

A photograph of the Maricopa County Sheriff's Office building, showcasing its modern architecture with a prominent, illuminated, perforated metal canopy structure. The building's glass facade reflects the sky, and interior lights are visible through the windows.

# MARICOPA COUNTY SHERIFF'S OFFICE

## Traffic Stops Quarterly Report 14

### 2023 District Analysis



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June 2024

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Traffic Stops Quarterly Report: District Analysis

June 2024

This study was developed and conducted by the Maricopa County Sheriff's Office (MCSO) Traffic Stop Analysis Unit and Research and Reporting Unit. The developed methodology was approved by the Court Monitoring Team and Parties on May 13th, 2024. This report is intended to meet the requirements of Paragraph 65 of the First Order, as Traffic Stop Quarterly Report for Quarter 2, 2024.

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The Traffic Stop Analysis and Research Units would like to thank the Monitoring Team and Parties for their thoughtful feedback in the development of the methods used in this report.

# Executive Summary

The purpose of this quarterly report was to investigate disparate outcomes of traffic stops at the district level. To investigate district-level disparate outcomes from traffic stops, MCSO analyzed the 2023 traffic stop data<sup>1</sup> in five ways. First, we describe general patterns of traffic enforcement for each district. Second, we determined whether districts differed from one another in average stop lengths and stop outcomes of citations, searches, and arrests, irrespective of race/ethnicity. Third, we utilized propensity score matching to identify within-district racial/ethnic disparity for these outcomes comparing White drivers to Hispanic, Black and Minority drivers (Asian, Black, Hispanic, and Native American drivers combined). Fourth, we compared between-district levels of disparity for White drivers to Hispanic, Black and Minority drivers to determine whether districts differed from one another in their levels of racial/ethnic disparity. Finally, we analyzed search and seizure activity for each district to determine whether different racial/ethnic groups experienced seizures following discretionary searches at different rates.

## Descriptive Analysis of Differences Among Districts

Descriptive analyses identified several differences in traffic stop activity among districts:

- District 1 had the fewest traffic stops of any district (N = 1,871); District 7 had the most traffic stops of any district (N = 4,241).
- District 2 had the highest stop rate of Hispanic drivers (49.9%) and the lowest stop rate for White drivers (32.9%); District 4 Had the lowest stop rate of Hispanic drivers (11.0%) and the Highest stop rate for White drivers (83.8%).
- District 4 had the highest citation rate for all drivers (64.3%) and District 2 had the lowest citation rate for all drivers (40.5%).
- District 4 had the highest citation/warning rate for speeding (63.9%) and District 1 had the lowest citation/warning rate for speeding (19.7%).
- The highest rate of citation/warning issued for driving documentation (license/insurance/registration) was in District 1 (46.8%); District 4 had the lowest rate of citations/warnings issued for driving documentation (18.6%).
- District 1 had the highest proportion of stops that included an equipment violation (18.0%) and District 5 had the lowest proportion of stops with equipment violations (5.6%).
- District 1 had the highest number (N = 19) and proportion (1.0%) of stops with discretionary searches and District 7 had the fewest (N = 3) and lowest proportion (0.2%) of discretionary searches.

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<sup>1</sup>Data used for the analyses in this report were the same data used to produce the TSAR 9 annual report which was released on June 30<sup>th</sup>, 2024. The data were also used for the TSQR 13 report on extended stop indicator use.

- District 1 had the longest average stop lengths (22.0 minutes), and District 7 had the shortest average stop lengths (14.4 minutes).
- The most common reason stops were extended for all districts was for driving documentation issues (24.7%). These delays were most common in District 1 (40% of stops) and least common in District 7 (15% of stops).
- The highest rate for custodial arrests during traffic stops was in District 1 (3.6% of stops); The lowest rate for custodial arrests during traffic stops was in Districts 4 (0.7% of stops).
- The highest rate for non-custodial arrests during traffic stops was in District 3 (6.3% of stops); The lowest rate for non-custodial arrests during traffic stops was in District 4 (2.5% of stops).

### **District Differences in Benchmark Measures (stop length, citations, arrests, and searches)**

Comparing differences between districts on benchmark measures, MCSO identified statistically significant differences among districts for all measures.<sup>2</sup>

#### *Stop Length*

- All districts had longer stops, on average, when compared to District 5. Districts 1, 2, 3, and 4 had longer stops, on average when compared to District 7. District 2 stops were shorter when compared to District 4 but were longer when compared to District 5 and District 7. Stop lengths for District 1 were not significantly different from stop lengths in Districts 2, 3, or 4.

#### *Citations*

Analysis of citation activity included two models that provided different results. Citation activity was analyzed using offense types (speed, non-speed moving, equipment, license/insurance/registration, and other violations) and the driver's speed over the speed limit as statistical controls (Model 1). In the second analysis, speed and offense type were excluded as statistical controls (Model 2).

- Based on Model 1, we found that the likelihood of receiving a citation was highest in Districts 1 and 7 when compared to other districts. Drivers stopped by District 2, District 3, and District 5 deputies were less likely to receive a citation than drivers stopped by deputies from Districts 1, 4, and 7. Drivers stopped by District 4 deputies were more likely to receive a citation than drivers stopped by deputies from Districts 2, 3, and 5.

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<sup>2</sup>Note that results differ from the descriptive analysis because multiple statistical controls are utilized in modeling comparisons among districts. For a list of statistical controls utilized in all analyses, consult the methods section of this report.

- Based on Model 2, we found that the likelihood of receiving a citation was lowest in District 7 when compared to Districts 1, 4, or 5. In contrast, the likelihood of receiving a citation was higher in District 5 when compared to Districts 2, 3, 4, and 7. The likelihood of receiving a citation from District 1 deputies was higher than drivers stopped by deputies from Districts 2, 3, or 7.

### *Arrests*

Analysis of arrest activity in the districts found significant differences in the likelihood of arrest during traffic stops across all districts.

- The likelihood a driver experienced an arrest was lower in District 1 when compared to Districts 3 or 7.
- The likelihood a driver experienced an arrest was lower in District 2 when compared to Districts 3, 5, or 7.
- The likelihood a driver experienced an arrest was higher in District 3 when compared to Districts 1, 2, or 4.
- Drivers stopped by District 4 deputies had the lowest likelihood of arrest when compared to Districts 3 and 7. Finally, the likelihood of experiencing an arrest by District 5 deputies was higher than District 2 deputies.

### *Searches*

Analysis of district discretionary search activity among the districts could not be conducted because statistical models would not converge, likely due to the small number of discretionary searches conducted in each district.

## **Results of Propensity Score Matching Analysis of District Racial/Ethnic Disparity**

MCSO used propensity score matching to compare stops of White drivers to Hispanic, Black, and Minority (Hispanic, Black, Native American, and Asian drivers combined) drivers for each district. This analysis identified within-district disparity.

### *Stop Length*

- We found that District 2 had statistically significant disparity in stop length for Hispanic and Black drivers when compared to White drivers. Stops of Hispanic drivers by District 2 deputies averaged about 53 seconds longer than stops of White drivers and stops of Black drivers in District 2 averaged about 77 seconds longer than stops of White drivers.
- Black drivers stopped by District 7 deputies experienced stops that averaged approximately 40 seconds less than stops of White drivers in District 7.

- There were no other statistically significant differences in stop length for any group in any other district.

### *Citations*

This research identified disparity in citation outcomes in four districts. Two analyses were conducted for citation activity. The first (Model 1) utilized speed over the speed limit drivers were driving and offense types (speed, non-speed moving, equipment, license/insurance/registration, and other violations) as matching variables. The second analysis (Model 2) excluded speed and offense types as matching variables.

- Model 1 (Including offense categories and speed)
  - In District 2, Hispanic drivers were cited about 4.7 percent more often than White drivers.
  - In District 4, Minority drivers were cited about 7.6 percent more often than White drivers.
- Model 2 (Excluding offense categories and speed)
  - In District 2, Hispanic drivers were cited about 7.9 percent more often than White drivers.
  - In District 3, Hispanic drivers were cited nearly 9 percent more often than White drivers and Minority drivers were cited about 6 percent more often than White drivers.
  - In District 4, Minority drivers were cited about 5.5 percent more often than White drivers.
  - In District 5, Hispanic drivers were cited about 7.7 percent more often than White drivers.

### *Searches*

In examining searches, we found statistically significant disparity in one district.

- In District 2, White drivers were searched about 1.8 percent more often than Black drivers.

### *Arrests*

There were no statistically significant differences in arrests for Hispanic, Black, or Minority drivers when compared to White drivers in any district.



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## **Analysis of Differences in Disparity Levels among Districts**

In the fourth analysis, we identified district-level differences in racial/ethnic disparity comparing districts to one another on the benchmarks of stop length, citations, arrests, and searches. We identified several pairwise district-level differences in disparity but did not identify simultaneous district-level differences in disparity for any benchmark (stop length, citations, arrests, and searches) or group (Hispanic v. White, Black v. White, and Minority v. White).

### *Stop Length*

- There were no significant differences in stop length disparity for Hispanic and White drivers among districts identified by the analyses.
- District 7 had higher levels of disparity in stop length between Black and White drivers when compared to District 5.
- There were no significant differences in stop length disparity for Minority and White drivers among districts identified by the analyses.

### *Citations*

We utilized two models for examining differences in disparity among districts. Model 1 utilized statistical controls of speed over the speed limit and offense categories (speed, non-speed moving, equipment, license/insurance/registration, and other violations).

- Model 1 (Including offense categories and speed as statistical controls)
  - There were no statistically significant differences in disparity among districts in for Hispanic and White drivers, Black and White drivers, or Minority and White drivers.
- Model 2 (Excluding offense categories and speed as statistical controls)
  - Hispanic and White disparity in citations was higher in District 7 when compared to District 5.
  - There were no other statistically significant differences in citation disparity for Hispanic, Black, or Minority drivers when compared to White drivers for any district.

### *Arrests*

We identified three statistically significant differences in arrest disparity among districts.

- District 4 had lower levels of disparity in arrest outcomes between Black and White drivers than Districts 3 and 5.
- District 3 had higher levels of arrest disparity between Minority and White drivers when compared to District 1.

### *Searches*

Partial analyses of disparity in discretionary search activity were conducted, however due to low numbers of searches in several districts, overall estimates of district-level differences in disparity could not be fully explored.<sup>3</sup> No district-level differences in disparity in searches were identified for any district or racial/ethnic group.

### *Seizures*

In our analysis of seizures following searches, we found no statistically significant difference in the distribution of searches with and without seizures across any driver race/ethnicity and for any district.

## **Response to the findings in this report**

MCSO investigates all disparities identified by analyses conducted for the Traffic Stop Annual Report, the Traffic Stop Quarterly Reports, and Traffic Stop Monthly Report. We identify disparity in traffic stop outcomes as indicia of potential bias. Because of this, MCSO identifies stops, deputies, and units that are associated with the inequality we measure and investigate whether bias played a role in creating inequality.

In response to this research (and all MCSO research), MCSO's Traffic Stop Analysis Unit continues to investigate the sources of the observed disparity and confers with the Internal Review Group to identify possible agency- or unit-level solutions any disparity that exists as a result of possible agency policies or practice.

Following publication of this report, MCSO will conduct district and agency-wide internal town halls to explain results to command and line-level supervisors. MCSO will also convene an internal review group to develop and recommend actions based on these results to Executive Command. This review group will also consider any actions suggested by Parties, Monitoring Team or Community following the publication of this report. This plan will include items that were considered and accepted as well as those considered and rejected. Any rejected recommendations will include an explanation as to why the actions were not recommended.

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<sup>3</sup>There were four discretionary searches during traffic stops by District 4 deputies and there were three discretionary searches during traffic stops by District 7 deputies. Each of these searches involved White drivers.

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# Introduction

MCSO evaluates disparity in traffic stop length and outcomes for the office annually and reports the results of that analysis in the Traffic Stop Annual Report (TSAR). MCSO also analyzes individual deputy stop activity monthly for disparity in the Traffic Stop Monthly Report (TSMR). The TSMR process allows MCSO to evaluate racial/ethnic disparities in traffic stop outcomes at an individual level to determine if deputies could be making decisions influenced by bias. Traffic Stop Quarterly Reports (TSQR) usually dive deeper into office wide data to identify if any actionable insight can be gained into the causes of disparities identified in the TSAR reports. The MCSO last published an analysis of district-level disparities in December of 2023 for the Traffic Stop Quarterly Report 12 (TSQR12). In TSQR12, MCSO evaluated traffic stop data from 2022 to determine whether different districts had different levels of disparity in stop lengths and traffic stop outcomes (citations/warnings, arrests, and searches) and whether districts differed from one another in their levels of disparity. In that analysis, MCSO utilized the methods approved by the Monitor's team for the TSAR8 and applied them to individual districts.

This quarterly report revisits racial/ethnic disparity at the district level. Three questions are explored. First, how do districts differ in the average stop length during traffic stops and do different districts cite/warn, search, and arrest drivers at different rates? Secondly, what, if any, racial/ethnic disparities do each district have when analyzed using the propensity score matching method employed in the TSAR annual analyses? Finally, do the districts differ from one another in their levels of disparity on the benchmarks of stop length, citation rate, arrest rate, and search rates?

The organization of this report is as follows. We begin with a description of the districts describing their geographic boundaries and influences on traffic enforcement activity such as MCSO-city contracts or DUI patrols. We include maps of all traffic stops made by deputies assigned to the different districts, highlighting that while districts generally conduct traffic enforcement in their geographic boundaries, others make traffic stops across the County. Following the description of the districts, we provide the methodology used to produce the findings in this report and include a listing of the variables used in the analyses presented in this report.

Analyses are then presented in five phases. In phase one, we provide rich descriptive information about traffic stops for both MCSO as a whole and disaggregated by district. In phase two, we provide results modeling MCSO's major benchmarks used in the TSAR and TSMR (stop length, citation rate, arrest rate and search rate) to determine if districts differ from one another on these traffic stop metrics. In phase three, we present results from the Propensity Score Matching analysis to identify racial/ethnic disparity specific to districts. In the fourth phase we report our analysis of inter-district racial/ethnic disparities, identifying whether certain districts have higher or lower disparities when compared to one another. In the fifth and final phase MCSO conducted district level chi-square analyses for seizures after searches and included a robustness check using the Fischer's exact test to account for small cell counts for Asian and Native American drivers.

Following the results section, we provide a summary of notable findings from this research and conclude with a discussion of actions MCSO has taken and will consider based on the findings from the research.

## Information About MCSO and its Districts

MCSO has six administrative districts that manage deputy activity.<sup>4</sup> While the districts have geographic boundaries, deputies assigned to individual districts often make traffic stops in other districts for a variety of reasons. For example, when deputies work on DUI special assignments, they make stops across county. Deputies might also work in an off-duty capacity monitoring special events such as golf tournaments or auto races. Deputies may cross district boundaries when assisting other police agencies in Maricopa County, e.g., municipal police departments, or may transfer to other districts mid-shift to meet MCSO staffing and public safety needs. Deputies may also change assignments during an individual shift for staffing reasons but retain a specific district-level designation. In this section, we provide profiles of the geography of each district and provide mapping of the stops made by deputies assigned to each district.

## MCSO Traffic Enforcement

Traffic control by MCSO deputies follows several notable enforcement patterns within the districts and across Maricopa County. First, within certain districts, communities have contracted with MCSO to meet their policing and emergency response needs. In 2023, there were a total 13 communities within the county for which MCSO acts as the local law enforcement.<sup>5</sup> These communities are diverse. Some are historically retirement communities such as Sun City and Sun City West, while others are affluent predominantly White communities such as Fountain Hills, Cave Creek, Carefree, and Anthem. Still others are small majority-minority communities such as Gila Bend which is centered on two Interstates and several state highways and Guadalupe which is home to a branch of the Yaqui tribe, originally from Mexico.

Second, MCSO also acts as the police force for “county islands” throughout the Phoenix metropolitan area. These are regions that are surrounded by municipalities with their own police forces, but for which the MCSO must provide public safety. Notable examples of county islands include a four square-mile area, adjacent to the east of Luke Air Force Base and is largely composed of housing for members of the military, and a similarly sized county island directly between the cities of Mesa and Apache Junction. Other county islands pepper Maricopa County.

Third, MCSO acts as the rural police force for nearly all the desert land and much of the agricultural

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<sup>4</sup>Note that District 6 is no longer in operation. This district was formerly the city of Queen Creek, which MCSO contracted with to act as its municipal police force. Beginning in January of 2022, Queen Creek ended its contract with MCSO and hired its own police force. The geographic boundaries of District 6 were absorbed into District 1.

<sup>5</sup>This includes Anthem, Carefree, Cave Creek, Fountain Hills, Gila Bend, Guadalupe, Litchfield Park, Youngtown, Sun City, Sun City West, Whittman, Anthem, Desert Hills, and New River.

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land in Maricopa County, but which is outside of the Phoenix metropolitan area. This includes major outdoor recreation areas associated with local lakes and the Salt River recreation area, thoroughfares through sparsely populated regions of the county, and both industrial and family-owned farmland.

Fourth, MCSO deputies aid state and local police in traffic control on local state highways (such as the Loops 101, 202, and 303), other state highways (SR-74, SR-84, SR-85), and local federal highways (Interstates 8, 10, and 17). Other enforcement occurs on local thoroughfares that bisect or intersect communities such as Shea Boulevard, the Carefree Highway, New River Parkway, Lake Pleasant Parkway, Grand Avenue, and Hunt Highway.

In Table 1 below, we present general information about districts, highlighting their geographic size and estimated population characteristics based on U.S. Census estimates.<sup>6</sup> Caution should be taken inferring Maricopa County driving population characteristics from Maricopa County Census population information.<sup>7</sup> This is especially true for the Sheriff’s Office as they are not the primary police agency for much of the population within each district.

