UCONN
INSTITUTE FOR MUNICIPAL AND REGIONAL POLICY

CONNECTICUT RACIAL PROFILING PROHIBITION PROJECT

TRAFFIC STOP DATA ANALYSIS AND FINDINGS, 2023–24

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PREAMBLE

This preamble was written by an ad hoc committee of the Connecticut Racial Profiling Prohibition Project advisory board and unanimously endorsed by the board on December 6, 2018.

1. Racial Profiling has historically occurred and continues to occur throughout America.
2. The Alvin W. Penn Racial Profiling Law enacted by the Connecticut General Assembly in 1999 required state and local police to collect traffic stop data and report the data to the state.
3. The 2011 federal investigation into the East Haven Police Department brought this issue to the forefront in Connecticut again and led to the Connecticut General Assembly updating the Profiling Legislation in 2012.
4. Disparities across racial and ethnic groups occur in traffic stops in Connecticut.
5. Enforcing the law's data reporting requirement and collecting and analyzing racial disparities in traffic stop records in the primary charge of the advisory board.
    a. A broader analysis utilizing multiple methodologies in the preferred method for measuring the presence of racial disparities in traffic enforcement;
    b. Although no measure is 100% accurate in measuring disparities, the analysis utilized in Connecticut is sufficient in determining the presence of disparities;
    c. We will continue to modify and refine our methodologies based on the best available research and accepted practices in the field.
6. We will take a proactive approach to understanding, explaining, and addressing disparities found in the analysis by:
    a. Utilizing input from all stakeholders to understand the underlying causes for such disparities;
    b. Clearly explaining to the public and stakeholders if there are justifiable reasons for such disparities;
    c. Reporting to the Office of Policy and Management instances where the Connecticut Racial Profiling Prohibition Project Advisory Board believes that a police department is in violation of the Alvin W. Penn law.

EXECUTIVE SUMMARY OF FINDINGS

This is the tenth analysis conducted by the Institute for Municipal and Regional Policy (IMRP) at the University of Connecticut (UConn)[1]. The IMRP and Connecticut Racial Profiling Prohibition Project advisory board is particularly well-known for developing the technical framework of the "Connecticut Model," a pioneering approach designed to identify and mitigate racial and ethnic disparities in police traffic stops. Our approach has been adopted by multiple states, endorsed by advocacy organizations, and is nationally recognized as the gold standard approach for analyzing traffic stop data for evidence of disparate treatment.

This analysis examines reported traffic stop data from the 2023 and 2024 calendar years, including a three-year aggregate assessment of stops across the study periods. Data were submitted by 95 municipal police departments, the Connecticut State Police, and several special police agencies.

In total, Connecticut law enforcement agencies conducted approximately 358,000 traffic stops in 2023 and 413,000 in 2024. White non-Hispanic drivers represented approximately 58% of all stops in both years, while Black drivers accounted for 18–19% and Hispanic drivers for 19–20%.

Traffic enforcement activity increased by 14% in 2023 relative to the previous year and rose by an additional 15% in 2024. Of all traffic stops conducted during the study period, approximately 75% were initiated by municipal police departments, while the Connecticut State Police accounted for the remaining 25%.

E.1: SUMMARY OF METHODS

For the past two decades, analyzing racial disparities in policing data has been a critical policy tool for evaluating the potential presence of racial and ethnic bias within various jurisdictions. This report presents a statistical assessment of policing data for Connecticut to provide a clear, transparent, and unbiased evaluation. The report is structured to guide the reader through several analytical tests, each differing in assumptions and levels of scrutiny.

- **Solar Visibility Analysis**: Solar visibility analysis compares the rate at which White and non-White drivers are stopped during daylight to the rate at which they are stopped in darkness when it is harder for the officer to observe the driver's race. When there is a higher relative rate of non-White drivers stopped in daylight than in darkness, it indicates racial bias. This method is among the most rigorous approaches available for evaluating racial disparities in Connecticut's traffic stop data.
- **Synthetic Control Analysis: T**his method compares traffic stop data from individual police departments to a synthetic benchmark based on stops in other departments with similar characteristics. The goal is to assess whether non-White motorists were disproportionately stopped in specific jurisdictions relative to expected stop rates.
- **Post-Stop Enforcement Action Analysis**: This method examines each traffic stop conducted and then compares the outcomes of the stop between White and non-White drivers. Outcomes can include arrests and other discretionary law enforcement actions (searches, tickets, warnings, amount of time stopped). When there is a *different* rate of a

[1] The Institute for Municipal and Regional Policy was previously located at Central Connecticut State University.

specific outcome for non-White drivers compared to White drivers who were stopped under similar circumstances, it can indicate racial bias.

- **Search Hit Rate Analysis**: This method examines each traffic stop where *a search* is conducted and then compares the rates of contraband found between White and non-White drivers. "Contraband" is an illegal item, such as drugs, weapons, and stolen property. When there is a *lower* rate of contraband found for non-White drivers compared to White drivers who were stopped under similar circumstances, it can indicate racial bias.

We use this multi-test approach to safeguard against potential errors, reducing the possibility of (1) false positives- where a disparity is detected where none exists, and (2) false negatives- where a real disparity goes undetected. Each method has inherent drawbacks based on the volume and structure of the data available for this analysis. However, if we find consistent disparities across Connecticut or within specific police departments, it indicates an area for researchers to investigate further to determine if the disparities result from specific policing practices that can be changed.

E.2: SUMMARY OF FINDINGS

The Solar Visibility Analysis, among the most rigorous approaches available, shows a modest upward trend in the likelihood of Black motorists being stopped during daylight hours. However, most results were not statistically significant across the years examined, including 2024. For Hispanic motorists, a similar upward trend was observed. While results were sporadic in 2021 and 2022, by 2024, nearly all findings were statistically significant, indicating a measurable disparity for Hispanic drivers.

When comparing outcomes of traffic stops, such as arrests, tickets, and stop duration, we found Black and Hispanic motorists were more likely to experience a more severe outcome, an arrest, or a precursor to an arrest, even after controlling for circumstantial factors. Our evaluation of search data also revealed that Black and Hispanic motorists were disproportionately subjected to a search and less likely to be found with contraband.

Highlights from the Analysis

Solar Visibility Analysis:
Compares the rate at which White and non-White drivers are stopped during daylight to the rate at which they are stopped in darkness, when it is harder for the officer to observe the driver's race. When there is a higher relative rate of non-White drivers stopped in daylight than in darkness, it indicates racial bias.

Statewide Estimates

- Black motorists: Occasional statistically significant increases, but the effects were small and not consistent across robustness checks.
- Hispanic motorists: Statistically significant increase ranging from 2% to 6% in 2024. The disparity was modest in size and indicates that Hispanic motorists are more likely to be stopped during daylight, when their race is more discernible.

Agency Estimates

- **2023:**

- Black motorists: 2 State Police Troops and 3 municipal agencies were identified with statistically significant disparities. In these agencies, Black motorists are more frequently stopped in daylight compared to darkness.
- Hispanic motorists: 1 State Police Troop and 1 municipal agency were identified with statistically significant disparities. In these agencies, Hispanic motorists are more frequently stopped in daylight compared to darkness.

- **2024:**
  - No agency was identified with a statistically significant disparity for Black and Hispanic motorists alone. However, when the demographic groups were combined, there was 1 State Police Troop and 3 municipal agencies identified with a statistically significant disparity.

Synthetic Control Analysis:
Compares traffic stop data from individual police departments to a synthetic benchmark based on stops in other departments with similar characteristics.

Agency Estimates

- **2023:**
  - Black motorists: 11 municipal agencies were identified with statistically significant disparities. In these agencies, Black motorists are more frequently stopped by police relative to their respective benchmark group.
  - Hispanic motorists: 8 municipal agencies were identified with statistically significant disparities. In these agencies, Hispanic motorists are more frequently stopped by police relative to their respective benchmark group.
- **2024:**
  - Black motorists: 7 municipal agencies were identified with statistically significant disparities. In these agencies, Black motorists are more frequently stopped by police relative to their respective benchmark group.
  - Hispanic motorists: 5 municipal agencies were identified with statistically significant disparities. In these agencies, Hispanic motorists are more frequently stopped by police relative to their respective benchmark group.

Post-Stop Enforcement Action Analysis:
Investigated racial disparities in post-stop outcomes such as arrests and other discretionary enforcement actions (arrests, warnings, stop duration, non-safety related enforcement).

Statewide Estimates

- In 2023 and 2024, Black and Hispanic motorists were significantly more likely to experience a more severe outcome, an arrest, or a precursor to an arrest, even after controlling for circumstantial factors.
- Black motorists were 13.5% (3.5 percentage points) more likely to experience a more severe outcome in 2023, and that increased to 15.5% (3.8 percentage points) in 2024.
- Hispanic motorists were 20.9% (5.3 percentage points) more likely to experience a more severe outcome in 2023, and that increased to 23.1% (6 percentage points) in 2024.

Agency Estimates

- **2023:**
  - Black motorists: no agencies were identified.
  - Hispanic motorists: 1 agency was identified with statistically significant disparities. In this agency, Hispanic motorists experience more severe stop outcomes.
- **2024:**
  - Black motorists: 1 state police troop was identified with statistically significant disparities. In this agency, Black motorists experience more severe stop outcomes.
  - Hispanic motorists: 1 agency was identified with statistically significant disparities. In this agency, Hispanic motorists experience more severe stop outcomes.

Search Hit-Rate Analysis:
Examined racial disparities in the likelihood of a discretionary search resulting in evidence being found.

Statewide Estimates

- In 2023 and 2024, Black and Hispanic motorists were disproportionately subjected to a search and were less likely to be found with contraband.

Agency Estimates

- **2023:**
  - Black motorists: 3 municipal agencies were identified where police conducted searches of Black individuals at disproportionately higher rates relative to their success in finding contraband.
  - Hispanic motorists: 1 state police troop was identified where police conducted searches of Hispanic individuals at disproportionately higher rates relative to their success in finding contraband.
- **2024:**
  - Black motorists: 2 municipal agencies and one state police troop were identified where police conducted searches of Black individuals at disproportionately higher rates relative to their success in finding contraband.
  - Hispanic motorists: 1 municipal police agency was identified where police conducted searches of Hispanic individuals at disproportionately higher rates relative to their success in finding contraband.

Each agency or troop could be identified up to eight times across four analytical tests and two years. Because each test varies in statistical rigor, results were weighted accordingly, with greater emphasis placed on the Solar Visibility Analysis due to its higher precision and relevance to this research. These findings should be interpreted in totality, as focusing too heavily on any single test or year would not provide an accurate assessment.

Overall, 38 municipal police agencies and 4 State Police troops were identified in at least one test in one year. However, only 10 municipal agencies and 2 State Police troops were identified across at least one measure in both 2023 and 2024. Among these, only one municipal agency demonstrated statistically significant disparities for Black or Hispanic drivers across multiple tests. Based on our evaluation and prior experience, we determined that only the Meriden Police Department warranted further analysis. A summary of the detailed analysis can be found in Section VII of this report.

BACKGROUND

Connecticut's Alvin W. Penn Racial Profiling Prohibition Act (Public Act 99-198), enacted in 1999, prohibits law enforcement officers from stopping, detaining, or searching a motorist on the basis, in whole or in part, of the perceived racial or ethnic status of such individual, except when such status is used in combination with other information when seeking to apprehend a specific suspect whose racial or ethnic status is part of the description of the suspect (Connecticut General Statutes §§ 54-1l and 54-1m).

In 2012 and 2013, the Connecticut General Assembly strengthened the law through Public Acts 12-74 and 13-75, establishing a statewide system to address racial profiling concerns. These amendments created the Racial Profiling Prohibition Project Advisory Board to advise the Office of Policy and Management (OPM) on standardized methods for collecting and analyzing traffic stop data. The Institute for Municipal and Regional Policy (IMRP) at the University of Connecticut was designated to oversee the design, evaluation, and management of the state's racial profiling study.

Beginning October 1, 2013, police agencies were required to submit traffic stop data electronically to the state's Criminal Justice Information System (CJIS) using the new OPM-approved methods. The amended law also authorized OPM to impose penalties, including the withholding of state funds, for noncompliance by municipal police departments, the Department of Emergency Services and Public Protection (DESPP), or other law enforcement entities.

The project received support from the National Highway Traffic Safety Administration (NHTSA) through a grant administered by the Connecticut Department of Transportation (CTDOT). Since 2012, the Advisory Board, IMRP staff, and working groups—focused on Data, Community Outreach, and Policy—have collaborated with law enforcement and community stakeholders to ensure effective and consistent data collection across agencies with varying technological capacities.

The IMRP maintains the project website (www.ctrp3.org), which provides public access to meeting materials, press releases, and statewide updates. In partnership with the Connecticut Data Collaborative, all traffic stop data are published quarterly, allowing the public to download raw data, view summary tables, and use interactive tools for independent analysis.

In addition to improving data systems, the project emphasizes training, transparency, and community engagement. Initiatives include public education campaigns, the development of a fair and impartial policing training program, and a continuing series of public forums designed to strengthen communication and trust between law enforcement and the communities they serve.

I: METHODOLOGICAL APPROACH UNDERLYING THE ANALYSIS

Assessing racial disparities in policing data has been a crucial policy tool for the past two decades, helping to evaluate whether racial bias exists within a given jurisdiction. Although public support for the fair treatment of all races and ethnicities has long been widespread, recent national headlines have intensified this issue, sparking a heated debate over policing policy. The statistical evaluation of traffic stops by police in Connecticut represents a significant step toward fostering transparent, data-driven dialogue between law enforcement and the public. The goal of this report is to present the results of that evaluation in a clear and unbiased manner.

This statistical analysis is guided by three key principles, which form the foundation of the research process and inform the selection of results to be shared with the public. Understanding these principles is crucial to interpreting the technical portions of the analysis. Presenting them at the outset gives readers the necessary context to understand the overall approach.

- Principle 1: Recognize that statistical evaluations can identify racial and ethnic disparities indicative of racial/ethnic bias and potentially discrimination, but without formal procedural investigations, they cannot alone be considered conclusive evidence.
- Principle 2: Adopt a holistic approach to assessing racial and ethnic disparities by utilizing a variety of methods grounded in well-established scholarly literature.
- Principle 3: Transparently outline the assumptions and limitations of each method, allowing policymakers and the public to make informed judgments based on each analysis.

The report is structured to guide readers through a range of descriptive and statistical tests, each differing in its assumptions and scrutiny levels. This multi-test approach serves as a safeguard against potential errors, mitigating the possibility of (1) false positives- where a disparity is detected and where none exists (Type I error) and (2) false negatives- where a real disparity goes undetected (Type II error). For the analysis, demographic groups were categorized into four overlapping classifications to ensure a sufficiently large sample size for statistical validity. Although much of the focus is on stops involving Black and Hispanic individuals, the analysis also considers aggregated groups of all non-White individuals. In individual tests, we annotate results that were found to be statistically significant at a confidence level exceeding 90 percent. However, we consider highly significant results to be those exceeding a 95 percent confidence level.

The analysis begins with the Solar Visibility analysis, a method developed by Grogger and Ridgeway (2006) to detect racial and ethnic disparities in stop data. This test focuses on stops occurring during the "inter-twilight window"—a fixed period each year where visibility fluctuates due to seasonal changes and daylight savings. It compares the ratio of non-White to White stops made in daylight versus darkness. The test assumes that if racial profiling occurs, troopers are more likely to act during daylight when race and ethnicity are easier to observe. By restricting the sample to this window and controlling for variables such as time of day and day of the week, any remaining differences in stop rates are attributed to potential disparate treatment. A higher likelihood of a non-White motorist having been stopped in daylight relative to darkness would indicate potential discriminatory behavior.

The second analytical tool used in the analysis is the synthetic control, where the number of non-White 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 non-White population and makes most of their stops on Friday nights at 7 PM 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. This methodology ensures that there is an apples-to-apples comparison between the number of minorities stopped in a given town relative to their benchmark and allows for the interpretation of any remaining differences to be attributed to possible disparate treatment.

Next, we examine disparities in traffic stop outcomes by analyzing the distribution of post-stop dispositions, conditional on race and the reason for the stop. Specifically, we test whether non-White individuals experience different outcomes compared to their White counterparts. In this section, we analyze differences in terms of arrests and precursors to an arrest, which we define as a discretionary search, vehicle exit, or field sobriety test. We condition a highly granular set of control variables to control for inherent differences that might necessitate a trooper engaging in discretionary post-stop enforcement. A higher rate of post-stop enforcement for non-White individuals relative to White individuals would indicate potential discriminatory behavior.

Finally, the analysis explores post-stop outcomes using the hit-rate approach developed by Knowles, Persico, and Todd (2001). This approach assumes that individuals adjust their likelihood of carrying contraband in response to the probability of being searched, while police troopers make search decisions based on visible indicators of guilt. According to the model, a demographic group should only be searched more frequently than White non-Hispanic individuals if its members are more likely to carry contraband. However, the higher search rate should correspond exactly to a higher propensity to carry contraband. In the absence of racial bias, the success rate of searches (i.e., the hit rate) should be equal across all demographic groups. A lower hit rate for non-White individuals relative to White individuals would indicate potential discriminatory behavior.

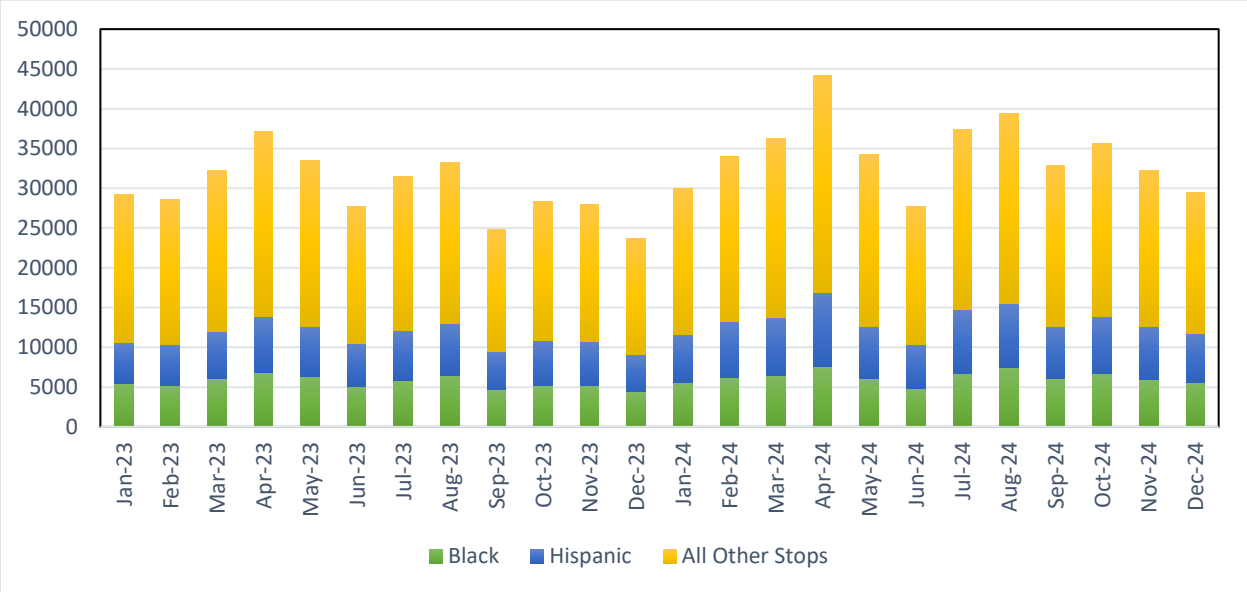
In summary, the analysis aims to identify statistically significant racial and ethnic disparities in traffic stop data. A variety of tests are applied to offer a comprehensive approach, incorporating lessons from both academic research and policy applications. Detailed explanations of each test's assumptions and mechanisms are provided to ensure policymakers and the public can assess the data and draw informed conclusions. Finally, we emphasize that these statistical tests can reveal racial and ethnic disparities indicative of racial/ethnic bias and potential discrimination, but without an additional procedural investigation, they cannot alone be considered conclusive evidence.

II: CHARACTERISTICS OF TRAFFIC STOP DATA

This section examines general patterns of traffic enforcement activities in Connecticut for the study period of January 1, 2023, to December 31, 2024. Statewide and agency activity information can be used to identify variations in traffic stop patterns to help law enforcement and local communities understand more about traffic enforcement. Although some comparisons can be made between similar communities, we caution against comparing agencies' data in this report section. Please note that the tables in this report present information from only a few departments. Complete tables for all agencies are included in the technical appendix.

In Connecticut, 357,852 traffic stops were conducted in calendar year 2023, and 413,137 traffic stops were conducted in calendar year 2024. Traffic enforcement increased by 14% in 2023 compared to 2022 and 15% in 2024 compared to 2023. In both years, the month with the largest number of traffic stops occurred in April. In 2023, 73% of the total stops were conducted by the 95 municipal police departments, while the Connecticut State Police conducted 27%. In 2024, 77% of the total stops were conducted by the 95 municipal police departments, while the Connecticut State Police conducted 23%. Figure 2.1 shows the aggregate number of monthly traffic stops and each demographic category.

Figure 2.1: Aggregate Traffic Stops by Month of the Year



The number of reported traffic stops declined steadily from 2014 to 2018, with an overall decrease of 16%. A slight uptick occurred in 2019, followed by a sharp drop in 2020—54% lower than 2019 and 61% lower than 2014. Stops rebounded moderately in 2021 (up 17%) and again in 2022 (up 15%), though levels remained below pre-pandemic figures. Growth continued through 2023 and 2024 with increases of 14% and 15% respectively, compared to previous years. Figure 2.2 displays the total number of traffic stops by year since the start of the project.

Figure 2. 2: Connecticut, number of traffic stops, 2014-2024

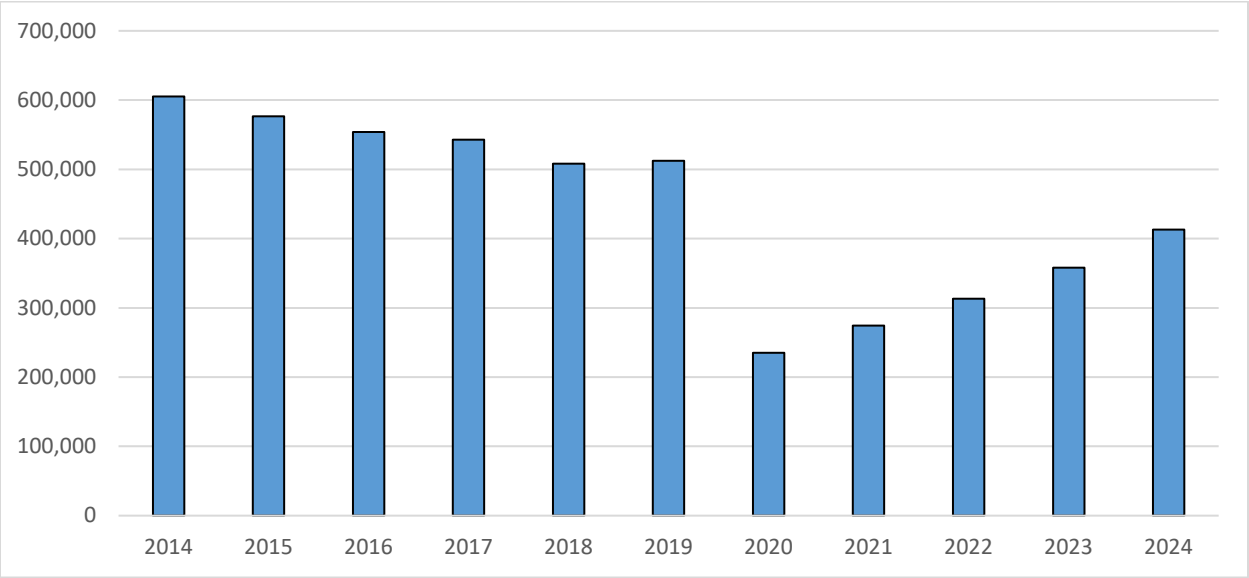


Figure 2.3 shows the aggregate number of traffic stops by month of the year between 2019 and 2024. Traffic stops have increased each month of each year since April 2020, but only one month (December 2024) has matched or exceeded pre-pandemic stop totals. Although the monthly trends remain similar, April and August contributed the largest number of traffic stops, and December had the lowest number of traffic stops in the calendar year.

