Developing a Data Driven Approach to Address Racial Profiling

Quick Facts

- On average, Connecticut law enforcement agencies conduct approximately **550,000** traffic stops a year. Traffic stops are the most common encounter police have with the public.

- Four statewide studies have been published since 2015 identifying 31 departments with statistically significant racial disparities.

- Statewide analysis clearly indicates that race/ethnicity is a factor in traffic enforcement.

Overview of Alvin W. Penn Law

- 1999: Connecticut enacts The Alvin W. Penn Racial Profiling Prohibition Act (Public Act 99-198) that prohibits any law enforcement agency from stopping, detaining, or searching any motorist when the stop is motivated solely by considerations of the race, color, ethnicity, age, gender or sexual orientation (Connecticut General Statutes Sections 54-1l and 54-1m).

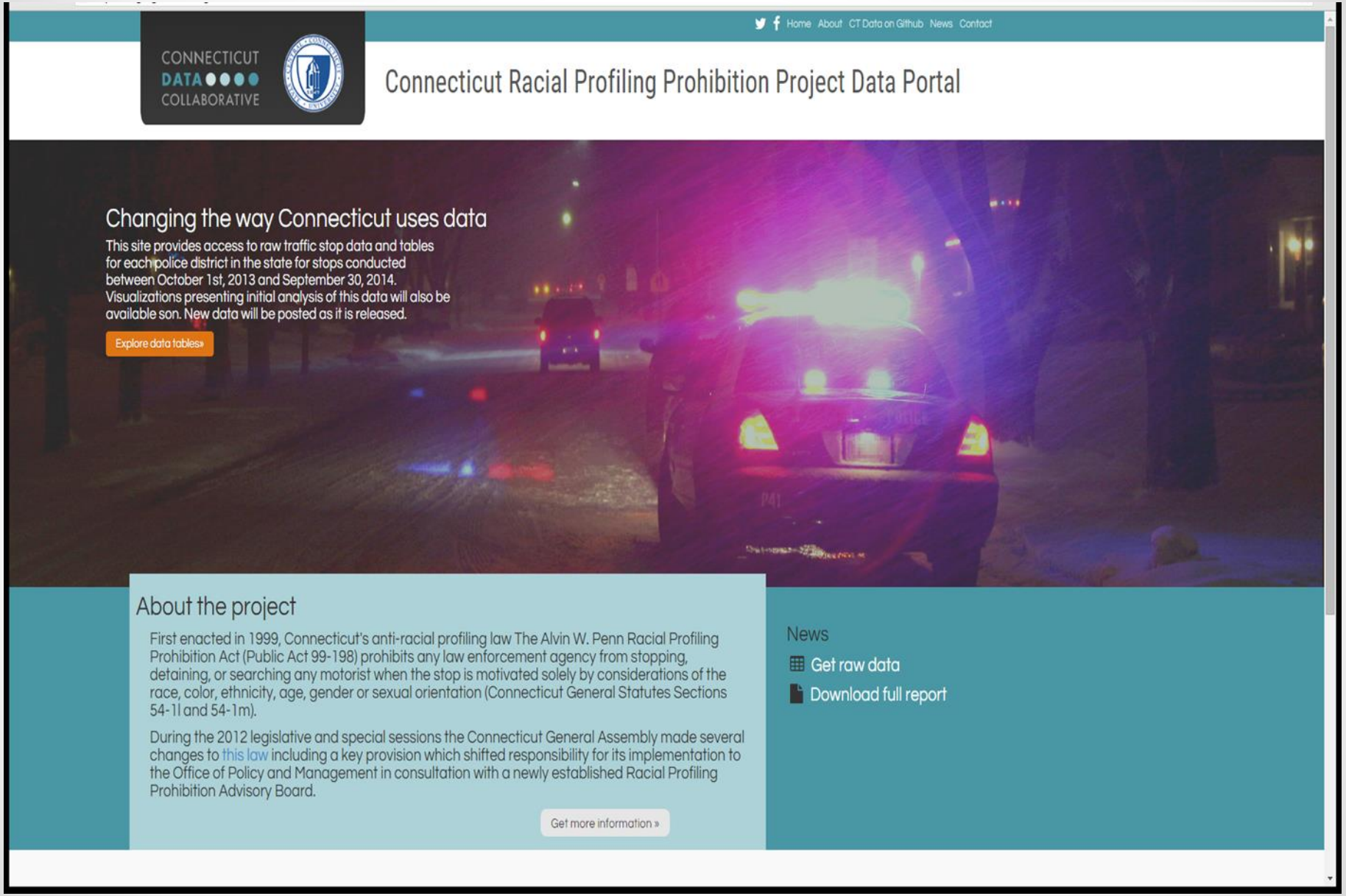
- 2012: Responsibility for implementation changed to the Office of Policy and Management (OPM) and established the Racial Profiling Prohibition Advisory Board.