**Table 1:** District Information

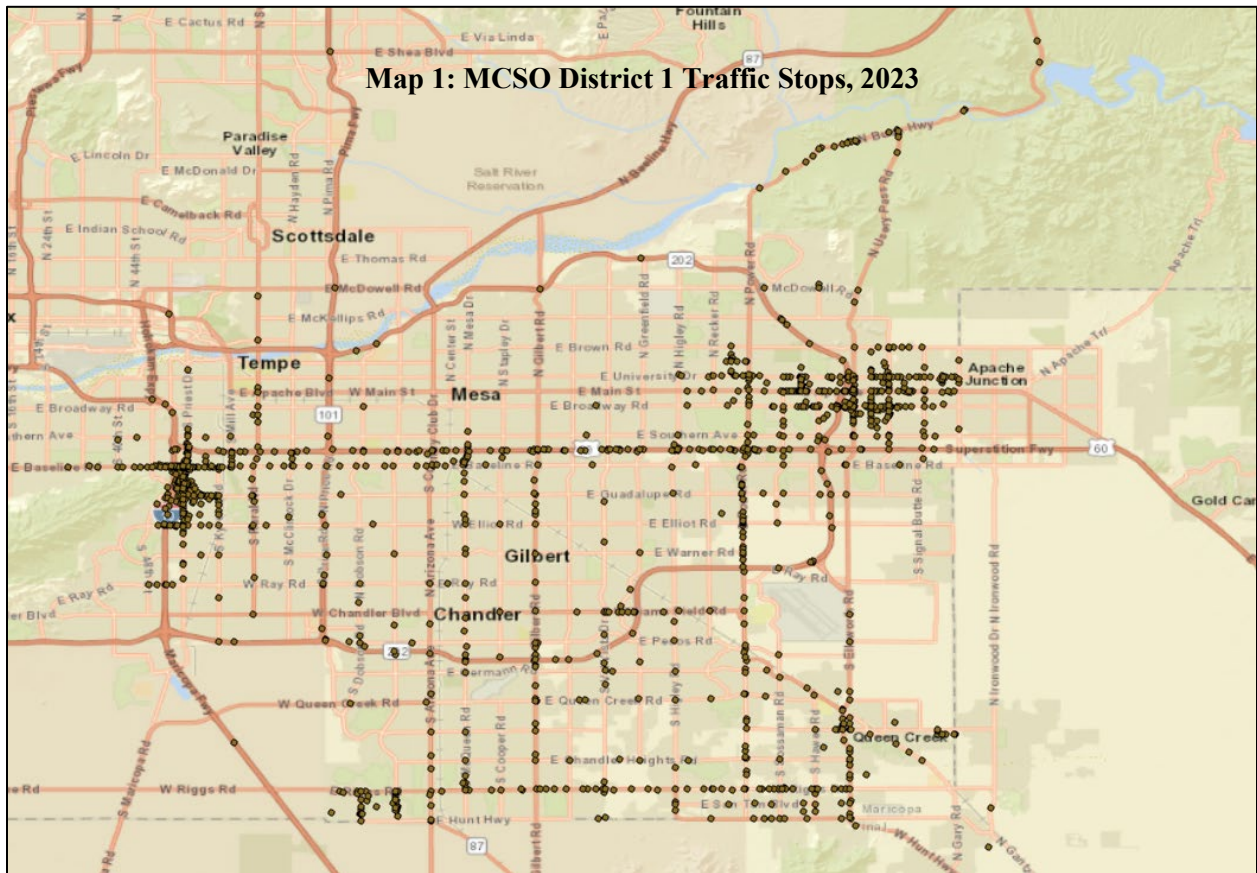
District	Size (Square Miles)	Population (Approx.)	Deputies <sup>8</sup>	District Demographics (Approx.)	
1	558	1,618,105	67	Asian	6%
				Black	5%
				Hispanic	24%
				Native American	2%
				White	58%
2	5,216	1,232,768	83	Asian	3%
				Black	9%
				Hispanic	55%
				Native American	2%
				White	27%
3	1,632	849,312	64	Asian	4%
				Black	4%
				Hispanic	22%
				Native American	1%
				White	64%
4	668	944,556	47	Asian	5%
				Black	4%
				Hispanic	18%
				Native American	2%
				White	66%
5 (Lakes)	1,089	35,926	59	Asian	2%
				Black	1%
				Hispanic	8%
				Native American	5%
				White	80%
7	124	41,454	41	Asian	3%
				Black	1%
				Hispanic	5%
				Native American	4%
				White	83%

<sup>6</sup>To derive district population estimates, MCSO used GIS to overlay MCSO District borders with Census block group estimates for 2020.

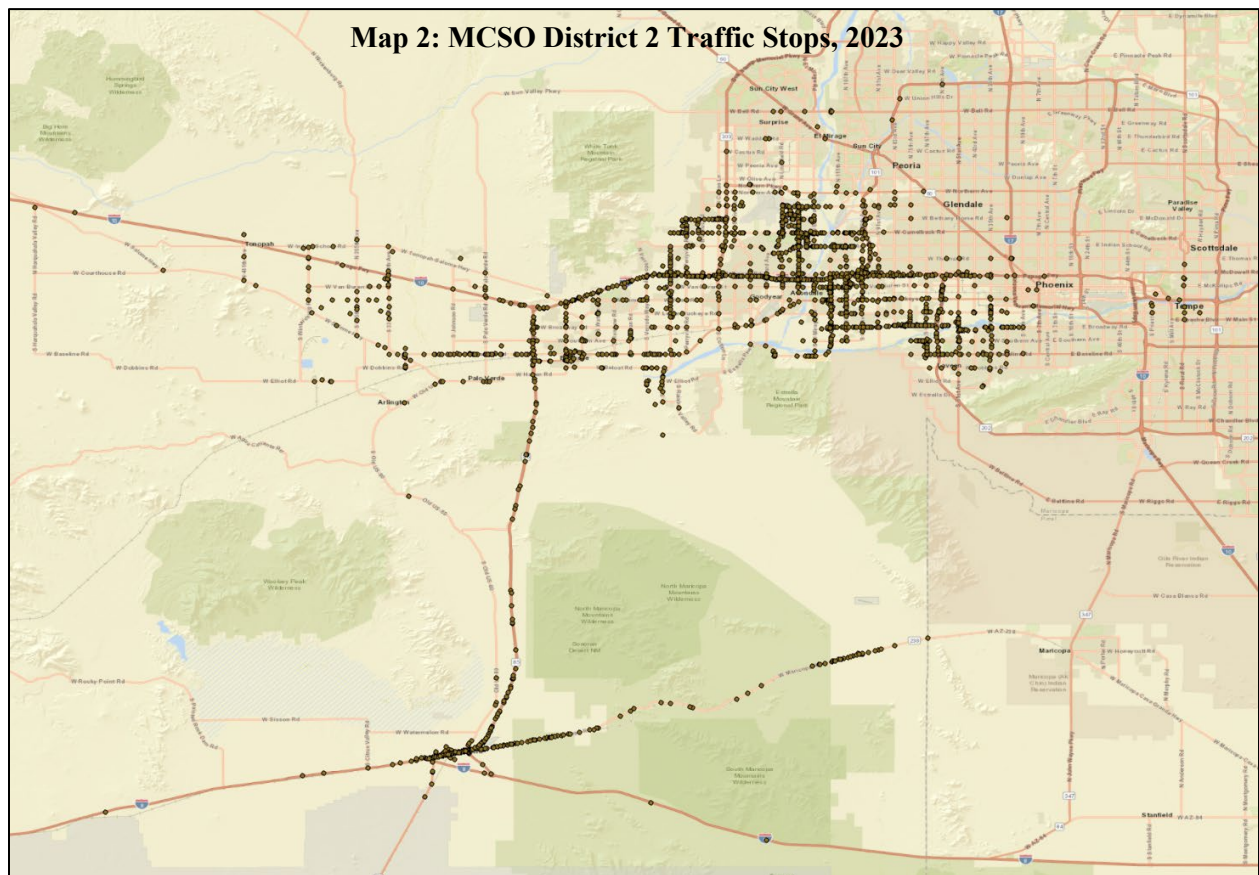
<sup>7</sup>Scholars have long recognized the **severe** limitations of census data for use in estimating the driving population. Limitations include who drives, where they are driving, and important for MCSO’s research, who is violating the law. For a comprehensive review of these limitations, see the U.S. Department of Justice-funded research Fridell (2004) “By the Numbers: A Guide for Analyzing Race Data from Vehicle Stops.”

<sup>8</sup>This number represents the number of deputies that made traffic stops while assigned to the district in 2022. Because deputies could move districts throughout the year, they may be enumerated in more than one district.

District 1 is in southeastern Maricopa County and primarily provides law enforcement for county islands and the Town of Guadalupe. The district also serves as back-up law enforcement to Apache Junction, Chandler, Gilbert, Mesa, Tempe, South Scottsdale, and Queen Creek. The district covers over 500 square miles, and communities in District 1 are very diverse, including retirement communities, a major university, a historical settlement of the Yaqui Native American tribe, new suburban development, and farmland. In Map 1 below, we provide the geographic distribution of traffic stops from deputies who were assigned to District 1 when the stop was made. District 1 deputies generally make traffic stops within the district boundaries. The greatest concentration of stops by District 1 deputies include the contracted Town of Guadalupe, on US 60 (The Superstition Freeway), in rural-urban areas in the southern portion of the district along Hunt Highway and in county islands east of the City of Mesa and west of Apache Junction.

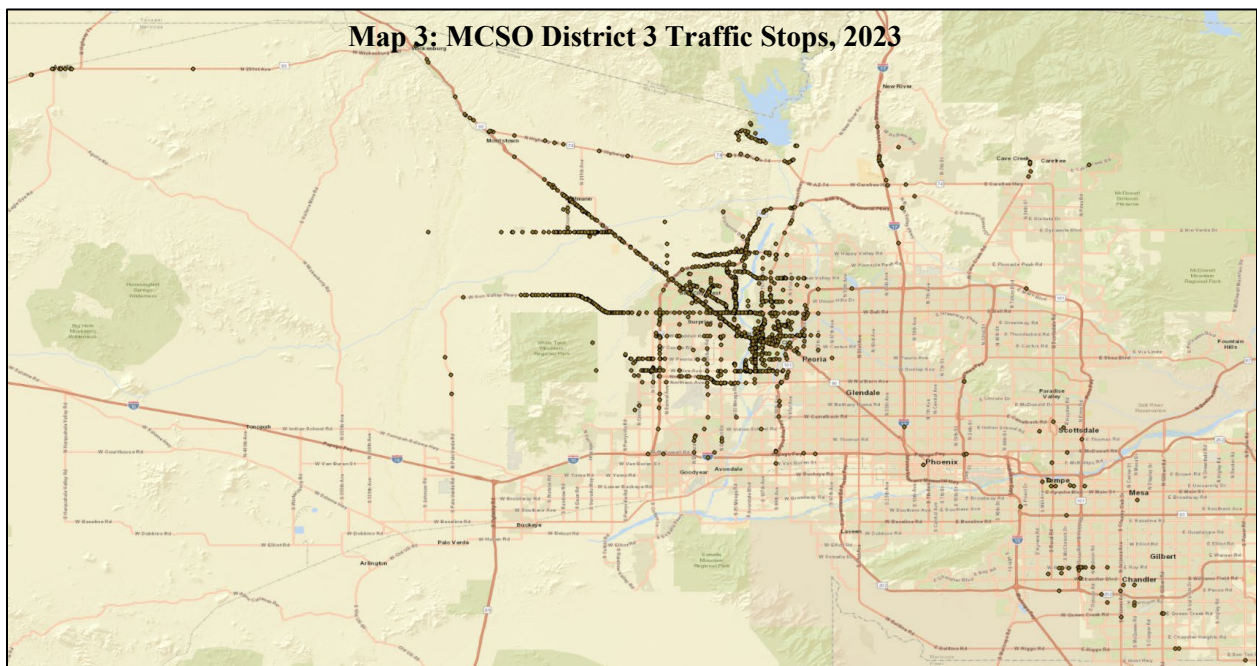


District 2 is in southwestern Maricopa County and is the largest MCSO district by land area. It includes the southwestern Phoenix metropolitan area and wide swaths of rural spaces. The district has the highest proportion of Hispanic driver within-district traffic stops, as well as the highest Hispanic population residing in any district’s geographic boundaries. Gila Bend is one community in District 2 that MCSO contracts with for law enforcement needs and highways in and out of Gila Bend are often patrolled by MCSO. Other notable cities in District 2 include Buckeye, Goodyear, Litchfield Park, cities adjacent to the western I-10 corridor, and downtown Phoenix. MCSO contracts with the city of Goodyear for patrol of certain areas within the city boundaries. District 2 also includes two Maricopa County parks—Estrella Mountain Regional Park, and Skyline Regional Park. The highest concentration of traffic stops by MCSO deputies in District 2 include the Town of Gila Bend, rural county islands in and around Buckeye and Goodyear and a four square-mile county island adjacent to Luke Air Force Base.

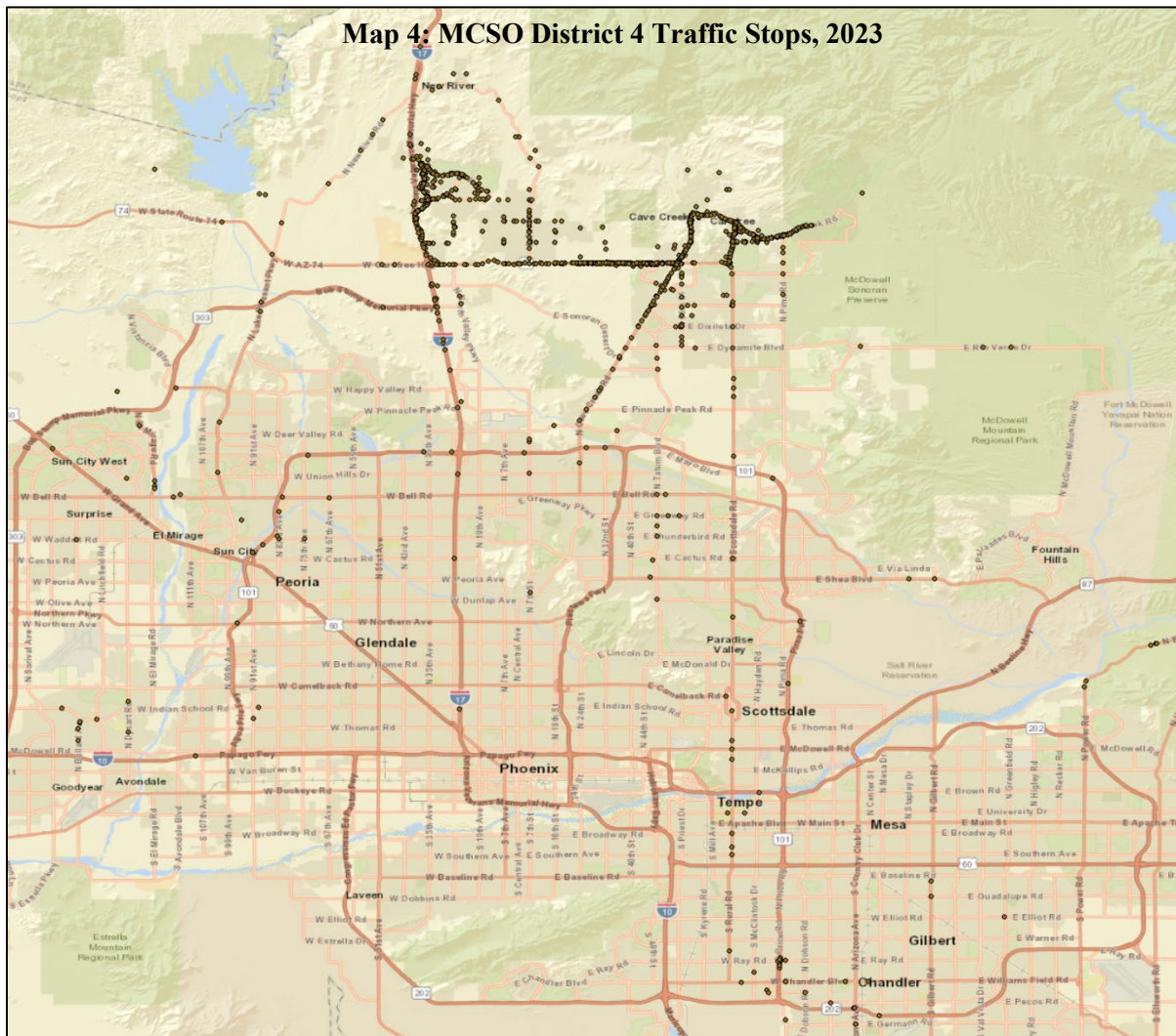




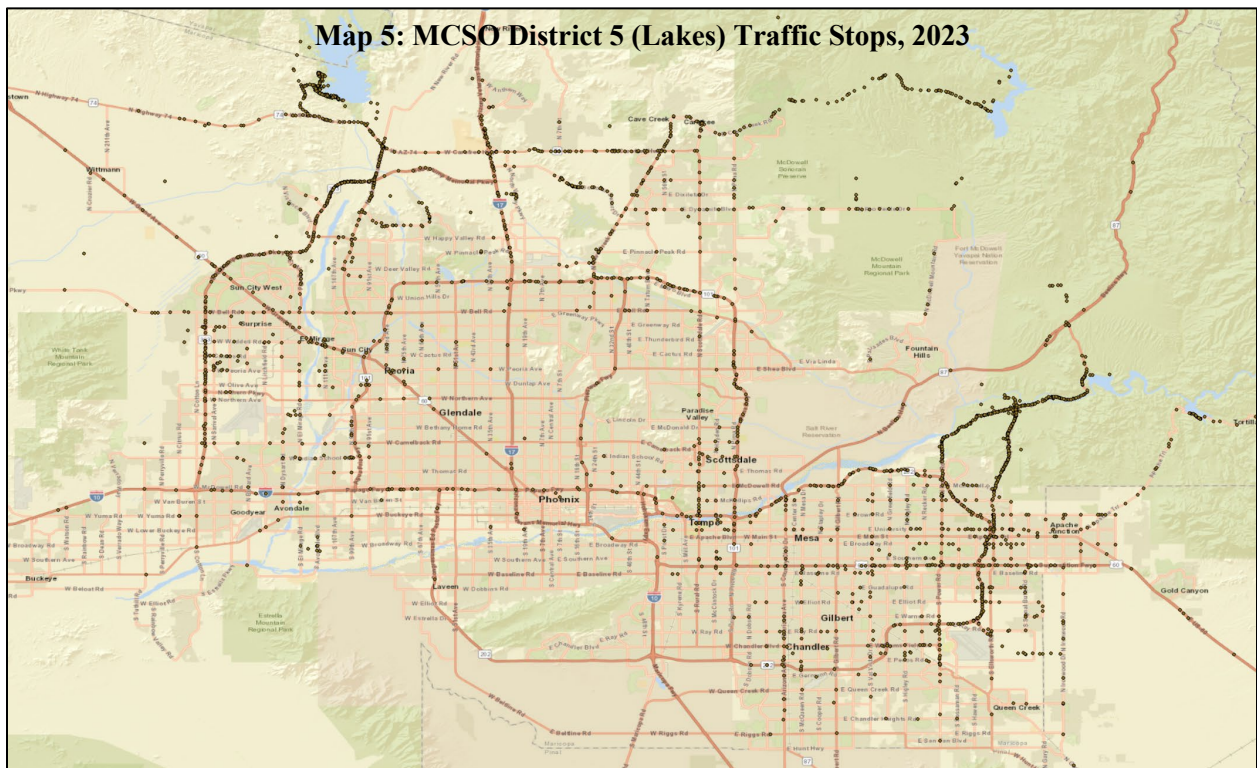
District 3 covers an area of 1,631 square miles in the northwestern quadrant of Maricopa County and MCSO is the primary law enforcement agency for several small towns and unincorporated communities, as well as large rural and agricultural spaces in the district. MCSO carries contracts for policing several cities in District 3 including Youngtown, Whittman, Sun City, and Sun City West. District 3 has several major state and US highways on which MCSO deputies often make traffic stops. These include US 60, Loop 303, Loop 101, and State Route 74. Traffic stops within the boundary of District 3 are concentrated in the cities of Sun City, Sun City West, Wittmann, and Youngtown. Other notable concentrations of traffic stops in District 3 include rural areas west of the Phoenix metropolitan area, Morristown, and along Sun Valley Parkway, and on US 60. Like District 1, District 3 deputies generally make stops within the district’s geographic borders.