Figure 2. 3: Aggregate Traffic Stops by Month of the Year 2019 to 2024

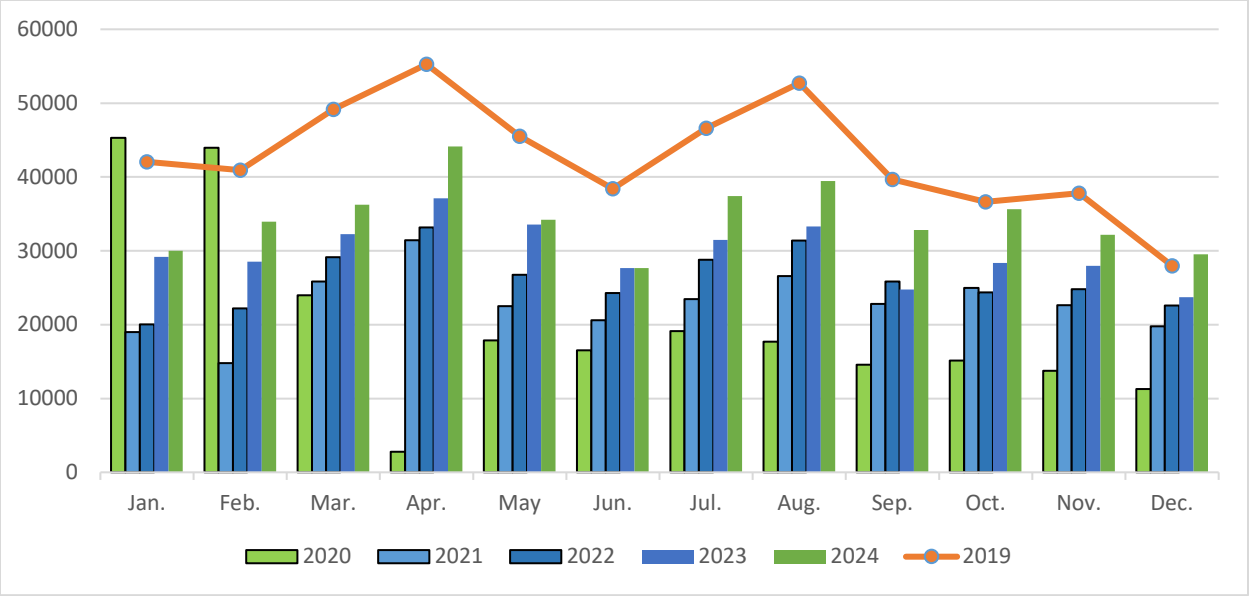


Figure 2.4 shows traffic stops by time of day over the analysis period. Stop volumes vary considerably by hour, with distinct peaks and lulls. In 2023, the highest hourly volume occurred between 5:00 and 6:00 PM, accounting for 7.1% of all stops—consistent with peak commuting patterns in Connecticut. By contrast, the lowest volume occurred between 4:00 and 5:00 AM and remained low through the morning commute, likely reflecting an emphasis on maintaining smooth traffic flow and a reduced

likelihood of discretionary stops during these hours. In 2024, enforcement patterns shifted: the highest volume of stops occurred between 9:00 and 11:00 AM, comprising 15% of all stops. Notably, 2024 marked the first year since this study began in 2015 that morning enforcement exceeded evening enforcement.

Figure 2.4: Aggregate Traffic Stops by Time of Day

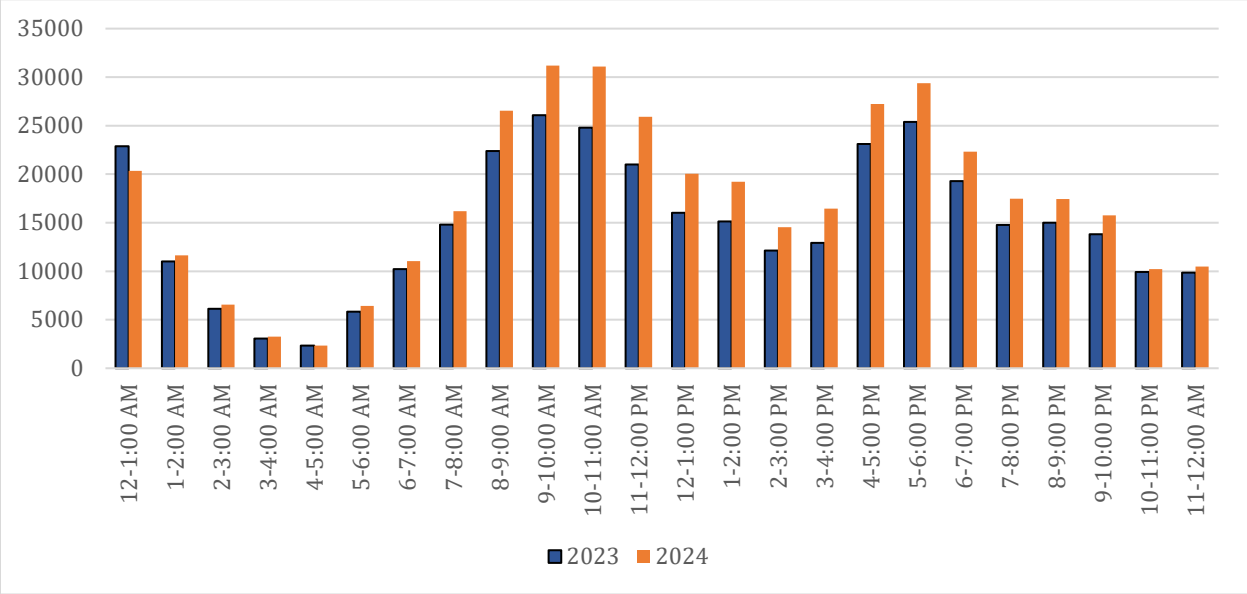
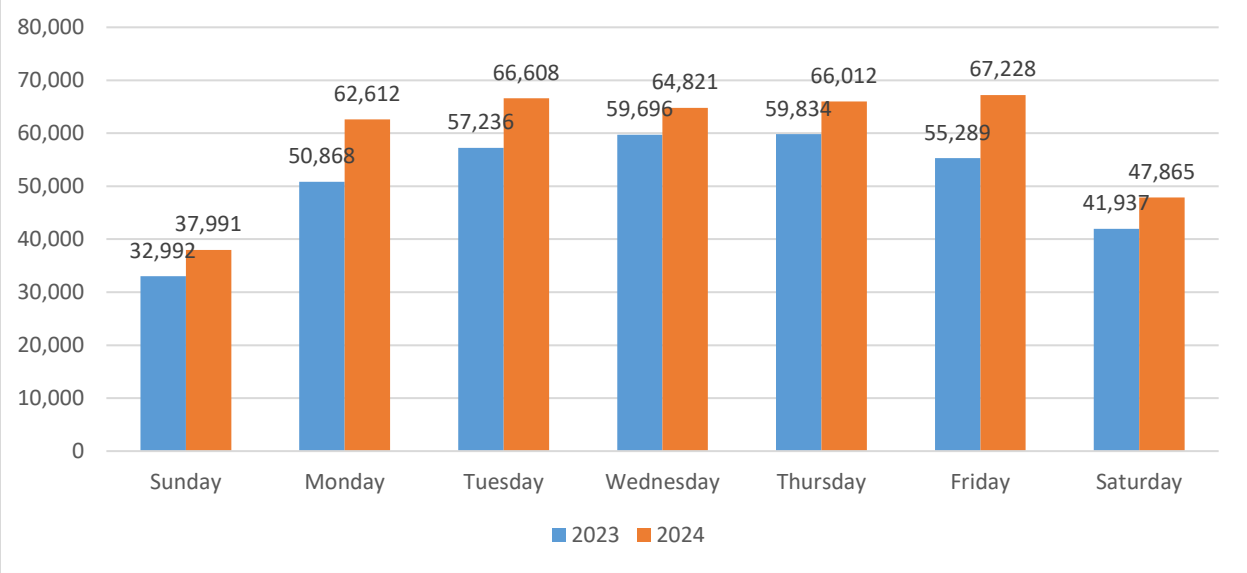


Figure 2.5 displays traffic stops by day of the week for the entire analysis period. This figure shows that the number of traffic stops increases throughout the week and peaks between Tuesday and Thursday. Traffic stops decline substantially on the weekends, with the smallest number occurring on Sundays.

Figure 2. 5: Traffic Stops by Day of Week



Traffic stop enforcement levels and purposes vary widely across agencies, reflecting factors such as crash prevention in high-risk areas, responses to criminal activity, and citizen complaints. Agencies with dedicated traffic units generally record higher stop volumes. To standardize comparisons, traffic stops are measured per 1,000 residents. In 2023, the statewide rate was 127 stops per 1,000 residents, rising to 146 in 2024. That year, 33 municipal departments exceeded the state rate, compared to 36 in 2024. In 2023, the highest stop rates were reported by Wilton, Orange, Waterford, Southington, and Ansonia, while the lowest were recorded in Shelton, Waterbury, Wolcott, Bridgeport, and Thomaston. In 2024, Waterford, East Windsor, Westport, Madison, and Wilton had the highest rates, while Shelton, Wolcott, Thomaston, Bridgeport, and Stratford had the lowest. Full results by department are provided in Tables A.1 (2023) and A.2 (2024) in Appendix A.

Table 2.1 summarizes demographic characteristics of drivers stopped in Connecticut during the study period. Across both years, nearly two-thirds (63%) of stopped drivers were male, and the vast majority (88%) were Connecticut residents. About one-third of drivers were under age 30, while one-quarter were over age 50.

By race and ethnicity, White Non-Hispanic drivers accounted for the majority of stops, though their share declined slightly from 58.3% in 2023 to 57.7% in 2024. Black Non-Hispanic drivers made up 18.7% of stops in 2023 and 18.2% in 2024. Hispanic drivers increased from 19.1% in 2023 to 20.4% in 2024, while drivers classified as Other (Asian/Pacific Islander and American Indian/Alaskan Native Non-Hispanic) remained stable at about 4% across both years.

Table 2. 1: Statewide Driver Characteristics

<table>
<tr><th>Race and Ethnicity</th><th>2023</th><th>2024</th><th>Gender</th><th>2023</th><th>2024</th></tr>
<tr><td>White</td><td>58.3%</td><td>57.7%</td><td>Male</td><td>63.2%</td><td>63.6%</td></tr>
<tr><td>Black</td><td>18.7%</td><td>18.2%</td><td>Female</td><td>36.8%</td><td>36.4%</td></tr>
<tr><td rowspan="2">Hispanic</td><td rowspan="2">19.1%</td><td rowspan="2">20.4%</td><td colspan="3">Age</td></tr>
<tr><td>16 to 20</td><td>8.5%</td><td>8.2%</td></tr>
<tr><td rowspan="2">Other</td><td rowspan="2">3.8%</td><td rowspan="2">3.7%</td><td>21 to 30</td><td>25.6%</td><td>24.6%</td></tr>
<tr><td>31 to 40</td><td>22.8%</td><td>22.8%</td></tr>
<tr><td colspan="3">Residency</td><td>41 to 50</td><td>16.8%</td><td>17.2%</td></tr>
<tr><td>CT Resident</td><td>88.1%</td><td>87.8%</td><td>51 to 60</td><td>14.0%</td><td>13.9%</td></tr>
<tr><td>Non-Resident</td><td>11.9%</td><td>12.2%</td><td>Older than 61</td><td>12.3%</td><td>13.3%</td></tr>
</table>

Police record the statutory reason for stopping a motor vehicle for every stop. Those statutes are then sorted into 15 categories, from speeding to registration and stop sign violations. For example, all statutory violations related to speed are categorized as speeding. Although speeding is the most often cited reason for stopping a motor vehicle statewide, the results vary by jurisdiction. Table 2.2 presents the basis for traffic stops in 2023 and 2024. Speeding remained the most common reason for a stop, increasing slightly from 34.8% in 2023 to 35.7% in 2024. Stop sign violations (11.0% to 11.1%) and traffic control signal violations (8.4% to 8.7%) were largely unchanged.

Some categories saw modest shifts. Registration-related stops rose from 7.7% to 8.6%, while miscellaneous moving violations declined from 8.0% to 7.5%. Defective light violations also decreased, from 6.2% in 2023 to 5.5% in 2024. Seatbelt stops saw the largest drop, falling from 1.9% to 1.2%. Cell phone stops (6.3% to 6.1%), STC violations (3.0% to 2.8%), and display of plates (2.6%

to 2.3%) all declined slightly. The share of stops categorized as "All Other" increased marginally, from 10.1% in 2023 to 10.5% in 2024.

Table 2. 2: Basis for Stop

Basis for Stop	2023	2024
Speeding	34.8%	35.7%
Defective Lights	6.2%	5.5%
Misc. Moving Violation	8.0%	7.5%
Stop Sign	11.0%	11.1%
Registration	7.7%	8.6%
Traffic Control Signal	8.4%	8.7%
Cell Phone	6.3%	6.1%
STC Violation	3.0%	2.8%
Display of Plates	2.6%	2.3%
Seatbelt	1.9%	1.2%
All Other	10.1%	10.5%

In addition to the difference in the volume of traffic stops across communities, agencies stopped drivers for various reasons. In 2023 and 2024, clear patterns emerge in the types of traffic violations most frequently cited by each agency statewide. Speed-related offenses dominate enforcement activity, accounting for approximately one-third of all citations issued by each department on average. Following speeding, violations, stop signs and traffic control signals violations consistently rank as the next most common categories for each agency. Moderate levels of enforcement are observed for moving violations, defective lights, and registration issues (typically between 7% and 8% of enforcement by departments).

At the departmental level, distinct outliers highlight the impact of local priorities. In both years, Weston consistently emerges as one of the most speed-focused departments, with speed-related violations exceeding 75% in 2023 and 82% in 2024. Cell phone enforcement varies by department: Plymouth and Meriden reported higher levels of cell phone violations in 2023, while Hamden and Danbury reported the highest levels in 2024. These local differences underscore the importance of considering community-specific factors, such as traffic patterns, roadway design, and safety priorities, when evaluating enforcement outcomes across the state.

Some Connecticut residents have expressed concern about the stops made for violations perceived as more discretionary, potentially making the driver more susceptible to possible police bias. Those stops are typically referred to as pretext stops and might include stops for defective lights, excessive window tint, or a display of plate violation, each of which, though a possible violation of state law, leaves the police officer with considerable discretion with respect to actually making the stop. A statewide combined average for stopping drivers for these violations is 11.5% in 2023 and 10.4% in 2024. While equipment-related violations make up a relatively small portion of overall traffic stops statewide, there is significant variation across departments. For most, equipment issues account for roughly one in ten citations; however, some departments place a much greater emphasis on this category.

In 2023, the Mohegan Tribal Police stood out, with nearly 39% of all citations tied to equipment violations, more than three times the statewide average. Central Connecticut State University also shows a strong focus, with almost 29% of its citations in this category. Other departments with

elevated levels include Torrington (25.6%), Rocky Hill (24.8%), and Plainfield (24.8%), each recording equipment-related stops at roughly double the average. The pattern persists in 2024, where Central Connecticut State University once again reports a high concentration of equipment violations, this time at 30.8% of citations, reinforcing a consistent enforcement emphasis across both years. Additional departments with above-average enforcement include Plymouth (27.3%), Willimantic (25.7%), Ledyard (24.4%), and Plainville (22.6%), all of which issued equipment-related citations at more than twice the statewide average. All department results are contained in Tables A.3 (2023) and A.4 (2024) of Appendix A.

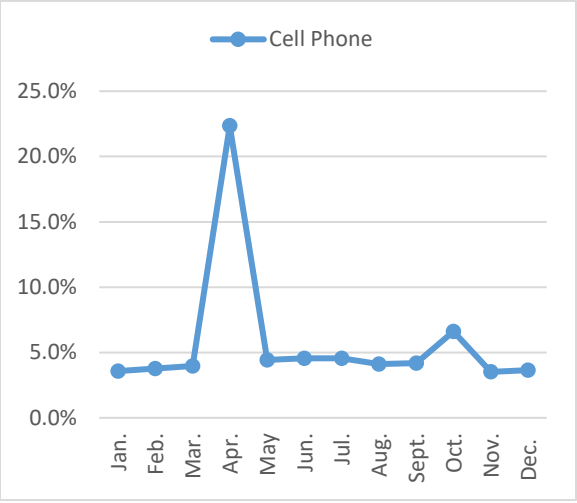
In communities with a higher proportion of stops due to these violations, it is recommended that the departments be proactive in discussing the reasons for these stops with community members and examine for themselves whether or not such stops produce disparate enforcement patterns.

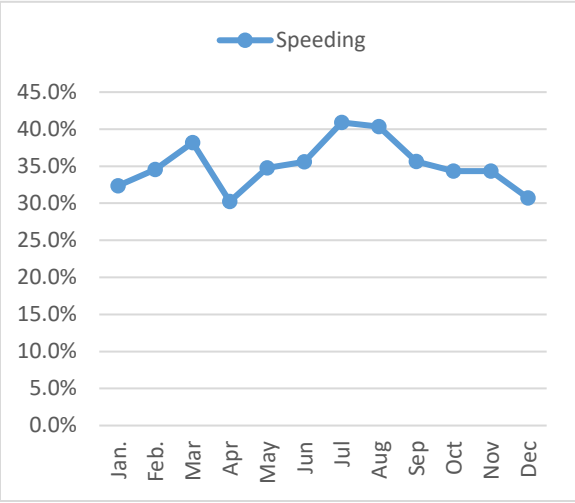
Police generally stop a consistent percentage of drivers each month across most violation categories. For instance, administrative offenses account for roughly 3% of all stops each month, with little variation. However, four categories show more pronounced seasonal or monthly fluctuations. Cell phone violations typically represent about 6% of monthly stops, but enforcement spikes sharply in April (nearly 25%) and drops to just under 7% in October. These peaks likely correspond with federally funded distracted driving enforcement campaigns, which provide additional resources for targeted initiatives. Notably, the April surge in cell phone enforcement coincides with a decline in speeding stops, suggesting that such campaigns shift the focus of enforcement activity rather than increasing the total number of stops.

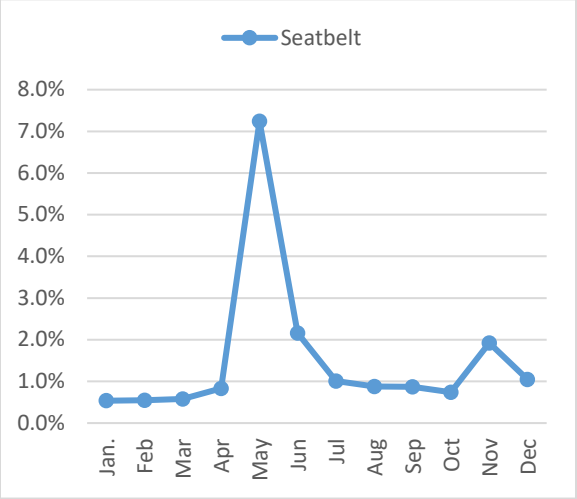
Speeding violations peak in the summer months of July and August, while seatbelt enforcement follows a pattern similar to cell phone violations, with limited activity throughout most of the year but a significant increase in May, consistent with national seatbelt campaigns. In contrast, defective lighting violations demonstrate a seasonal trend tied to environmental conditions. Enforcement rises during the winter months, peaking between November and February, which corresponds with shorter daylight hours and a greater likelihood of lighting-related issues being detected.

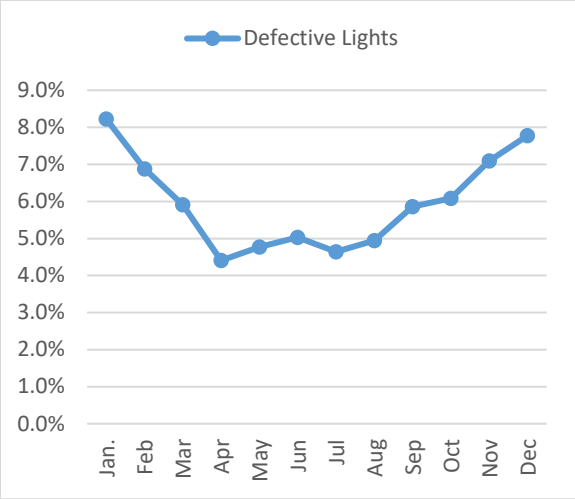
Figure 2.6 illustrates these patterns by showing the monthly distribution of stops for cell phone, speeding, seatbelt, and defective lighting violations.

Figure 2. 6: Percent of Stops by Month for Select Violations









The distribution of traffic stop outcomes remained largely consistent between 2023 and 2024, though there were modest shifts in enforcement emphasis.

In 2023, the majority of stops resulted in warnings rather than infractions, summons, or arrest. Verbal warnings were the most common outcome, accounting for 38.1% of all stops, followed by written warnings (24.3%). Infractions represented nearly one-third of all stops (30.6%), while more serious outcomes such as misdemeanor summons (4.2%) and arrest (1.0%) were relatively rare. A small share of stops resulted in no disposition (1.7%) or vehicle searches (1.6%).

In 2024, the general pattern persisted, but there were some notable shifts. Infractions increased to 33.1%. At the same time, verbal warnings declined to 35.4%, though they still remained the single most frequent disposition. Written warnings increased slightly to 25.6%, while misdemeanor summons decreased to 3.1%. Arrests, no dispositions, and vehicle searches all remained relatively stable, with only minor changes from 2023. The stability in arrests and searches indicates no significant change in the most serious enforcement outcomes. Table 2.3 presents the outcomes of traffic stops in 2023 and 2024.

Table 2. 3: Outcome of Traffic Stop

Outcome of Stop	2023	2024
Uniform Arrest Report	1.0%	0.9%
Misdemeanor Summons	4.2%	3.1%
Infraction Ticket	30.6%	33.1%
Written Warning	24.3%	25.6%
Verbal Warning	38.1%	35.4%
No Disposition	1.7%	1.8%
Vehicles Searched	1.6%	1.7%

Some argue that it is difficult for police officers to identify the defining characteristics of a driver before initiating a stop. Yet, just as there are variations across departments in the reasons for traffic stops, there are also differences in the outcomes of those stops. These differences highlight the discretion local police departments have in enforcing state traffic laws. For example, some communities may prioritize issuing infraction tickets as the most effective way to promote traffic safety, while others may rely more heavily on warnings. This analysis provides police departments

and local communities with a framework to understand how their enforcement activity compares to that of other jurisdictions.

At the department level, outcome patterns shifted more noticeably than at the statewide level, underscoring the localized nature of enforcement practices. For instance, Fairfield, Waterbury, and CSP Troop H issued substantially more infractions in 2024, while Fairfield simultaneously reduced its use of verbal warnings. In contrast, Groton Long Point, East Lyme, and Easton relied far more on written warnings, with Groton Long Point increasing by more than 40 percentage points. Other departments moved in the opposite direction: Eastern Connecticut State University and Putnam issued fewer written warnings but leaned more heavily on verbal warnings. Wolcott exhibited significant fluctuations across categories, with increases in arrests and verbal warnings, but decreases in infractions and written warnings. Meanwhile, Waterbury, Shelton, and Norwich recorded sharp declines in the use of misdemeanor summonses.

Although arrests remain rare in Connecticut, averaging 0.9% of stops in 2023 and 0.8% in 2024, some departments consistently report arrest rates several times higher than the statewide average. In 2023, the highest rates were found in Willimantic (4.5%), CSP Troop H (4.5%), and New London (4.3%), with additional elevated levels in Bridgeport, Winsted, Yale University, and Groton City. By 2024, arrest rates declined slightly, but departments such as Groton City, CSP Troop D, Bridgeport, and Plainfield remained well above average, along with Willimantic, CSP Troop H, New London, West Haven, and CSP Troop G. Full department-level outcomes are provided in Tables A.5 (2023) and A.6 (2024) of Appendix A.

Vehicle searches are also uncommon, occurring in only 1.6% of stops in 2023 and 1.7% in 2024. Nevertheless, significant variation exists across jurisdictions. When searches are conducted, officers must record their legal justification and whether contraband was recovered, providing an additional layer of accountability. A small number of departments consistently report search rates far above the statewide average. In both years, Waterbury, West Haven, and Bridgeport led the state, with search rates of 17–18% in Waterbury, around 11% in West Haven, and 10% in Bridgeport. Smaller jurisdictions, including Willimantic and Norwich, also exceeded the statewide average, though their rates moderated slightly in 2024.

In addition to these consistently high-search departments, some agencies recorded substantial changes between the two years. Notable increases occurred in Wolcott (1.0% to 4.0%), New Canaan (0% to 2.9%), Monroe (1.5% to 4.0%), University of Connecticut (2.5% to 4.9%), and New London (3.3% to 5.1%). Conversely, the largest declines were observed in Yale University (3.6% to 0.4%), New Britain (6.0% to 2.9%), Willimantic (9.1% to 6.1%), Winsted (2.6% to 0.3%), and Middletown (3.4% to 1.1%).

Overall, while the statewide averages for both arrests and searches remain low and stable, the department-level data reveal substantial variation in enforcement practices. Waterbury, West Haven, and Bridgeport consistently stand out as high-search jurisdictions, while other departments experienced notable shifts in their approach between 2023 and 2024. These differences reinforce the importance of examining enforcement not only at the statewide level but also within individual communities. All department-level results are provided in Tables A.7 (2023) and A.8 (2024) of Appendix A.