- 2013: The law was expanded to include all agencies with the power to conduct a motor vehicle stop and added new information to be collected. It also changed the reporting requirements.

Updated Alvin W. Penn Law

- 107 Agencies are required to collect data on all traffic stops and electronically report to a centralized database on a monthly basis.
  - 94 Municipal Police Agencies
  - State Police
  - 12 Special Police Agencies
- State law requires an analysis of data on an annual basis.
- State law also required the development of an on-line database to be available to the public.

http://ctrp3.ctdata.org



Annual Analysis of Data

Guiding Principles for Statistical Analysis

- **Principle 1:** Acknowledge that statistical evaluation is limited to finding racial and ethnic disparities that are indicative of racial and ethnic bias but that, in the absence of a formal procedural investigation, cannot be considered comprehensive evidence.

- **Principle 2:** Apply a holistic approach for assessing racial and ethnic disparities in Connecticut policing data by using a variety of approaches that rely on well-respected techniques from existing literature.

- **Principle 3:** Outline the assumptions and limitations of each approach transparently so that the public and policy makers can use their judgment in drawing conclusions from the analysis.

Methodological Approach

- The report is organized to lead the reader through a host of descriptive and statistical tests that vary in their assumptions and level of scrutiny.
- The intent behind this approach is to apply multiple tests as a screening filter for the possibility that any one test (1) produces false positive results or (2) reports a false negative.
- Seven distinct analytical tools were used to evaluate whether racial and ethnic disparities are present in the Connecticut policing data.

Veil of Darkness

- If racial bias is driven by the ability of officers to observe the race of drivers before making a stop, then we should observe a statistical disparity between the rate of minority stops occurring in daylight vs. darkness.
  - Developed by Jeffery Grogger (U. Chicago) and Greg Ridgeway (U. Penn and NIJ) in 2006
  - Restricts sample to intertwilight window
  - Control statistically for a number of factors that could change risk-set
    - Time of the day, day of the week, state traffic volume, police department, time of day*department fixed effects, day of the week*department fixed effects, and volume*department
  - Estimates are for several minority definitions
  - Considered by IMRP to be the strongest and most accurate test

Synthetic Control Method

- The number of minority traffic stops in a given department is evaluated against a benchmark constructed using stops made by all other departments in Connecticut.
  - Since departments differ in terms of their enforcement activity (i.e. time of stops, reason for stops, etc.) and the underlying demographics of the population on the roadway, this analysis relies on the rich statistical literature on propensity scores.
  - Here, a propensity score is a measure of how similar a stop made outside a given department is to a stop made by the department being analyzed. These measures of similarity are used to weight stops when constructing an individual benchmark for each department.
    - For example, if the department being analyzed has a high minority population and makes most of their stops on Friday nights at 7PM for speeding violations then stops made for speeding violations by departments with a similar residential population at this time and day will be given more weight when constructing the benchmark.