District 4 covers an area of approximately 668 square miles in the north-central quadrant of Maricopa County. This district includes northern areas of Phoenix and Scottsdale, parts of Peoria, and unincorporated Maricopa and Yavapai County land. Deputies primarily serve the communities of Anthem (officially Phoenix), Carefree, and Cave Creek in these areas although other municipal police departments utilize MCSO deputies as supplemental law-enforcement in the district. I-17 borders the western edge of District 4, and the Carefree Highway is a major thoroughfare through the district. District 4 deputies make a number of stops outside District 4 boundaries and these stops are generally made on major freeways, arterial streets, and along Rio Verde Drive. The highest concentration of stops in District 4 occur in the towns of Anthem (Phoenix), Cave Creek, Carefree, and along the major thoroughfares of I-17, Carefree Highway, and Cave Creek Road. Finally, District 4 had the highest number of traffic stops (N = 1,229) by deputies assigned to traffic enforcement in the county. Traffic stops by deputies assigned to traffic enforcement in District 4 accounted for 51 percent of all stops in District 4.

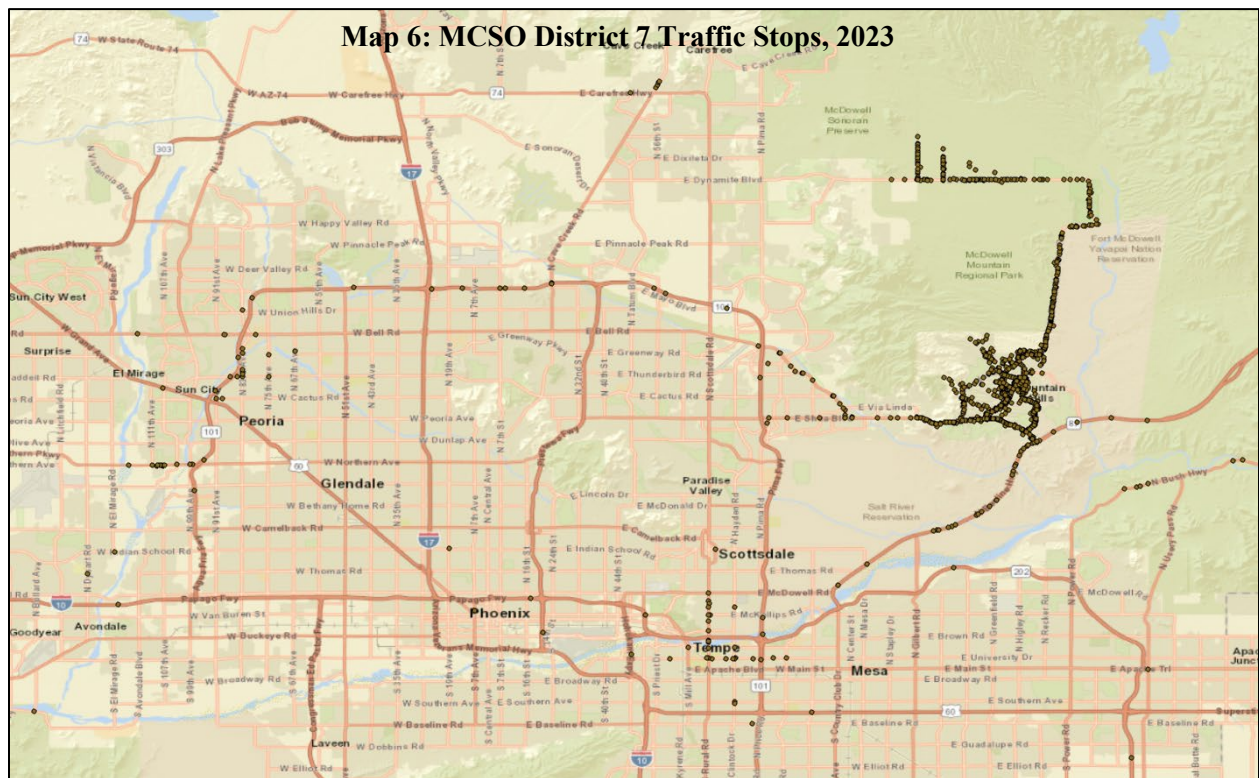


District 5, Lake Patrol, is a specialized division consisting of many units that safeguard the lakes, rivers, and wilderness areas of Maricopa County. Of particular interest to this analysis, the majority of special assignment patrols (DUI Taskforce, and Aggressive Driver Patrol) are assigned through District 5 Command. Deputies assigned to District 5 make the most stops of any district outside their geographic boundaries. District 5 is bifurcated geographically, with patrol units working in the northeastern and northwestern recreational areas in Maricopa County, and different legal frameworks—federal, county, municipal, and state—may apply, depending on the area. There are 6 major reservoirs and adjacent areas patrolled by District 5 deputies. These include Lake Pleasant, Bartlett Lake, Horseshoe Reservoir, Saguario Lake, Canyon Lake, and Apache Lake. District 5 deputies also patrol the Salt River Basin, a major summer recreational area. The district has a population density of fewer than 50 people per square mile, compared to the approximate 500 people per square mile in the rest of the districts. This far less populated area has fewer calls for service and is mostly recreational space for the local population and tourists. Stops outside District 5 boundaries are primarily concentrated on major freeways of Loop 303, Loop 202, Loop 101, and 1-17. Within the district’s boundaries, major concentrations of traffic stops include in and around Lake Pleasant Park, along the Beeline Highway exiting northeast out of the Phoenix area, along the Bush Highway in the Salt River Valley, and along Usery Pass Road.



District 7 is in the northeast area of Maricopa County, serving as primary law enforcement for the Town of Fountain Hills, and Rio Verde, as well as unincorporated county land and McDowell Mountain Regional Park. While most stops made by District 7 deputies occurred within the district's boundaries, outside of the district, deputies made a number of stops on the Loop 101 and several areas typically patrolled by Lake Patrol. Among all districts, District 7 has the highest concentration of stops within any city, with nearly 3,500 stops made within the boundaries of Fountain Hills (81% of District 7 stops). About 17 percent of District 7 stops (N = 730) were made by deputies assigned to traffic enforcement. Other areas of concentrated traffic stop activity in District 7 included Rio Verde Dr., Shea Blvd., and McDowell Mountain Road.

Patrol activity priorities in District 7, while managed by MCSO are often determined, in part, by Fountain Hills City Council as they request certain types of enforcement in specific areas of the city (e.g., speeding offenses on Shea Blvd., school zone patrol, or red light or stop sign violations at specific intersections).



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## Methods

MCSO conducted five phases of analysis to produce this report. The first analysis provides descriptive statistics on traffic stops for each of the districts. We report information about the drivers, including the perceived race/ethnicity and sex of the drivers. We report characteristics about the stops such as the time of year stops were made, the time-of-day stops were made, average stop length by district and race/ethnicity, and use of extended stop indicators by district and race/ethnicity. We also report outcomes of the stops for each district and by race/ethnicity. Next, we report offense categories that were cited or warned during traffic stops (speed, non-speed moving, driving documentation, equipment, and other types of violations). Following this, we identify special assignment stops for each district and whether the traffic stop could be classified as civil traffic, criminal traffic, or criminal. We report searches conducted in each district and identify arrests made in each district. Finally, we report deputy traffic stop counts for each district. Summary statistics for MCSO are provided in this section for comparison. No statistical tests for significance were conducted for the descriptive portion of the report.

The second phase provides fixed-effects regression analyses of stop length and stop outcomes (citation/warning, discretionary searches, and arrests) using variables that are used in the Propensity Score Matching process in the TSAR and the weighting process in the TSMR. Excluded from models are variables for geography and race/ethnicity of the drivers.<sup>9</sup> Ordinary least squares regression was employed for the analysis of stop length, while logistic regression was used for the categorical outcomes of citations, arrests, and searches. Two separate analyses were conducted for citations. The first was a logistic regression model predicting a citation outcome that included offense categories and the speed of the vehicle over the speed limit (for speeding violations), while the second analysis excluded violation categories and speed in the modeling process. The purpose of all models presented in this section was to determine whether individual districts differed from one another on the stop outcomes, while controlling for race-neutral characteristics of the stop. We employed an alpha level of  $p = 0.05$  as the critical value for statistical significance, with  $p$ -values lower than 0.05 considered statistically significant. Table 2 provides a list of the variables used for these models.

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<sup>9</sup>Geography and race/ethnicity were excluded from these analyses at the request of experts working for the Department of Justice.

**Table 2: Variables Used in Regression Models**

Stop Length	Citations (Violations and Speed)	Citations/Arrests/Searches
Time Splined	Time Splined	Time Splined
Driver Sex	Driver Sex	Driver Sex
Stop Classification (civil/criminal)	Stop Classification (civil/criminal)	Stop Classification (civil/criminal)
Non-AZ Plate	Non-AZ Plate	Non-AZ Plate
Assignment Category	Assignment Category	Assignment Category
Patrol	Patrol	Patrol
Traffic	Traffic	Traffic
Supervisors	Supervisors	Supervisors
Off-Duty	Off-Duty	Off-Duty
Other (reference category)	Other (reference category)	Other (reference category)
District 1-5 and 7	Violation Type	District 1-5 and 7
Arrest	Speed	
Search	Non-Speed Moving	
	Driving Documentation	
	Equipment	
	Other Violations	
	Speed Binned in 5 MPH increments	
	District 1-5 and 7	

In the third phase, we used Propensity Score Matching to estimate disparities at the district level.<sup>10</sup> The models compare stop length, citations, arrests, and searches for comparisons of White and Hispanic drivers, White and Black drivers, and White and Minority drivers (all Asian, Native American, Hispanic, and Black drivers combined). Propensity scores for this analysis were generated using the same propensity score generating process employed in the TSAR 9 analyses.<sup>11</sup> However, propensity scores were generated using data for each individual district’s stops, not MCSO as a whole. Variables used for generating propensity scores are available in Table 3 below. Five different PSM models were estimated for each district and for Hispanic drivers, Black drivers, and Minority drivers. White drivers were the comparison group for all analyses.

The first analysis was a comparison of stop length and excludes extended stops. The second analysis provides comparisons for citations using both violation types and speed for generating propensity scores (in addition to other matching variables). The third analysis examines district citation rates using propensity scores that were generated without any consideration of the violation type or speed. The fourth analysis examines disparity in district arrest rates. Finally, the

<sup>10</sup>We report the “Average Treatment on the Treated” as a measure of difference between Hispanic, Black, and Minority drivers when compared to White drivers. To avoid confusion, “treatment” and “treated” in this context are terms derived from experimental methods identifying the treatment and control groups. In the context of the analyses presented in this report “treated” and “treatment” refer to the racial/ethnic group analyzed and does not refer to deputies’ interpersonal interaction with drivers.

<sup>11</sup>For a full explanation of the propensity score generating process employed in the TSAR analyses, see page 9 of the 2023 TSAR 9 report available at: <https://www.mcsobio.org/traffic-stop-data>

fifth analysis considers district-level disparity in discretionary searches. We employed an alpha level of  $p = 0.05$  as the critical value for statistical significance for all tests, with  $p$ -values lower than 0.05 considered statistically significant.

It should be noted that some Propensity Score Matching models did not perform well due to the small number of stops of particular racial/ethnic groups in specific districts. For example, Districts 4 and 7 had four and three discretionary searches in 2023, respectively. Estimates matching disparity with such a low number of searches cannot be generalized in any way.

**Table 3:** Variables Used in Propensity Score Matching Models

Stop Length	Citations (Violation and Speed)	Citations/Arrests/Searches
Time Splined	Time Splined	Time Splined
X and Y Coordinates (splined)	X and Y Coordinates (splined)	X and Y Coordinates (splined)
Interaction of X and Y (splined)	Interaction of X and Y (splined)	Interaction of X and Y (splined)
Driver Sex	Driver Sex	Driver Sex
Stop Classification (civil/criminal)	Stop Classification (civil/criminal)	Stop Classification (civil/criminal)
Non-AZ Plate	Non-AZ Plate	Non-AZ Plate
Assignment Category	Assignment Category	Assignment Category
Patrol	Patrol	Patrol
Traffic	Traffic	Traffic
Supervisors	Supervisors	Supervisors
Off-Duty	Off-Duty	Off-Duty
Other (reference category)	Other (reference category)	Other (reference category)
Arrest	Violation Type	
Search	Speed	
	Non-Speed Moving	
	Driving Documentation	
	Equipment	
	Other Violations	
	Speed Binned in 5 MPH increments	

In the fourth phase of analysis, MCSO sought to determine whether districts differed from one another in their levels of disparity. The analysis utilized weighted regression models for each racial/ethnic group comparison (Hispanic/White, Black/White, and Minority/White) and benchmark (Stop length, citations, arrests, and searches). In this analysis, district and race/ethnicity are interacted to determine whether racial/ethnic disparities vary statistically across districts. We then performed a linear hypothesis test to determine whether statistically significant differences of disparity exist among all districts simultaneously. To perform this test, we used the Stata command “test” which evaluates whether the estimated differences in disparities for districts (interaction between district and race) are “jointly zero.” If the test rejected the null hypothesis, we identify which districts displayed the most pronounced disparities in comparison to one another. We also report if any districts were different from others on these benchmarks, regardless of whether the linear hypothesis test was significant. Variables used to generate propensity scores in this analysis are provided in Table 4 below.

**Table 4: Variables Used in Difference in Disparity Models**

Stop Length	Citations (Violation and Speed)	Citations/Arrests/Searches
Time Splined	Time Splined	Time Splined
Driver Sex	Driver Sex	Driver Sex
Stop Classification (civil/criminal)	Stop Classification (civil/criminal)	Stop Classification (civil/criminal)
Non-AZ Plate	Non-AZ Plate	Non-AZ Plate
Assignment Category	Assignment Category	Assignment Category
Patrol	Patrol	Patrol
Traffic	Traffic	Traffic
Off-Duty	Off-Duty	Off-Duty
Other (reference category)	Other (reference category)	Other (reference category)
Arrest	Violation Type	
Search	Speed	
	Non-Speed Moving	
	Driving Documentation	
	Equipment	
	Other Violations	
	Speed Binned in 5 MPH increments	

Finally, MCSO conducted district level chi-square analyses for seizures after searches and included a robustness check, using the Fischer's exact test, to account for small cell counts for Asian and Native American drivers.

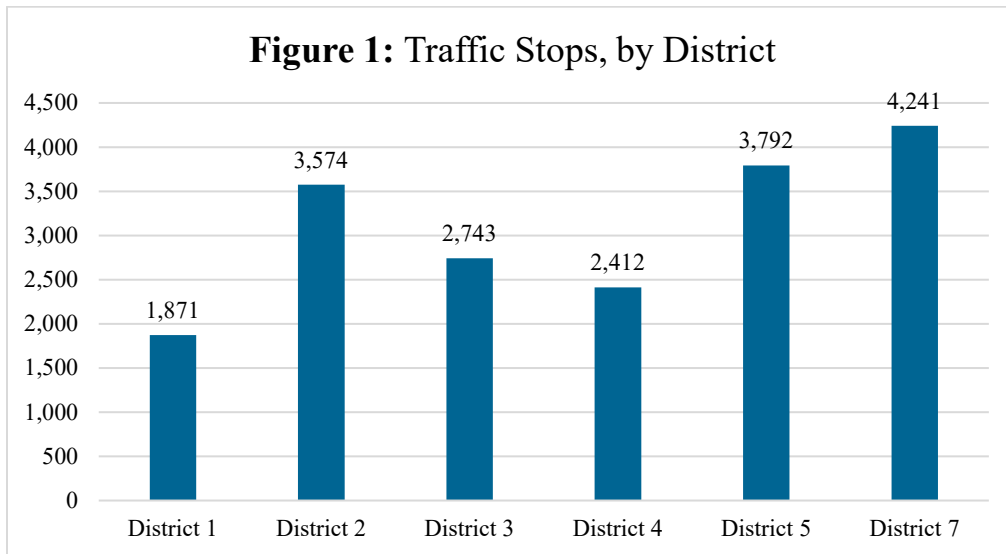


# Descriptive Findings

In Figure 1 below we provide the number of traffic stops by MCSO for each district. Note that these numbers reflect the districts to which the deputy was assigned and not the geographic location of the stop.