III: ANALYSIS OF TRAFFIC STOPS, SOLAR VISIBILITY

Assessing racial and ethnic disparities in police decisions to stop motorists presents a significant challenge, primarily due to the absence of an appropriate counterfactual. In simple terms, reliable data on the demographic composition of motorists is unavailable, leaving no benchmark for evaluating police traffic stops. To address this challenge, we implement a solar visibility analysis, following the methodology established by Grogger and Ridgeway (2006). The authors demonstrate that, under specific conditions, a change in the odds of a stopped motorist being a minority from daylight to darkness is equivalent to a change in the odds that a minority motorist is stopped. Assuming the only variable changing between daylight and darkness is the police's ability to detect race before making a traffic stop, an increased likelihood of stopping a minority motorist during daylight indicates disparate treatment and possible discrimination (see also Ridgeway 2009; Horrace and Rohlin 2019; Kalinowski et al. 2018, 2020, 2022).[2] Ross et al. (2020) note that when they wrote their study, 18 cities and four states had already adopted solar visibility analysis to evaluate traffic stops.[3] They describe this approach as being widely considered a "best practice" among practitioners and policymakers, a view that has gained even more traction since the study's publication.

Utilizing data on traffic stops conducted by all policing agencies in Connecticut during 2023 and 2024, we apply solar visibility analysis to assess the extent of racial and ethnic disparities in the decision to stop motorists. To account for potential differences in enforcement activity and the underlying composition of motorists at various times of day, we restrict our analytical sample to traffic stops occurring during periods when sunset varies seasonally. Specifically, we focus on traffic stops made within the "inter-twilight period"—between the earliest sunset of the year (approximately 4:30 PM) and the latest end of evening civil twilight (approximately 9:00 PM), or between the earliest start of morning civil twilight (approximately 4:45 AM) and the latest sunrise of the year (approximately 7:30 AM). Stops occurring during twilight—times within the inter-twilight period that are neither fully daylight nor fully dark—are excluded from the analytical sample.

Since certain violations (e.g., lighting, miscellaneous equipment, window tint, seatbelt, and cellphone violations) may be correlated with visibility and possibly with race (via socioeconomic factors), we further restrict our sample to moving violations (see Ridgeway 2009). To control for potential variations across time and geographic locations, we employ regression analysis, adjusting for factors such as geographic location and individual officer characteristics (see Horrace and Rohlin 2019; Kalinowski et al. 2018).[4] To address concerns of endogeneity related to seasonal differences in

[2] In Appendix Table A.2.1, we test the underlying assumption of this test using data on trooper's initial perceptions of race where we find that troopers are approximately 16% more likely to report that they cannot observe race during darkness.

[3] Scholarly critiques of Veil of Darkness have largely found it to be a conservative and strict test (see Horace and Rohlin 2016; Kalinowski et al. 2023, 2019a; 2019b). A recent national application of Veil of Darkness on 100 million traffic stops from 21 state patrol agencies and 35 municipal police departments was published in Nature Human Behavior (Pierson et al. 2020). A more updated list of statewide multi-agency studies relying on the VOD includes Connecticut (Ross et al. 2015, 2016, 2017a, 2017b, 2018, 2019a, 2019b, 2020, 2021, 2022), Rhode Island (Ross et al. 2019, 2020, 2021), California (Sanchagrin et al. 2019, 2020, 2021), Oregon (Oregon DOJ dashboard), and Massachusetts (Salem State 2020, 2022; Ross 2023). Agency-specific studies relying on the VOD include Oakland, CA (Grogger and Ridgeway 2006); Cincinnati, OH (Ridgeway 2009); Minneapolis, MN (Ritter and Bael 2009; Ritter 2017); Syracuse, NY (Worden, McLean, and Wheeler 2010, 2012; Horace and Rohlin 2016); Portland, OR (Renauer, Henning, and Covelli 2009); Durham Greensboro, Raleigh, and Fayetteville, North Carolina (Taniguchi et al. 2016a, 2016b, 2016c, 2016d); New Orleans, LA (Asher 2016); San Diego, CA (Chanin et al. 2016); Corvallis PD (Criminal Justice Policy Research Institute 2017); Columbia, MO (Milyo 2017); San Jose, CA (Smith et al. 2017); Maricopa, AZ (Wallace et al. 2017); Portland, ME (McDevitt et al. 2023), Douglas Co, KS (McDevitt et al. 2023); Tennessee State Police (Kalinowski et al. 2023); Texas Highway Patrol (Kalinowski et al. 2023, Mello et al. 2024); Massachusetts State Police (Kalinowski et al. 2023); New Jersey State Police (Ross 2023); Pennsylvania State Police (Engel 2024, 2025); and DC Metro (2025).

[4] Formally, we estimate a linear probability model of the form

$$1[minority_i] = \alpha + \beta\ 1[daylight_i] + dow_i^y + \quad (1)$$

driving and enforcement, we will also conduct a robustness test using a regression discontinuity design, focusing on a narrowly defined window of time before and after the spring/fall daylight savings time (DST) shift (see Kalinowski et al. 2020).

Figure 3.1 provides a graphical analysis of traffic stops in Connecticut, using data from policing agencies in 2023 and 2024. The data focuses on moving violations during the inter-twilight periods, comparing stops involving Black (panels a and b) or Hispanic (panels c and d) motorists with those involving White non-Hispanic motorists. The vertical axis represents the predicted probability that a stop involved a non-White motorist. Each graph displays pairs of bars: darker bars for darkness, and lighter bars for daylight. Annotations above each pair detail the magnitude and statistical significance of the change in predicted probability, along with the mean stop rate for non-White motorists. The first pair of bars shows the results from the primary model. The second pair controls for officer fixed effects to account for differences in duties or assignments. The third and fourth pairs show the primary model's results for the morning and evening inter-twilight windows, respectively, with the morning window considered less susceptible to seasonal variation in the driving population. To further control for possible variation in the driving population, the fifth pair of bars includes controls for motorist age and gender, while the sixth and final pair estimates a regression discontinuity model using only stops immediately before and after the spring and fall daylight saving time shifts.[5] Separate results for a combined sample of Black and Hispanic motorists, as well as for all other non-White motorists, are presented in the Appendix.

The 2023 data revealed statistically significant disparities against Black motorists in only two of six specifications, and the estimates were not very precise. In contrast, the 2024 data showed a statistically significant and positive disparity in those same two specifications. The estimated differences in the likelihood of a stopped motorist being Black in daylight versus darkness ranged from -1.2% to 4.17% in 2023 and -1.20% to 4.06% in 2024. For Hispanic motorists, the 2023 results were also small, ranging from -2.7% to 3.06%, and were statistically insignificant. However, several results for Hispanic motorists in 2024 were statistically precise, with relative differences ranging from 1.88% to 6.4%. Although small in magnitude, these findings suggest that Connecticut police officers, on average, disproportionately stopped Hispanic motorists during daylight hours in 2024, when their race or ethnicity would have been more easily discernible. Additional results for a combined sample of Black and Hispanic motorists, as well as for all other non-White motorists, are

$$hod_i^y + agency_i^y + officer_i^y + \mu_i$$

where the dependent variable, $1[minority_i]$, is a binary indicator that equals one if traffic stop i involved a minority motorist and zero otherwise. The primary independent variable, $1[daylight_i]$, is also a binary indicator, set to one if a traffic stop occurred during daylight and zero otherwise. Additional control variables are interacted with each study year y and include indicators for the day of the week (dow_i), indicators for hour of the day (hod_i), indicators for agency ($agency_i$), and indicators for each unique officer ($officer_i$). Each minority group (i.e., Black Hispanic, and all other races/ethnicities) is compared only against a sample of Caucasian (i.e., non-Hispanic) motorists. Across all estimates, we cluster standard errors by hour-of-day-year.

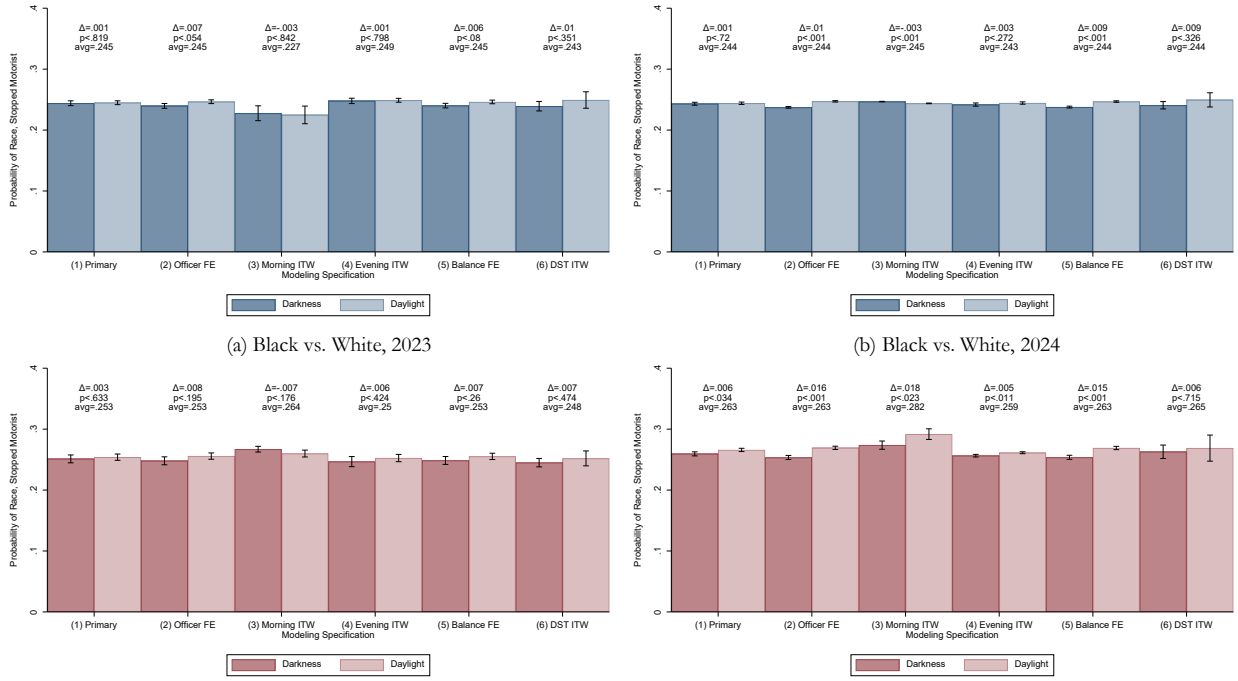
[5] The model we estimate for this specification is a linear probability model of the form

$$1[minority_i] = \alpha + \beta\ 1[dst_i] + \gamma\ run_i + dow_i^y + hod_i^y + agency_i^y + officer_i^y + \mu_i \quad (2)$$

where the dependent variable, $1[minority_i]$, is a binary indicator that equals one if traffic stop i involved a minority motorist and zero otherwise. The primary independent variable $1[dst_i]$ is a binary indicator for the period before or after daylight savings time when there is more daylight and run_i is a continuous variable counting the number of days from the side of the window with more daylight. Additional control variables are interacted with each DSY window and study year y and include indicators for the day of the week (dow_i), indicators for hour of the day (hod_i), indicators for agency ($agency_i$), and indicators for each unique officer ($officer_i$). Each minority group (i.e., Black Hispanic, and all other races/ethnicities) is compared only against a sample of Caucasian (i.e., non-Hispanic) motorists. Across all estimates, we cluster standard errors by hour-of-day-year.

presented in the Appendix. Results for the combined three-year sample of 2021-23 and 2022-24 are also contained in the Appendix.

Figure 3. 1: Statewide Solar Visibility Estimates by Modeling Specification



(a) Black vs. White, 2023

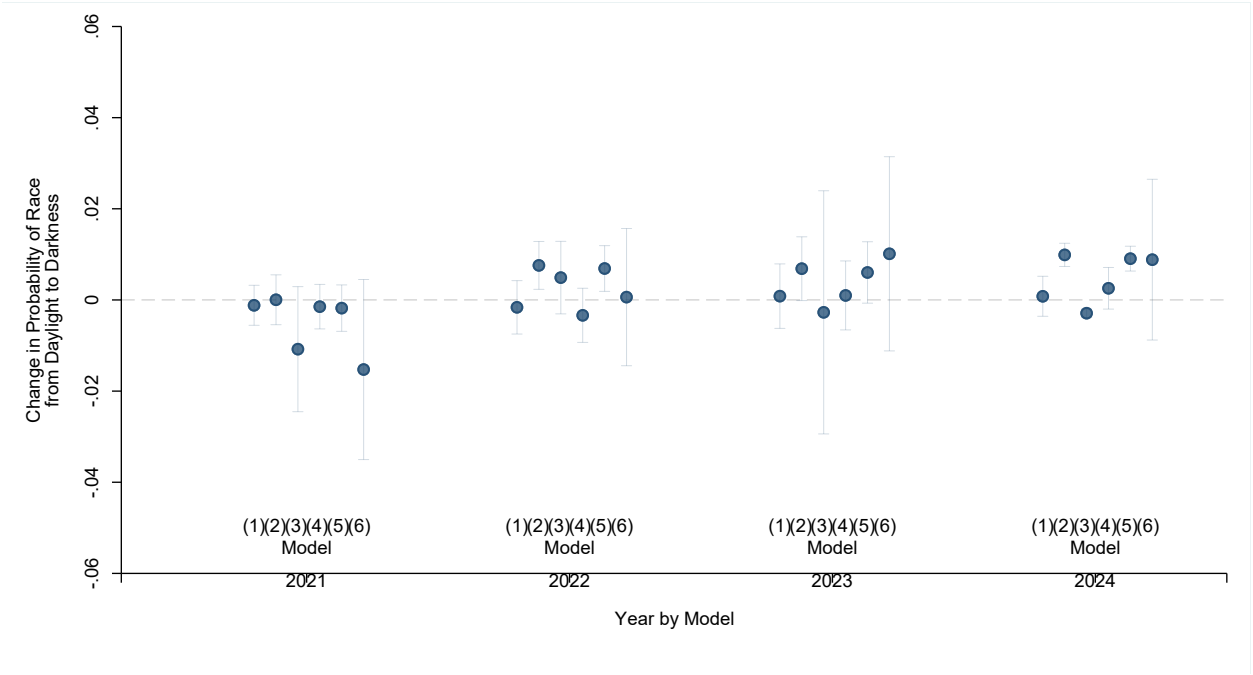
(b) Black vs. White, 2024

(c) Hispanic vs. White, 2023

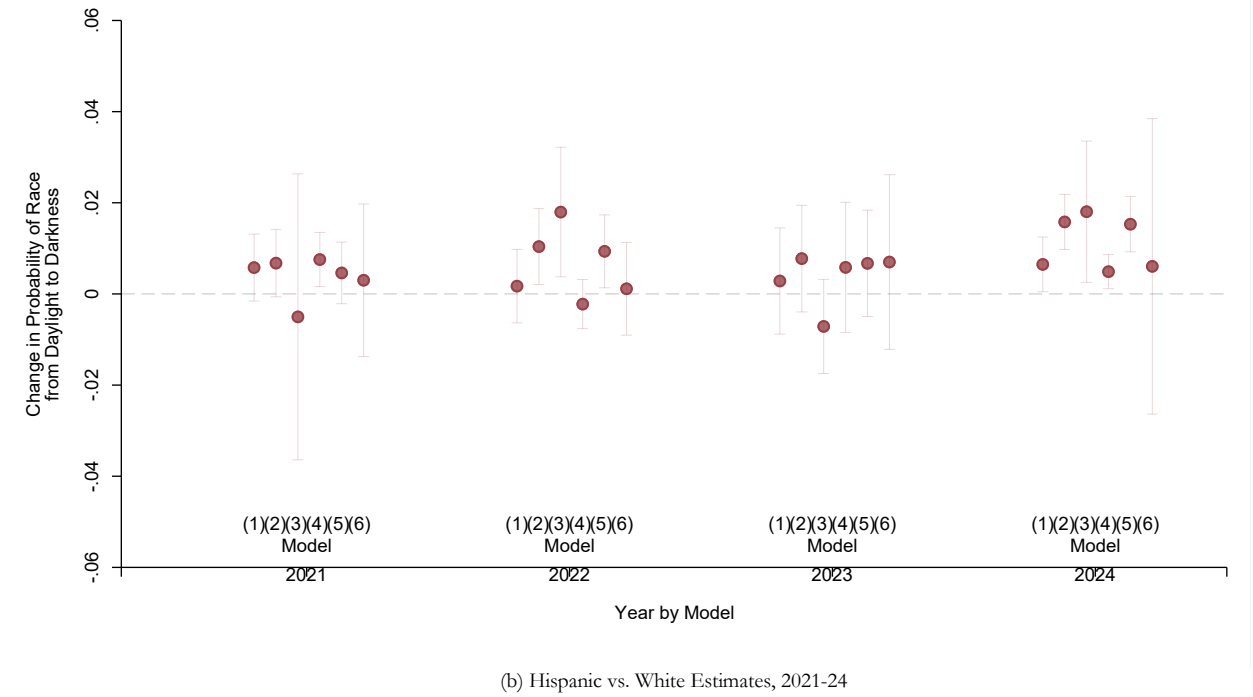
(d) Hispanic vs. White, 2024

Figure 3.2 presents the estimated differences in the likelihood of a traffic stop involving non-White motorists for each of the six models, from 2021 to 2024. The vertical axis represents the difference in the relative likelihood of a non-White motorist, as compared to a White motorist, being stopped in daylight versus darkness. The horizontal axis plots the results for each of the six models, estimated annually from 2021 to 2024. The data reveal distinct patterns for Black (panel a) and Hispanic (panel b) motorists. For Black motorists, there is a modest upward trend in the estimated difference over time. However, most of these estimates are statistically insignificant in all years analyzed, including 2024, when the differences were largest. For Hispanic motorists, a few of the results were statistically significant in 2021 and 2022. By 2024, however, nearly all results were statistically significant, indicating a disparity against Hispanic motorists. Additional results for a combined sample of Black and Hispanic motorists, as well as for all other non-White motorists, are presented in the Appendix.

Figure 3. 2: Statewide Solar Visibility Estimates by Year



(a) Black vs. White Estimates, 2021-24



(b) Hispanic vs. White Estimates, 2021-24

Solar Visibility Analysis by Agency

The statewide analysis shows that Black and Hispanic drivers are more likely to be stopped in daylight than in darkness in some of the specifications. This difference is based on the assumption that, if daylight made no difference, Black and non-White drivers would be stopped at the same rate in daylight as in darkness. Statewide analysis does not show which police departments may be

driving the disparities. To identify where these disparities may be concentrated, we look more closely by running the test separately for each department to see if disparities appear at the local level.

Figure 3.3 is a graphical depiction of the results from applying the primary model to each agency in 2023 and 2024. The vertical axis represents the probability of a non-White motorist being stopped in darkness, while the horizontal axis represents the probability of a non-White motorist being stopped in daylight. Each marker represents an individual department, with its size scaled by the inverse of the standard error of the estimate. The 45-degree line represents parity between daylight and darkness, indicating equal treatment irrespective of visibility. A comparison of the estimates for Black motorists in 2023 (panel a) to those in 2024 (panel b) reveals a notable increase in the number of departments showing a disparity. Similarly, comparing the results for Hispanic motorists in 2023 (panel c) with those in 2024 (panel d) shows the same pattern, with more departments exhibiting a disparity in the latter period. Additional results for a combined sample of Black and Hispanic motorists, as well as for all other non-White motorists, are presented in the Appendix. Results for the combined three-year sample of 2021-23 and 2022-24 are also contained in the Appendix.

In 2023, we found statistically significant disparities in the following departments:

- For Black motorists: CSP Troop G, CSP Troop L, Groton Town, Meriden, and Vernon.
- For Hispanic motorists: CSP Troop G and North Branford.

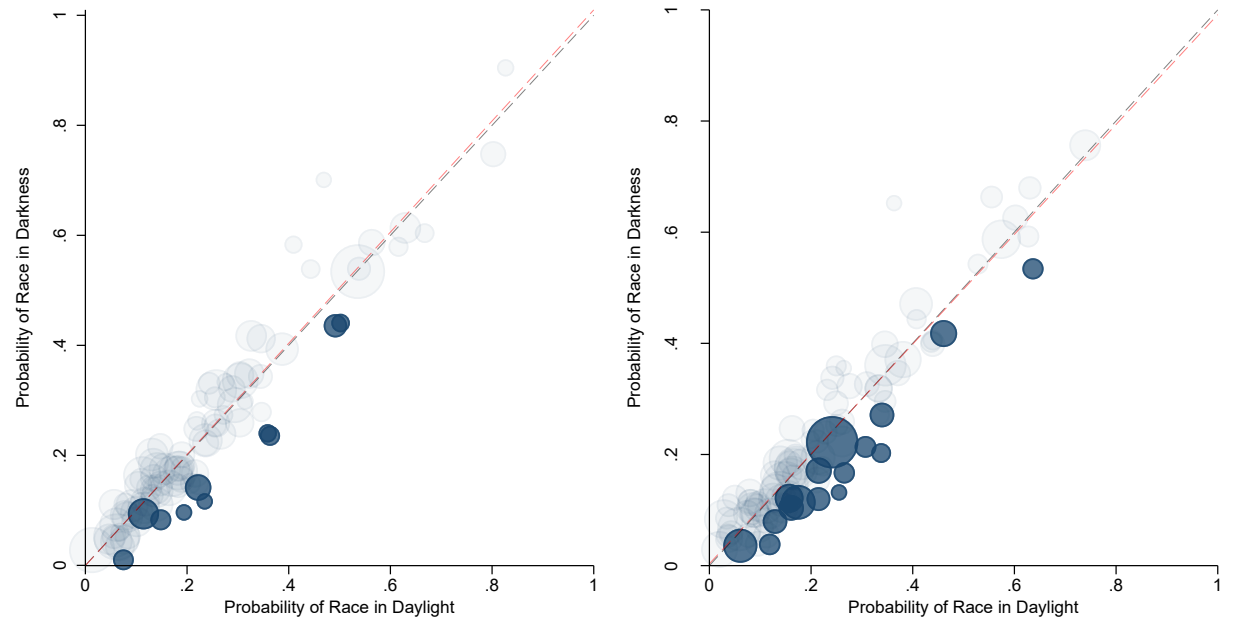
While the estimates for these departments didn't pass all robustness tests, we also noted significant disparities across several specifications in CSP Troop L, East Haven, Enfield, Monroe, Naugatuck, and Suffield. However, these estimates did not pass all robustness tests.

By 2024, the list of departments with statistically significant disparities includes:

- For both Black and Hispanic motorists: CSP Troop G, Darien, Simsbury, and Willimantic.

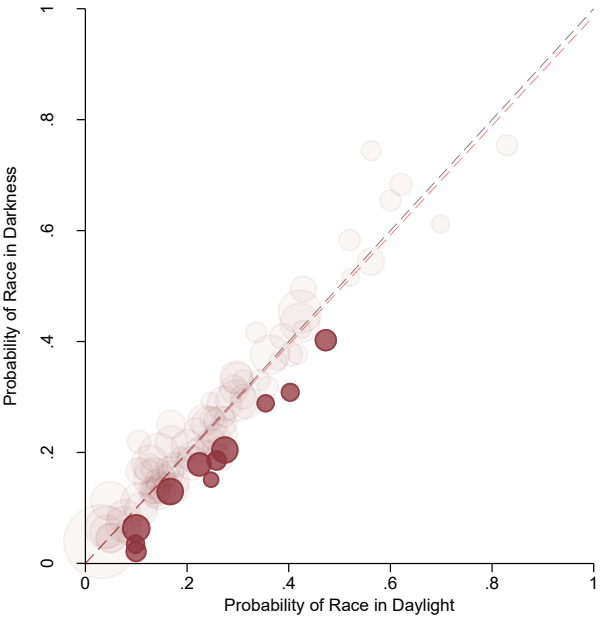
While the estimates for these departments didn't pass all robustness tests, we also noted significant disparities across several specifications in Ansonia, CSP Troop C, Fairfield, Farmington, Glastonbury, Greenwich, Meriden, Naugatuck, North Haven, Norwalk, Vernon, and Winsted. However, these estimates did not pass all robustness tests.

