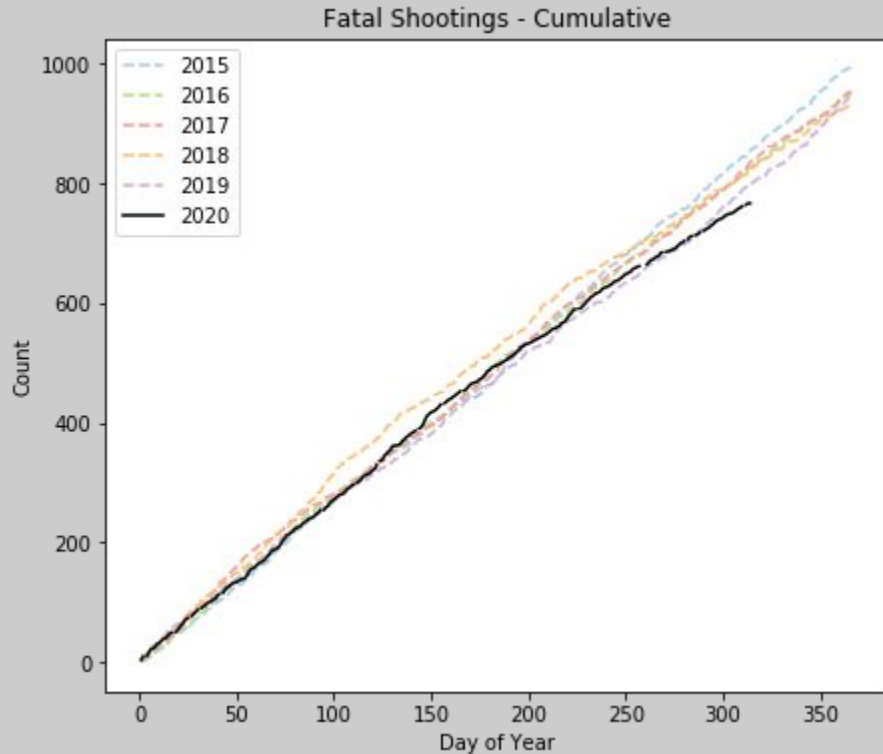
Missing Race Data

2020	215
2019	141
2018	101
2017	77
2016	56
2015	29

Name: date, dtype: int64

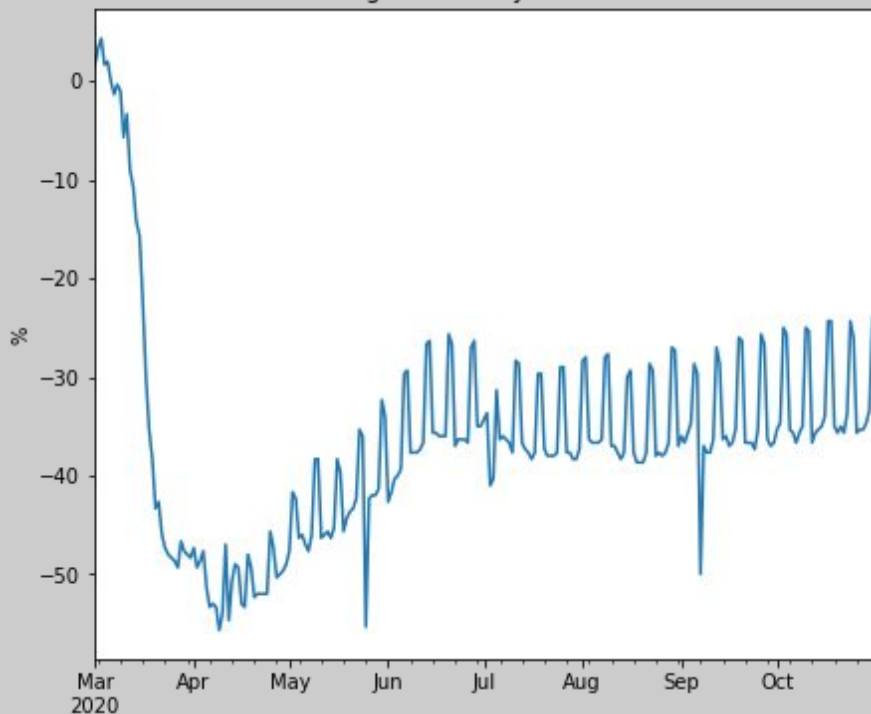


## Research Question 2: Are US police shooting fatalities lower in 2020 due to the COVID-19 pandemic?

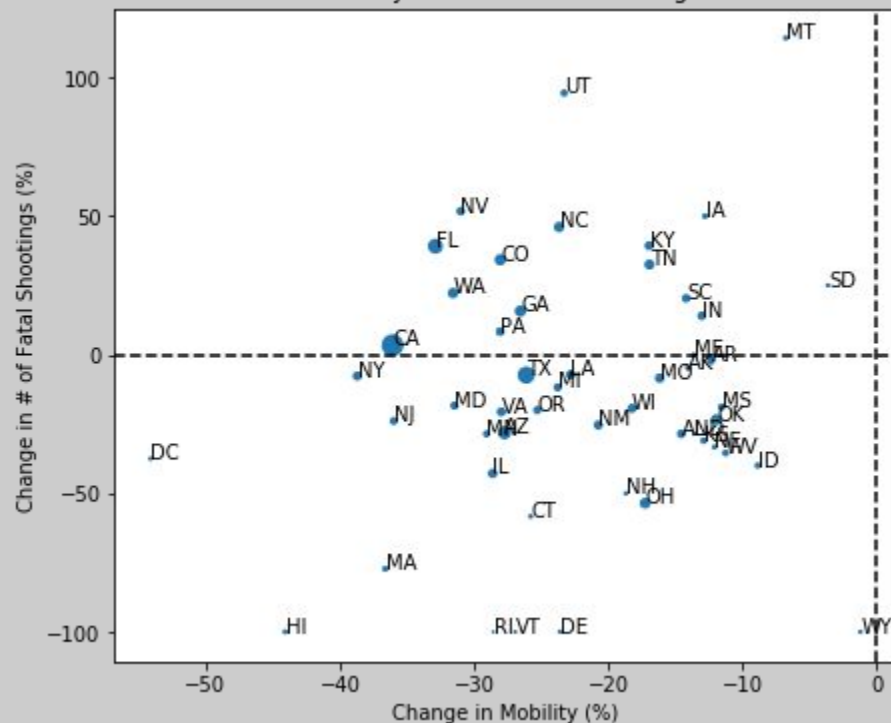


## Research Question 2: There is **little** evidence that lockdown measures have led to reduction in police fatal shootings.

Change in Mobility - California

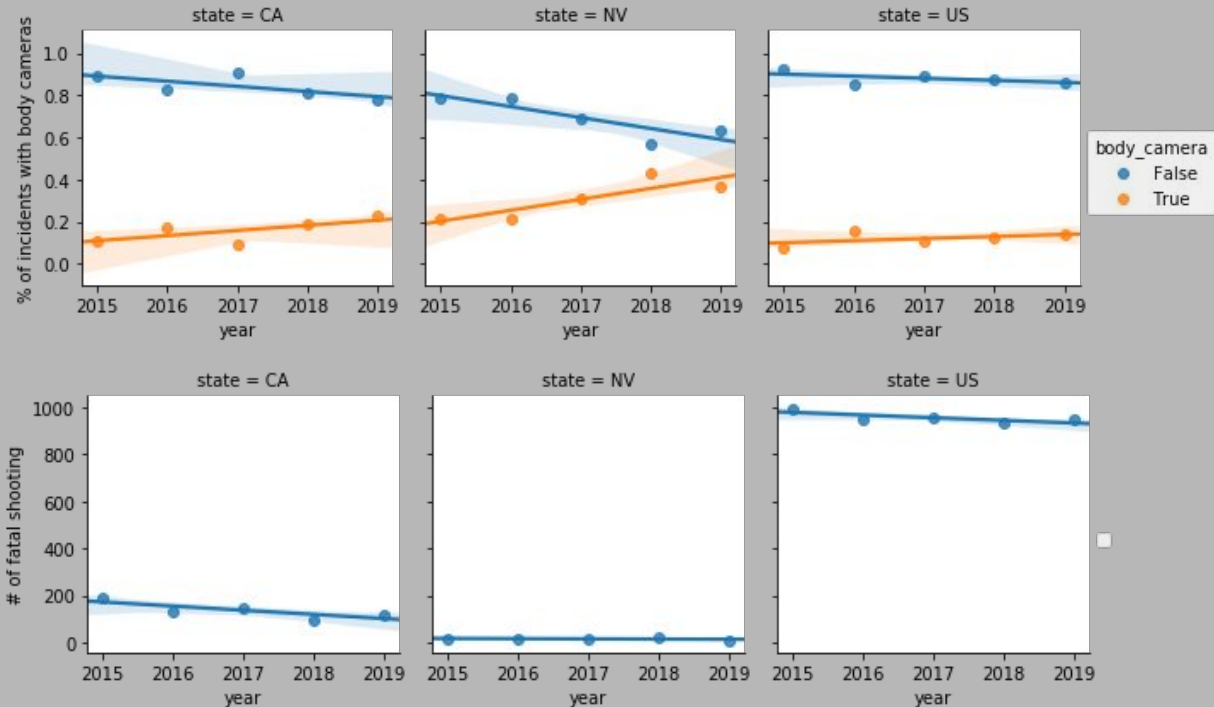


Mobility vs. # of Fatal Shootings



**Research Question 3:** We hesitate to conclude that body cameras can effectively reduce police misconduct although in California it shows positive impact.

threat_level	attack	other	undetermined
body_camera			
False	88.64%	85.61%	87.98%
True	11.36%	14.39%	12.02%



# Conclusion

1. There is a **strong** correlation between racial composition and police fatal shooting fatality rates in the US. At a high level, minority races such as Black and Hispanic Americans are killed at a higher rate in comparison to White Americans.
2. We do not observe strong evidence in support of the hypothesis using both temporal and cross-sectional analysis, and thus **cannot conclude** that reduction in mobility has clear impact on police fatal shootings.
3. By analyzing our dataset and referencing the current studies, we **hesitate to conclude** that body cameras can effectively reduce police misconduct although in California, it shows positive impact. More research is needed because the average deployment rate of body cameras is quite small and the body camera policies vary in different agencies