## Number of Traffic Stops by District

Of the 18,632 stops made by MCSO in 2022 nearly 23 percent (N = 4,241) were made by deputies working in District 7. District 1 had the fewest number of traffic stops of any district accounting for about 10 percent of traffic stops made by MCSO. District 4 had the second fewest number of stops with 2,412 stops made by District 4 deputies in 2022. This accounted for approximately 13 percent of all traffic stops made by MCSO during the year. Districts 2 and 5 had similar numbers of traffic stops in 2022 accounting for 19.18 percent and 20.35 percent of all MCSO traffic stops, respectively. Deputies from District 3 made 2,743 traffic stops in 2023, nearly 15 percent of MCSO traffic stops. The average number of stops for districts was 3,106 with a standard deviation of approximately 828 traffic stops.



## Deputies and Stop Characteristics

### Stop Counts

In total, 280 MCSO deputies conducted traffic stops in 2023. The number of traffic stops a deputy makes in a year impacts analysis in the TSMR. Deputies who make fewer than 20 stops during the previous 12-month period are analyzed using a “descriptive” method in the TSMR and deputies who make 20 or more stops in the previous 12-month period are analyzed using a “comparative” method.<sup>12</sup> Table 5 provides a tabulation of traffic stop counts by deputies. District 2 had the largest number of deputies who made fewer than 20 stops in 2023 (N = 40). Districts 3, 4, and 7 each had deputies who made more than 500 traffic stops during the year.

**Table 5:** Deputy Traffic Stop Count (number of stops over the 12-month period), by District

	Number of Deputies					
	District 1	District 2	District 3	District 4	District 5	District 7
1 to 19 Stops	26	40	30	20	22	15
20 to 49 Stops	13	20	19	12	13	4
50 to 99 Stops	9	14	4	6	11	6
100 to 149 Stops	0	4	4	1	6	4
150 to 199 Stops	2	2	0	1	2	2
200 to 499 Stops	1	3	0	2	5	2
Over 500 Stops	0	0	2	1	0	3

<sup>12</sup>MCSO investigated the activity of “low-volume” deputies in TSQR 11. Low-volume deputies (deputies who make fewer than 20 stops in a 12-month period) accounted for less than 5 percent of traffic stops made by MCSO deputies. In 2023, 37.9 percent of deputies making stops were low-volume deputies (N = 106), accounting for less than 4 percent (N = 741) of traffic stops made by MCSO deputies. The analysis of low-volume deputy stop activity can be accessed at: [https://www.mcsobio.org/\\_files/ugd/b6f92b\\_05c14012c8624fa382977bfa58d24fb0.pdf](https://www.mcsobio.org/_files/ugd/b6f92b_05c14012c8624fa382977bfa58d24fb0.pdf)

## Deputy Assignments

MCSO utilizes deputy assignment categories as variables in the TSAR and TSMR that contribute to the generation of propensity scores. Categories include Patrol deputies, Lake Patrol deputies, Supervisors, Other assignments, Traffic, and Off Duty. Table 6 below provides a tabulation of the number of stops in each district categorized by the type of assignment.<sup>13</sup>

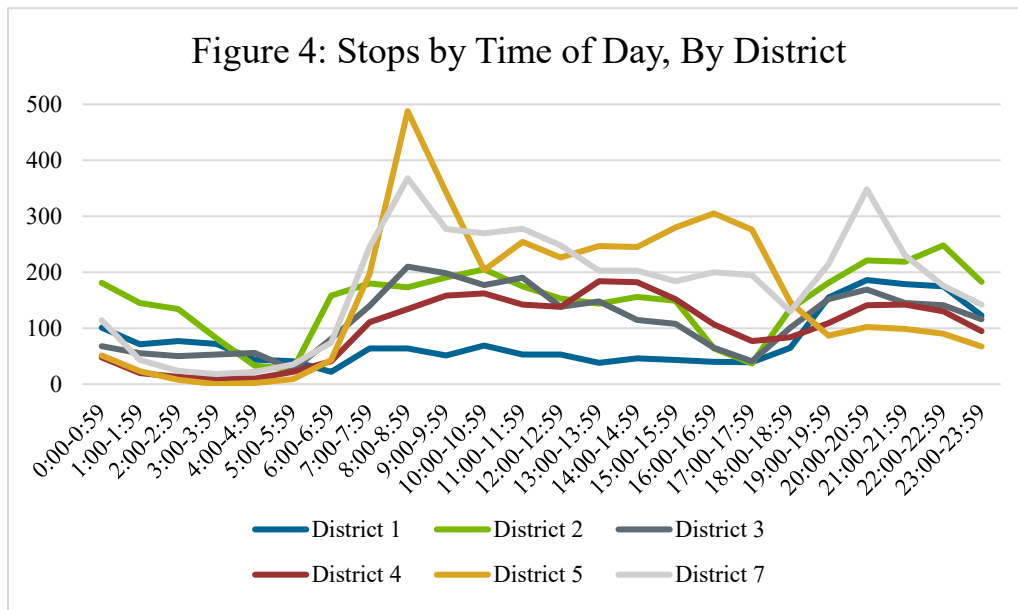
**Table 6:** Deputy Assignments at time of stop

	Number of Stops					
	District 1	District 2	District 3	District 4	District 5	District 7
Patrol Deputy	1,729	3,278	1,525	1,159	0	3,464
Lake Patrol Deputy	0	0	0	0	3,466	0
Supervisor	15	287	136	11	289	46
Traffic	118	0	1,081	1,229	0	730
Off Duty	2	3	0	3	3	0
Other	7	6	1	10	34	1

<sup>13</sup>The deputy assignment category for “Lake Patrol Deputy” was adjusted for this quarterly analysis because all Lake Patrol deputies are assigned to District 5. For regression analyses presented in this report, Lake Patrol Deputies were coded as Patrol Deputies.

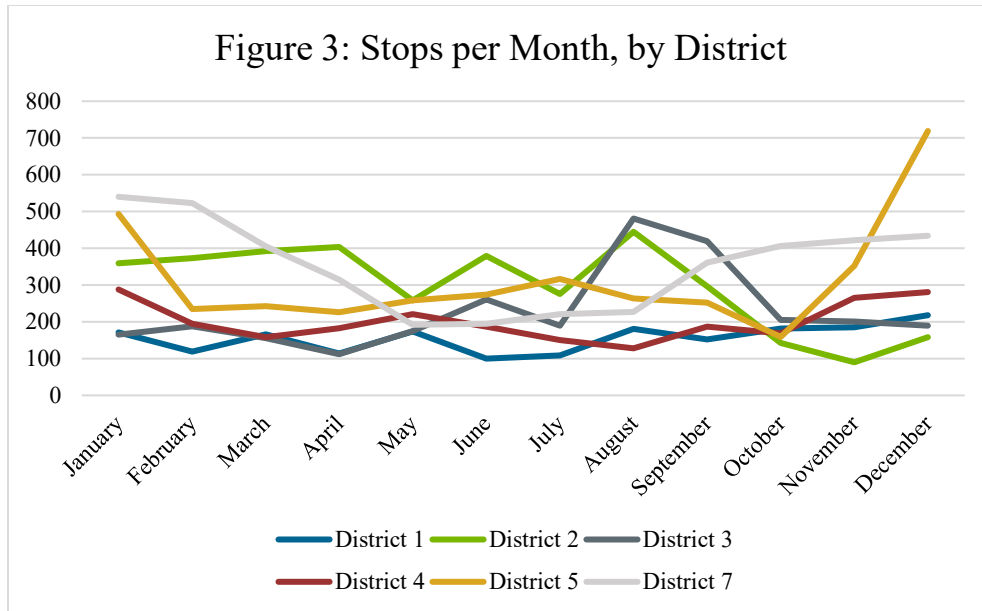
## Time of Day

Figure 2 provides a comparison of district stops by the time of day. All districts have the fewest number of stops between 4:00 and 5:00 am with an increase in stops during the morning commuting hours between 6:00 and 8:00 am. Stops taper off through the day until the evening commuting hours.



## Stops per Month

Figure 3 provides monthly trends for stops made by deputies in each district. In general, districts made a similar number of stops each month. However, District 2 had much more month-to-month variation relative to other districts, making as few as 90 traffic stops in November of 2023 and as many as 445 traffic stops in August of 2023. District 5 deputies made the most traffic stops of any other district in December 2023, stopping 719 drivers.



## Special Assignments

MCSO deputies sometimes work special assignment patrols. These special assignments identify certain types of violations and deputies actively patrol for these violations.<sup>14</sup> Table 7 provides a tabulation of special assignment traffic stops by district. Of the 965 stops made while deputies were working on the DUI Taskforce, 559 stops were made by deputies from District 5. This represented nearly 15 percent of all stops made by District 5 deputies. District 5 also accounted for the most stops made by deputies on Aggressive Driver special assignments. Finally, there were 79 traffic stops by deputies working Click-it-or-ticket special assignment. All these stops were made by deputies from District 5.

**Table 7:** Special Assignment Stops by District (percentage of stops by district)

	DUI Taskforce	Aggressive Driver	Click-it-or-ticket
District 1	33 (1.76%)	0 (0.00%)	0 (0.00%)
District 2	40 (1.12%)	0 (0.00%)	0 (0.00%)
District 3	133 (4.85%)	26 (0.95%)	0 (0.00%)
District 4	80 (3.32%)	0 (0.00%)	0 (0.00%)
District 5	559 (14.74%)	256 (6.75%)	79 (2.08%)
District 7	120 (2.83%)	127 (2.99%)	0 (0.00%)

## Stop Classification

MCSO uses the classification of the violations during traffic stops as one variable in its propensity score matching and weighing processes for the TSAR and TSMR, respectively. Table 8 provides the classifications of these violations by district. Across all districts, civil traffic violations were the most common class of violations, exceeding 90 percent in each District. District 5 had the highest number and percent of stops classified as criminal traffic. As is apparent in Table 8, criminal stops are a rare occurrence in all districts with less than half of one percent of stops classified as criminal in each district.

**Table 8:** Traffic Stop Classifications by District

	Criminal Traffic	Civil Traffic	Criminal
District 1	147 (7.86%)	1,718 (91.82%)	6 (0.32%)
District 2	76 (2.12%)	3,400 (95.13%)	6 (0.17%)
District 3	34 (1.25%)	2,522 (91.94%)	4 (0.15%)
District 4	85 (2.43%)	2,332 (96.68%)	1 (0.04%)
District 5	347 (8.86%)	3,469 (91.48%)	6 (0.16%)
District 7	85 (1.99%)	4,072 (96.02%)	2 (0.05%)

<sup>14</sup>MCSO investigated special assignment activity in 2021 as part of its TSQR 9 research. A more thorough explanation of special assignment activity can be accessed in that report, available at: [https://www.mcsobio.org/\\_files/ugd/b6f92b\\_089d19c100b24f53a01ee1b453e40a79.pdf](https://www.mcsobio.org/_files/ugd/b6f92b_089d19c100b24f53a01ee1b453e40a79.pdf)

## Driver Characteristics

### Driver Race/Ethnicity

When deputies make a traffic stop, they document their observation of the perceived race/ethnicity of the driver. Table 9 below provides the racial/ethnic perception of drivers stopped by deputies from each of the six districts. The racial/ethnic perception of drivers stopped by all MCSO deputies is provided for comparison. Note that the Minority category includes Asian, Black, Hispanic, and Native American drivers combined.

In District 1, 30.30 percent of drivers stopped by deputies were identified as Hispanic. Almost 50 percent of drivers stopped by District 1 deputies were Minority drivers. District 2 had the highest stop rate (67.10%) for Minority drivers compared to all other Districts and over one-third of traffic stops of Minority drivers by all MCSO occurred in District 2. District 2 deputies also stopped the greatest number (N = 1,784) and proportion of Hispanic drivers (49.92%) compared to all other MCSO districts.

**Table 9:** Perceived Post-Stop Driver Race/Ethnicity, by District

Race/Ethnicity	MCSO	District 1	District 2	District 3	District 4	District 5	District 7
Black	8.37%	14.64%	13.63%	8.60%	3.19%	6.04%	6.06%
Hispanic	25.13%	30.30%	49.92%	24.86%	10.99%	21.73%	13.20%
White	62.41%	50.45%	32.90%	63.80%	83.80%	67.85%	75.03%
Minority	37.59%	49.55%	67.10%	36.20%	16.92%	32.15%	24.97%

District 3 deputies made 2,743 traffic stops in 2023. Deputies in District 3 perceived 25 percent of drivers as Hispanic, nearly 9 percent as Black and 63.80 percent of drivers as White. About 36 percent of drivers stopped by District 3 deputies were perceived as non-White Minority drivers.

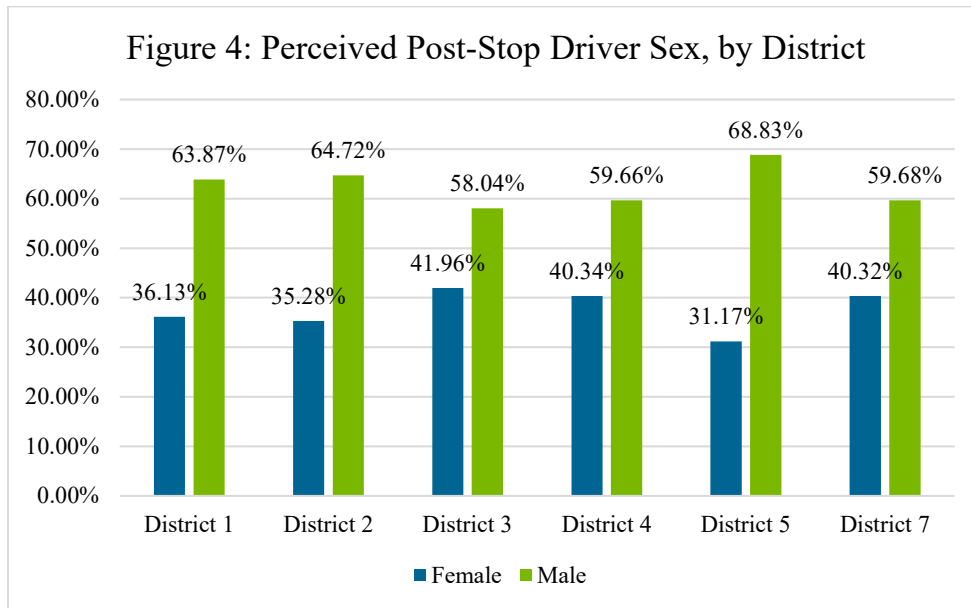
District 4 had the highest rate of White drivers stopped compared to all other districts. Almost 84 percent of drivers were perceived as White in District 4, while 11 percent were perceived as Hispanic. Deputies from District 4 stopped the fewest number (N = 408) and lowest proportion of stops of Minority drivers (16.92%) of any district.

District 5 (Lakes) deputies conducted 3,792 traffic stops in 2023. Of these stops, two-thirds (67.85%) of drivers were perceived as White, about 22 percent were perceived as Hispanic and about 6 percent were perceived as Black. About one-third (32.15%) of drivers stopped by District 5 deputies were perceived as non-White minorities.

Finally, District 7 had the most stops of all districts during 2023. These 4,241 stops accounted for almost 23 percent of MCSO traffic stops made in 2023. About 75 percent of stops made in District 7 were of drivers perceived as White, about 13 percent of stops were of drivers perceived as Hispanic, and about 6 percent of drivers stopped by District 7 deputies were perceived as Black. Just under 25 percent of drivers stopped in District 7 were perceived as non-White Minorities.

## Driver Sex

Post-stop, deputies enter the driver's perceived sex into TraCS. Across all MCSO traffic stops, approximately 63 percent of drivers were identified as male and 37 percent as female. Figure 4 provides percentages of driver's perceived sex by district. More male drivers were stopped in every district. District 5 had the highest percentage of male drivers stopped (68.83%), while District 3 had the lowest percentage of male drivers stopped (58.04%).





## Summary Statistics

### Stop Length

Stop length is analyzed in our analyses in the Traffic Stop Monthly Report (TSMR) and the Traffic Stop Annual Report (TSAR). MCSO also tracks certain types of delays during traffic stops using “Extended Traffic Stop Indicators” (ETSI) to identify reasonable, and common impacts on the length of stops.<sup>15</sup> Tables 10 and 11 below provide average stop lengths for each of the districts, for MCSO, and by race/ethnicity. Table 10 provides average stop lengths, using all stops, while Table 11 provides average stop lengths for stops that were not considered extended and did not include an arrest or search.

Using all stops (Table 10), the average stop length for MCSO traffic stops was sixteen minutes and forty-five seconds. However, as Table 10 shows, Hispanic, Black and Minority drivers all have longer average stop lengths than do White drivers. This pattern persists across every district. Of all districts, District 7 had the lowest average stop length (14.35 minutes), while District 1 had the longest (21.97 minutes). District 1 also had the longest average stop length for Hispanic drivers (26 minutes) compared to all other districts and all other racial groups.

**Table 10:** Average Stop Length, in Minutes, by District and Race/Ethnicity

	All Stops	Hispanic	Black	White	Minority
MCSO	16.76	21.12	18.98	14.69	20.20
District 1	21.97	26.02	22.70	19.59	24.40
District 2	19.27	20.99	19.98	16.26	20.75
District 3	16.61	21.33	18.35	14.53	20.29
District 4	14.88	18.80	14.92	14.27	17.89
District 5	15.82	20.96	18.86	13.88	19.90
District 7	14.35	17.67	15.02	13.66	16.40

Table 11 below provides average stop lengths, by district, with extended stops and stops with arrests or searches removed from the analysis. When these stops are removed, the average stop length for all MCSO traffic stops was 11 minutes and 30 seconds. Averages for the districts ranged from 10.76 minutes in District 7 to 12.37 minutes in District 1. Average stop lengths for Hispanic and Black drivers were longer than White drivers in Districts 2, 3 and 5.