Figure 3. 3: Solar Visibility Estimates by Department

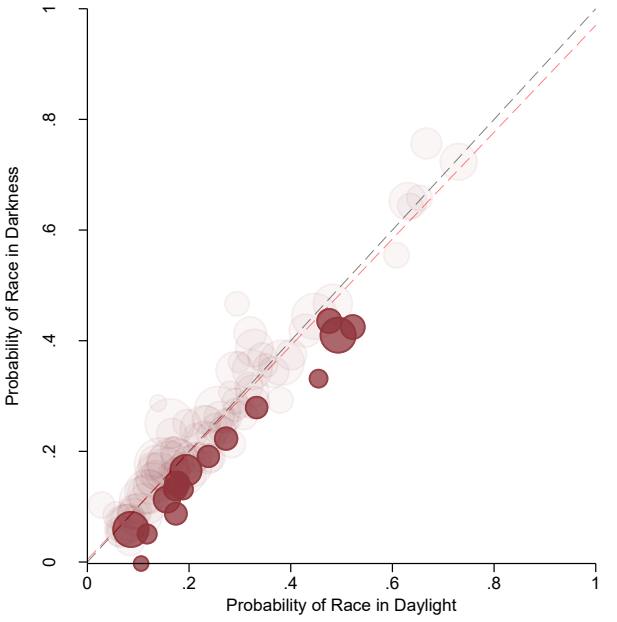


(a) Black vs. White, 2023

(b) Black vs. White, 2024



(c) Hispanic vs. White, 2023



(d) Hispanic vs. White, 2024

IV: ANALYSIS OF TRAFFIC STOPS, SYNTHETIC CONTROL

As we previously stated, assessing racial and ethnic disparities in police decisions to stop motorists presents a significant challenge, primarily due to the absence of an appropriate counterfactual. In simple terms, reliable data on the demographic composition of motorists on the road is unavailable, leaving no benchmark for evaluating police traffic stops. To address this challenge, we implement a synthetic control analysis with the same intuition as traditional population-based benchmarks but grounded in rigorous statistical theory. The synthetic control method is a causal inference technique used to estimate the effect of an intervention when there is a single focal unit (in this case, a police department) and a pool of potential control units (other police departments). It works by creating a "synthetic" version of the focal unit by weighting a combination of the control units based on their similarity to the focal unit. This synthetic control serves as a counterfactual, showing what the racial and ethnic composition of stops would look like for a department with similar characteristics.

We use inverse propensity score weighting to construct a unique synthetic control for each police department. The methodology accounts for differences in enforcement activity, such as the time of day, day of the week, and types of violations, and the underlying demographics of the population on the roadway. This analysis estimates a measure of similarity called a propensity score, which measures how similar a traffic stop made outside a given department is to a stop made by the analyzed department. These similarity measures are used to weigh stops when constructing a benchmark for each department. For example, if the department being analyzed makes most of its stops on Friday nights at 7 PM for speeding violations and serves a high non-White population, stops made by other departments with similar characteristics will be given more weight when constructing the benchmark. This methodology ensures an apples-to-apples comparison between the number of minorities stopped in the focal department relative to their benchmark and allows for the interpretation of any remaining differences attributed to possible disparate treatment.

The synthetic control approach follows a rich and extensive literature spanning the fields of statistics, economics, and public policy. The application of similar methodologies to policing data has recently entered the criminal justice literature through notable applications by McCaffrey et al. (2004), Ridgeway (2006), and Ridgeway and MacDonald (2009). These studies demonstrate how this method can provide a robust alternative to traditional benchmarking methods, especially when the underlying assumptions of those methods are difficult to meet. The use of propensity scores in this context ensures that we compare departments with similar observable characteristics, which helps to mitigate selection bias.[6] This is a significant improvement over simple population-based comparisons that often fail to account for the unique operational contexts of different police departments. One key limitation of the synthetic control approach for analyzing traffic stop

[6] Our propensity score estimates incorporate a comprehensive set of variables to ensure a robust comparison between police departments. These variables are based on nine components derived from a principal component analysis of various demographic and enforcement metrics. The nine components were created from the following variables: total population, share by race/ethnicity, median household income, population density, employment rate, employment share in arts and entertainment, median population age, monthly total stops, monthly stops by reason category, and stops per capita as well as month by year fixed effects. A propensity score weight is generated for each control town and is allowed to vary by month and year. We use a logistic regression to estimate the propensity score. We estimate two versions of the second-stage regression: a singly robust and a doubly robust. Both models use a linear probability model to estimate the effect of interest. The singly robust model includes fixed effects for stop reason, hour of day, day of week, and week of the year. It relies on the propensity score to create a balanced comparison group. In contrast, the doubly robust model includes these same fixed effects but also incorporates the nine components used in the propensity score estimation. This helps to correct for any potential imbalances that the propensity score model might not have fully captured. All standard errors are clustered at the stop reason by year level to account for potential correlations within these groups.

disparities is that it's a relative test. Unlike the veil of darkness analysis, which provides an absolute measure of disparity, the synthetic control method can only identify policing agencies that are outliers compared to their peers. It's not designed to capture disparities that might be uniform across all departments in a state.

Figure 4.1 is a graphical depiction of the results from applying the doubly-robust synthetic control estimates to each agency in 2023 and 2024. The vertical axis represents the probability of a non-White motorist being stopped in the control, while the horizontal axis represents the probability of a non-White motorist being stopped in the focal department. Each marker represents an individual department, with its size scaled by the inverse of the standard error of the estimate. The 45-degree line represents parity between the control and focal department, indicating equal treatment. Additional results for a combined sample of Black and Hispanic motorists, as well as for all other non-White motorists, are presented in the Appendix. Results for the combined three-year sample of 2021-23 and 2022-24 are also contained in the Appendix.

These results should be interpreted with caution. While the test identifies racial and ethnic differences, it does not, by itself, explain their causes or significance.

In 2023, the following departments were identified as outliers compared to their benchmark groups[7]:

- For Black motorists: Berlin, Coventry, Groton City, North Haven, Norwich, Orange, Plymouth, Portland, Vernon, Windsor, and Woodbridge.
- For Hispanic motorists: Bethel, Brookfield, Danbury, Derby, New Milford, Weston, Wethersfield, and Wilton.
- For both Black and Hispanic motorists: Stratford

Although the estimates for Waterford did not pass all robustness tests, this department also appeared as an outlier relative to its benchmark group.

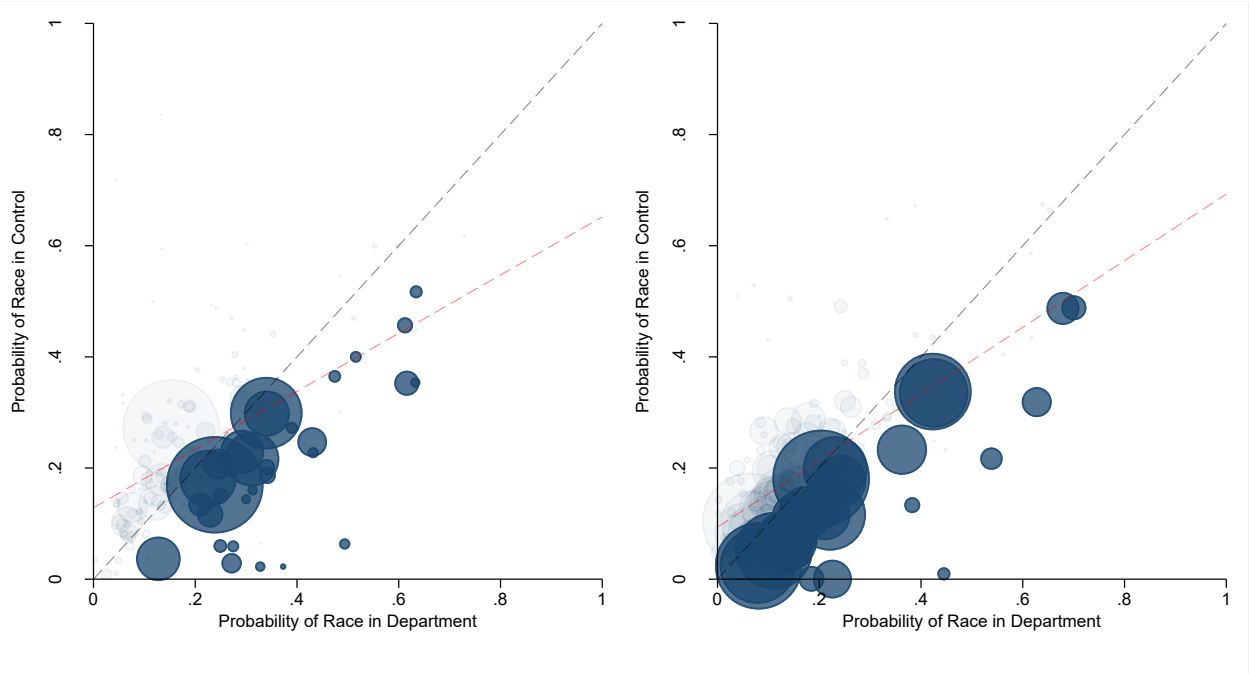
In 2024, the following departments were identified as outliers compared to their benchmark groups:

- For Black motorists: Berlin, Manchester, North Haven, Orange, South Windsor, Waterford, and Woodbridge.
- For Hispanic motorists: Brookfield, Danbury, New Milford, Redding, and Wilton.

Again, although the estimates for Monroe and Norwich did not pass all robustness tests, these departments also appeared as outliers relative to their benchmark group.

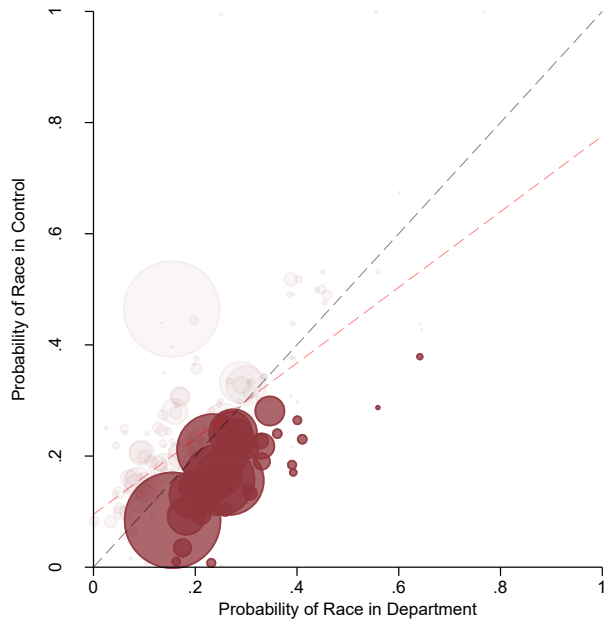
[7] Outliers are departments that show a statistically significant difference when compared to their synthetic benchmark.

Figure 4. 1: Synthetic Control Estimates by Department

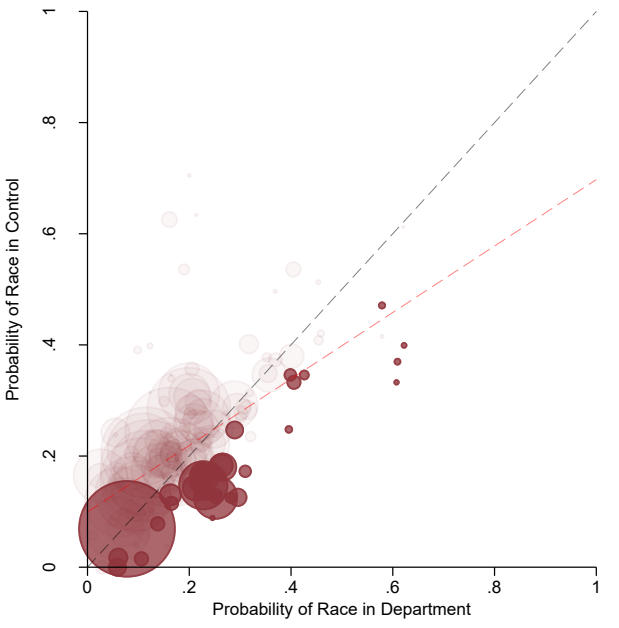


(a) Black vs. White, 2023

(b) Black vs. White, 2024



(c) Hispanic vs. White, 2023



(d) Hispanic vs. White, 2024

V. ANALYSIS OF POST-STOP ENFORCEMENT ACTIONS

In this section, we analyze potential racial and ethnic disparities in the outcomes of traffic stops using an approach that estimates differences across race/ethnicity by conditioning on observable circumstances. Specifically, we test whether stops involving non-White individuals result in different outcomes compared to their White counterparts. This analysis of "conditional outcomes" examines the distribution of stop outcomes, such as arrests, searches, warnings/tickets, extended stop durations, and administrative/equipment violations, while controlling for various circumstantial factors.

Similar to other tests for discriminatory stops, our approach assumes that under equal treatment and after conditioning on the circumstances, the likelihood of a given outcome should be equal across racial and ethnic groups. Unlike other tests, however, the expected direction of bias—whether a particular outcome is more or less likely—is not immediately clear.[8] The intuition behind this approach is similar to that of hit-rate tests, which measure the success rate of searches (e.g., whether a search yields contraband). For example, if officers are searching minority drivers more frequently but are less successful in finding contraband, it suggests they have a lower threshold for searching those drivers, which is indicative of discrimination (see also Knowles, Persico, and Todd 2001; Ayres and Siegelman 1995; Ross and Yinger 2002). In principle, these tests only assume the null hypothesis of equal treatment where contraband hit rates are equal across racial and ethnic groups. However, in practice, and based on the theoretical underpinnings of the test, a lower hit-rate is typically the only difference interpreted as evidence of discrimination. Rather than making an untestable assumption about the direction of potential bias, we simply test for equality of outcomes across racial and ethnic groups conditional on the circumstances of the stop.

We utilize data on all traffic stops conducted by Connecticut police agencies during 2023 and 2024. This dataset allows us to examine key outcomes, including arrest rates, ticketing rates, and the duration of the stop. We employ a regression analysis to control for various factors that might influence stop outcomes, such as the specific police agency, the individual officer, the day of the week, and the hour of the day.[9] For all estimates in the main report, we use an index variable as the outcome, which captures the incidence of arrest itself as well as potential precursors to arrest, like searches, warnings, a longer stop duration, and an equipment or administrative violation.[10] While the traffic stop data is extremely detailed, it does not allow us to fully control for all potential confounding variables, such as the specific circumstances of the stop, the driver's prior criminal history, or the nature of the observed violation. These unobserved factors could introduce unobserved variable bias,

[8] The ambiguity in the direction of bias arises from competing hypotheses about officer behavior. On one hand, a police officer with discriminatory biases might impose harsher penalties on non-White individuals, leading to an increased likelihood of arrest or a ticket for a given violation (see, e.g., Pierson et al. 2020; Ridgeway and MacDonald 2010; Goncalves and Mello 2021). On the other hand, a discriminatory officer might also engage in more pretextual stops of non-White motorists for minor infractions, hoping to find evidence of more severe crimes but ultimately leading to a more lenient outcome, on average (Harris 1997; Rushin and Edwards 2021).

[9] Formally, we estimate a linear probability model of the form

$$1[post_i] = \alpha + \beta\ 1[minority_i] + reason_i + dow_i^y + tod_i^y + agency_i^y + \mu_i$$

where the dependent variable $1[post_i]$ is an indicator which is equal to one if traffic stop *i* resulted in a post-stop enforcement action. The primary independent variable $1[minority_i]$ is an indicator which is equal to one if traffic stop *i* was made of a minority motorist and zero otherwise. Additional control variables include indicators for the reason for the stop ($reason_i$), day of the week (dow_i), 15-minute time of day increments (tod_i), and indicators for each policing agency in the data ($agency_i^y$). Each non-White group (i.e., Black, Hispanic, and all other races/ethnicities) is compared only against a sample of White (i.e., non-Hispanic) motorists. Across all estimates, we cluster standard errors by reason for stop.

[10] We construct the index applying principal components analysis to the outcome variables: search, warning/ticket, prolonged stop duration, and an infraction n for an administrative or equipment violation.

as different demographic groups may be stopped under different circumstances, even for the same type of violation. Therefore, our results should be interpreted as highlighting associations rather than establishing causal links between race and traffic stop outcomes.

Figure 5.1 provides a graphical analysis of traffic stops in Connecticut, using data from policing agencies in 2023 and 2024. The analysis compares outcomes for Black (panels a and b) and Hispanic (panels c and d) motorists to those for White non-Hispanic motorists. The data includes all police stops and accounts for various contextual factors. The outcome is a composite index constructed from multiple variables that represent both precursors to and the final act of arrest. These variables include an indicator for arrest, search, warning, stop duration, and whether the stop was made for an equipment or administrative violation. The appendix provides results for each individual measure. Since the circumstances of a stop are highly related to the outcome of the stop and these circumstances might vary by race, the analysis includes a granular set of control variables that capture the circumstances surrounding the stop.

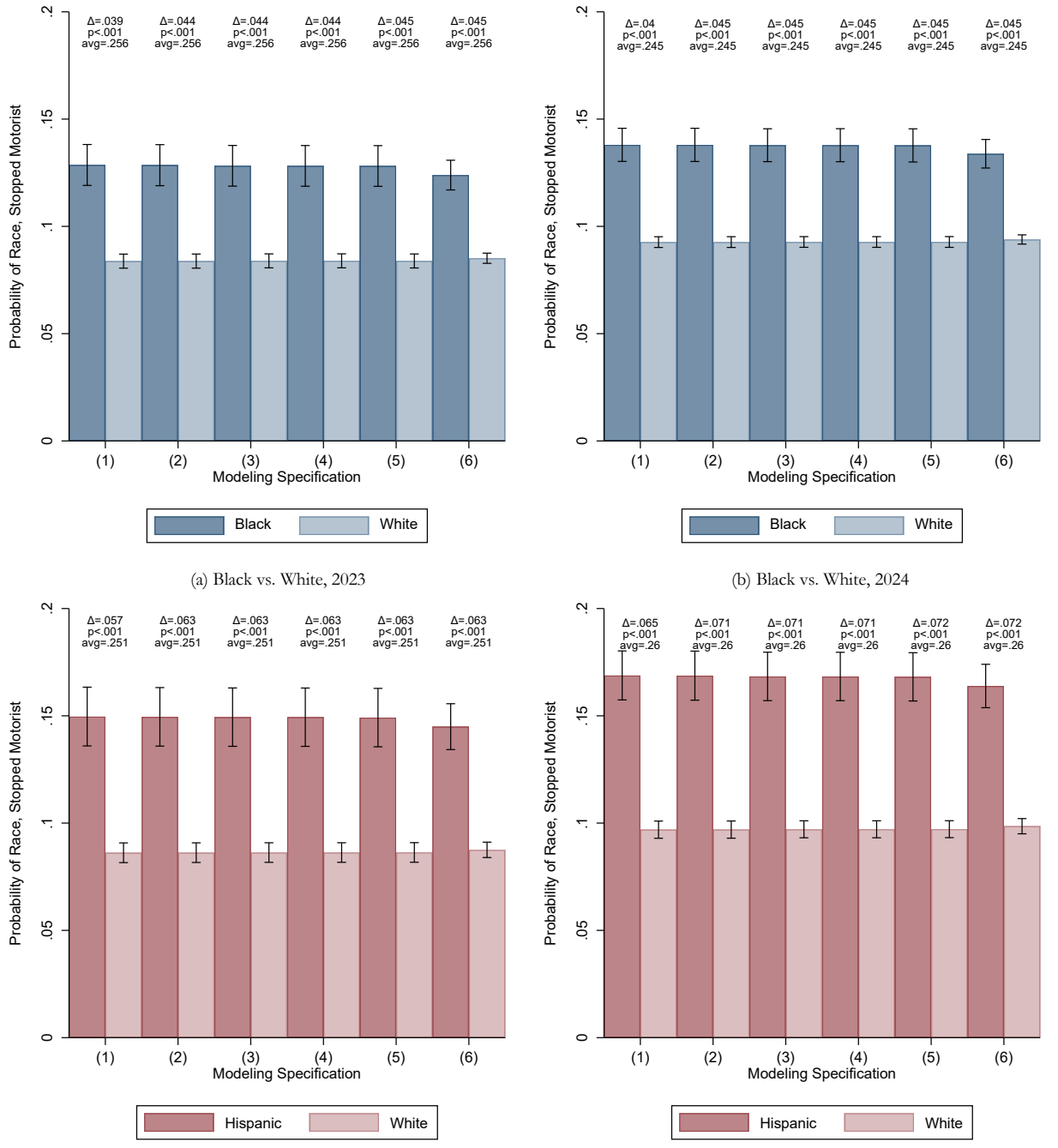
Each panel in the figure presents six pairs of bars, where darker bars represent estimates for non-White motorists and lighter bars represent estimates for White motorists. Each pair displays the predicted probability that a stop ranks higher on the composite index for a given model, along with annotations that detail the magnitude and statistical significance of the differences.

Moving from left to right, each pair of bars represents the results from a model with an increasingly complex set of controls, building upon the previous one:

- First Pair: The primary model with baseline controls.
- Second Pair: Replaces the day of week and hour controls with an interaction term for differences within hours on a given day.
- Third Pair: Adds an interaction between the reason for the stop and the hour.
- Fourth Pair: Adds an interaction between the reason for the stop and the day of the week.
- Fifth Pair: Includes a three-way interaction among the reason for the stop, hour, and day of the week.
- Sixth Pair: The final model adds officer fixed effects.

Data from 2023 and 2024 traffic stops in Connecticut reveal a similar pattern: Black and Hispanic motorists are significantly more likely to experience an outcome that is more severe and a precursor to an arrest or an arrest itself, even after controlling for a granular set of circumstantial factors. The most conservative fully saturated model estimates that Black motorists were 13.5% more likely to have a stop result in a more severe outcome, an arrest or precursor to an arrest in 2023, a difference of 3.5 percentage points. This increased to 15.5% more likely (3.8 percentage points) in 2024. Hispanic motorists were 20.9% more likely to have a stop result in a more severe outcome, an arrest or precursor to an arrest in 2023, a difference of 5.3 percentage points. This increased to 23.1% more likely (6 percentage points) in 2024. These findings suggest that, on average, Connecticut police officers are disproportionately likely to arrest minority motorists or subject them to more severe outcomes, even when accounting for a highly detailed set of circumstantial factors. Additional results for a combined sample of Black and Hispanic motorists, as well as for all other non-White motorists, are presented in the Appendix. Results for the combined three-year sample of 2021-23 and 2022-24 are also contained in the Appendix.

Figure 5. 1: Statewide Estimates of Differences in the Outcome of a Stop by Modeling Specification



(a) Black vs. White, 2023

(b) Black vs. White, 2024

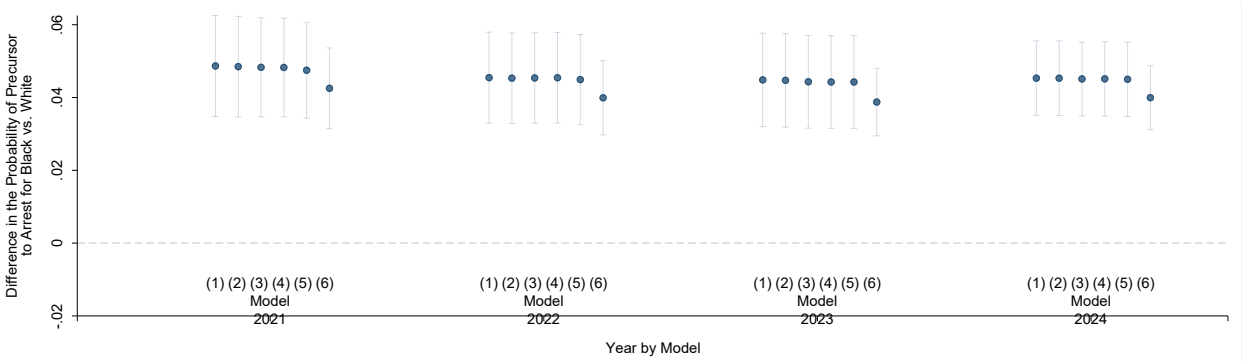
(c) Hispanic vs. White, 2023

(d) Hispanic vs. White, 2024

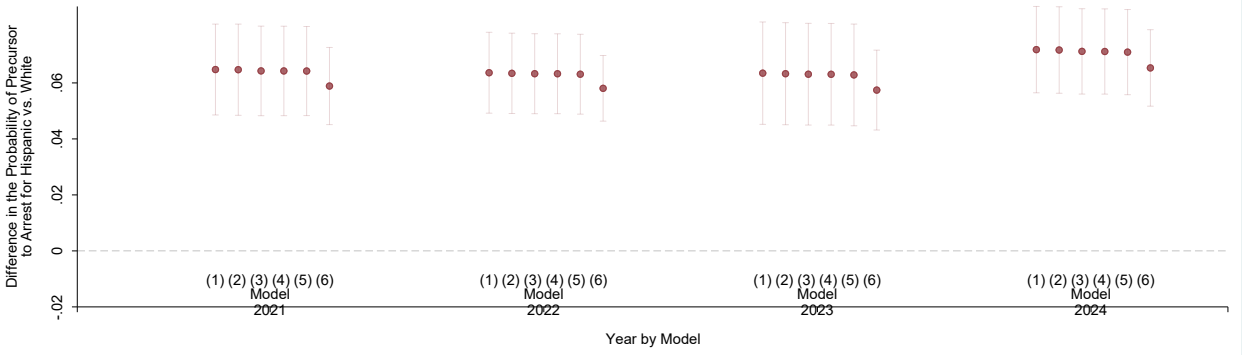
Figure 5.2 shows the estimated differences in the likelihood of a traffic stop resulting in a more severe outcome, an arrest or a precursor to an arrest for non-White motorists compared to White motorists from 2021 to 2024. The vertical axis represents the difference in this likelihood, while the horizontal axis displays the results for each of the six models, estimated annually. The data reveals distinct, persistent patterns for Black motorists (panel a), showing a consistent disparity in the likelihood of

experiencing a more severe outcome, an arrest or its precursors, with the magnitude remaining stable throughout the period. Hispanic motorists (panel b) exhibit a similarly large and persistent disparity over the same four-year span. In summary, the results indicate that Black and Hispanic motorists are disproportionately subjected to a more severe outcome, or outcomes that could lead to an arrest across the entire time period. Additional results for a combined sample of Black and Hispanic motorists, along with all other non-White motorists, are available in the appendix.