Descriptive Statistics and Intuitive Measures

- These methods are referred to as population benchmarks and are commonly used to evaluate racial disparities in police data across the country
  - Statewide Average Comparison
  - Estimated Commuter Driving Population
  - Resident Population
- These 3 measures became the descriptive statistic matrix that was used to help screen departments.

Descriptive Statistics and Intuitive Measures

- Departments were considered sufficient for identification if a department had either:
  - A disparity of 10 percentage or more (1 point)
  - A disparity of more than five, but less than 10 percentage points as well as a disparity ratio greater than 1.75 (0.5 points)
- Department exceeds the disparity threshold in at least 2 of three benchmark areas and a weighted total of 4.5 or more.

Stop Disposition Test

- Tests for disparities in the outcomes of traffic stops using a model that examines the distribution of dispositions conditional on race and the reason for the stop.
  - Specifically, we test whether traffic stops made of minority motorists result in different outcomes relative to their white non-Hispanic peers.

KPT Hit Rate Analysis

- If drivers and motorists behave rationally and optimize behavior, in equilibrium they are expected to have equal hit rates across races i.e. guilt/searches.
  - Developed by Knowles (IZA) Persico (NYU) and Todd (U. Penn) in 2001
  - Utilizes only post stop data and restricts sample to discretionary searches
  - Estimated across several minority definitions and compared to control group
  - Has known shortcomings but can be used to confirm other tests

Criteria for Identifying Departments

- In order to determine if a departments racial and ethnic disparities warrant additional in-depth analysis, researchers review the results from the seven analytical methods.
- The threshold for identifying significant racial and ethnic disparities for departments is described for each method
  - ex. departments with a disparity that was statistically significant at the 95 percent level in the black or Hispanic alone categories in the Veil of Darkness methodology were identified as statistically significant

Criteria for Identifying Departments

Criteria for being identified for follow-up analysis

1. A statistically significant disparity in the Veil of Darkness analysis
2. A statistically significant disparity in the synthetic control analyses and any one of the following analyses:
    a. Descriptive statistics
    b. Stop Disposition
    c. KPT-Hit Rate
3. A statistically significant disparity in the descriptive statistics, stop disposition, and KPT hit-rate analyses.

Follow-Up Analysis

- By conducting additional in-depth analyses on the identified departments, the public can have a better understanding as to why and how disparities exist. This transparency is intended to assist in achieving the goal of increasing trust between the public and law enforcement.
- The follow-up analysis is designed to be a collaborative effort between research staff, the police department and the community.
- The analysis is tailored based on the department and community's unique characteristics.
  - Traffic stop disparities can be influenced by many factors such as the location of accidents, high call for service volume areas, high crime rate areas, and areas with major traffic generators such as shopping and entertainment districts, to name a few.

Characteristics of Traffic Stop Data

2017 Statewide Driver Characteristics

Race and Ethnicity		Gender		Residency		Age	
White	66.4%	Male	63.1%	Connecticut Resident	86.2%	16 to 20	8.5%
						21 to 30	29.5%
Black	16.3%					31 to 40	21.2%
All Other Races	3.1%	Female	36.9%	Nonresident	13.8%	41 to 50	17.0%
Hispanic	14.2%					51 to 60	14.4%
						Older than 61	9.4%

Characteristics of Traffic Stop Data

2017 Statewide Stop Characteristics

Classification of Stop		Basis for Stop	
Motor Vehicle Violation	88.4%	Speeding	28.2%
Equipment Violation	9.6%	Cell Phone	9.0%
Investigatory	2.0%	Defective Lights	8.9%
Outcome of Stop		Registration	8.8%
Uniform Arrest Report	0.9%	STC Violation	7.7%
Misdemeanor Summons	4.7%	Misc. Moving Violation	7.7%
Infraction Ticket	42.6%	Traffic Control Signal	7.2%
Written Warning	15.1%	Stop Sign	7.0%
Verbal Warning	35.4%	Seatbelt	3.5%
No Disposition	1.4%	Display of Plates	2.8%
Vehicles Searched	3.2%	All Other	9.2%