<sup>15</sup>MCSO first investigated the use of extended stop indicators in its third quarterly report available at [https://www.mcsobio.org/files/ugd/c866a6\\_f37279fd33394818bb370ab6af46820e.pdf](https://www.mcsobio.org/files/ugd/c866a6_f37279fd33394818bb370ab6af46820e.pdf). MCSO revisited the use of extended stop indicators using 2023 traffic stop data. Results of that research are available at: [https://www.mcsobio.org/files/ugd/b6f92b\\_ac4262279ed84a10b0815b362e687837.pdf](https://www.mcsobio.org/files/ugd/b6f92b_ac4262279ed84a10b0815b362e687837.pdf)

**Table 11: Average Stop Length, in Minutes, by District and Race/Ethnicity (Excluding Extended Stops)**

	All Stops	Hispanic	Black	White	Minority
MCSO	11.48	11.95	11.93	11.29	11.90
District 1	12.32	12.51	12.00	12.27	12.38
District 2	12.37	12.72	12.63	11.88	12.67
District 3	11.61	11.80	12.33	11.48	11.90
District 4	11.52	11.50	11.68	11.52	11.53
District 5	10.76	10.98	11.88	10.65	11.07
District 7	11.23	11.39	10.87	11.18	11.39

## Extended Stops

Reasons for extended stops fall into seven different categories which include stops with DUI investigations, stops with language barriers, technical issues, training stops, stops that involve a tow of a vehicle, stops that involve driving documentation issues, and other issues (where deputies must document what different circumstances delayed the stop). In Table 12, we provide ETSI use for the office, by race/ethnicity. In Table 13 below we provide rates for ETSI use by District for all stops and identify rates for ETSI use for White, Hispanic, Black, and non-White Minority drivers.

**Table 12: Extended Stop Reasons, MCSO, by Race/Ethnicity**

	All Stops	Hispanic	Black	White	Minority
Driving Documentation Issue	24.69%	35.37%	37.82%	18.71%	34.61%
DUI	1.93%	2.90%	2.37%	1.45%	2.73%
Language Barrier	2.37%	8.09%	0.77%	0.14%	6.08%
Technical Issue	7.46%	8.97%	8.78%	6.66%	8.78%
Tow	1.99%	4.87%	2.24%	0.77%	4.01%
Training	5.68%	6.94%	6.09%	5.06%	6.70%
Other Delay	6.84%	8.93%	10.38%	5.54%	8.99%

**Table 13: Extended Stop Reasons, By District and Race/Ethnicity**

	% All Stops	Hispanic	Black	White	Minority
<b>District 1</b>					
Driving Documentation Issue	39.98%	48.68%	47.45%	33.16%	46.93%
DUI	2.08%	3.00%	1.82%	1.59%	2.59%
Language Barrier	2.62%	8.11%	0.00%	0.11%	5.18%
Technical Issue	11.01%	9.88%	10.95%	11.76%	10.25%
Tow	4.54%	9.35%	3.65%	1.91%	7.23%
Training	9.14%	7.94%	5.47%	10.28%	7.98%
Other Delay	11.65%	12.70%	14.60%	10.49%	12.84%
<b>District 2</b>					
Driving Documentation Issue	38.14%	40.86%	47.02%	30.70%	41.78%
DUI	1.68%	1.85%	1.44%	1.45%	1.79%
Language Barrier	4.22%	7.51%	0.82%	0.26%	6.17%
Technical Issue	10.18%	10.43%	10.06%	10.37%	10.09%
Tow	3.58%	5.27%	2.26%	1.53%	4.59%
Training	11.95%	11.10%	11.70%	13.52%	11.18%
Other Delay	6.58%	6.61%	9.86%	4.76%	7.46%
<b>District 3</b>					
Driving Documentation Issue	20.63%	27.57%	34.75%	16.40%	28.10%
DUI	1.64%	2.05%	2.54%	1.37%	2.11%
Language Barrier	2.19%	6.74%	1.69%	0.34%	5.44%
Technical Issue	6.89%	8.36%	10.17%	5.66%	9.06%
Tow	1.60%	3.96%	3.39%	0.40%	3.73%
Training	5.72%	4.99%	6.78%	5.71%	5.74%
Other Delay	5.65%	8.65%	8.47%	4.11%	8.36%
<b>District 4</b>					
Driving Documentation Issue	17.70%	25.28%	25.97%	16.42%	24.02%
DUI	1.20%	1.51%	0.00%	1.10%	1.72%
Language Barrier	1.12%	7.92%	1.30%	0.15%	5.88%
Technical Issue	4.60%	5.66%	6.49%	4.24%	6.37%
Tow	0.62%	2.26%	0.00%	0.35%	1.96%
Training	9.16%	11.70%	6.49%	8.78%	11.03%
Other Delay	4.39%	4.53%	7.79%	4.29%	4.90%
<b>District 5</b>					
Driving Documentation Issue	22.65%	31.55%	31.44%	18.85%	30.68%
DUI	4.01%	7.65%	7.86%	2.57%	7.05%
Language Barrier	3.01%	11.77%	0.44%	0.08%	9.19%
Technical Issue	8.52%	9.22%	9.17%	8.08%	9.43%
Tow	1.29%	3.03%	1.75%	0.66%	2.63%
Training	1.69%	1.46%	0.87%	1.79%	1.48%
Other Delay	7.99%	13.59%	7.86%	6.34%	11.48%
<b>District 7</b>					
Driving Documentation Issue	15.02%	24.29%	22.18%	12.60%	22.29%
DUI	0.83%	0.89%	0.39%	0.79%	0.94%
Language Barrier	0.97%	6.25%	0.78%	0.03%	3.78%
Technical Issue	4.65%	5.36%	3.11%	4.71%	4.44%
Tow	1.18%	4.11%	0.78%	0.72%	2.55%
Training	0.42%	0.89%	0.00%	0.35%	0.66%
Other Delay	6.06%	8.04%	11.67%	5.28%	8.40%

For all stops, in all districts, driving documentation issues were the most common ETSIs used. This was most common in District 1 where almost 40 percent of stops involved some delay associated with licensing, insurance, and/or registration. Two districts had low use of this ETSI with District 4 and District 7 both using the Driving Documentation ETSI during about 25 percent of stops. For all racial/ethnic groups combined, and for all districts, driving documentation issues were the most used among all ETSIs. Nearly half of stops with Hispanic drivers in District 1 (48.68 percent) involved a delay due to driving documentation issues.

Some other notable patterns of ETSI use include the use of the DUI ETSI in District 5. Across all racial/ethnic groups, compared to other districts, District 5 had the highest proportion of stops that involved DUI investigations. Districts 1 and 2 had the highest proportion of stops that involved a technical issue with over 10 percent of stops in each district delayed because of technical problems experienced during the stop. Hispanic drivers had the highest proportion of vehicles towed compared to other racial/ethnic groups in every district.<sup>16</sup>

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<sup>16</sup>TSQR 6 examined citations and warnings and MCSO identified that Hispanic drivers were cited at a higher rate for ARS 28-3151A. According to Arizona Statute 28-3511, drivers who are found to be driving without having ever been issued a driver's license (ARS 28-3151A) in any jurisdiction "shall" have their vehicles towed. In the data used for this report, Hispanic drivers were cited 328 times for ARS 28-3151A and accounted for 67.08 percent of all citations for violating this statute. TSQR 6 can be accessed at:

[https://www.mcsobio.org/\\_files/ugd/b6f92b\\_8d83e6c90eac4d0c95fab0b607dc8ab4.pdf](https://www.mcsobio.org/_files/ugd/b6f92b_8d83e6c90eac4d0c95fab0b607dc8ab4.pdf)

## Stop Outcomes

### Citation Outcome

Less than one percent of stops result in an outcome other than a citation or warning. Table 14 provides percentage of stop outcomes for MCSO as a whole and by district. The “Other” category in Table 14 represents stops that concluded with one of two different outcomes. They include “Incidental Contact,” and “Field Interview.” Incidental contact is used for a variety of reasons. The most common reason for incidental contact stop conclusions was when a deputy ends the traffic stop without giving a citation or warning because they were called off the stop for a priority call. A field interview occurred during five traffic stops during 2023.

For MCSO, 52.27 percent of traffic stops ended in a citation. However, in comparing districts, each district cites drivers at a different rate. District 4 cites over 64 percent of drivers that are contacted, whereas District 2 cites the lowest proportion of drivers of any district at nearly 40.49 percent.

**Table 14:** Citation/Warning rate for MCSO and Districts

	Citation (percent)	Warning (percent)	Other (percent)
MCSO	9,739 (52.27%)	8,779 (47.12%)	115 (0.62%)
District 1	942 (50.35%)	893 (47.73%)	36 (1.92%)
District 2	1,447 (40.49%)	2,109 (59.01%)	18 (0.50%)
District 3	1,612 (58.77%)	1,122 (40.90%)	9 (0.33%)
District 4	1,552 (64.34%)	853 (35.36%)	7 (0.29%)
District 5	2,177 (57.41%)	1,595 (42.06%)	20 (0.53%)
District 7	2,009 (47.37%)	2,207 (52.04%)	25 (0.59%)

In Table 15 below, we identify citation rates for MCSO and each district for White, Hispanic, Black, and Minority drivers. Across MCSO, deputies issue citations to White drivers at a higher rate (52.81%) than Hispanic (52.78%), Black (48.78%) and Minority drivers (51.37%). Across most districts, citation rates were generally similar for each racial/ethnic group, with differences ranging between less than 1 percent to 3 percent. However, some differences should be identified. For example, in District 1, White drivers were cited 47.78 percent of the time while Hispanic drivers were cited 56.61 percent of the time. In District 7, White drivers were cited 42.98 percent of the time, while Hispanic drivers were cited 51.55 percent of the time. Similarly, in District 4, White drivers were cited 71.15 percent of the time, while Hispanic drivers were cited 77.38 percent of the time. It should be noted that both Districts 4 and 7 stop Hispanic drivers at the lowest rates compared to other districts. In District 4, 11 percent of stops were of Hispanic drivers (N = 265), while in District 7, 13.20 percent of stops were of Hispanic drivers (N = 560).

**Table 15:** Citation/Warning rate for MCSO and Districts, by race/ethnicity

	Citation (percent)	Warning (percent)	Other (percent)
MCSO	9,739 (52.27%)	8,779 (47.12%)	115 (0.62%)
Hispanic	2,471 (52.78%)	2,178 (46.52%)	33 (0.70%)
Black	761 (48.78%)	788 (50.51%)	11 (0.71%)
White	6,141 (52.81%)	5,424 (46.64%)	64 (0.55%)
Minority	3,598 (51.37%)	3,355 (47.90%)	51 (0.73%)
District 1	942 (50.35%)	893 (47.73%)	36 (1.92%)
Hispanic	321 (56.61%)	234 (41.27%)	12 (2.12%)
Black	137 (50.00%)	134 (48.91%)	3 (1.09%)
White	451 (47.78%)	475 (50.32%)	18 (1.91%)
Minority	491 (52.97%)	418 (45.09%)	18 (1.94%)
District 2	1,447 (40.49%)	2,109 (59.01%)	18 (0.50%)
Hispanic	751 (42.10%)	1,024 (57.40%)	9 (0.50%)
Black	196 (40.25%)	287 (58.93%)	4 (0.82%)
White	457 (38.86%)	714 (60.71%)	5 (0.43%)
Minority	990 (41.28%)	1,395 (58.17%)	13 (0.54%)
District 3	1,612 (58.77%)	1,122 (40.90%)	9 (0.33%)
Hispanic	408 (59.82%)	268 (39.30%)	6 (0.88%)
Black	134 (56.78%)	101 (42.80%)	1 (0.42%)
White	1,026 (58.63%)	722 (41.26%)	2 (0.11%)
Minority	586 (59.01%)	400 (40.28%)	7 (0.70%)
District 4	1,552 (64.34%)	853 (35.36%)	7 (0.29%)
Hispanic	185 (69.81%)	80 (30.19%)	0 (0.00%)
Black	44 (57.14%)	33 (42.86%)	0 (0.00%)
White	1,276 (63.67%)	721 (35.98%)	7 (0.35%)
Minority	276 (67.65%)	132 (32.35%)	0 (0.00%)
District 5	2,177 (57.41%)	1,595 (42.06%)	20 (0.53%)
Hispanic	493 (59.83%)	329 (39.93%)	2 (0.24%)
Black	124 (54.15%)	104 (45.41%)	1 (0.44%)
White	1,465 (56.94%)	1,093 (42.48%)	15 (0.58%)
Minority	712 (58.41%)	502 (41.18%)	5 (0.41%)
District 7	2,009 (47.37%)	2,207 (52.04%)	25 (0.59%)
Hispanic	313 (55.89%)	243 (43.39%)	4 (0.71%)
Black	126 (49.03%)	129 (50.19%)	2 (0.78%)
White	1,466 (46.07%)	1,699 (53.39%)	17 (0.53%)
Minority	543 (51.27%)	508 (47.97%)	8 (0.76%)

## Violation Categories

MCSO categorizes stops into five violation categories: speed violations, non-speed moving violations, equipment violations, license/insurance/registration violations, and other violations. Violation categories are derived from ARS sections and subsections that were entered into citation or warning forms issued to drivers during a stop.<sup>17</sup> Speeding violations were violations associated with exceeding the speed limit (e.g., speeding, criminal speeding, speeding in a school zone, racing, or reckless driving). Non-speed moving violations included violations for which the vehicle was moving, such as turning, failure to signal when changing lanes, failing to stop, tailgating, or driving too slowly. DUI violations were included in the non-speed moving category. Equipment violations included any violation in which a driver's automobile lacked proper equipment, had non-functioning equipment, or had equipment deemed unsafe (e.g., broken taillights or headlights, cracked windshields, illegally modified vehicles, and restricted opacity on window tint). Driving documentation violations included any violation associated with licensing (vehicle or driver), insurance, and registration. Examples include driving without a license, driving on a suspended/revoked license, expired registration, failure to possess insurance, driving without license plates, or driving with suspended license plates. Finally, other violations included all violations that could not be identified as one of the above categories. The other violation category included a diverse collection of offenses such as drug violations, seat belt violations, cell phone violations, parking violations, noise violations, or littering, among others. Drivers can be cited or warned for more than one violation category. This occurs when deputies identify multiple types of violations prior to the stop, or when a deputy stops a driver and discovers additional violations during the encounter (e.g., having no mandatory insurance or not possessing a driver's license).

Table 16 below provides the percentage of stops for each violation type for all of MCSO and for each district. Table 16 also identifies overall violation categories and violation categories for each racial/ethnic group. For MCSO, speed violations were the most common violations with 50.16% of drivers cited or warned for speed and speed related violations.<sup>18</sup> In 2023, MCSO cited or warned drivers 19.08 percent of the time for non-speed moving offenses. Licensing/Insurance/Registration violations were cited or warned during 25.29% of all MCSO traffic stops, while equipment violations were cited or warned during 11.46 percent of MCSO traffic stops. Other violations were cited or warned during 2.45 percent of traffic stops.

In District 1 driving documentation was the most common violation type that was cited or warned (46.82% of stops) and was the most common violation type across all racial/ethnic groups. In

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<sup>17</sup>Note that these violations are not the reason the stop was made. TSQR 6 examined, among other things, the reasons deputies initiated traffic stops and compared those stop reasons to what violation was ultimately cited or warned. Agreement between the stop reason and violations for citations and warning was above 90 percent. TSQR 6 is available here: [https://www.mcsobio.org/files/ugd/b6f92b\\_8d83e6c90eac4d0c95fab0b607dc8ab4.pdf](https://www.mcsobio.org/files/ugd/b6f92b_8d83e6c90eac4d0c95fab0b607dc8ab4.pdf)

<sup>18</sup>In TSQR 6 MCSO thoroughly investigated speed violations. Analysis presented in the report determined that Hispanic drivers were cited more often than White drivers for speeding violations. However, when the speed over the speed limit was entered as a statistical control, there was no statistically significant difference in the likelihood of a citation for speed between Hispanic and White drivers. See Models 28, 29, 30, 33, 34 in TSQR 6.

District 2, speed was the most common violation type for the district. It is notable that in Districts 1 and 2, the proportion of drivers cited or warned for speed was well below the overall proportions for these types of violations for MCSO. In District 3, speed was the most common violation that was cited or warned. However, there was variation among racial/ethnic groups in this district with Black drivers cited/warned for speed during about 55 percent of stops while Hispanic drivers were cited/warned for speed during 58 percent of stops and Minority drivers as a group during 57.4 percent of stops. White drivers were cited/warned for speed during nearly 62 percent of traffic stops in District 3.

In District 4, across all racial/ethnic groups speed was cited/warned at the highest rate. These rates were higher than any other district. Hispanic drivers were cited/warned during 56.6 percent of traffic stops when speed was cited/warned and White drivers were cited/warned during 65 percent of traffic stops when speed was cited/warned.

In District 5 (Lakes District), speed was the most common citation/warning issued across all racial/ethnic groups and for the district. In District 5, Hispanic drivers were cited/warned more often for non-speed moving violations (23.14%) and license/insurance/registration violations (29.69%) than White drivers (17.37% and 20.91%, respectively).

Finally, in District 7 speeding was the most common violation that was cited/warned across all racial/ethnic groups (53.29%) and Hispanic drivers were cited/warned for speeding at the highest rate (56.61%) compared to other racial/ethnic groups. In District 7, Hispanic drivers were also cited/warned for license/insurance/registration violations at the highest rate (24.46%) compared to other racial/ethnic groups.