Figure 5. 2: Statewide Estimates of Differences in the Outcome of a Stop by Year



(a) Black vs. White Estimates, 2021-24



(b) Hispanic vs. White Estimates, 2021-24

Figure 5.3 is a graphical depiction of the results from applying the fully specified model to each agency in 2023 and 2024. The vertical axis represents the probability that a White motorist is subjected to a more severe outcome, an arrest or a precursor to an arrest, while the horizontal axis represents the probability that a non-White motorist experiences a similar outcome. Each marker represents an individual department, with its size scaled by the inverse of the standard error of the estimate. The 45-degree line represents parity between daylight and darkness, indicating equal treatment. A comparison of the estimates for Black and Hispanic motorists in 2023 (panel a) to those in 2024 (panel b) reveals a persistent disparity across both periods. Additional results for a combined sample of Black and Hispanic motorists, as well as for all other non-White motorists, are presented in the Appendix. Results for the combined three-year sample of 2021-23 and 2022-24 are also contained in the Appendix.

In 2023, we found statistically significant disparities in the following departments:

- For Hispanic motorists: Putnam

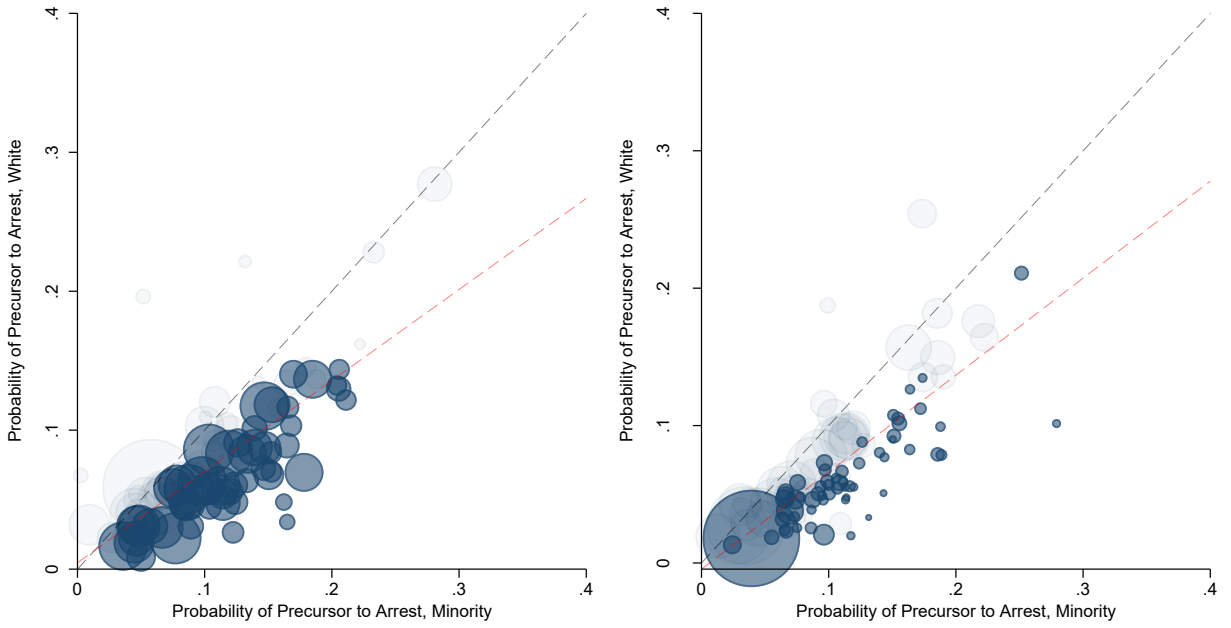
While the estimates for these departments didn't pass all robustness tests, we also noted significant disparities across several specifications in Bethel, Cheshire, Danbury, Norwalk, Suffield, and West Hartford. However, these estimates did not pass all robustness tests.

In 2024, the list of departments with statistically significant disparities were:

- For both Black and Hispanic motorists: CSP Troop G
- For Hispanic motorists: Watertown

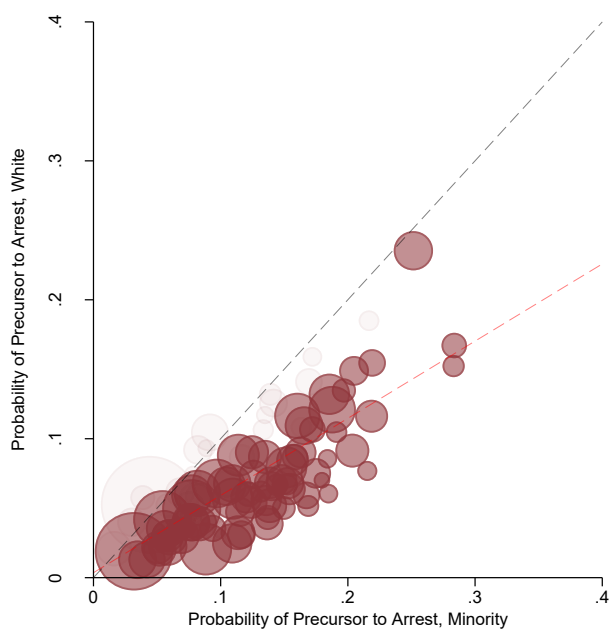
While the estimates didn't pass all robustness tests, we also noted significant disparities across several specifications in Madison, Ridgefield, and Plainville. However, these estimates did not pass all robustness tests.

Figure 5. 3: Estimates of Differences in the Outcome of a Stop by Department

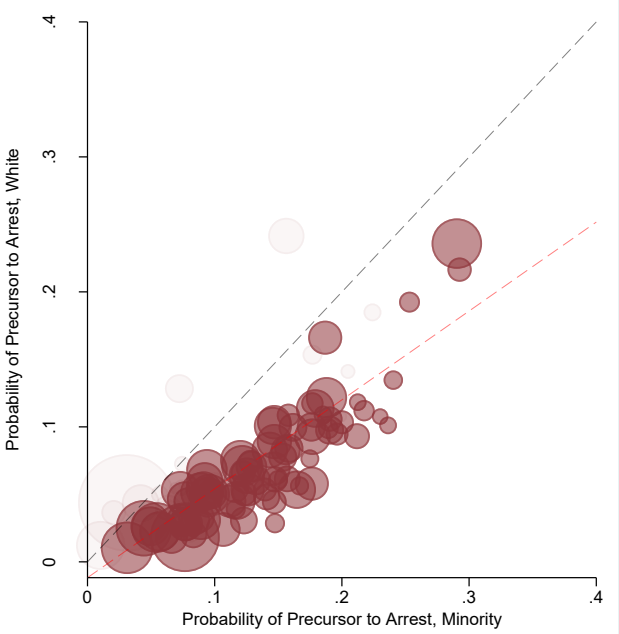


(a) Black vs. White, 2023

(b) Black vs. White, 2024



(c) Hispanic vs. White, 2023



(d) Hispanic vs. White, 2024

VI: ANALYSIS OF VEHICULAR SEARCHES

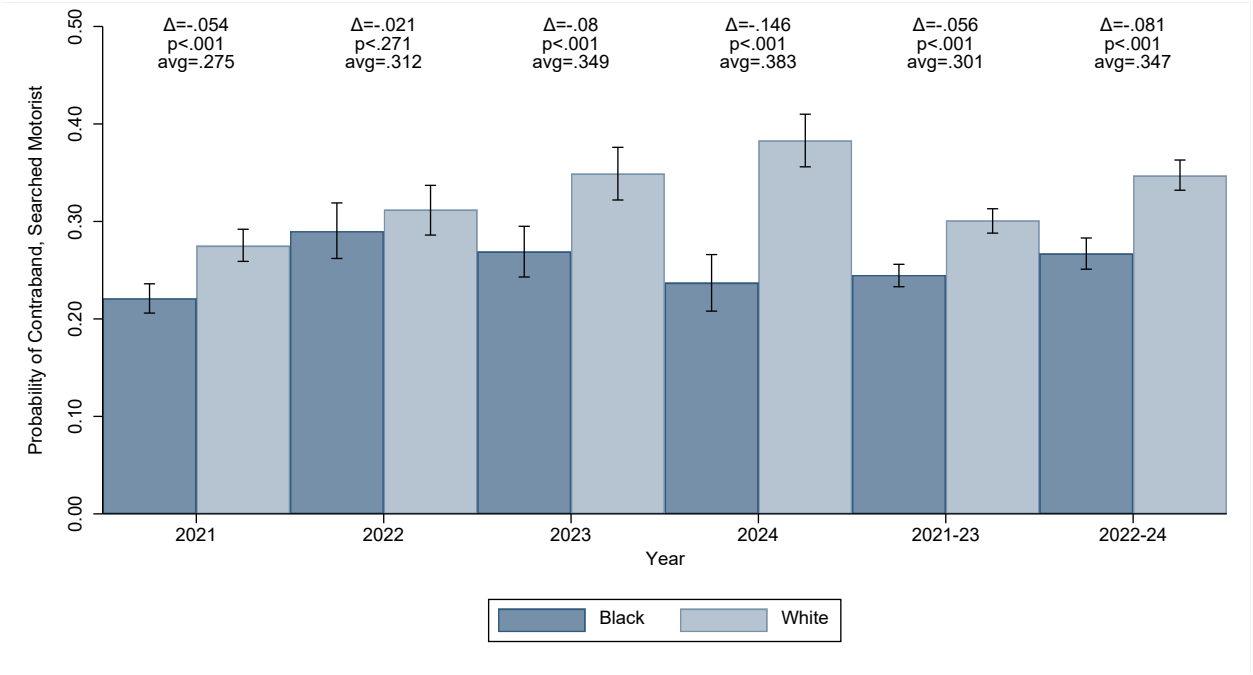
A challenge arises because unobservable differences between motorists—characteristics not easily captured in traffic stop data—can persist even when controlling for a rich set of variables. These differences might influence a police officer's on-the-scene decisions, creating a potential source of bias. To address this challenge, scholars and practitioners often use hit-rate tests, as proposed by Knowles et al. (2001), rather than relying solely on approaches that condition on observables (Dharmapala & Ross 2003; Antonovics & Knight 2004; and Anwar & Fang 2006).[11] These tests are grounded in Becker's (1971) economic model of discrimination, which conceptualizes police bias as a lower internal cost for an officer to engage in discretionary enforcement against a non-White motorist compared to a White motorist.

In the absence of disparate treatment, an officer who makes enforcement decisions based on reasonable suspicion, or a credible threat, should face equal costs across different groups. Therefore, the empirical probability of a discretionary action, like a search yielding contraband, should be equal across racial/ethnic groups, even if guilt rates differ. Unbiased officers might engage in discretionary post-stop enforcement against non-White motorists more frequently than against White motorists, but only in proportion to their likelihood of guilt. Conversely, if non-White motorists face a disproportionate rate of post-stop enforcement relative to their guilt rate, it suggests that police have a lower cost for engaging in such enforcement and may be biased against non-Whites. We used a dataset of searches from Connecticut policing agencies to conduct this analysis, focusing on those resulting from a traffic stop and categorized as a search, while excluding inventory searches.

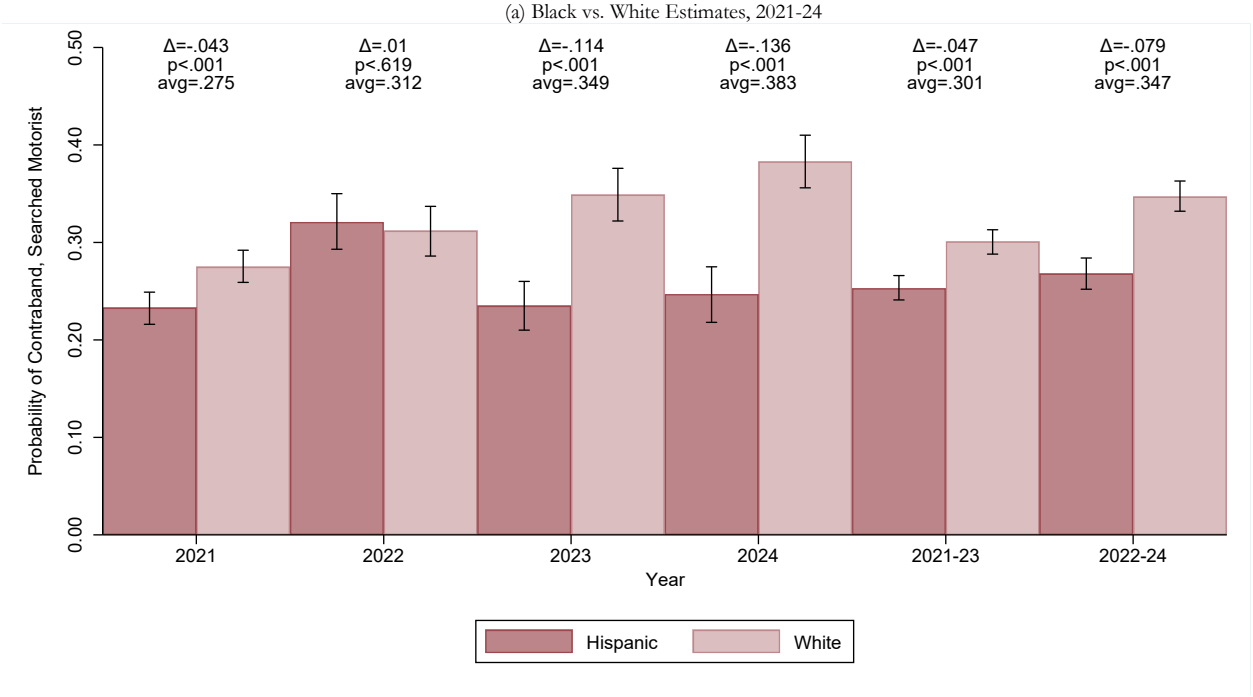
Figure 6.1 illustrates the estimated differences in the likelihood of a search yielding contraband for non-White motorists compared to White motorists from 2021 to 2024. The vertical axis represents the probability of a search resulting in contraband being found. The data reveals distinct and persistent patterns. For Black motorists (panel a), there is a consistent disparity, suggesting that they are less likely to have contraband found after a search relative to White motorists, which in turn suggests they are disproportionately subjected to searches. Similarly, Hispanic motorists (panel b) exhibit a large and persistent disparity over the same four-year period. In summary, the results suggest that Black and Hispanic motorists are disproportionately subjected to searches and are therefore less likely to be found with contraband as a result of a search. Additional results for a combined sample of Black and Hispanic motorists, along with other non-White motorists, are available in the appendix.

[11] Simoiu et al. (2017) also propose a threshold-style test that has the benefit of alleviating potential concerns of infra-marginality in the hit-rate style tests but at the cost expense of adding significant complexity. To propose a parsimonious solution, we have limited our focus to hit-rate tests.

Figure 6. 1: Contraband Hit-Rate Estimates by Year



(a) Black vs. White Estimates, 2021-24



(b) Hispanic vs. White Estimates, 2021-24

Figure 6.2 is a graphical depiction of the results from applying the contraband hit-rate test to each agency in 2023 and 2024. The vertical axis represents the hit rate for White motorists, while the horizontal axis represents the hit rate for non-White motorists. Each marker on the graph represents an individual department, with its size scaled by the inverse of the standard error of the estimate. The 45-degree line represents parity, indicating equal treatment and success in finding contraband irrespective of race. Panels (a) and (b) contain the results comparing White to Black motorists for

2023 and 2024, respectively, while panels (c) and (d) show the results for White to Hispanic motorists for the same years. Additional results for a combined sample of Black and Hispanic motorists, as well as for all other non-White motorists, are presented in the Appendix. Results for the combined three-year sample of 2021-23 and 2022-24 are also contained in the Appendix.

In 2023, we found statistically significant disparities in the following departments:

- For both Black and Hispanic motorists: Willimantic
- For Black motorists: Bridgeport, Meriden, and Wallingford
- For Hispanic motorists: CSP Troop A

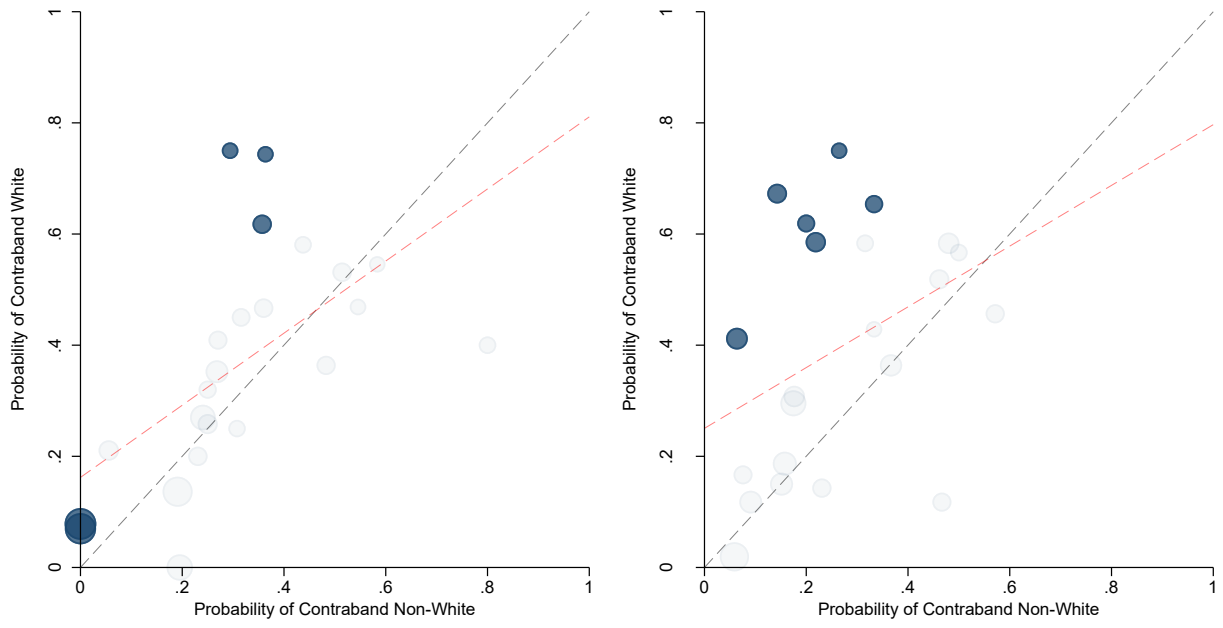
While the estimates for these departments didn't pass all robustness tests, we also noted significant disparities across several specifications in Groton Town, Middletown, New London, and Torrington. However, these estimates did not pass all robustness tests.

In 2024, the list of departments with statistically significant disparities were:

- For both Black and Hispanic motorists: CSP Troop H, New Britain, and Waterbury
- For Black motorists: CSP Troop A, New London, and Meriden
- For Hispanic motorists: West Haven

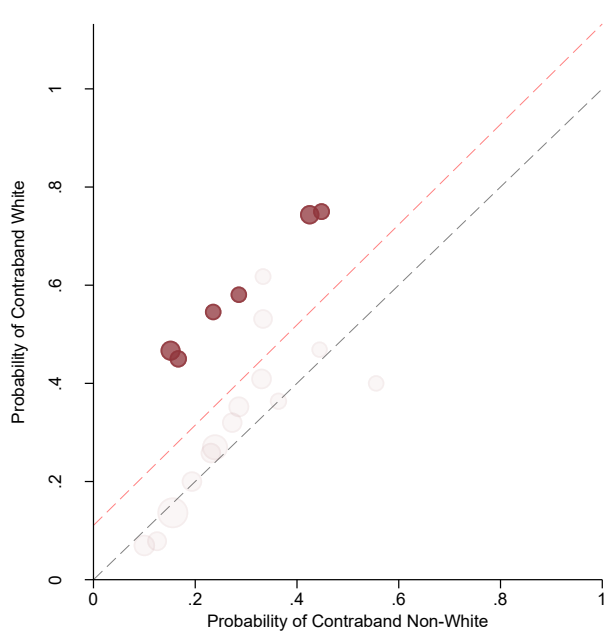
While the estimates didn't pass all robustness tests, we also noted significant disparities across several specifications in Groton City. However, these estimates did not pass all robustness tests.

Figure 6. 2: Contraband Hit-Rate Estimates by Department

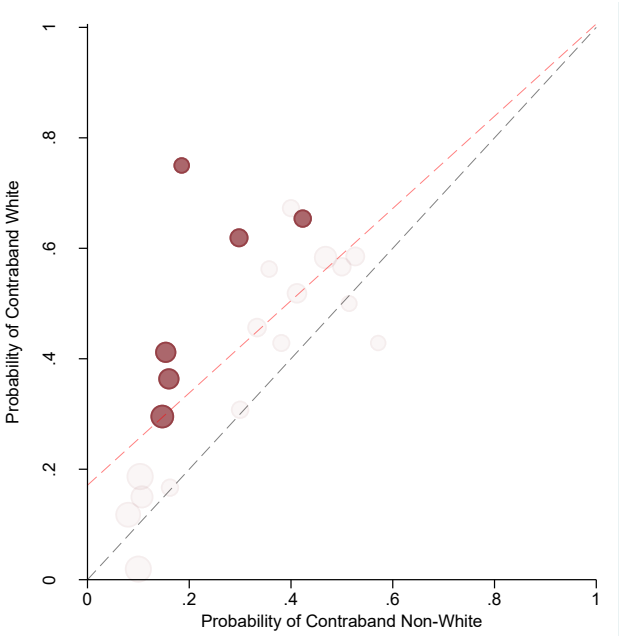


(a) Black vs. White, 2023

(b) Black vs. White, 2024



(c) Hispanic vs. White, 2023



(d) Hispanic vs. White, 202

VII: FOLLOW-UP ANALYSIS

The following section presents a follow-up analysis conducted for the Meriden Police Department, which was identified as warranting additional review. The purpose of this enhanced analysis is to more closely examine the factors contributing to observed racial and ethnic disparities in traffic stop data. While such disparities do not, on their own, constitute evidence of racial profiling, they may reflect the interaction of multiple underlying factors that can be more thoroughly understood through detailed analysis.

Traffic enforcement patterns are shaped by a range of influences, many of which vary across communities. Although certain elements are common to policing generally, local conditions, such as crime trends, traffic volume, and calls for service, play a critical role in determining how and where enforcement occurs. In particular, traffic stop disparities may be influenced by factors including crash frequency, high-demand service areas, localized crime activity, and the presence of major traffic generators such as commercial centers, medical facilities, and highway access points. Police administrators must continually balance these considerations when deploying resources to address community needs effectively.

Consistent with the established criteria for identifying racial and ethnic disparities, Chapters 3 through 6 of this report recommended that staff from the Racial Profiling Prohibition Project conduct a more detailed, in-depth analysis of the Meriden Police Department's data. This follow-up analysis focuses primarily on the most recent years available (2023 and 2024) to provide a current and relevant assessment of traffic enforcement patterns.

Over the two-year study period, the Meriden Police Department conducted a total of 3,223 traffic stops. Of these, 54% involved non-White drivers, including 33% Hispanic and 21% Black. Table 7.1 below presents a summary comparison of racial and ethnic data for all reported traffic stops in Meriden during this period.

Table 7. 1: Meriden Traffic Stops: 2023 – 2024

Race/Ethnicity	2023 Stops		2024 Stops	
White	700	47.3%	781	44.8%
Hispanic	451	30.5%	607	34.8%
Black	317	21.4%	347	19.9%
Asian	7	0.5%	6	0.3%
American Indian	4	0.3%	3	0.2%
Total	1,479		1,744	

VII.A: Meriden Population Breakdown by Race/Ethnicity

The racial and ethnic differences identified in the Meriden data were further examined through a detailed review of traffic enforcement activities during the study period. These differences were initially identified in the three-year aggregate analysis, after which the department provided additional data for consideration. We reviewed more detailed location information from each stop to

provide a more comprehensive spatial analysis. As part of this analysis, major corridors and roadways associated with substantial enforcement activity were examined.

According to the 2020 decennial census conducted by the United States Census Bureau, Meriden has a population of approximately 60,850 residents, of whom 52.2% identify as non-White. Table 7.2 summarizes key demographic characteristics of Meriden residents based on the 2020 census data.

