Livermore Police Department Traffic Stop Project: Final Report

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PROJECT OVERVIEW

Project Scope: Examine contacts with the public during traffic stops to better understand the racial/ethnic composition of these encounters and their outcomes.

Deliverables:

1. Discuss best practices in data analysis of police-civilian encounters – *completed March 2021*
2. Review and assess current traffic stop data collection protocols; provide recommendations as needed – *completed October 2021*
3. Analyze recent traffic stop data to identify the racial/ethnic composition of those encounters and compare against appropriate benchmarks
4. Analyze recent LPD data to identify factors associated with arrest

METHODOLOGY

Part I: Analyze recent traffic stop data to identify the racial/ethnic composition of those encounters and compare against appropriate benchmarks

- We have no information on situations in which an officer could have stopped a civilian, but then did not. Thus, the key challenge is to identify a comparison (referred to as a benchmark).
- Key consideration: What is the risk of being stopped for a specific civilian group?
- A good benchmark reflects stopping risk (assuming no bias) by asking the following questions: Where they drive?, When they drive?, How often they drive?, What they drive?, How they drive?, Who they are?

METHODOLOGY

- Two benchmarks were used as proxies for driving and traffic law violating populations (i.e., risk of being stopped) in Livermore
  1. A "veil of darkness" (VOD) analysis examined differences in stop rates of non-White and White drivers during the daytime compared to the nighttime
  2. Traffic crash data:
     a) Not-at-fault drivers serving as an estimate of the driving population
     b) At-fault drivers serving as an estimate of those who violate the traffic laws

METHODOLOGY

- Why not use Census population as a benchmark?
- The key problem is the faulty assumption that the residential population possesses an equal level of risk for being stopped by the police.
    1. Civilians vary in their likelihood of contact (i.e., risk) based on a number of factors, including their own driving behavior (i.e., if they drive, how they drive, when they drive, what they drive, etc.).
    2. This benchmark assumes that only the residential population that lives in a particular area drives in that area.
- These two factors (i.e., driving behavior of residents and the cross-jurisdictional travel of non-resident drivers), in addition to others, render this an inappropriate benchmark.
- The use of Census data as a legitimate, scientific benchmark has been rejected by contemporary scholars and experts.

METHODOLOGY

Part II: Analyze recent LPD data to identify factors associated with arrest

- Police-civilian encounters initiated by officers (i.e., traffic and pedestrian stops) were used in this analysis
- Descriptive statistics describe the encounters
- Inferential statistics determine whether a particular civilian group is more or less likely to receive a specific outcome while considering all other relevant characteristics
- Previous research suggests some evidence for non-White groups to be arrested at higher rates, while other studies provide no evidence of a relationship
- Male civilians are consistently found to be arrested at higher rates

DATA & ANALYSIS

- LPD activity between January 1, 2019 and April 30, 2021 was analyzed
- Part I: 22,737 LPD traffic stops were analyzed
  - Stops, Benchmark #1: ANOVA and t-tests for statistical significance
  - Stops, Benchmark #2: Disproportionality Ratios (DR) compare stopping rates between White and non-White groups
    - A rate above 1.0 indicates that the group of interest experienced rate of stops at an elevated rate compared to White drivers
- Part II: 24,065 police-civilian encounters were analyzed
  - Multivariate models were estimated to identify factors (i.e., encounter, civilian, officer, and contextual variables) associated with the likelihood of an arrest
  - Results identify variables that enhance or reduce the likelihood of an arrest while simultaneously considering all other factors

RESULTS: Stops, Benchmark #1

	Traffic Stop % (N=22,737)	Daytime % (N=1,552)	Nighttime % (N=1,148)
White	44.2%	44.5%	43.8%
Black	10.3%	9.7%	11.4%
Hispanic	28.1%	30.0%	29.4%
Asian	5.2%	4.3%	5.4%
Other	12.1%	11.5%	10.0%

No statistical significance

RESULTS: Stops, Benchmark #2

	Traffic Stop % (N=22,737)	At-Fault Crashes % (N=1,775)	Not-At-Fault Crashes % (N=2,220)	At-Fault DI	Not-At-Fault-DI	At-Fault DR	Not-At-Fault-DR
White	44.2%	40.7%	41.1%	1.1	1.1	--	--
Black	10.3%	9.4%	8.4%	1.1	1.2	1.0	1.1
Hispanic	28.1%	33.7%	28.6%	0.8	1.0	0.8	0.9
Asian	5.2%	5.4%	8.1%	1.0	0.6	0.9	0.6
Other	12.1%	10.9%	13.9%	1.1	0.9	1.0	0.8

RESULTS: Arrest

N=24,065	Percent		Percent/Average
Arrest	**1.8%**	**Officer Variables**	
Encounter Variables		Race/Ethnicity	
Year 2019	54.0%	White	89.0%
Year 2020	34.0%	Black	0.7%
Year 2021	12.1%	Hispanic	6.6%
Weekend	17.6%	Asian	0.5%
Daytime	62.1%	Other	3.2%
Civilian Variables		Male	92.7%
Race/Ethnicity		Age	37.65
White	45.6%	Years of Experience	11.26
Black	10.0%	Patrol Officer	61.0%
Hispanic	28.1%	**Contextual Variables**	
Asian	4.9%	Violent Crime Rate	2.72
Other	11.5%	Property Crime Rate	23.93
Male	71.2%		
Under 24 Years of Age	20.3%		

Violent and property crime rates are based on organization beats in effect since Feb 2020.

RESULTS: Arrest

Model 1

- No statistical difference between White and Black civilians
- Hispanic, Asian, and Other groups were all less likely to be arrested compared to White civilians

Factors that Increased the Likelihood of Arrest

- Male civilians
- Civilians under the age of 24
- Officers with less experience
- Officers assigned to Patrol
- Incidents during daytime

Model 2 (Feb 2020-Apr 2021)

- Largely the same results as Model 1 with three exceptions:
  1. No difference between Hispanic and White civilians
  2. No difference between daytime and nighttime incidents
  3. Areas with higher levels of violent crime experienced higher arrest rates

CONCLUSIONS

Key Findings

- The results from the two benchmark analyses did not reveal a pattern of racial/ethnic disparity in traffic stops experienced by non-White drivers.
  - The VOD analysis found no statistically significant differences in the rates at which non-White drivers were stopped in Livermore during the day compared to at night.
  - The traffic crash benchmark analysis found slightly elevated risks for stops of White and Black drivers (using both type of crash data), and a slightly elevated risk for stops of Black drivers relative to White drivers (not-at-fault benchmark only).
- Taken together, the two benchmark analyses do not show a consistent pattern of disparity in stops based on driver race or ethnicity. In other words, the LPD engaged in traffic stops that largely occurred independent from the influence of civilian race/ethnicity.

CONCLUSIONS

Key Findings

- The results of the arrest analyses do not reveal a pattern of racial disparity in police outcomes that disadvantages non-White civilians in the City of Livermore.

- In sum, no clearly identifiable or concerning pattern of racial/ethnic disparity was found in the encounters that took place in Livermore over a 26-month period during 2019-21.

Questions/Comments?

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