**Table 16: Violation categories, by District and Race/Ethnicity**

	All Stops	Hispanic	Black	White	Minority
<b>MCSO</b>					
Speed	50.16%	42.40%	40.32%	54.62%	42.75%
Non-Speed Moving	19.08%	21.44%	20.51%	17.85%	21.13%
Driving Documentation	25.29%	31.38%	33.08%	22.13%	30.54%
Equipment	11.46%	14.27%	15.38%	9.60%	14.55%
Other Violations	2.45%	3.40%	2.44%	2.12%	3.01%
<b>District 1</b>					
Speed	19.72%	16.75%	14.23%	23.31%	16.07%
Non-Speed Moving	21.54%	22.57%	28.47%	18.54%	24.60%
Driving Documentation	46.82%	50.44%	50.36%	44.70%	48.98%
Equipment	18.01%	16.58%	16.79%	18.54%	17.48%
Other Violations	1.76%	1.94%	1.46%	1.80%	1.73%
<b>District 2</b>					
Speed	36.12%	33.41%	34.29%	40.82%	33.82%
Non-Speed Moving	25.77%	27.02%	21.77%	25.34%	25.98%
Driving Documentation	29.83%	32.40%	34.91%	24.15%	32.61%
Equipment	16.87%	17.83%	17.45%	14.97%	17.81%
Other Violations	3.33%	3.48%	3.49%	3.32%	3.34%
<b>District 3</b>					
Speed	60.30%	57.92%	55.08%	61.94%	57.40%
Non-Speed Moving	14.25%	16.72%	14.41%	12.86%	16.72%
Driving Documentation	22.42%	26.10%	26.69%	20.86%	25.18%
Equipment	11.05%	12.17%	15.25%	10.17%	12.59%
Other Violations	2.66%	2.20%	1.27%	2.97%	2.11%
<b>District 4</b>					
Speed	63.85%	56.60%	58.44%	64.97%	58.33%
Non-Speed Moving	11.65%	9.81%	10.39%	11.88%	10.54%
Driving Documentation	18.62%	26.79%	24.68%	17.71%	23.04%
Equipment	10.95%	14.34%	16.88%	10.13%	14.95%
Other Violations	2.24%	3.02%	1.30%	2.10%	2.94%
<b>District 5</b>					
Speed	58.86%	52.43%	49.34%	61.56%	53.16%
Non-Speed Moving	18.49%	20.63%	23.14%	17.37%	20.84%
Driving Documentation	22.57%	26.58%	29.69%	20.91%	26.09%
Equipment	5.56%	9.71%	8.30%	4.00%	8.86%
Other Violations	3.19%	5.34%	3.93%	2.45%	4.76%
<b>District 7</b>					
Speed	53.29%	56.61%	52.53%	52.86%	54.58%
Non-Speed Moving	20.25%	15.00%	15.95%	21.78%	15.68%
Driving Documentation	20.04%	24.46%	22.57%	19.14%	22.76%
Equipment	9.83%	9.82%	15.95%	8.83%	12.84%
Other Violations	1.34%	3.39%	1.56%	1.04%	2.27%

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## Arrest Outcome

Arrests of drivers by MCSO deputies are analyzed in both the TSAR and TSMR. Table 17 below provides the number of arrests and the percentage of stops made for MCSO and districts. We differentiate between custodial arrests and non-custodial arrests. Custodial arrests occur when the driver is placed into custody. Custodial arrests are most common for drivers who possess outstanding warrants or are arrested for DUIs. Approximately 48 percent of custodial arrests (N = 136) were arrests for DUIs and almost 39 percent (N = 109) of custodial arrests were arrests of drivers on outstanding warrants. Non-custodial arrests occur when a driver has been cited for a criminal offense and is released with the understanding that they must attend court to address the violation. Non-custodial arrests are most common for criminal speed, driving on suspended licenses, or other criminal traffic offenses.<sup>19</sup> In 2023, 71 percent (N = 524) of non-custodial arrests were citations for criminal speeding (ARS 28-701.02) and almost 20 percent (N = 146) of non-custodial arrests were criminal citations for driving on a suspended, revoked, or canceled license (ARS 28-3473).

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<sup>19</sup>MCSO investigated arrest activity in TSQR 7. Results of that research are available at: [https://www.mcsobio.org/\\_files/ugd/c866a6\\_8bb2dabbd9fa4b0e8473184e32edf1f5.pdf](https://www.mcsobio.org/_files/ugd/c866a6_8bb2dabbd9fa4b0e8473184e32edf1f5.pdf)

**Table 17: Arrests During Traffic Stops, By District**

	All Arrests	Custodial Arrests	Non-Custodial Arrests
MCSO	1,019 (5.47%)	281 (1.51%)	738 (3.96%)
Hispanic	345 (7.37%)	116 (2.48%)	229 (4.89%)
Black	120 (7.69%)	34 (2.18%)	86 (5.51%)
White	507 (4.36%)	118 (2.18%)	389 (3.35%)
Minority	512 (7.31%)	163 (2.33%)	349 (4.98%)
District 1	127 (6.79%)	67 (3.58%)	60 (3.21%)
Hispanic	50 (8.82%)	29 (5.11%)	21 (3.70%)
Black	19 (6.93%)	12 (4.38%)	7 (2.55%)
White	54 (5.72%)	24 (2.54%)	30 (3.18%)
Minority	73 (7.87%)	43 (4.64%)	30 (3.24%)
District 2	147 (4.11%)	54 (1.51%)	93 (2.60%)
Hispanic	81 (4.54%)	32 (1.79%)	49 (2.75%)
Black	28 (5.75%)	10 (2.05%)	18 (3.70%)
White	35 (5.75%)	10 (0.85%)	25 (2.13%)
Minority	112 (4.76%)	44 (1.83%)	68 (2.84%)
District 3	214 (7.80%)	42 (1.53%)	172 (6.27%)
Hispanic	82 (12.02%)	19 (2.79%)	63 (9.24%)
Black	33 (13.98%)	5 (2.12%)	28 (11.86%)
White	93 (5.31%)	16 (0.91%)	77 (4.40%)
Minority	121 (12.19%)	26 (2.62%)	95 (9.57%)
District 4	75 (3.11%)	16 (0.66%)	59 (2.45%)
Hispanic	11 (4.15%)	2 (0.75%)	9 (3.40%)
Black	2 (2.60%)	0 (0.00%)	2 (2.60%)
White	58 (2.89%)	12 (0.60%)	46 (2.30%)
Minority	17 (4.17%)	4 (0.98%)	13 (3.19%)
District 5	280 (7.38%)	69 (1.82%)	211 (5.56%)
Hispanic	85 (10.32%)	29 (3.52%)	56 (6.80%)
Black	22 (9.61%)	5 (2.18%)	17 (7.42%)
White	154 (5.99%)	32 (1.24%)	122 (4.74%)
Minority	126 (10.34%)	37 (3.04%)	89 (7.30%)
District 7	176 (4.15%)	33 (0.78%)	143 (3.37%)
Hispanic	36 (6.43%)	5 (0.89%)	31 (5.54%)
Black	16 (6.23%)	2 (0.78%)	14 (5.45%)
White	113 (3.55%)	24 (0.75%)	89 (2.80%)
Minority	63 (5.95%)	9 (0.85%)	54 (5.10%)

## Search Outcome

Table 18 below provides percentages of traffic stops that involved searches in each district. Searches are relatively rare during traffic stops and most searches that occur are non-discretionary.<sup>20</sup> MCSO conducted 63 discretionary searches in 2023. MCSO requires searches of persons anytime they are placed in a patrol vehicle and requires an inventory search of vehicles prior to a vehicle tow. Discretionary searches occurred during less than one percent of all traffic stops.

**Table 18:** Searches, By District

	Driver Search	Vehicle Search	Search Driver or Vehicle	Non-Incidental Driver Search	Non-Incidental Vehicle Search	Non-Incidental Driver or Vehicle Search	Number non-Incidental Driver or Vehicle Searches
MCSO	1.68%	1.93%	2.69%	0.13%	0.25%	0.34%	63
District 1	4.06%	4.76%	6.47%	0.37%	0.80%	1.02%	19
District 2	1.73%	3.27%	3.78%	0.14%	0.34%	0.42%	15
District 3	1.75%	1.53%	2.55%	0.18%	0.29%	0.40%	11
District 4	0.87%	0.66%	1.16%	0.00%	0.17%	0.17%	4
District 5	1.79%	1.32%	2.27%	0.13%	0.18%	0.29%	11
District 7	0.90%	1.08%	1.44%	0.05%	0.02%	0.07%	3

<sup>20</sup>MCSO investigated 2022 search activity in TSQR 10. The report is available at: [https://www.mcsobio.org/\\_files/ugd/b6f92b\\_8fd0a6175a6f4d6483a8d97fa75f4d42.pdf](https://www.mcsobio.org/_files/ugd/b6f92b_8fd0a6175a6f4d6483a8d97fa75f4d42.pdf)

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## Modeling Stop Length and Stop Outcomes for Districts

At the request of experts for the Department of Justice, MCSO modeled stop length and stop outcomes (citation/warning, arrests, and searches) using variables that are typically used as matching variables in the PSM analysis for the TSAR/TSMR. The experts with the Department of Justice also requested that we remove geography (X and Y coordinates) and race/ethnicity from the analysis and include variables for districts. The purpose of this analysis was to determine which districts, if any, have differential stop lengths with drivers or differential citation/warning, arrest, or search activity. We ran six different models for each benchmark, varying the different districts as the reference group.<sup>21</sup> This allowed us to identify which differences between districts were statistically significant when compared to one another.

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<sup>21</sup>Full regression results for all models are available in the appendices A-D of this report.

## Stop Length

In the results presented below the length of stop is modeled using control variables of time-of-day (splined), driver sex, stop classification (civil v. criminal), license plate (in-state v. out-of-state), whether an arrest was made, whether a search was conducted and the deputy's category of assignment. For this model, we examined the fixed-effects for the districts to determine whether individual districts differed from one another on stop length. Note that extended stops are removed from this analysis.

Table 19 below provides a comparison of differences in stop lengths when varying districts as the reference group in the regression models. We begin by comparing district effects when District 1 was used as the reference group (Column 1, District 1 in Table 19). For context, the average stop length for a non-extended stop in District 1 was 12.32 minutes (without controls). Districts 5, and 7 had shorter average stop lengths when compared to District 1 and these differences were statistically significant. In this case District 5 had stop lengths that were, on average, 1.665 minutes shorter than District 1. District 7 had stop lengths that were, on average, 0.729 minutes shorter than District 1 stops. There were no statistically significant differences in stop length between District 1 and Districts 2, 3, or 4.

**Table 19:** Comparison of Stop Lengths for Districts

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	0.107	–0.107	–0.402	1.665*	0.729*
District 2	–0.107	–	–0.214	–0.509*	1.558*	0.622*
District 3	0.107	0.214	–	–0.295	1.772*	0.836*
District 4	0.401	0.509*	0.295	–	2.067*	1.131*
District 5	–1.665*	–1.558*	–1.772*	–2.067*	–	–0.936*
District 7	–0.729*	–0.622*	–0.836*	–1.131*	0.936*	–

\* $p < 0.05$

In the second model we used District 2 as the reference category (Column 2 in Table 19). For comparison, the average stop length for all non-extended traffic stops in District 2 was 12.37 minutes (without controls). In comparing district fixed-effects in this model, we found that Districts 4, 5, and 7 had statistically significant differences in stop length when compared to District 2. District 4 stops averaged 0.51 minutes longer than District 2 traffic stops. In contrast, District 5 had an average stop length 1.56 minutes shorter than District 2. District 7 stop lengths were, on average, 0.62 minutes shorter than those of District 2.

In the third model we used District 3 as the reference category (Column 3, District 3 in Table 19). For comparison, the average stop length for all non-extended traffic stops in District 3 was 11.61 minutes (without controls). In comparing district fixed-effects in this model we found statistically significant differences in stop lengths for Districts 5 and 7. District 5 stops were, on average, 1.77

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minutes shorter than those in District 3 and stops in District 7 were on average 0.84 minutes shorter than District 3 stops. There were no statistically significant differences in stop lengths between District 3 and Districts 1, 2, or 4.

In the fourth model, we used District 4 as the reference category (Column 4, District 4 in Table 19). For comparison, the average stop length for all non-extended traffic stops in District 4 was 11.52 minutes (without controls). When using District 4 as the reference category, we found statistically significant differences in stop length for District 2, District 5, and District 7. We did not identify statistically significant difference in stop lengths between District 1 and District 4 or between District 3 and District 4. Based on these findings, District 2 had stop lengths that were, on average, 0.51 minutes shorter than stops in District 4. Stops made by District 5 deputies averaged 2.07 minutes shorter than those made in District 4. Finally, stop lengths for stops by District 7 deputies were 1.13 minutes shorter when compared to District 4.

In the fifth model, we used District 5 as the reference category (Column 5, District 5 in Table 19). For comparison, the average stop length for all non-extended traffic stops in District 5 was 10.76 minutes (without controls). All districts had statistically significant differences in stop length when compared to District 5. In each of these cases average stop lengths were longer than those of District 5. District 1 stops averaged 1.67 minutes longer than District 5 stops. District 2 traffic stops averaged 1.56 minutes longer than District 5 stops. District 3 traffic stops averaged 1.77 minutes longer than District 5 stops. District 4 stops were 2.07 minutes longer, on average, than District 5 traffic stops. Finally, District 7 stops were 0.94 minutes longer than District 5 stops.

In the last model, we used District 7 as the reference category. (Column 6, District 7 in Table 19). For comparison, the average stop length for all non-extended traffic stops in District 7 was 11.23 minutes. We found statistically significant differences in stop length for all districts. Compared to District 7, District 1 stop lengths were 0.73 minutes longer. District 2 stops average 0.62 minutes longer than those of District 7. District 3 traffic stops were 0.84 minutes longer, on average, than traffic stops in District 7. District 4 traffic stops were 1.13 minutes longer, on average, than stops made by District 7 deputies. Finally, District 5 stops were 0.94 minutes shorter, on average, than District 7 traffic stops.

On the whole, we found that Districts 5 and 7 had shorter stops, on average, when compared to other districts. District 5 stops were shorter when compared to all other districts. District 7 traffic stops were shorter, on average, than Districts 1, 2, 3, and 4, but were about one minute longer than stops made by District 5 deputies. District 1 stop lengths were not statistically different than Districts 2, 3, or 4. District 2 stop lengths were not statistically different than Districts 1 and 3. District 4 stop lengths were longer than stops made by deputies from Districts 2, 5, and 7.

## Citation Outcome

In this section we compare districts to one another on citation outcomes and examine the district fixed-effects to determine whether the districts differ regarding their citation activity. We report odds ratios and discuss comparisons between districts for each model. As above, we report the statistical comparisons derived from the logistic regression models and have supplied the full regression models in the appendix of this report. Table 20 reports results for citation outcomes using the logistic regression model that included offense types and speed as statistical controls while Table 21 supplies results modeling citations excluding offense categories and speed as control variables. Fixed-effects regression models utilizing speed and violation categories (Table 20) explained 37 percent of the variation in citation outcomes whereas the models excluding speed and violation categories explained 12.2 percent of the variation in citation outcomes.

As a starting point for comparison, District 1 deputies had a raw citation rate of 50.35 percent for all drivers stopped in the district (without controls). Based on the odds ratios reported in Table 20, drivers stopped by District 1 deputies were about 52 percent more likely to receive a citation (versus a warning) than those stopped by District 2 deputies. This difference was statistically significant. Drivers stopped by District 1 deputies were approximately 53 percent more likely to receive a citation than those stopped by District 3 deputies. This difference was statistically significant. Drivers stopped by District 1 deputies were about 14 percent more likely to receive a citation than drivers stopped by District 4 deputies and were about 47 percent more likely to receive a citation than drivers stopped by District 5 deputies. There was no statistically significant difference in citation outcomes between District 1 and District 7.

Deputies in District 2 had the lowest citation rate of any district, citing 40.5 percent of drivers without accounting for control variables used to generate the estimates in Tables 20 and 21. Based on this analysis, drivers stopped by District 2 deputies were less likely to receive a citation than drivers stopped by Districts 1, 4 and 7. There was no statistically significant difference in citation activity between District 2 and Districts 3 and 5.

Drivers stopped by District 3 deputies were cited 58.77 percent of the time (without controls). When modeling citation outcomes utilizing statistical controls, we found statistically significant differences in citation activity between District 3 and Districts 1, 4, and 7. In these comparisons, drivers stopped by District 3 deputies were less likely to receive a citation than drivers stopped by deputies from Districts 1, 4, and 7. There was no statistically significant difference in the odds of receiving a citation between District 3 and Districts 2 or 5.

Drivers stopped by District 4 deputies were cited at the highest rate (64.34%) compared to other districts. In comparing District 4 to District 1, we found that drivers stopped by District 1 deputies were 14 percent more likely to be cited than those drivers stopped by District 4 deputies, and drivers stopped by District 7 deputies were almost 24 percent more likely to receive a citation compared to drivers stopped by District 4 deputies. These differences were statistically significant.



Drivers stopped by deputies from Districts 2, 3, and 5 were less likely to receive a citation than drivers stopped by deputies from District 4. These differences were statistically significant.

District 5, the Lakes District, had the second highest citation rate (57.41%, without controls) compared to other districts. Based on the results of modeling the citation outcomes using statistical controls we found that the likelihood of receiving a citation was higher for drivers stopped by deputies from Districts 1, 4, and 7 when compared to District 5. These differences were statistically significant. Specifically, drivers stopped by District 1 deputies were about 47 percent more likely to receive a citation than those stopped by District 5 deputies, drivers stopped by District 4 deputies were about 29 percent more likely to receive a citation than those stopped by District 5 deputies and drivers stopped by District 7 deputies were about 60 percent more likely to receive a citation than drivers stopped by District 5 deputies. There were no statistically significant differences in citation activity when comparing District 5 to Districts 2 or 3.

District 7 had the second lowest overall citation rate (47.37%) when compared to other districts. In comparing District 7 citation activity to other districts utilizing statistical controls, drivers stopped by District 7 deputies were more likely to be issued a citation when compared to stops of drivers in District 2, 3, 4, and 5. These differences were statistically significant. Specifically, drivers stopped by District 7 were between 24 and 66 percent more likely to be cited than drivers stopped by deputies from districts 2, 3, 4 and 5. These differences were statistically significant.