Table 7. 2: Meriden Population

Race/Ethnicity	Population Total	% Population Total
White	29,104	47.8%
Hispanic	22,295	36.6%
Black	5,565	9.1%
Asian	1,311	2.2%
Other	2,575	4.3%
Total	60,850	100%

The City of Meriden encompasses approximately 24 square miles, classifying it as a mid-sized municipality in Connecticut, and comprises 17 census tracts. Geographically, Meriden is situated roughly midway between Hartford and New Haven and is bordered by the towns of Southington, Middletown, Berlin, Wallingford, and Cheshire. The city also serves as a regional transportation hub, located at the intersection of Interstate 91 and Interstate 691. Furthermore, the town is also connected to both the Chamberlain Highway, which leads to New Britain, and the Berlin Turnpike, which connects Meriden to Berlin, Newington, Wethersfield, and ultimately leads into Hartford.

In contrast to Meriden, several neighboring municipalities are less racially diverse. For example, both North Haven and Wallingford have populations that are approximately 80% White. Traffic stop data indicate that, between 2023 and 2024, approximately 33% of drivers stopped in Meriden were non-residents.

Key commercial and institutional destinations, including the Meriden Mall and MidState Medical Center, are located north of I-691 and border portions of the downtown area (Census Tracts 1702 and 1703), near Columbus Park and John Barry Elementary School. These locations are expected to generate higher traffic volumes from both residents and non-residents, particularly given the multiple I-691 exits that provide direct access to this area. Additionally, the Meriden Police Department and Courthouse are located in Census Tract 1702, adjacent to East and West Main Streets, corridors where elevated traffic flow is also anticipated.

In recent years, the Meriden Police Department established a substation near the newly developed Meriden Commons apartment complex in the downtown area. The Meriden Train Station is also located nearby and receives additional patrol coverage from the Connecticut State Police. This area serves as a central hub for a variety of community resources, including food pantries, housing shelters, and health service providers.

In addition to these factors, the department has assigned three officers specifically to downtown patrol operations, along with three neighborhood officers who provide community-oriented services

throughout the area. The presence of the police substation, regional transportation infrastructure, community service providers, and dedicated patrol personnel contributes to a higher concentration of police activity and officer presence in the downtown area compared to most other parts of the city.

In order to better understand the demographic makeup of different neighborhoods in Meriden, Figure 7.1 illustrates the census tracts or more localized neighborhoods in Meriden. The resident driving-age population within each tract ranges from approximately 1,300 to 6,600 individuals. The largest concentration of residents, about 14% of the city's total population, is in Census Tract 1712, a predominantly suburban area on the city's southeastern side. Other suburban tracts with relatively high population concentrations include Tracts 1705, 1708, and 1711, each accounting for close to 10% of the total population.

Figure 7. 1: Meriden Census Tract Map (2020)

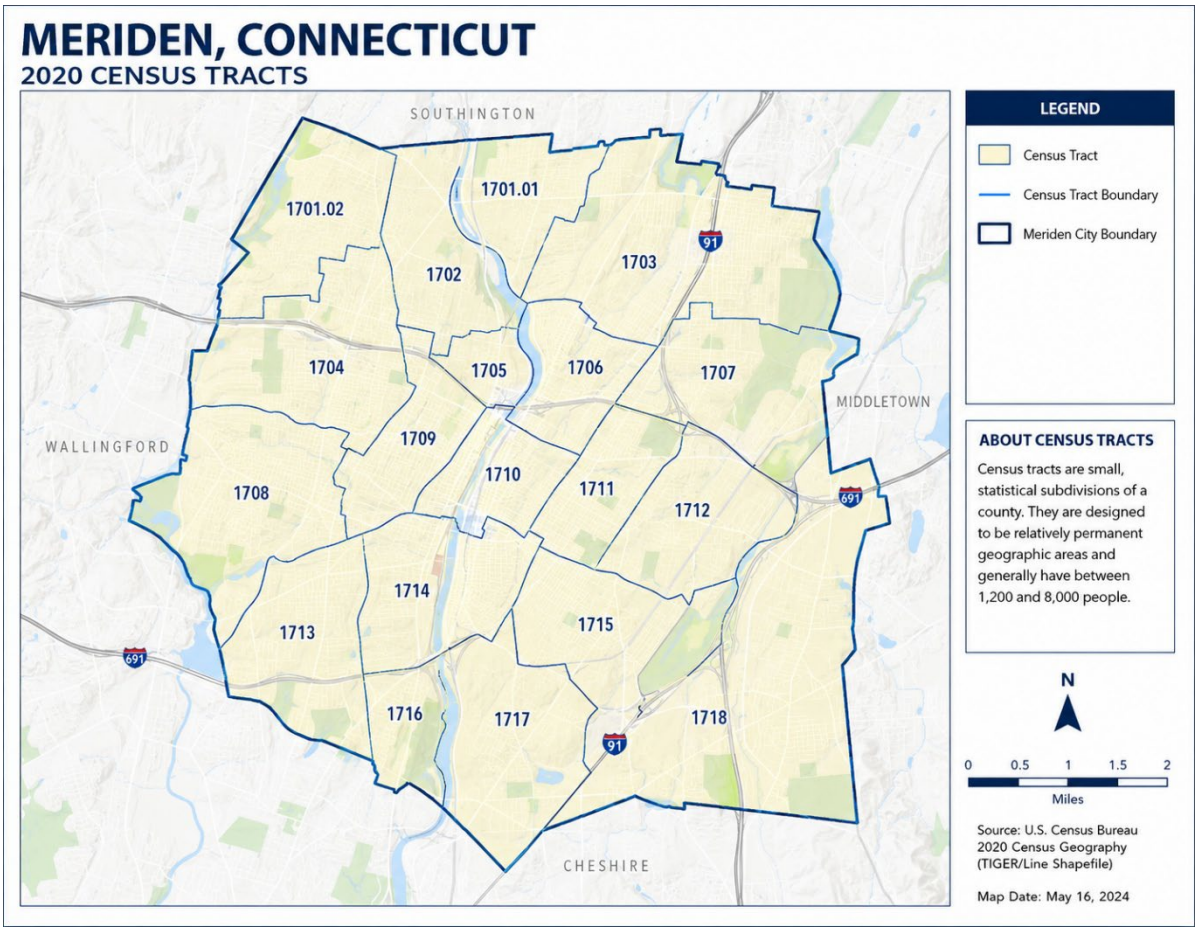
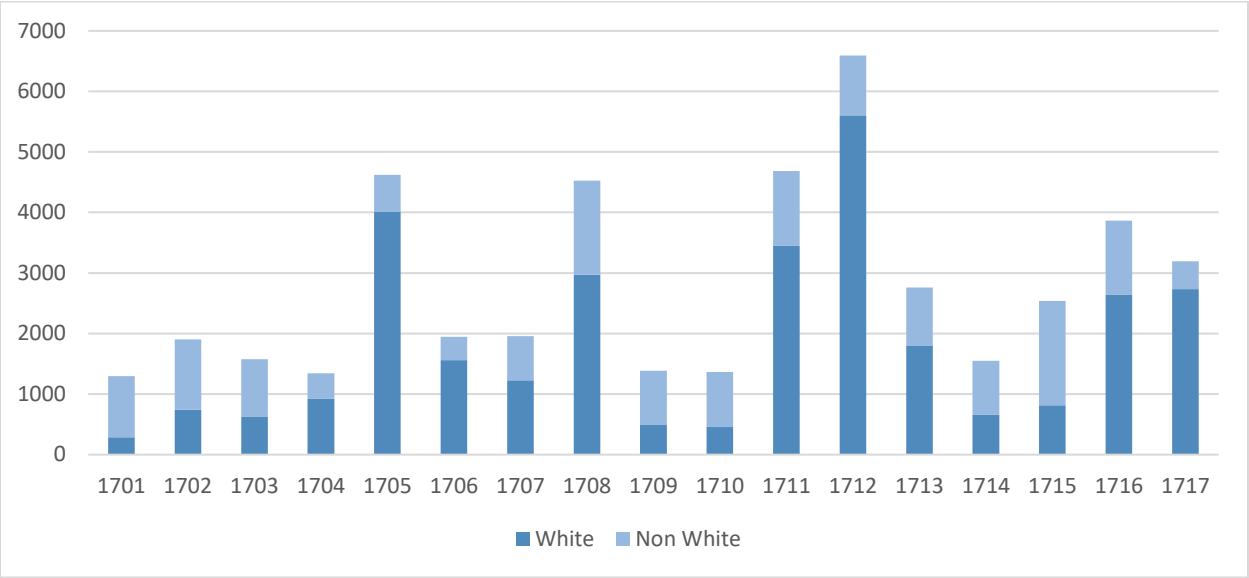


Figure 7.2 illustrates the distribution of White and non-White populations across Meriden's census tracts. Overall, 11 of the 17 census tracts have predominantly White, non-Hispanic populations. In contrast, Census Tract 1701, located within the downtown area, is the most demographically diverse. The downtown area comprises six census tracts, including 1701, 1702, 1703, 1707, 1709, and 1710. With the exception of Tract 1707, these areas have substantial non-White populations, particularly Hispanic residents, who account for approximately 60% to 78% of each tract's population.

Figure 7. 2: Meriden Population by Census Tract



VII.B: Traffic Stop Breakdown by Roadway and Race/Ethnicity

Limitations in the available location data prevented a fully detailed geographic analysis of individual traffic stops. As a result, the analysis focused on roadway corridors with the highest concentrations of enforcement activity. Six major corridors were identified as having more than 100 traffic stops during the study period. These included East and West Main Streets (707 stops), Broad Street (346), Cook Avenue and Old Colony Road (288), Pratt Street (271), Hanover Street (256), and the Colony corridor, including Colony Street, Colony Road, North Colony Road, and South Colony Road (142). Collectively, these corridors accounted for approximately 62% of all traffic stops.

East and West Main Streets alone accounted for 22% of all stops. These roadways traverse the central downtown census tracts, which experience higher traffic volumes, include the locations of the police department and state courthouse, and have greater proportions of non-White residents than areas outside the downtown core. Hanover Street, which borders the downtown area near the police station, accounted for approximately 8% of all stops.

Similarly, the Cook Avenue–Old Colony Road corridor connects additional suburban areas to downtown (specifically from Census Tract 1708 to Tract 1709). This corridor accounted for approximately 9% of all stops and serves an area where roughly 41% of the residential population identifies as non-White.

Figure 7.3 illustrates the distribution of traffic stop volumes across these high-enforcement corridors, with all remaining stop locations grouped into an “Other” category.

Figure 7. 3: Traffic Stops by Major Roadway

Figure 7.4 presents the percentage of Black drivers stopped on each major roadway in Meriden, compared to the citywide average of 19.8%. The proportion of Black drivers stopped exceeded the city average on two of the six major roadways and in the combined "Other" roadway category.

East and West Main Streets, the corridors with the highest volume of traffic enforcement, accounted for 22% of all stops but had a slightly lower proportion of Black drivers stopped (19.7%) compared to the city average. In contrast, Broad Street and Pratt Street, which accounted for approximately 11% and 8% of total stops, respectively, each had higher proportions of Black drivers stopped, at approximately 23%, exceeding the citywide average.

Broad Street (Route 5) passes through Census Tracts 1708, 1710, 1711, and 1714, where the Black population comprises approximately 8%, 15%, 7%, and 13% of residents, respectively. Notably, Census Tracts 1708 and 1711 have relatively lower overall non-White populations (34% and 26%, respectively). Pratt Street traverses Census Tracts 1701 and 1714, where the Black population is approximately 15% and 13%, respectively.

In both cases, Broad Street and Pratt Street exhibit proportions of Black drivers stopped that exceed the share of Black residents within the census tracts they serve. It is important to note, however, that Pratt Street provides direct access to Interstate 691, and both corridors serve as key routes into the downtown area, where traffic enforcement activity is more concentrated due to departmental deployment patterns. According to the department, crime trends and calls for service are regularly assessed when determining where additional police resources are needed. As a result, the higher levels of enforcement observed along these corridors may reflect operational and public safety considerations in addition to differences between enforcement patterns and local demographic composition.

Figure 7. 4: Black Drivers Stopped Compared to the City Average

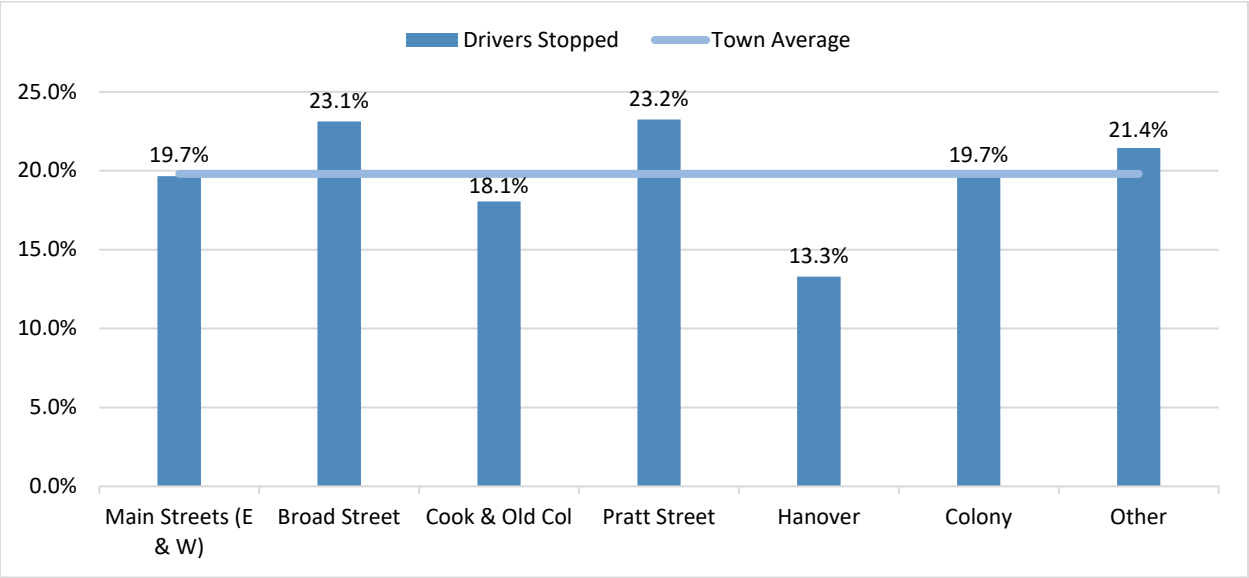


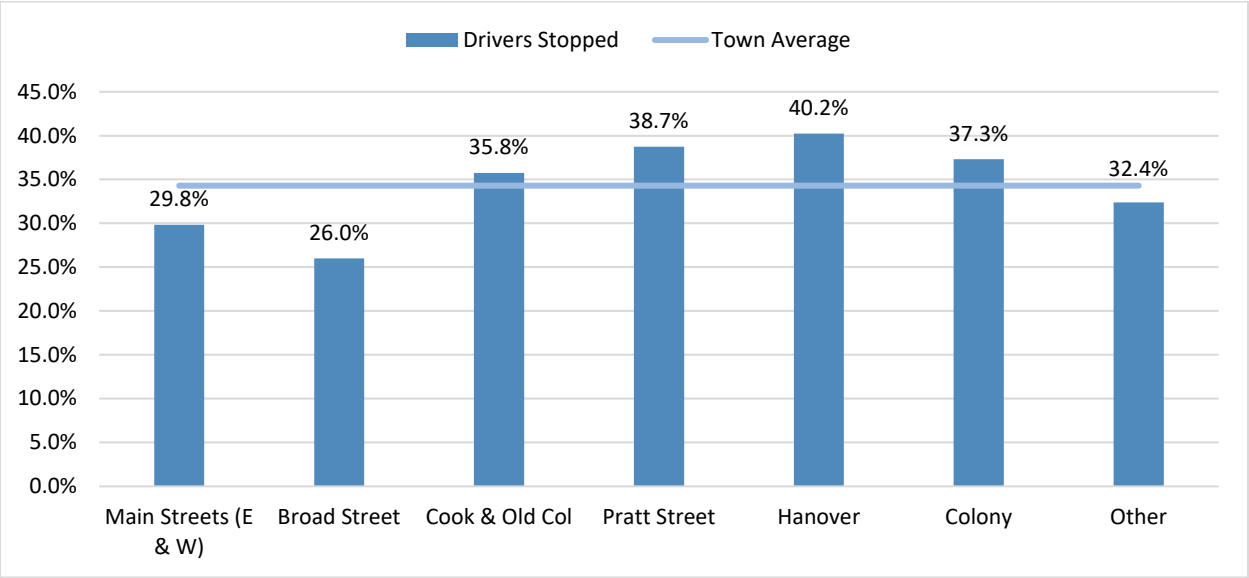
Figure 7.5 presents the percentage of Hispanic drivers stopped on each major roadway in Meriden, compared with the citywide average of 34.3%. The proportion of Hispanic drivers stopped exceeded this average on four of the six major roadways.

East and West Main Streets, despite accounting for the highest volume of traffic stops, had a lower proportion of Hispanic drivers stopped than the city average. In contrast, the Cook Avenue–Old Colony Road corridor, Pratt Street, Hanover Street, and the Colony corridor (including Colony Street, Colony Road, North Colony Road, and South Colony Road) each accounted for less than 10% of total stops but had higher proportions of Hispanic drivers stopped than the citywide average.

Hanover Street borders Census Tracts 1702, 1707, and 1709. While Census Tracts 1702 and 1709 each have Hispanic populations of approximately 50%, Census Tract 1707 has a lower Hispanic population of about 29%. The Colony corridor primarily traverses Census Tracts 1702 and 1716. Census Tract 1716 has a Hispanic population of approximately 20% and an overall non-White population of about 31%. This tract also includes major destinations such as the Meriden Mall and MidState Medical Center, which are likely to contribute to higher traffic volumes and, consequently, increased enforcement activity.

Additionally, portions of the Colony corridor extend east of MidState Medical Center into Census Tract 1715, where approximately 54% of residents identify as Hispanic. This variation in demographic composition along the corridor highlights the complexity of interpreting stop patterns in relation to residential population characteristics.

Figure 7. 5: Hispanic Drivers Stopped Compared to the City Average



VII.C: Review of Traffic Stops Along Selected Roadways

Main Streets (East & West)

The highest concentration of traffic stops in Meriden, approximately 22%, occurred along East and West Main Streets, where a total of 707 stops were conducted during the study period. According to the Connecticut Department of Transportation's average daily traffic counts, these roadways carry some of the highest traffic volumes in the city. Approximately 7,000 vehicles per day enter Meriden along West Main Street from the western boundary. Traffic volume increases steadily as one moves eastward through the city, reaching approximately 12,000 vehicles per day near downtown and nearly 20,000 vehicles per day near Paddock Avenue, close to Interstate 91.

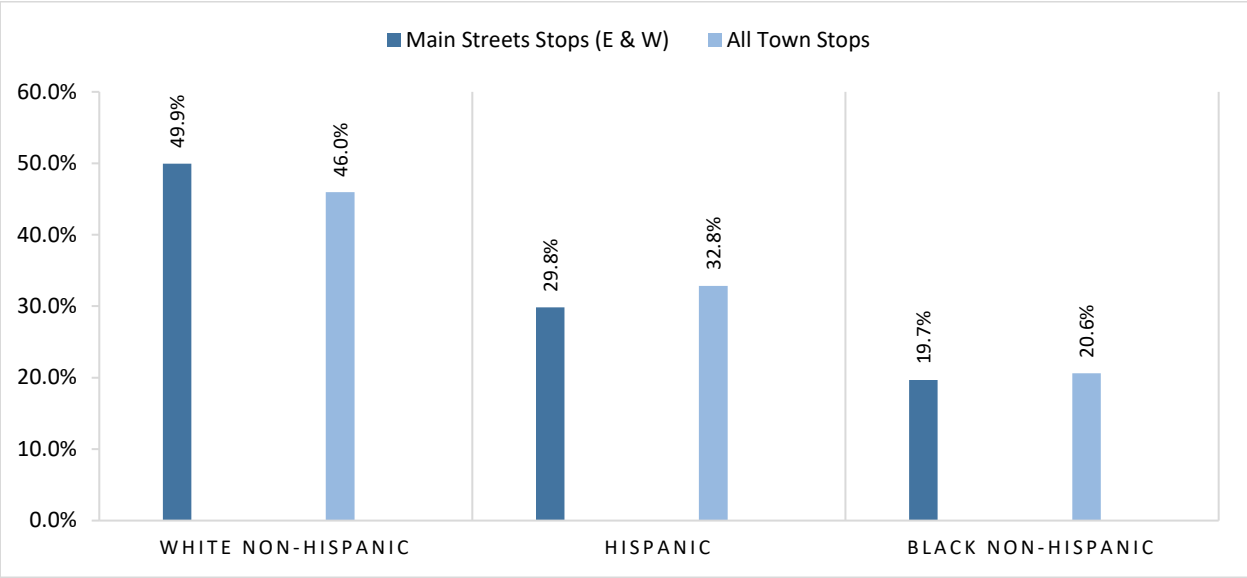
Of the 707 stops conducted along East and West Main Streets, approximately 50% (354) involved non-White drivers, including 29.8% (211) Hispanic and 19.7% (139) Black. Both figures are slightly lower than the citywide averages of 32.8% for Hispanic drivers and 20.6% for Black drivers.

Nearly 60% of these stops occurred at addresses within the 0–500 block range. These locations fall within Census Tracts 1701, 1702, 1703, 1707, 1709, and 1710, which comprise Meriden's downtown area, an area characterized by higher traffic volumes and increased police activity. The concentration of stops in this area is likely influenced by both increased vehicle flow and the proximity of the police department, courthouse, and other traffic generators, all of which may contribute more frequent interactions between officers and both resident and non-resident drivers.

As noted previously, the department identified several operational factors contributing to increased enforcement activity in the downtown area. These include dedicated neighborhood patrol officers, the police substation located within the Meriden Commons apartment complex, the Meriden Train Station, nearby parks, and other commercial and community destinations that generate significant vehicle and pedestrian traffic. In addition, Main Street serves as a primary corridor connecting the downtown area to MidState Medical Center near Lewis Avenue, further contributing to high traffic volumes and patrol presence along the corridor.

Figure 7.6 illustrates the distribution of traffic stops along East and West Main Streets by race and ethnicity, compared to the overall citywide averages.

Figure 7. 6: Main Street (E & W) Traffic Stops by Race/Ethnicity



Broad Street

A total of 346 traffic stops were conducted along Broad Street during the study period, including stops on North and South Broad Street. Approximately 52% (180) of these stops involved non-White drivers, which is slightly below the citywide average. Hispanic drivers accounted for approximately 26% of stops (90), nearly 7 percentage points below the citywide average, while Black drivers comprised 24.5% of stops (88), approximately 5 percentage points above the citywide average.

More than 70% of all stops occurred along the main section of Broad Street. Notably, approximately 30% of stops (114 total) were concentrated between the intersection of Broad Street and Gale Avenue (around street number 180) and the intersection of Broad Street and East Main Street (around street number 485). This segment is characterized by higher traffic volumes, which contribute to increased enforcement activity. In this segment, approximately 22% of stopped drivers were Black, exceeding the citywide average.

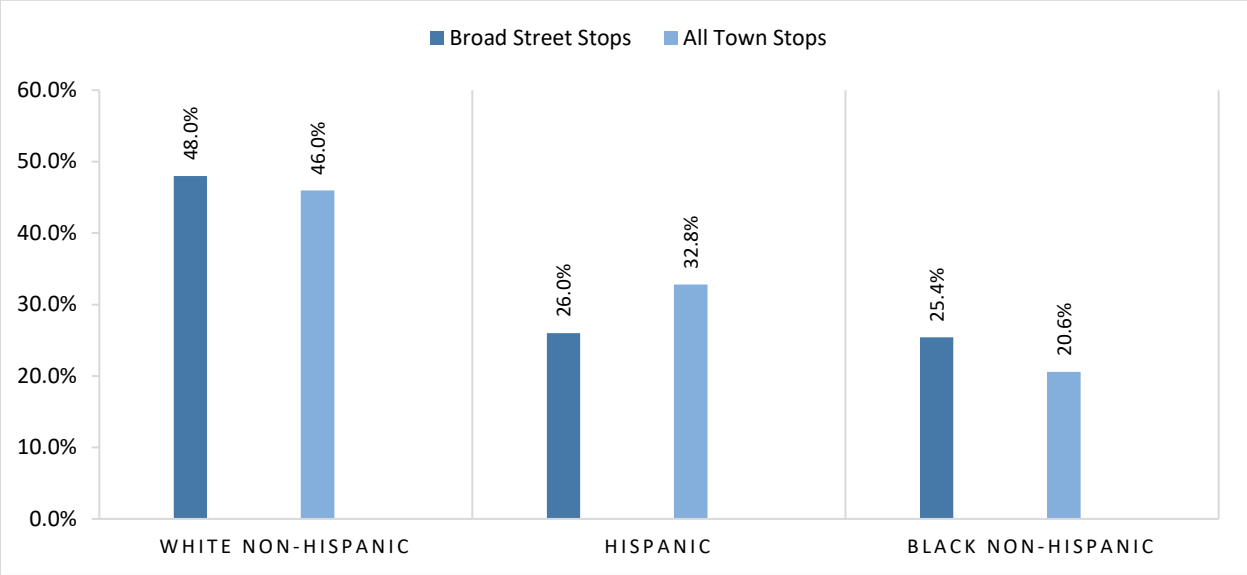
According to departmental information, Hobart Street and Geer Avenue were identified in 2020 as areas of concern due to an increase in violent crime. These areas either border or are in close proximity to the portions of Broad Street with the highest concentration of traffic stops during the 2023–2024 period.

Additionally, Interstate 691 provides direct access to both ends of the Broad Street corridor through multiple on- and off-ramps, contributing to elevated traffic flow in the area. The department also reported several pedestrian-related motor vehicle incidents occurring along this corridor, which prompted targeted traffic enforcement initiatives aimed at improving roadway and pedestrian safety. Many of these selective enforcement efforts were conducted near school zones and other high pedestrian traffic areas, further contributing to increased police presence and enforcement activity along Broad Street. Traffic volume data further contextualize enforcement activity along Broad Street. According to the Connecticut Department of Transportation's average daily traffic counts, Broad Street is among the busiest roadways in Meriden. Approximately 16,500 vehicles per day enter the city from Wallingford along the southern portion of Broad Street. Traffic volumes remain

relatively consistent as the roadway approaches and crosses Main Street. North of Westfield Street, traffic volumes decrease to approximately 7,500 and 11,000 vehicles per day as Broad Street approaches its intersection with the Berlin Turnpike. Notably, the Berlin Turnpike itself carries significantly higher volumes, with approximately 32,000 vehicles per day.

Figure 7.7 illustrates the distribution of traffic stops along Broad Street by race and ethnicity, compared to citywide averages.

Figure 7. 7: Broad Street Traffic Stops by Race/Ethnicity



Cook Ave. and Old Colony Rd.

A total of 288 traffic stops were conducted along Cook Avenue and Old Colony Road during the study period. Approximately 54.2% (132) of these stops involved non-White drivers, which is consistent with the citywide average. Hispanic drivers accounted for approximately 36% of stops (103), about 3 percentage points higher than the city average, while Black drivers comprised approximately 18% of stops (52), roughly 2.5 percentage points lower than the city average.

Old Colony Road extends from Census Tract 1708, where approximately 24% of residents identify as Hispanic, into Cook Avenue, which enters the downtown area in Census Tract 1709, where the Hispanic population increases to approximately 49%, making the average Hispanic population across both Census Tracts about 36.5%. This corridor also reflects changing traffic patterns. According to Connecticut Department of Transportation data, approximately 10,000 vehicles per day enter Meriden from Wallingford along Old Colony Road. Traffic volume gradually decreases to about 8,000 vehicles per day moving north, then declines further to approximately 6,000 vehicles per day as the roadway transitions into Cook Avenue, before increasing again as Cook Avenue approaches Hanover Street and West Main Street, areas associated with higher traffic flow and connectivity to the downtown network.

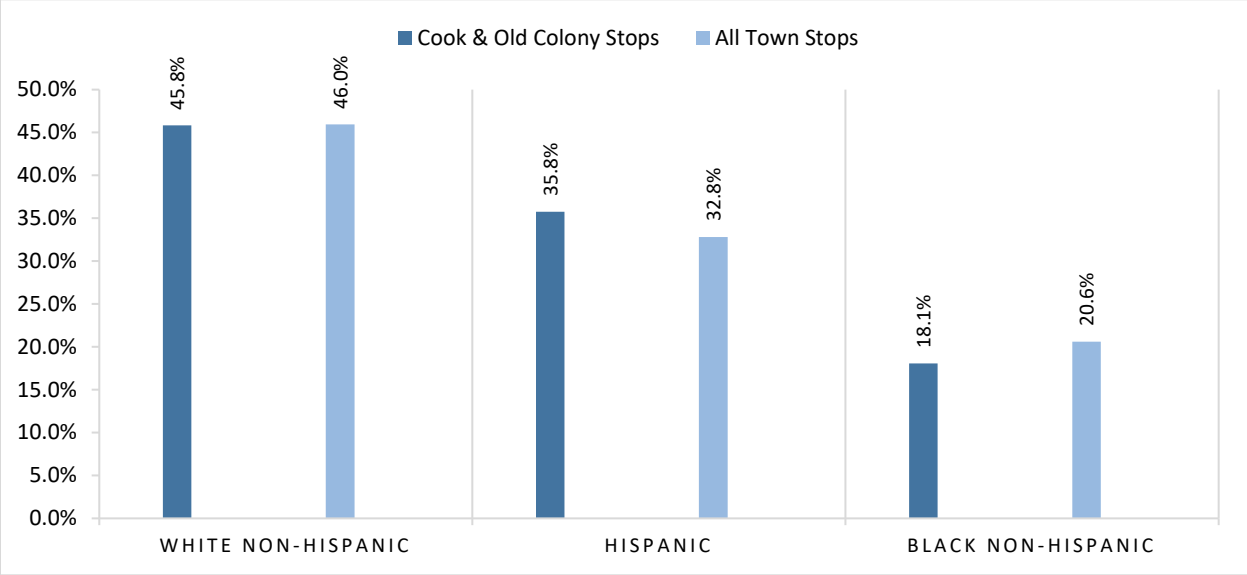
More than 75% of all stops along this corridor (220 of 288) occurred along Cook Avenue, specifically between its intersection with West Main Street and the area near First Christian Church (224 Cook Avenue). This segment lies entirely within Census Tract 1709 and includes several intersecting

roadways, such as Orange Street, Cooper Street, and Bronson Avenue, which likely contribute to both increased traffic volume and enforcement activity.

Within this concentrated segment, approximately 55% of stops (122 of 220) involved non-White drivers. Hispanic drivers accounted for approximately 37% (82 stops), exceeding the citywide average, while the proportion of Black drivers remained lower than the overall city rate.

Figure 7.8 illustrates the distribution of traffic stops along Cook Avenue and Old Colony Road by race and ethnicity, compared to citywide averages.

Figure 7. 8: Cook & Old Colony Traffic Stops by Race/Ethnicity



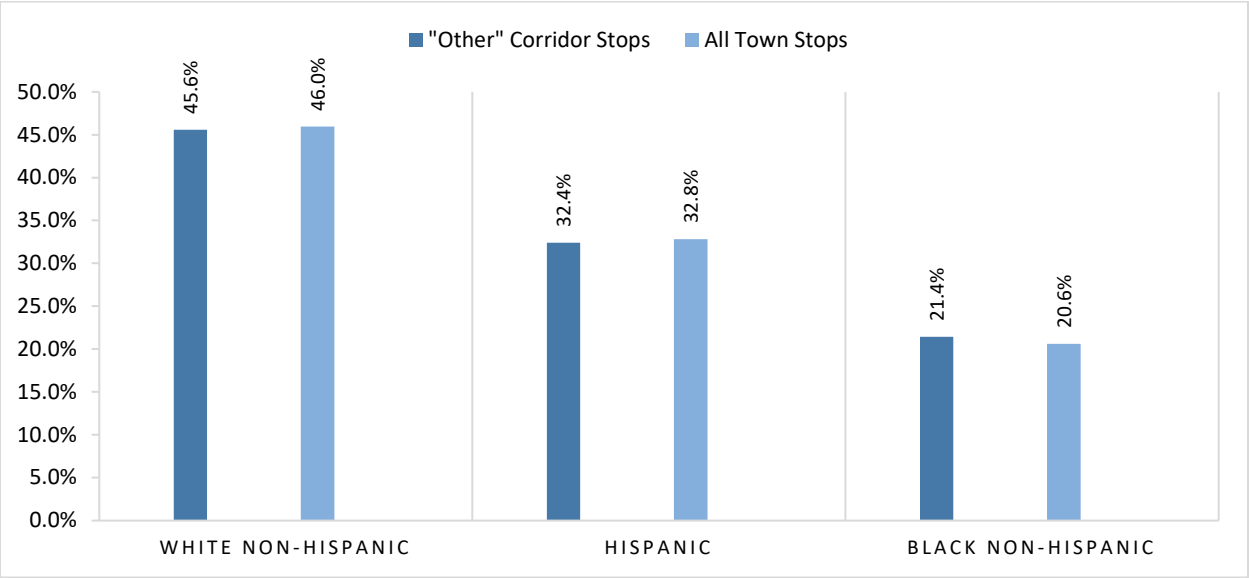
All Other Stop Locations

A total of 1,213 traffic stops were conducted during the study period on roadways outside of the major corridors identified in Figure 7.3. Approximately 54.4% of these stops (660) involved non-White drivers, a rate that is generally consistent with the citywide average. Hispanic drivers accounted for approximately 32.4% of stops (393), slightly below the citywide average, while Black drivers accounted for approximately 21.4% of stops (260), about 1 percentage point higher than the citywide average.

Many of the roadways in this category are located outside the downtown area, where both the police department and the highest-traffic corridors are concentrated. As a result, enforcement patterns in these areas more closely reflect overall citywide averages, likely due to more diffuse traffic flow and fewer concentrated enforcement locations.

Figure 7.9 illustrates the distribution of traffic stops across these remaining corridors by race and ethnicity, compared to the overall citywide averages.

Figure 7. 9: All Other Corridor Traffic Stops by Race/Ethnicity



VII.D: Traffic Stop Distribution for Meriden Officers

Meriden's 3,223 traffic stops during the study period are generally comparable to those reported by other municipalities of similar size. A total of 93 officers reported conducting at least one traffic stop, with an average of approximately 35 stops per officer. Among these officers, 17 conducted between 50 and 100 stops, 3 conducted between 100 and 200 stops, and 2 conducted more than 200 stops each.

The five officers who conducted more than 100 stops collectively accounted for nearly 30% of all traffic stops in Meriden. The two officers, with more than 200 stops, accounted for approximately 17% of total stops. These findings indicate that a relatively small subset of officers contributed disproportionately to the overall volume of traffic enforcement activity.

During the study period (2023 and 2024), 77 officers conducted at least one stop involving a Black driver, and 76 officers conducted at least one stop involving a Hispanic driver. However, traffic stop activity involving these groups was also concentrated among a smaller group of officers. Specifically, 33 officers each stopped more than five Black drivers, collectively accounting for approximately 83% of all Black drivers stopped. Similarly, 48 officers each stopped more than five Hispanic drivers, accounting for approximately 95% of all Hispanic drivers stopped.

Further concentration is evident among the highest-activity officers. Two officers accounted for approximately 17% of all stops involving Black drivers, while two officers accounted for approximately 20% of all stops involving Hispanic drivers. Of these, a single officer was responsible for approximately 13% of all stops involving Hispanic drivers.

This summary should not be interpreted as an analysis of officer-level disparities or as evidence of improper conduct by any individual officer. Officers with higher volumes of stops will naturally contribute a larger share of data to the department's overall stop totals. A comprehensive evaluation of individual officer activity would require consideration of numerous additional factors, including assigned shift, patrol area, enforcement responsibilities, calls for service, arrest activity, participation in specialized enforcement initiatives, and other operational variables. Accordingly, this section is intended to be descriptive in nature and should not be construed as a formal officer-level disparity analysis.

VII.E: Post-Stop Outcome Review

Reason for Stops

The reasons for initiating motor vehicle stops can vary across police departments. As part of this analysis, researchers reviewed the statutory authority cited by Meriden officers as the basis for traffic stops. The four most common categories were stop sign violations (22%), cell phone violations (16%), traffic control signal violations (13%), and speed-related violations (12%), which together accounted for approximately 63% of all traffic stops.

Enforcement related to stop sign, cell phone, traffic control signal, and speed-related violations is often influenced by community complaints, roadway safety concerns, and the identification of high-risk driving behaviors. Given the higher concentration of patrol activity and traffic volume within Meriden's downtown area, it is reasonable to expect elevated enforcement of these types of violations in those locations, particularly for stop sign and traffic control signal violations where traffic density, pedestrian activity, and intersection frequency are greater.

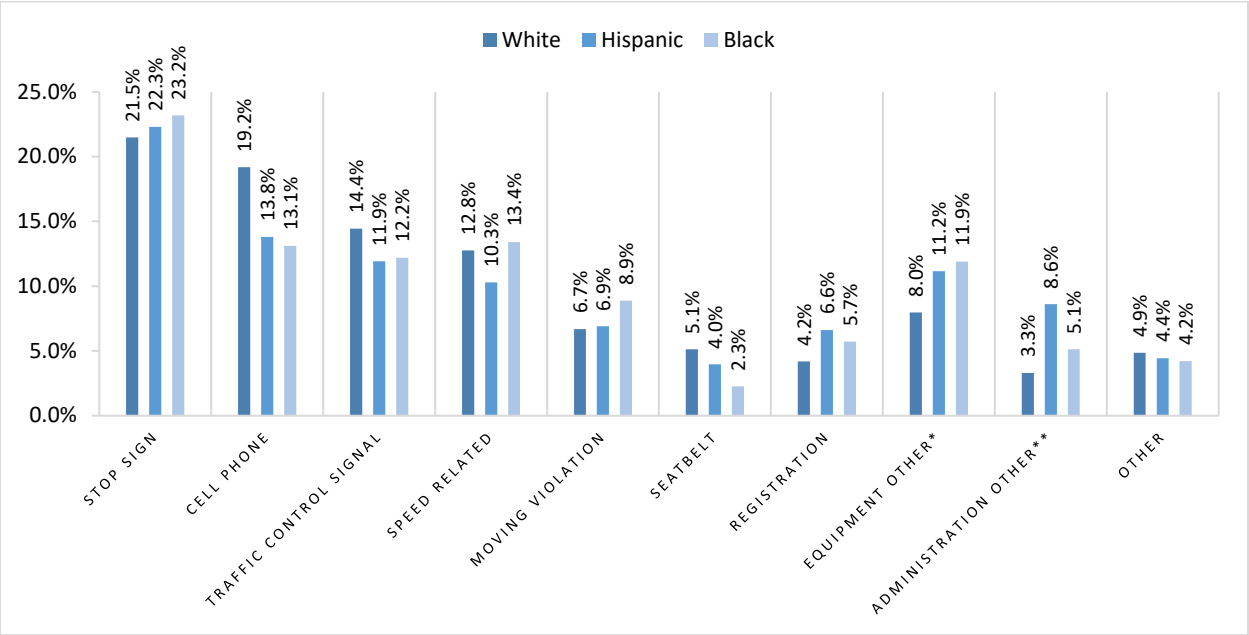
Variation in the reasons for traffic stops was observed across major roadways with more than 100 stops during the 2023–2024 period. For example, along Broad Street, approximately 32% of traffic stops were attributed to cell phone violations, double the citywide average. A similar pattern was observed on East and West Main Streets, where nearly 26% of stops were for cell phone violations, approximately 10 percentage points higher than the city average. According to the department, both corridors have been the focus of targeted high-visibility enforcement campaigns aimed specifically at distracted driving and cell phone-related violations, which likely contributed to the elevated enforcement rates observed in these areas.

Additionally, approximately 22% of stops on East and West Main Streets were for traffic control signal violations, nearly 10 percentage points above the citywide average. This finding is not unexpected given the high concentration of signalized intersections, heavy traffic flow, and increased pedestrian activity along this corridor, all of which create greater opportunities for the observation and enforcement of traffic control signal violations.

In contrast, roadways outside the major corridors showed a higher concentration of stop-sign violations. Approximately 37% of traffic stops in these areas were attributed to stop sign violations, about 15 percentage points higher than the citywide average. Collectively, these stops accounted for approximately 63% of all stop-sign violations recorded citywide, with Pratt Street alone accounting for an additional 26%.

According to the department, violations involving stop signs are among the most common traffic-related complaints received from residents, particularly in residential neighborhoods with higher levels of pedestrian activity, schools, or the presence of children. As a result, traffic enforcement efforts in these areas are often directed toward addressing community safety concerns and improving compliance with traffic control devices. Figure 7.10 illustrates the distribution of traffic stop reasons by race and ethnicity.

Figure 7. 10: Reason for Traffic Stop



*Equipment Other includes violations for defective lights, excessive window tints, or display of plate
**Administrative Other includes unlicensed operations

The reasons for traffic stops in Meriden vary across racial and ethnic groups. White drivers were more likely than Black and Hispanic drivers to be stopped for cell phone violations and were also slightly more likely to be stopped for traffic control signal, seatbelt, and other violations. In contrast, Black drivers were more likely than both White and Hispanic drivers to be stopped for stop sign, moving, and speed-related violations. Hispanic drivers were more than twice as likely as White drivers to be stopped for administrative violations and were somewhat more likely than both Black and White drivers to be stopped for registration-related violations.

When examined as a proportion of total stops within each group, White drivers were more frequently stopped for higher-risk driving behaviors, while Black and Hispanic drivers were more frequently stopped for equipment-related, administrative, registration, and stop sign violations. The data further suggest that enforcement patterns for equipment-related violations (e.g., defective lights, window tint, or plate display issues) and administrative offenses are closely associated with stop locations. Specifically, when these types of stops are concentrated in areas with higher proportions of non-White drivers, they tend to result in a higher share of non-White drivers being stopped. Conversely, in areas with higher concentrations of White drivers, the demographic composition of stops shifts accordingly. This pattern indicates that the likelihood of identifying certain types of violations may be influenced more by geographic context than by driver race or ethnicity alone. It is worth noting that most patrol vehicles in Meriden are equipped with license plate reader (LPR) technology. When activated, this technology automatically scans vehicle license plates and alerts officers through their mobile data terminals to potential administrative issues associated with the vehicle or registered owner, such as expired or suspended registrations, license suspensions, or other administrative violations. The use of this technology may increase the likelihood that officers identify administrative or registration-related violations during routine patrol operations.

The distribution of stop reasons also varies by roadway. A substantial majority of violations across several categories occurred along the major corridors identified in this report, which are primarily located in or connected to the downtown area. Specifically, these corridors accounted for

approximately 82% of all cell phone violations, more than 75% of traffic control signal violations, roughly two-thirds of equipment-related, seatbelt, registration, and moving violations, over 60% of speed-related violations, and 56% of administrative offenses.

Individual roadways also accounted for disproportionate shares of specific violation types. East and West Main Streets, along with Broad Street, accounted for approximately 56% of all cell phone violations, substantially higher than the citywide average of 16%. East and West Main Streets alone accounted for approximately 24% of all administrative offenses, nearly five times the citywide average, and 24% of all equipment-related violations, more than double the average. Additionally, Pratt Street accounted for approximately 26% of all stop sign violations, exceeding the citywide average of 22%.

Overall, these findings highlight the extent to which both the type and distribution of traffic enforcement activity in Meriden are shaped by roadway characteristics and geographic enforcement patterns.

Outcome of Stops

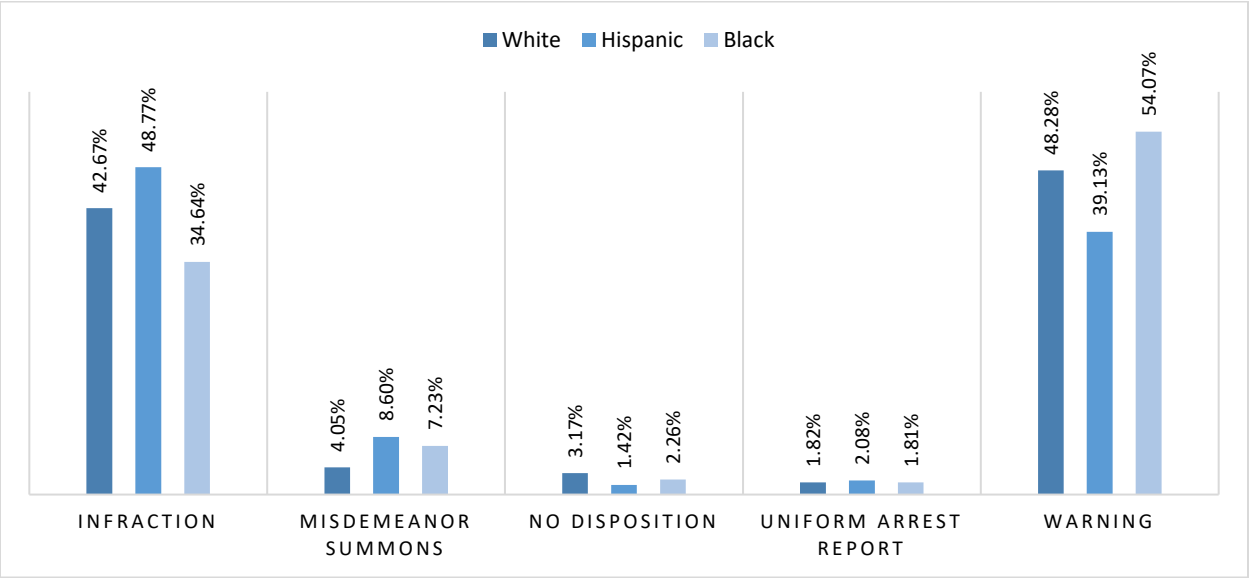
The majority of traffic stops in Meriden (89.5%) resulted in either a warning (47%) or an infraction (43%). However, outcomes varied by race and ethnicity. Black drivers were more likely than both White and Hispanic drivers to receive a warning. In contrast, Hispanic drivers were more likely to receive enforcement actions beyond warnings.

Specifically, Hispanic drivers were approximately twice as likely as White drivers to receive a misdemeanor summons and were more likely than both White and Black drivers to receive an infraction. Nearly 49% of Hispanic drivers received infractions, exceeding the overall infraction rate of approximately 43%. Additionally, Hispanic drivers were about 15 percentage points less likely than Black drivers and nearly 10 percentage points less likely than White drivers to receive a warning.

White drivers, meanwhile, were more likely to receive no disposition compared to Black drivers and were approximately twice as likely as Hispanic drivers to have no recorded outcome.

Figure 7.11 illustrates the distribution of traffic stop outcomes by race and ethnicity.

Figure 7. 11: Outcome of Stops – 2023 – 2024



Most motor vehicle law violations are classified as infractions, although certain offenses are legally considered to be more serious. These include violations such as reckless driving, operating a vehicle with a suspended license, driving under the influence of alcohol or drugs, and operating without a valid license. The traffic stop data collection system requires officers to document both the legal justification for the initial stop and any subsequent charges that differ from and are more serious than the original violation. This allows for a more comprehensive understanding of enforcement actions, capturing both the initial reason for the stop and any escalation in charges. For example, a driver may be stopped for an infraction, such as a seatbelt or stop sign violation, but may subsequently be cited for a more serious offense, such as operating with a suspended license.

In Meriden, 199 traffic stops (6.2%) resulted in the issuance of a misdemeanor summons, a rate higher than the statewide average of 3.6% during the study period. Misdemeanor summonses were issued at higher rates to Hispanic and Black drivers compared to White drivers. Specifically, more than 8% of Hispanic drivers and over 7% of Black drivers received misdemeanor summonses, compared to approximately 4% of White drivers.

It is important to note, however, that officers generally have limited discretion once a misdemeanor offense is identified. Connecticut law prescribes how certain violations must be classified and charged, meaning that when an officer discovers a qualifying misdemeanor offense during a traffic stop, the issuance of a misdemeanor summons is often mandated by statute rather than left to the officer's discretion.

Black and Hispanic drivers collectively accounted for 139 of the 199 stops that resulted in misdemeanor summonses. Notably, 142 of these stops (71%) were initially conducted for non-misdemeanor violations, such as speeding, stop sign violations, or equipment-related issues, but escalated after the initial interaction. In many of these cases, a more serious violation was identified after the initial stop, at which point officers were generally required to proceed with the appropriate misdemeanor charge. These findings highlight the role of post-stop interactions and legally mandated enforcement actions in shaping enforcement outcomes across different driver groups.