**Table 20:** Comparison of Odds Ratios for Citations, by Districts, with violations/speed as controls

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	1.517*	1.532*	1.138*	1.471*	0.920
District 2	0.659*	–	1.010	0.751*	0.970	0.607*
District 3	0.653*	0.990	–	0.743*	0.961	0.601*
District 4	0.879	1.332*	1.346*	–	1.292*	0.809*
District 5	0.680*	1.031	1.041	0.774*	–	0.626*
District 7	1.086	1.648*	1.664*	1.237*	1.598*	–

\* $p < 0.05$

In Table 21, we compare citation activity across districts using models that excluded the statistical controls of violation type (speed, non-speed moving, license/insurance/registration, and other violations) and speed. In comparing the results from the two modeling processes, findings suggest that violation categories and speed likely play a role in the difference in citation activity among districts. For example, when utilizing violations and speed as statistical controls, drivers were about 60 percent more likely to receive a citation from District 7 deputies than District 5 deputies. In contrast when speed and violation categories were dropped from the model, drivers stopped by District 5 drivers were about 62 percent more likely to receive a citation when stopped by District 5 deputies compared to District 7.

Based on the reduced models presented in Table 21, we found that drivers stopped by District 1

deputies had higher odds of being cited than drivers stopped by deputies from Districts 2, 3, and 7. These differences were statistically significant. Specifically, drivers stopped by District 1 deputies were nearly 45 percent more likely to receive a citation than those stopped by District 2 deputies; drivers stopped by District 1 deputies were about 30 percent more likely to receive a citation than those stopped by District 3 deputies; and drivers stopped by District 1 deputies were about 44 percent more likely to receive a citation than those stopped by District 7 deputies. There was no statistical difference in the likelihood of receiving a citation between District 1 and District 4 or 5.

Drivers stopped by District 2 deputies were less likely to be cited than drivers stopped by Districts 1, 4, and 5 deputies. These differences were statistically significant. Drivers stopped by District 1 deputies were about 45 percent more likely to receive a citation than drivers stopped by District 2 deputies; Drivers stopped by District 4 deputies were about 30 percent more likely to receive a citation than drivers stopped by District 2 deputies; and drivers stopped by District 5 deputies were about 63 percent more likely to be cited than drivers stopped by District 2 deputies. There was no statistical difference in the odds of receiving a citation between District 2 and Districts 3 or 7.

Drivers stopped by District 3 deputies were less likely to be cited than drivers stopped by deputies in Districts 1, 4, or 5. These differences were statistically significant. Specifically, drivers stopped by District 1 deputies were about 30 percent more likely to receive a citation than drivers stopped by District 3 deputies; drivers stopped by District 4 deputies were about 17 percent more likely to be cited than drivers stopped by District 3 deputies; and drivers stopped by District 5 deputies were about 47 percent more likely to receive a citation than drivers stopped by District 3 deputies.

Drivers stopped by District 4 deputies were more likely to receive a citation than drivers stopped by deputies from Districts 2 and 7 but were less likely to receive a citation than drivers stopped by deputies from District 5. These differences were statistically significant. Specifically, drivers stopped by District 4 deputies were about 30 percent more likely to receive a citation than drivers stopped by District 2 or District 7 deputies. In contrast, drivers stopped by District 5 deputies were about 25 percent more likely to be cited than drivers stopped by District 4 deputies.

Drivers stopped by District 5 deputies were more likely to be cited than drivers stopped by Deputies from all other districts. Finally, drivers stopped by District 7 deputies were less likely to be cited than drivers stopped by deputies from Districts 1, 4 and 5.

**Table 21: Comparison of Odds Ratios for Citations, by Districts, No violations/speed as controls**

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	1.449*	1.303*	1.112	0.888	1.442*
District 2	0.690*	–	0.899	0.767*	0.613*	0.994
District 3	0.767*	1.112	–	0.853*	0.682*	1.106
District 4	0.900	1.304*	1.172	–	0.799*	1.297*
District 5	1.126	1.631*	1.467*	1.251*	–	1.622*
District 7	0.694*	1.005	0.904	0.771*	0.616*	–

\* $p < 0.05$

One result common to both analyses of citation activity was that, in general, when compared to other districts, drivers stopped by deputies from Districts 1 and 4 were more likely to receive a citation than drivers stopped by deputies from other districts.

## Arrest Outcome

Table 22 below reports results modeling arrest outcomes for districts. Note that arrests include both custodial arrests and non-custodial arrests during traffic stops and that the majority of arrests recorded in MCSO data are non-custodial cite and release arrests which rarely involve taking the driver into custody (see Table 17). Based on these comparisons, we found differences in the odds of an arrest for all districts when comparing them to other districts.

Drivers stopped by District 1 deputies were less likely to be arrested than those stopped by deputies in Districts 3 or 7. Drivers stopped by District 2 deputies were less likely to be arrested than drivers stopped by deputies from Districts 3, 5, and 7. District 3 arrest activity differed from Districts 1, 2, and 4. In this case, drivers stopped by District 3 deputies were more likely to be arrested than drivers stopped by District 1, 2, and 4 deputies. Drivers stopped by District 4 deputies were less likely to be arrested than drivers stopped by District 3 and District 7 deputies. District 5 arrest activity differed from District 2. In this case, drivers stopped by District 2 deputies were less likely to be arrested than drivers stopped by District 5 deputies. Finally, District 7 arrest activity differed from Districts 1, 2, and 4. Specifically, drivers stopped by District 7 deputies were more likely to be arrested than those drivers stopped by deputies from Districts 1, 2, and 4.

**Table 22:** Comparison of Odds Ratios for Arrests, by Districts

	Reference Category					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	1.097	0.513*	1.050	0.681	0.504*
District 2	0.912	–	0.468*	0.958	0.621*	0.459*
District 3	1.950*	2.139*	–	2.048*	1.328	0.983
District 4	0.952	1.044	0.488*	–	0.648	0.480*
District 5	1.469	1.611*	0.753	1.543	–	0.740
District 7	1.985*	2.177*	1.018	2.085*	1.351	–

\*  $p < 0.05$

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## Search Outcome

Models comparing district-level differences in discretionary searches were unable to converge due to the small number of discretionary searches in each district (see Table 18).

## Propensity Score Matching Results, By District

In this section we report propensity score matching results for each district. The analysis provides district-level results for each of the “baseline” benchmarks used in the TSAR and an analysis of citations that does not include speed or violation types as matching variables.

## Stop Length

The baseline measure for investigating stop length uses all stops that were not considered extended (no ETSI was selected by the deputy during these stops).<sup>22</sup> Table 23, below provides results of the PSM analysis for stop length. In District 1, 3, 4, and 5 there were no statistically significant differences in stop length for Hispanic, Black, or Minority drivers as a group when compared to White drivers. There was a statistically significant difference in stop length between Hispanic and White drivers and between Black and White drivers in District 2. In this case stops of Black drivers were about 77 seconds longer than stops of White drivers and stops of Hispanic drivers were about 53 seconds longer, on average, than stops of White drivers.

In District 7 we identified a statistically significant difference in stop length when comparing Black and White drivers. In this case, stop lengths for White drivers averaged about 41 seconds longer than stop lengths for Black drivers.

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<sup>22</sup>MCSO investigated extended stops and long traffic stops in TSQR 3 and TSQR 4, respectively, and investigated extended stop indicator use in TSQR 13. These reports can be accessed at: <https://www.mcsobio.org/traffic-stop-data>

**Table 23: PSM Results for Stop Length, by District**

	Difference, in Minutes	t-statistic	Statistically Significant?
<b>TSAR 9</b>			
Hispanic v. White	0.33	1.71	No
Black v. White	0.46	1.79	No
Minority v. White	0.28	2.06	Yes
<b>District 1</b>			
Hispanic v. White	0.18	0.29	No
Black v. White	-0.64	-1.25	No
Minority v. White	0.33	0.68	No
<b>District 2</b>			
Hispanic v. White	0.89	3.11	Yes
Black v. White	1.28	2.32	Yes
Minority v. White	0.37	1.27	No
<b>District 3</b>			
Hispanic v. White	0.18	0.43	No
Black v. White	1.00	0.92	No
Minority v. White	0.25	1.03	No
<b>District 4</b>			
Hispanic v. White	0.40	1.07	No
Black v. White <sup>23</sup>	0.38	0.73	No
Minority v. White	0.14	0.46	No
<b>District 5</b>			
Hispanic v. White	0.52	1.81	No
Black v. White	1.15	1.08	No
Minority v. White	-0.11	-0.36	No
<b>District 7</b>			
Hispanic v. White	-0.14	-0.35	No
Black v. White	-0.69	-1.99	Yes
Minority v. White	0.30	1.22	No

<sup>23</sup>Propensity scores for comparing stop length of Black (N = 47) and White drivers could not be calculated using the method employed in the TSAR. P-scores for this model were constant for Black drivers and White comparison stops at 0.0321258. Results reported here should be interpreted with caution.

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## Citations

In this section we provide two different analyses of citations. In the first analysis (Table 24) we use propensity score matching results using propensity scores that included the violation type (speeding, equipment, non-speed moving, and other violations) and speed as matching variables. In the second analysis (Table 25), violation type and speed were not used as matching variables.

Table 24 provides results for differences in citation rates between Hispanic and White drivers, between Black and White drivers and between Minority and White drivers for each district. Based on these findings, we found two statistically significant results. In District 2 there was a statistically significant difference in the citation rate between Hispanic and White drivers. In this case, Hispanic drivers were cited 4.7 percent more often than White drivers. In District 4, Minority drivers were cited about 7.6 percent more often than White drivers. There were no other statistically significant differences in citation outcomes for any groups in any district.

**Table 24: PSM Results for Citations, by District**

	Difference, in Percent	t-statistic	Statistically Significant?
<b>TSAR 9</b>			
Hispanic v. White	2.41	1.74	No
Black v. White	-0.06	-0.03	No
Minority v. White	2.50	2.13	Yes
<b>District 1</b>			
Hispanic v. White	0.03	0.73	No
Black v. White	0.00	0.00	No
Minority v. White	6.60	1.83	No
<b>District 2</b>			
Hispanic v. White	4.74	2.09	Yes
Black v. White	-1.30	-0.34	No
Minority v. White	2.66	1.13	No
<b>District 3</b>			
Hispanic v. White	4.25	1.36	No
Black v. White	-1.77	-0.35	No
Minority v. White	1.51	0.55	No
<b>District 4</b>			
Hispanic v. White	5.91	1.53	No
Black v. White	2.60	0.33	No
Minority v. White	7.60	3.10	Yes
<b>District 5</b>			
Hispanic v. White	2.43	0.85	No
Black v. White	5.53	1.14	No
Minority v. White	3.45	1.40	No
<b>District 7</b>			
Hispanic v. White	-1.40	-0.47	No
Black v. White	2.77	0.59	No
Minority v. White	-0.38	-0.15	No



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Table 25 below presents propensity score matching results for differences in citation rates between Hispanic and White drivers, Black and White drivers, and Minority and White drivers for each district. In this table, we utilized propensity scores that did not include offense categories or speed as matching variables. In District 2 we found a statistically significant difference in citation outcomes between Hispanic and White drivers. In this case, Hispanic drivers were cited 7.9 percent more often than White drivers. In District 3 we found a statistically significant difference in citation rates between Hispanic and White drivers and between Minority and White drivers. According to this analysis, Hispanic drivers were cited nearly 9 percent more often than White drivers and Minority drivers were cited about 6 percent more often than White drivers.

In District 4 we found a statistically significant difference in citation outcomes between Minority and White drivers. In this case, Minority drivers were cited about 5.5 percent more often than White drivers. We found statistically significant difference in citation rates between Hispanic and White drivers in District 5. In District 5, Hispanic drivers were issued a citation about 7.7 percent more often than White drivers. There were no statistically significant differences in citation levels for drivers stopped by District 1 or District 7 deputies.

**Table 25:** PSM Results for Citations, by District (No offense categories or speed for matching)

	Difference, in Percent	t-statistic	Statistically Significant?
<b>District 1</b>			
Hispanic v. White	6.87	1.76	No
Black v. White	-2.92	0.54	No
Minority v. White	5.29	1.50	No
<b>District 2</b>			
Hispanic v. White	7.90	3.52	Yes
Black v. White	1.23	0.31	No
Minority v. White	4.22	1.81	No
<b>District 3</b>			
Hispanic v. White	8.94	2.83	Yes
Black v. White	0.49	0.11	No
Minority v. White	6.04	2.23	Yes
<b>District 4</b>			
Hispanic v. White	6.53	1.89	No
Black v. White	-5.19	-0.64	No
Minority v. White	5.48	2.17	Yes
<b>District 5</b>			
Hispanic v. White	7.72	2.47	Yes
Black v. White	7.69	1.55	No
Minority v. White	3.86	1.53	No
<b>District 7</b>			
Hispanic v. White	3.69	1.20	No
Black v. White	-3.24	-0.78	No
Minority v. White	2.39	0.94	No

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## Searches

In Table 26 below, we provide analyses of non-incident (discretionary) searches. With two exceptions, based on these findings, there were no statistically significant differences in search rates between Hispanic and White drivers, between Black and White drivers or between Minority and White drivers in any district. However, in District 1, White drivers were searched 1.82 percent more often than Black drivers. In District 4 White drivers were searched 0.11 percent more often than Minority drivers. Note that in District 4, there were only four discretionary searches in 2023 and in District 7, there were only 3 discretionary searches during traffic stops. In Districts 4 and 7, there were no discretionary searches of Hispanic, Black or Minority drivers.

**Table 26: PSM Results for Searches, by District**

	Difference, in Percent	t-statistic	Statistically Significant?
<b>TSAR 9</b>			
Hispanic v. White	-0.06	-0.38	No
Black v. White	-0.26	-1.51	No
Minority v. White	-0.14	-0.70	No
<b>District 1</b>			
Hispanic v. White	-0.53	-0.65	No
Black v. White	-1.82	-2.50	Yes
Minority v. White	-0.54	-0.82	No
<b>District 2</b>			
Hispanic v. White	0.05	0.20	No
Black v. White	0.41	0.94	No
Minority v. White	0.00	0.00	No
<b>District 3</b>			
Hispanic v. White	-0.59	0.74	No
Black v. White	-1.27	-1.90	No
Minority v. White	-0.40	-0.88	No
<b>District 4</b>			
Hispanic v. White	-0.05	-0.20	No
Black v. White	-1.30	-1.00	No
Minority v. White	-0.11	-2.00	Yes
<b>District 5</b>			
Hispanic v. White	0.24	0.94	No
Black v. White	-0.87	-1.26	No
Minority v. White	0.08	0.29	No
<b>District 7</b>			
Hispanic v. White	0.00	0.00	No
Black v. White	-0.77	-1.26	No
Minority v. White	-0.09	-1.41	No

## Arrests

Table 27 below provides propensity score matching results for arrests in each district. We found no statistically significant differences in arrest rates when comparing Hispanic and White drivers, Black and White drivers, and Minority and White drivers for all districts.

**Table 27:** PSM Results for Arrests, by District

	Difference, in Percent	t-statistic	Statistically Significant?
<b>TSAR 9</b>			
Hispanic v. White	0.91	1.31	No
Black v. White	1.54	1.49	No
Minority v. White	0.58	1.02	No
<b>District 1</b>			
Hispanic v. White	2.12	1.10	No
Black v. White	-2.92	-0.96	No
Minority v. White	-0.76	0.40	No
<b>District 2</b>			
Hispanic v. White	0.73	0.64	No
Black v. White	2.87	1.85	No
Minority v. White	1.24	1.43	No
<b>District 3</b>			
Hispanic v. White	2.49	1.21	No
Black v. White	-0.85	-0.30	No
Minority v. White	1.21	0.74	No
<b>District 4</b>			
Hispanic v. White	1.40	0.90	No
Black v. White	0.00	0.00	No
Minority v. White	0.63	0.55	No
<b>District 5</b>			
Hispanic v. White	-0.49	-0.25	No
Black v. White	1.75	0.60	No
Minority v. White	0.98	0.66	No
<b>District 7</b>			
Hispanic v. White	0.89	0.59	No
Black v. White	1.82	0.70	No
Minority v. White	0.44	0.40	No

## District-Level Differences in Disparity

In this section we report the results analyzing differences in the level of disparity among districts. We used propensity scores generated from covariates used in the TSAR but excluded variables for geography. Propensity scores were included in the modeling process to approximate the matching processes used in the TSAR. We provide pairwise estimates from full models for the difference in disparity for stop length (measured in minutes) and differences in odds ratios for citations/warnings, and arrests. Full models are provided in the appendix of the report. We present six different models for each benchmark, varying which district was the reference group to identify which districts display the most pronounced disparity when compared to one another. While the differences in disparity identified in this section are discussed here, they do not necessarily mean that these districts had statistically significant differences within themselves for each benchmark referenced in this section. Full estimates for differences in searches could not be provided because models would not converge due to the low number of discretionary searches conducted by MCSO deputies within each district.

### Hispanic v. White Drivers, Stop Length

In Table 28 below, we present the differences in disparities between White and Hispanic drivers among districts for the stop length benchmark. The post-hoc test where the interaction term between the driver race/ethnicity and district indicators was jointly zero was not statistically significant ( $F = 0.52$ ;  $p = 0.761$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in collective disparity in stop length for the districts. There were no statistically significant differences in stop length disparity for any district when changing the reference group.

**Table 28:** Comparison of Hispanic/White Stop Length Disparity Between Districts (PSW Regression, in Minutes)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	–0.65	–0.02	0.28	0.03	0.16
District 2	0.65	–	0.63	0.93	0.68	0.81
District 3	0.02	–0.63	–	0.29	0.04	0.17
District 4	–0.28	–0.93	–0.29	–	–0.25	–0.12
District 5	–0.03	–0.68	–0.04	0.25	–	0.13
District 7	–0.16	–0.81	–0.17	0.12	–0.13	–
Test for significant differences	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant

## Black v. White Drivers, Stop Length

In Table 29 below we report the results of the analysis comparing district-level disparity in stop length for Black and White drivers. The post-hoc test for no differences was statistically significant ( $F = 1.71$ ;  $p = 0.128$ ) in indicating that there was insufficient evidence to reject the null hypothesis of no difference in collective disparity in stop length for the districts. We identified statistically significant differences in stop length disparity between Districts 5 and 7. In this case, District 5 had higher levels of disparity in stop length than District 7.