Search Information

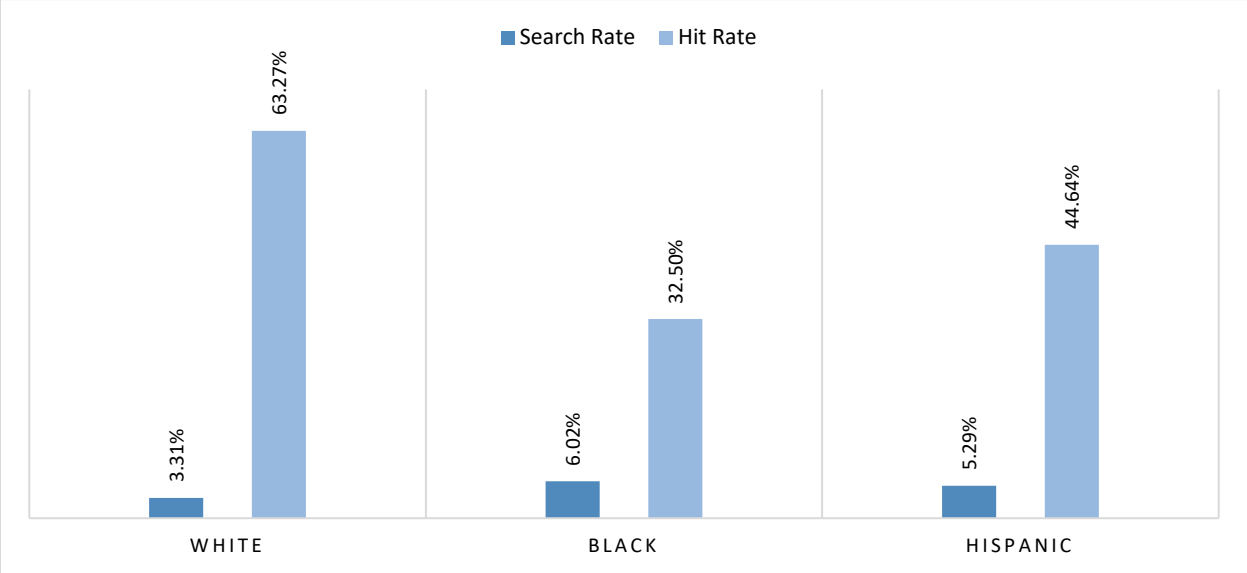
A review of departmental search data indicates that approximately 4.5% (145) of the 3,223 drivers stopped in Meriden were subjected to a motor vehicle search. Search rates varied by race and ethnicity. Approximately 6% (40) of Black drivers who were stopped were subjected to a search, nearly twice the rate observed for White drivers (3.3% or 49 drivers). Hispanic drivers were also searched at a higher rate (5.3% or 56 drivers) compared to White drivers.

However, the rate at which searches led to the discovery of contraband varied across groups. Among Black drivers who were searched, 32.5% of searches (13 of 40 drivers) resulted in a hit, approximately half the rate observed for White drivers (63.3% or 31 of 49 drivers). Similarly, while Hispanic drivers were searched more frequently than White drivers, their hit rate (44.6% or 25 of 56 drivers) was notably lower than that of White drivers.

Of the 145 searches conducted between 2023 and 2024, 35 searches (24%) were categorized as "consent searches," defined as searches conducted with the driver's permission. An additional three searches were categorized as "inventory searches," which are conducted to document the contents of a vehicle when it is taken into police custody. The majority of searches (95) were categorized as "other searches," generally indicating searches conducted based on probable cause or the observation of contraband in plain view. Additionally, 12 traffic stops were reported as resulting in a search, but no corresponding search authorization or justification was documented in the data provided.

These findings indicate that, although Black and Hispanic drivers were subjected to searches at higher rates, searches of White drivers were more likely to result in the discovery of contraband. Figure 7.12 illustrates both the motor vehicle search rates and corresponding hit rates by race and ethnicity.

Figure 7. 12: Search and Hit Rate (All Searches)



VII.F: Additional Contributing Factors

During the study period, the Meriden Police Department participated in several regional traffic enforcement initiatives aimed at improving roadway safety for residents and non-residents alike. From 2023 to 2024, these initiatives included Click It or Ticket, Distracted Driving High Visibility Enforcement, Speed and Aggressive Driving Enforcement, and Comprehensive DUI Enforcement[12].

Over the two-year period, these initiatives resulted in approximately 850 traffic stops. Of these, about 17% (145) resulted in verbal or written warnings, while approximately 73% (626) resulted in citations. The largest share of citations was issued for cell phone or texting violations (242), other motor vehicle violations (181), speeding (103), and seatbelt violations (100). The remaining 10% of stops resulted in more serious outcomes, including citations and arrests for DUI offenses, fugitive apprehensions, felony arrests, custodial arrests, recovery of stolen vehicles, drug-related offenses, reckless or distracted driving, operating without insurance or with a suspended license, and child safety seat violations. Among these enforcement actions, there were four drug-related arrests, three DUI arrests, three felony arrests, two custodial arrests, and two fugitive apprehensions.

In addition to proactive traffic enforcement, the department maintains a broad range of public safety responsibilities. Between 2023 and 2024, the department responded to approximately 60,000 calls for service. The most common call types included extra security checks, reports of suspicious persons or activity, dispute resolution, motor vehicle-related incidents, welfare checks, animal-related complaints, and disturbances. Together, these categories accounted for approximately 52% of all calls. An additional 10% of calls were related to crimes or potential criminal activity, including warrant services, while approximately 3% involved assisting other agencies.

During the same period, the department recorded more than 9,600 criminal offenses. Approximately one-third (33%) of these offenses involved simple assault, intimidation, various forms of larceny, motor vehicle theft, theft from vehicles, and property damage or vandalism. An additional 24% of offenses involved incidents that resulted in citations.

The department also provided information on nearly 60 cases involving both violent and non-violent crimes between 2022 and 2024. Approximately half of these incidents were located along major roadway corridors with higher volumes of traffic stops, including East and West Main Streets, Broad Street, and the Cook Avenue–Old Colony Road corridor. The occurrence of violent and non-violent offenses, firearm-related incidents, homicides, and other criminal activity in these areas likely contributes to increased patrol presence and proactive enforcement efforts. As a result, these operational and public safety considerations may help explain the elevated levels of traffic enforcement observed along these corridors.

Additionally, the city experienced nearly 2,600 motor vehicle crashes during the study period, all of which required police response. Crash activity was concentrated along the same high-traffic corridors identified in this report. For example, the intersection of Broad Street and East Main Street alone experienced approximately 75 crashes. East and West Main Streets accounted for over 500 crashes, Broad Street for approximately 250 crashes, and the Cook Avenue–Old Colony Road corridor

[12] Data on regional traffic enforcement campaigns were obtained from summary activity reports submitted to the Connecticut Department of Transportation to document the outcomes of these initiatives. These reports provide aggregate enforcement information but do not include demographic data for individual drivers. Additionally, the information contained in the activity reports cannot be readily linked to the department's traffic stop database. As a result, more detailed demographic or stop-level analysis of traffic stops associated with these enforcement campaigns was not possible.

for nearly 140 crashes. Collectively, these major roadways accounted for approximately 34% of all crashes citywide.

These patterns suggest that both calls for service and crash-related incidents are concentrated along a relatively small number of high-traffic corridors, likely influencing patrol deployment and contributing to higher levels of traffic enforcement in these areas.

VII.G: Summary of Findings and Conclusion

The follow-up analysis of traffic stop activity in Meriden found that slightly more than half of all stopped drivers were non-White, which closely mirrors the city's 52% non-White residential population. At the citywide level, this alignment suggests that aggregate differences alone do not constitute evidence of systemic disparities. However, a closer examination of roadway, officer activity, search practices, and post-stop outcomes reveals more nuanced patterns of enforcement.

It is also important to note that approximately one-third of drivers stopped in Meriden were non-residents. This factor clearly influences comparisons between stop demographics and the city's residential population and further underscores the importance of considering traffic flow and commuter patterns when interpreting disparities.

Traffic enforcement in Meriden is highly concentrated geographically. Nearly two-thirds of all stops occurred on a small number of major roadways, with 22% taking place on East and West Main Streets in the downtown corridor. These areas experience heavier traffic flow, contain key public safety and commercial locations, and provide access to major highways, all of which increase the likelihood of officer-driver contact. Many of these same corridors also account for a disproportionate share of traffic crashes and calls for service, indicating that roadway risk and safety considerations significantly shape enforcement patterns.

In this context, stop patterns on East and West Main Streets were slightly below city averages for both Black and Hispanic drivers. However, other corridors such as Broad Street and Pratt Street showed higher percentages of Black drivers stopped relative to the city average and, in some cases, relative to the residential demographics of the census tracts those roads traverse. Similarly, several corridors exceeded the city average for Hispanic drivers stopped. These differences are influenced by traffic volume, commuting patterns, targeted patrol activity, or crime concerns; the variation across corridors suggests that enforcement is not experienced uniformly across the city.

Differences in stop reasons by race and ethnicity further reflect the influence of geography on enforcement patterns. White drivers were more frequently stopped for higher-risk driving behaviors such as cell phone and traffic signal violations, while Black and Hispanic drivers were more frequently stopped for equipment-related, administrative, registration, and stop sign violations. This pattern suggests that observed disparities may be influenced, in part, by where enforcement occurs and the types of violations commonly identified in those locations.

Importantly, the department operates within a broader public safety context. Officers responded to approximately 60,000 calls for service and logged over 9,600 criminal offenses during the study period. Some high-enforcement corridors overlapped with areas experiencing elevated crime or targeted safety initiatives. Additionally, a significant portion of the city's traffic crashes occurred on the same major roadways that saw the highest levels of enforcement activity. These operational realities are likely to contribute to increased patrol presence and stop activity in specific areas. However, even when enforcement intensity is driven by legitimate public safety concerns, ensuring that its impact is equitable and proportionate remains critical for maintaining community trust.

Traffic Stop Outcomes

Post-stop outcomes also reveal differences worth examining. Although the majority of all drivers received warnings or infractions, Hispanic drivers were more likely to receive infractions and misdemeanor summonses compared to White drivers, while Black drivers were more likely to receive warnings. These differences may reflect variation in violation types or officer discretion, but they underscore the importance of ensuring that similarly situated drivers are treated consistently.

A notable finding is that a substantial proportion of misdemeanor summonses resulted from stops that were initially conducted for non-misdemeanor violations. In many cases, more serious violations were identified after the stop was initiated, at which point officers may have had limited discretion to issue a summons. This suggests that post-stop interactions, rather than initial enforcement decisions alone, may contribute to differences in outcomes across driver groups.

Although Meriden Police did not conduct many searches during the study period, the search data indicated that Black and Hispanic drivers were searched at higher rates than White drivers; however, searches of these drivers resulted in contraband being discovered at lower rates than searches of White drivers. Lower "hit rates" for minority drivers may indicate that the threshold for conducting searches differs in practice, even if unintentionally. These findings indicate that the department may benefit from continued review of search decision-making practices.

Conclusion

Overall, the findings indicate that traffic enforcement patterns in Meriden are strongly influenced by geographic, operational, and contextual factors, including roadway characteristics, traffic volume, crash patterns, calls for service, and targeted enforcement initiatives.

At the same time, the analysis identifies specific areas where disparities emerge, particularly in corridor-level patterns and search rates. These patterns do not appear to be uniform across the city and are often closely tied to where enforcement occurs and how it is conducted. The findings suggest that geography, crime patterns, including violent and non-violent offenses, firearm-related incidents, and homicides, and departmental deployment strategies all play important roles in shaping enforcement decisions and the disparities observed in the traffic stop data.

The department noted its use of the Data-Driven Approaches to Traffic Safety (DDACTS) methodology in deploying law enforcement resources. As such, the department conducts targeted deployments of police resources and traffic enforcement in high-risk areas as determined through the collection and mapping of traffic, crash, crime, call-for-service, and enforcement data.

The department should continue its practice of enhanced supervisory review of high-activity police officers, continued monitoring of corridor-level enforcement patterns, evaluation of search practices to ensure compliance with established laws, and its periodic analysis of traffic stop outcomes by violation type and demographic group. The Meriden Police Department would benefit from continuing and improving upon transparent communication with the community it serves, which will be important in reinforcing accountability and the public's trust.

By continuing to evaluate its practices in the broader context of public safety needs and community impact, the Meriden Police Department can refine its approach to traffic enforcement while continuing to promote fairness, consistency, and effectiveness in its policing efforts.

REFERENCES

Anwar, Shamena, and Hanming Fang. "An Alternative Test of Racial Prejudice in Motor Vehicle Searches: Theory and Evidence." *American Economic Review* 96, no. 1 (2006): 127–51.

Antonovics, Kate L., and Brian G. Knight. "A New Look at Racial Profiling: Evidence from the Boston Police Department." *Review of Economics and Statistics* 91, no. 1 (2009): 163–77.

Ayres, Ian, and Peter Siegelman. "Race and Gender Discrimination in Bargaining for a New Car." *American Economic Review* 85, no. 3 (1995): 304–21.

Becker, Gary S. *The Economics of Discrimination*. 2nd ed. Chicago: University of Chicago Press, 1971.

Dharmapala, Dhammika, and Stephen L. Ross. "Racial Bias in Motor Vehicle Searches: Additional Theory and Evidence." *The B.E. Journal of Economic Analysis & Policy* 3, no. 1 (2004): 1-21.

Grogger, Jeffrey, and Greg Ridgeway. "Testing for Racial Profiling in Traffic Stops from Behind a Veil of Darkness." *Journal of the American Statistical Association* 101, no. 475 (2006): 878–87.

Hirano, Keisuke, and Guido W. Imbens. "Health Services & Outcomes Research Methodology." *Health Services & Outcomes Research Methodology* 2 (2001): 259.

Hirano, Keisuke, Guido W. Imbens, and Geert Ridder. "Efficient Estimation of Average Treatment Effects Using the Estimated Propensity Score." *Econometrica* 71, no. 4 (2003): 1161–89.

Horrace, William C., and Shawn M. Rohlin. "How Dark Is Dark? Bright Lights, Big City, Racial Profiling." *Review of Economics and Statistics* 98, no. 2 (2016): 226–32.

Kalinowski, Jesse, Stephen L. Ross, and Matthew B. Ross. "Endogenous Driving Behavior in Tests of Racial Profiling." *Journal of Human Resources* 58, no. 3 (2023): 937-67.

Kalinowski, Jesse, Stephen L. Ross, and Matthew B. Ross. "Now You See Me, Now You Don't: The Geography of Police Stops." *AEA Papers and Proceedings* 109 (2019): 143-47.

Kalinowski, Jesse, Stephen L. Ross, and Matthew B. Ross. "Beyond Identification: A Problem-Oriented Approach to Diagnosing Racial Disparities in Policing." *Journal of Research in Crime and Delinquency* 59, no. 8 (2022): 899-922.

Kalinowski, Jesse, Stephen L. Ross, and Matthew B. Ross. "Testing for Disparities in Traffic Stops: Best Practices from the Connecticut Model." *Criminology & Public Policy* 19, no. 4 (2020): 833-855.

Knowles, John, Nicola Persico, and Petra Todd. "Racial Bias in Motor Vehicle Searches: Theory and Evidence." *Journal of Political Economy* 109, no. 1 (2001): 203–32.

McCaffrey, Daniel F., Gregory Ridgeway, and Andrew R. Morral. "Propensity Score Estimation with Boosted Regression for Evaluating Causal Effects in Observational Studies." *Psychological Methods* 9, no. 4 (2004): 403–25.

Pierson, Emma, Camelia Simoiu, Jan Overgoor, Sam Corbett-Davies, Daniel Jenson, Amy Shoemaker, Vignesh Ramachandran, Phoebe Barghouty, Cheryl Phillips, Ravi Shroff, and Sharad Goel. "A large-scale analysis of racial disparities in police stops across the United States." *Nature Human Behaviour* 4, no. 7 (2020): 736–45.

Ridgeway, Greg. "Loss Function Based Ranking in Two-Stage Hierarchical Models." *Bayesian Analysis* 1, no. 4 (2006): 915-46.

Ridgeway, Greg, and John MacDonald. "Doubly Robust Internal Benchmarking and False Discovery Rates for Detecting Racial Bias in Police Stops." *Journal of the American Statistical Association* 104, no. 486 (2009): 661–68.

Rosenbaum, Paul R., and Donald B. Rubin. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika* 70, no. 1 (1983): 41-55.

Ross, Matthew B., Jesse Kalinowski, Ken Barone, and James Fazzalaro. "Testing for Disparities in Traffic Stops: Best Practices from the Connecticut Model." *Criminology & Public Policy* 19, no. 4 (2020): 833-855.

Ross, Stephen L., and John Yinger. *The Color of Credit: Mortgage Discrimination, Research Methodology, and Fair-Lending Enforcement*. Cambridge, MA: MIT Press, 2002.

Simoiu, Camelia, Sam Corbett-Davies, and Sharad Goel. "The Problem of Infra-marginality in Outcome Tests for Discrimination." *The Annals of Applied Statistics* 11, no. 3 (2017): 1193–215.

Worden, Robert E., Sarah J. McLean, and Andrew P. Wheeler. "Testing for Racial Profiling with the Veil-of-Darkness Method." *Police Quarterly* 15, no. 4 (2012): 442-63.

GLOSSARY OF TERMS

Bias: In a statistical context, bias refers to a systematic error in a study or analysis that can lead to misleading results. For example, it can be caused by unobserved factors, such as those that give rise to unobserved variable bias, which are not included in the model's estimate. It can also be introduced by a flawed selection process, leading to selection bias, where the chosen sample does not accurately represent the intended population.

Benchmark: A benchmark is a standard used for comparison. It can be a real-world reference, like the general population, or a more specific standard created for the study. While a benchmark is useful for measuring how one group compares to another, it does not necessarily have a causal interpretation. In contrast, a counterfactual is a hypothetical scenario that helps researchers understand what would have happened if a specific event had not occurred, which is necessary to establish a causal link.

Causal Link: A causal link is a connection between two things where one is directly responsible for causing the other. It is different from an association or a correlation, which simply means two things are related without proving that one caused the other.

Coefficient (Beta): In a statistical model, the beta or coefficient is a numerical value that represents the strength and direction of the relationship between a predictor variable and the outcome variable. For example, a positive beta value indicates that as the predictor variable increases, the outcome variable also increases.

Conditional Outcomes: This term refers to the results of an event, such as a traffic stop, that are analyzed while taking into account or "conditioning on" various circumstances of that event. The analysis looks for differences in outcomes (like arrests or searches) between different groups, assuming that if all other circumstances were equal, the outcomes should be similar.

Confidence Interval: A confidence interval is a range of values that likely contains the true value of a population parameter, such as the mean. It provides a measure of how precise an estimate is. A 95% confidence interval, for example, means that if the study were repeated many times, 95% of the calculated intervals would contain the true population value.

Contraband Hit-Rate Test: This test is used to determine if there are racial disparities in police search practices. It works by comparing the success rate of searches (the "hit rate") across different racial or ethnic groups. If officers are searching non-White drivers more frequently but are less successful in finding illegal items, it suggests they have a lower standard for searching these drivers.

Control Variable: A factor that is accounted for in a statistical analysis to ensure the results are not due to that factor. For example, when analyzing traffic stops, a researcher might use time of day or location as a control variable to isolate the effect of other factors.

Counterfactual: A counterfactual is a concept used in research and statistics to describe what would have happened in a different, alternative world. It is a hypothetical scenario that allows researchers to consider what would have occurred in the absence of a particular event or intervention. Unlike a benchmark, which is used for simple comparison, a counterfactual is essential for establishing causation by providing a basis to infer what would have happened if the event had not occurred.

Disparate Impact: This refers to a policy or practice that is neutral on its face but has a disproportionately negative effect on a particular racial or ethnic group.

Disparate Treatment (Discrimination): This is a form of discrimination that occurs when an individual or group is intentionally treated differently than others based on a protected characteristic, such as race or ethnicity.

Disparity: A statistical overrepresentation of one group compared to another in a specific outcome or action. It highlights an imbalance that may be caused by a neutral policy with a disproportionate effect (disparate impact) or by intentional bias (disparate treatment).

Endogeneity: In a statistical model, endogeneity refers to a situation where a variable is correlated with the error term of the model, which can lead to biased and unreliable results. This can happen for several reasons, including when important variables are missing from the model (omitted variable bias), when there is a two-way causal relationship between variables (simultaneity), or when variables are measured with error.

Estimate: In a statistical context, an estimate is a value or range calculated from a data sample to approximate a characteristic of a larger population. When working with observational data, this assumes the population is a realization of a data-generating process. It is not a casual guess, but a precise calculation derived from a statistical model.

Fixed Effects: A statistical approach used in regression analysis to control for unobserved variables that do not change over time or across specific groups. This technique can be used to account for the unique characteristics of each individual, such as a police officer, that might influence their behavior, ensuring that the results are not just due to differences between individuals.

Hypothesis Test A hypothesis test is a statistical method used to determine whether there is enough evidence in a sample of data to infer a particular conclusion about an entire population. The process involves two competing ideas: the null hypothesis, which states there is no effect or relationship, and the alternative hypothesis, which states there is a real effect or relationship. The goal of the test is to see if there is enough evidence to reject the null hypothesis in favor of the alternative.

Inter-Twilight Period: This refers to a specific time window around sunrise and sunset when the amount of daylight changes significantly throughout the year. Researchers focus on this period because it is when the difference in visibility between full daylight and full darkness is most pronounced, making it ideal for solar visibility analysis.

Inverse Propensity Score Weighting: A statistical technique that creates a fair comparison between different groups by assigning a weight to each observation based on how similar it is to the observations in the other group.

Mean (or Average): The mean, or average, is a statistical measure of the central tendency of a data set. It is calculated by summing all the values and dividing by the number of values.

Propensity Score: A propensity score is a statistical measure of similarity. It represents the likelihood of a person or observation being in a certain group based on a set of observed characteristics.

P-Value: The p-value is a statistical measure used to determine if a finding is statistically significant. It represents the probability of observing a result as extreme as the one found, assuming that there

is no real effect. A low p-value (typically less than 0.05) is often used as a threshold to reject the idea that the result is due to random chance.

Q-Value or False Discovery Rate: The q-value or False Discovery Rate (FDR) is a statistical measure used when performing many statistical tests at the same time. It helps to control the proportion of "false positives"—results that appear to be significant but are not—among all the findings that are deemed statistically significant. For example, a q-value of 0.1 means that you expect 10% of your significant findings to be false positives. Researchers typically set a low threshold for the q-value to ensure the findings are reliable.

Regression Analysis: his is a statistical technique used to understand the relationship between different variables. For example, it can be used to see if factors like the time of day, location, or an officer's characteristics are related to the likelihood of a traffic stop or a particular outcome. It helps to isolate the effect of one factor while accounting for others. Two common types of regression are:

- Ordinary Least Squares (OLS) Regression: This technique finds the line of best fit for a set of data by minimizing the sum of the squared differences between the observed data points and the values predicted by the model.
- Linear Probability Model (LPM): This is a straightforward method that uses linear regression to model a binary outcome. It is a simpler alternative to Logistic Regression, but it can under certain conditions, produce non-sensical results with predicted probabilities that are less than 0 or greater than 1.
- Logistic (Logit) Regression: This technique is used to model the probability of an outcome that can only have two results (e.g., yes/no, arrest/no arrest). It uses a logistic function to ensure that the estimated probabilities always fall between 0 and 1.

Regression Discontinuity Design: A statistical method used to estimate the effect of an intervention when people or things are assigned to a treatment or control group based on whether a specific cutoff point is met. This technique allows researchers to analyze data around the cutoff, providing a strong basis for inferring a causal effect.

Robustness Tests: These are additional analyses performed to verify that the results of a study are reliable and not simply a result of the specific methods or assumptions used. If a result passes robustness tests, it means the findings are consistent and dependable.

Sample: A sample is a subset of a population selected for analysis. In research, a sample is used to draw conclusions about the entire population without having to study every single person or instance. When working with observational data, the entirety of the data can be considered a sample because it is a representation of a larger data-generating process.

Solar Visibility Analysis: Also known as the "veil of darkness" test, this is a method used to study racial disparities in police traffic stops. The underlying assumption is that in the daytime, an officer can more easily see a driver's race before deciding to pull them over, but in darkness, this is more difficult. By comparing the racial makeup of stopped drivers during the day versus at night, researchers can see if there is a difference in the likelihood of a non-White driver being stopped when their race is visible. A statistically significant difference in stop rates between daylight and darkness suggests the presence of bias or disparate treatment.

Standard Deviation: A measure of how spread out the numbers in a data set are from the average (mean). It is the square root of the variance. A low standard deviation indicates that the data points tend to be very close to the mean, while a high standard deviation indicates that the data points are spread out over a wider range.

Standard Error: The standard error is a measure of the statistical accuracy of an estimate. It is an estimate of the standard deviation of the sampling distribution of a statistic, and it provides a measure of how much the estimate is likely to vary from one sample to another. A smaller standard error means the estimate is more precise.

Statistical Significance: This is a term used in statistics to describe the likelihood that a research result is due to chance. If a result is "statistically significant," it means there is a very low probability that the finding occurred by random chance. Researchers use this to highlight which findings are likely to be real differences rather than just random variations.

Synthetic Control Analysis: This is a method that creates a "synthetic," or artificial, control group to estimate the effect of an event. It works by weighting a combination of unaffected units (e.g., other cities or states) to create a control group that closely resembles the unit that was affected by the event. This synthetic control provides a benchmark for comparison, which is essential for determining if a particular action had an impact.

Type I and Type II Errors: A Type I Error occurs when a researcher incorrectly rejects a true null hypothesis. In simpler terms, it's a "false positive" or a mistaken conclusion that there is a significant effect when there is not. A Type II Error occurs when a researcher fails to reject a false null hypothesis. This is a "false negative," meaning a missed opportunity to find a real effect or relationship.

Unobservable Differences: These are characteristics or factors that influence an outcome but are not captured in the data available for analysis. Researchers may use specific statistical methods, such as fixed effects, to try and account for these missing variables.

Variance: A measure of how far a set of numbers are spread out from their average value. It is calculated as the average of the squared differences from the mean. It is the square of the standard deviation and is used in many statistical calculations.