**Table 29:** Comparison of Black/White Stop Length Disparity Between Districts (PSW Regression, in Minutes)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	–1.55	–1.07	–0.56	–1.76	0.10
District 2	1.55	–	–0.48	0.99	–0.21	1.65
District 3	1.07	–0.48	–	0.50	–0.69	1.17
District 4	0.56	–0.99	–0.50	–	–1.20	0.66
District 5	1.76	0.21	0.69	1.20	–	1.86*
District 7	–0.10	–1.65	–1.67	–0.66	–1.86*	–
Test for significant differences	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant

\* $p < 0.05$

## Minority v. White Drivers, Stop Length

In Table 30 below, we report the results comparing district-level disparity in stop length for Minority and White drivers. The post hoc test for no differences in disparity levels among all districts was not statistically significant ( $F = 0.72$ ;  $p = 0.605$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in stop length disparity among districts. We identified no statistically significant differences in disparity between districts when changing the district reference group.

**Table 30:** Comparison of Stop Length Minority/White Disparity Between Districts (PSW Regression, in Minutes)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	–0.79	–0.28	0.02	–0.32	–0.08
District 2	0.79	–	0.52	0.81	0.48	0.71
District 3	0.28	–0.52	–	0.30	–0.04	0.20
District 4	–0.02	–0.81	–0.30	–	–0.34	–0.10
District 5	0.32	–0.48	0.04	0.34	–	0.23
District 7	0.08	–0.71	–0.20	0.10	–0.23	–
Test for significant differences	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant



## Hispanic v. White Drivers, Citations

In Table 31 below we present results for differences between districts for disparity in citation activity between Hispanic and White drivers. In this analysis we included speed and offense categories in generating propensity scores used for matching stops. Results of this analysis were similar to the analysis presented above. The post hoc test of no differences was not statistically significant ( $\chi^2 = 5.16$ ;  $p = 0.397$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in citation disparity among districts. We identified no statistically significant differences in disparity between districts when changing the district reference group.

**Table 31:** Comparison of Hispanic/White Citation Disparity Between Districts (PSW, Odds ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	1.23	1.19	1.09	1.27	1.03
District 2	0.81	–	0.97	0.89	1.04	0.84
District 3	0.84	1.04	–	0.92	1.07	0.87
District 4	0.91	1.12	1.08	–	1.16	0.94
District 5	0.79	0.96	0.93	0.86	–	0.81
District 7	0.97	1.19	1.15	1.06	1.23	–
Test for significant differences	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

In Table 32 below, we present results for differences between districts for disparity in citation activity. In this analysis we excluded speed and offense categories in generating propensity scores used for matching stops. The post hoc test of no differences was not statistically significant ( $\chi^2 = 7.16$ ;  $p = 0.209$ ) suggesting the districts do not differ from one another in the level of disparity in citation rates between Hispanic and White drivers. We identified that disparity in citation activity for Hispanic and White drivers was higher in District 7, when compared to District 5 and that these differences were statistically significant.

**Table 32:** Comparison of Hispanic/White Citation Disparity Between Districts, No speed or offense categories (PSW Regression; Odds Ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	1.26	1.21	1.13	1.29	1.00
District 2	0.79	–	0.96	0.89	1.02	0.79
District 3	0.83	1.04	–	0.93	1.06	0.82
District 4	0.89	1.12	1.08	–	1.14	0.89
District 5	0.78	0.98	0.94	0.88	–	0.78*
District 7	1.00	1.26	1.21	1.13	1.29*	–
Test for significant differences	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant

\* $p < 0.05$

## Black v. White Drivers, Citations

In Table 33 below, we report results of the analysis comparing district-level disparity in citation activity for Black and White drivers. In this analysis, speed and offense categories were included as variables used for generating propensity scores. The post hoc test for no differences in disparity levels among all districts was not statistically significant ( $\chi^2 = 3.58; p = 0.612$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in citation disparity among districts. We identified no statistically significant differences in disparity between districts when changing the district reference group.

**Table 33:** Comparison of Black/White Citation Disparity Between Districts (PSW Logistic Regression, Odds ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	0.95	1.00	1.49	1.19	1.12
District 2	1.05	–	1.05	1.57	1.25	1.19
District 3	1.00	0.95	–	1.50	1.19	1.13
District 4	0.67	0.64	0.67	–	0.80	0.75
District 5	0.84	0.80	0.84	1.25	–	0.95
District 7	0.89	0.84	0.89	1.33	1.06	–
Test for significant differences	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant

In Table 34 below, we report results of the analysis comparing district-level disparity in citation activity for Black and White drivers. In this analysis speed and offense categories were excluded as variables used for generating propensity scores. The post hoc test for no differences in disparity levels among all districts was not statistically significant ( $\chi^2 = 4.64$ ;  $p = 0.462$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in citation disparity among districts. We identified no statistically significant differences in disparity between districts when changing the district reference group.

**Table 34:** Comparison of Black/White Citation Disparity Between Districts, No speed or offense categories (PSW Logistic Regression; Odds Ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	0.93	1.04	1.60	1.20	1.10
District 2	1.08	–	1.12	1.72	1.30	1.18
District 3	0.96	0.89	–	1.54	1.16	1.06
District 4	0.63	0.58	0.65	–	0.75	0.69
District 5	0.83	0.77	0.86	1.33	–	0.91
District 7	0.91	0.84	0.95	1.46	1.10	–
Test for significant differences	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant

### Minority v. White Drivers, Citations

In Table 35 below, we present results for differences between districts for disparity in citation activity for Minority and White drivers. In this analysis we included speed and offense categories in generating propensity scores used for matching stops. The post hoc test of no differences was not statistically significant ( $\chi^2 = 1.65$ ;  $p = 0.895$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in citation disparity among districts. We identified no statistically significant differences in disparity between districts when changing the district reference group.

**Table 35:** Comparison of Minority/White Citation Disparity Between Districts (PSW Regression; Odds Ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	1.09	1.08	1.08	1.16	1.04
District 2	0.92	–	0.99	0.99	1.05	0.97
District 3	0.92	1.01	–	0.99	1.06	0.98
District 4	0.93	1.01	1.01	–	1.06	0.98
District 5	0.87	0.95	0.94	0.93	–	0.92
District 7	0.95	1.03	1.03	1.02	1.09	–
Test for significant differences	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant

In Table 36 below, we present results for differences between districts for disparity in citation activity for Minority and White drivers. In this analysis we excluded speed and offense categories in generating propensity scores used for matching stops. The post hoc test of no differences was not statistically significant ( $\chi^2 = 2.34$ ;  $p = 0.800$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in citation disparity among districts. We identified no statistically significant differences in disparity between districts when changing the district reference group.

**Table 36:** Comparison of Minority/White Citation Disparity Between Districts, No speed or offense categories (PSW, Odds ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	1.11	1.12	1.10	1.17	1.04
District 2	0.90	–	1.01	0.99	1.06	0.94
District 3	0.90	0.99	–	0.98	1.05	0.93
District 4	0.91	1.01	1.02	–	1.07	0.95
District 5	0.85	0.95	0.95	0.93	–	0.89
District 7	0.96	1.06	1.07	1.05	1.12	–
Test for significant differences	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

## Hispanic v. White Drivers, Arrests

In Table 37 below, we report results of the analysis comparing disparity levels for arrests for Hispanic and White drivers for districts. The post hoc test for no differences between disparity levels among all districts was not statistically significant ( $\chi^2 = 3.23$ ;  $p = 0.664$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in disparity in arrests for the districts. We identified no statistically significant differences in disparity between districts when changing the district reference group.

**Table 37:** Comparison of Hispanic/White Arrest Disparity Between Districts (PSW, Odds ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	0.99	0.68	1.00	0.83	0.86
District 2	1.01	–	0.68	1.01	0.84	0.87
District 3	1.47	1.46	–	1.47	1.22	1.27
District 4	1.00	0.99	0.68	–	0.83	0.86
District 5	1.20	1.20	0.82	1.20	–	1.04
District 7	1.16	1.15	0.79	1.16	0.96	–
Test for significant differences	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

## Black v. White Drivers, Arrests

In Table 38 below, we report the results of the analysis comparing district-level disparity in arrest activity for Black and White drivers. The post hoc test for no differences in disparity levels among all districts was not statistically significant ( $\chi^2 = 10.51$ ;  $p = 0.062$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in arrest disparity among districts. We identified statistically significant differences in disparity between Districts 1 and 3, Districts 3 and 4 and between Districts 4 and 5. In this case, District 3 and District 5 both had lower levels of Black/White arrest disparity than District 4, and District 3 had a higher level of Black/White arrest disparity than District 1.

**Table 38:** Comparison of Black-White Arrest Disparity Between Districts (PSW, Odds ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	0.55	0.39*	2.36	0.49	0.58
District 2	1.82	–	0.70	4.29	0.89	1.05
District 3	2.60*	1.43	–	6.13*	1.27	1.50
District 4	0.42	0.23	0.16*	–	0.21*	0.25
District 5	2.04	1.12	0.79	4.82*	–	1.18
District 7	1.73	0.95	0.67	4.08	0.85	–
Test for significant differences	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

\* $p < 0.05$

## Minority v. White Drivers, Arrests

In Table 39 below, we report results of the analysis investigating differences among districts for disparity in arrests for Minority and White drivers. The post hoc test of no differences was not statistically significant ( $\chi^2 = 6.40$ ;  $p = 0.270$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in arrest disparity among districts. We identified one statistically significant difference in disparity between Districts 1 and 3. In this case, District 3 has higher levels of Minority/White arrest disparity than District 1.

**Table 39:** Comparison of Arrest Disparity Between Districts (PSW, Odds ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	0.86	0.58*	0.86	0.73	0.82
District 2	1.17	–	0.67	1.00	0.85	0.96
District 3	1.73*	1.48	–	1.49	1.26	1.42
District 4	1.17	1.00	0.67	–	0.85	0.96
District 5	1.37	1.18	0.79	1.18	–	1.13
District 7	1.22	1.04	0.70	1.04	0.89	–
Test for significant differences	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

## Hispanic v. White Drivers, Searches

In Table 40 below, we report the results of the analysis investigating differences among districts for disparity in discretionary searches for Hispanic and White drivers. Coefficients for Districts 4 and 7 were not available because there were so few searches by deputies from those Districts and no Hispanic drivers were searched. The post hoc test of no differences was not statistically significant ( $\chi^2 = 0.35$ ;  $p = 0.951$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in search disparity among districts. We identified no statistically significant differences in disparity between districts when changing the district reference group.

**Table 40:** Comparison of Hispanic/White Search Disparity Between Districts (PSW, Odds ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	0.82	0.70	N/A	0.65	N/A
District 2	1.23	–	0.85	N/A	0.79	N/A
District 3	1.44	1.17	–	N/A	0.93	N/A
District 4	Omitted	Omitted	Omitted	–	Omitted	N/A
District 5	1.55	1.26	1.08	N/A	–	N/A
District 7	Omitted	Omitted	Omitted	N/A	Omitted	–
Test for significant differences	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

## Black v. White Drivers, Searches

Comparison search disparity for Black and White drivers was unavailable because all models would not converge.

## Minority v. White Drivers, Searches

In Table 41 below, we report the results of the analysis investigating differences among districts for disparity in discretionary searches for Minority and White drivers. Coefficients for Districts 4 and 7 were not available because there were so few searches by deputies from those Districts and no Minority drivers were searched. The post hoc test of no differences was not statistically significant ( $\chi^2 = 2.28$ ;  $p = 0.516$ ) indicating that there was insufficient evidence to reject the null hypothesis of no difference in search disparity among districts. We identified no statistically significant differences in disparity between districts when changing the district reference group.

**Table 41:** Comparison of Minority/White Search Disparity Between Districts (PSW, Odds ratios)

	Reference Group					
	District 1	District 2	District 3	District 4	District 5	District 7
District 1	–	0.48	0.62	N/A	0.32	N/A
District 2	2.08	–	1.29	N/A	0.67	N/A
District 3	1.62	0.78	–	N/A	0.52	N/A
District 4	Omitted	Omitted	Omitted	–	Omitted	N/A
District 5	3.13	1.50	1.94	N/A	–	N/A
District 7	Omitted	Omitted	Omitted	N/A	Omitted	–
Test for significant differences	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

## Analysis of Seizures Following Searches

In this section, we evaluate seizures following searches for each district. Table 42 provides a tabulation of searches and seizures by race/ethnicity for District 1. District 1 had the largest number of non-incident searches compared to other districts and had the highest seizure rate relative to all other districts. In District 1, there was no statistically significant difference in the distributions of searches with and without seizures across driver race/ethnicity.

**Table 42:** District 1; Seizures During Non-Incidental Searches by the Race/Ethnicity of the Driver

Race/Ethnicity of Driver	Number of Searches	Percent of Searches without seizures	Percent of Searches with Seizures
Asian	0	N/A	N/A
Black	0	N/A	N/A
Hispanic	7	28.6	71.4
Native American	0	N/A	N/A
White	12	25.0	75.0
Overall	19	26.3	73.7

$$\chi^2 = 0.029; p = 0.865; \text{Fischer's Exact } p = 0.634$$

Table 43 below provides a tabulation of searches and seizures by race/ethnicity in District 2. District 2 had the second most non-incident searches compared to other districts and the lowest seizure rate of any district. In District 2, there was no statistically significant difference in the distributions of searches with and without seizures across driver race/ethnicity.

**Table 43:** District 2; Seizures During Non-Incidental Searches by the Race/Ethnicity of the Driver

Race/Ethnicity of Driver	Number of Searches	Percent of Searches without seizures	Percent of Searches with Seizures
Asian	0	N/A	N/A
Black	2	50.0	50.0
Hispanic	7	71.4	28.6
Native American	2	50.0	50.0
White	4	75.0	25.0
Overall	15	66.7	33.3

$$\chi^2 = 0.696; p = 0.874; \text{Fischer's Exact } p = 1.000$$



Table 44 below provides a tabulation of searches and seizures by race/ethnicity in District 3. In District 3, there was no statistically significant difference in the distributions of searches with and without seizures across driver race/ethnicity.

**Table 44:** District 3; Seizures During Non-Incidental Searches by the Race/Ethnicity of the Driver

Race/Ethnicity of Driver	Number of Searches	Percent of Searches without seizures	Percent of Searches with Seizures
Asian	0	N/A	N/A
Black	0	N/A	N/A
Hispanic	4	25.0	75.0
Native American	0	N/A	N/A
White	7	42.9	57.1
Overall	11	36.4	63.6

$\chi^2 = 0.351$ ;  $p = 0.554$ ; Fischer's Exact  $p = 1.000$

Table 45 below provides a tabulation of searches and seizures by race/ethnicity in District 4. There were only four discretionary searches conducted in District 4 and all searches were of White drivers.

**Table 45:** District 4; Seizures During Non-Incidental Searches by the Race/Ethnicity of the Driver

Race/Ethnicity of Driver	Number of Searches	Percent of Searches without seizures	Percent of Searches with Seizures
Asian	0	N/A	N/A
Black	0	N/A	N/A
Hispanic	0	N/A	N/A
Native American	0	N/A	N/A
White	4	75.0	25.0
Overall	4	75.0	25.0

$\chi^2 = N/A$ ;  $p = N/A$ ; Fischer's Exact  $p = N/A$

Table 46 below provides a tabulation of searches and seizures by race/ethnicity in District 5. In District 5, there was no statistically significant difference in the distributions of searches with and without seizures across driver race/ethnicity.

**Table 46:** District 5; Seizures During Non-Incidental Searches by the Race/Ethnicity of the Driver

Race/Ethnicity of Driver	Number of Searches	Percent of Searches without seizures	Percent of Searches with Seizures
Asian	1	100.0	0.0
Black	0	N/A	N/A
Hispanic	3	66.7	33.3
Native American	1	0.0	100.0
White	6	83.3	16.7
Overall	17	72.7	27.3

$\chi^2 = 4.528$ ;  $p = 0.210$ ; Fischer's Exact  $p = 0.256$

Table 47 below provides a tabulation of searches and seizures by race/ethnicity in District 7. District 7 had the fewest number of searches compared to all other districts. In District 7, there were only three discretionary searches conducted and each of these searches involved White drivers.

**Table 47:** District 7; Seizures During Non-Incidental Searches by the Race/Ethnicity of the Driver

Race/Ethnicity of Driver	Number of Searches	Percent of Searches without seizures	Percent of Searches with Seizures
Asian	0	N/A	N/A
Black	0	N/A	N/A
Hispanic	0	N/A	N/A
Native American	0	N/A	N/A
White	3	100.0	0.0
Overall	3	100.0	0.0

$\chi^2 = N/A$ ;  $p = N/A$ ; Fischer's Exact  $p = N/A$

# Summary of Findings

In this section we provide a summary of findings for each district. We begin with a brief discussion of the descriptive and summary statistics presented in the findings section of this report. Next, we provide a discussion of any statistically significant findings identifying district-level fixed effects on differences in stop lengths and the outcomes of citations/warnings, arrests, and searches. Following this, we discuss findings from the Propensity Score Matching analyses which identified whether racial/ethnic disparities existed within the district for stop length and the stop outcomes of citation/warning, arrests, and searches. Next, we report district-specific findings for the differences in disparity for stop length and the outcomes of citations and arrests. We conclude with findings from the analysis of seizures following non-incident searches.

## District 1

Deputies assigned to District 1 made a total of 1,871 traffic stops in 2023, the fewest of any MCSO district. The majority (51%) of deputies who made traffic stops in District 1 made fewer than 20 stops. Like other districts, traffic stops in District 1 occurred most often during the morning and afternoon commuting hours and the number of stops per month stayed relatively stable throughout the year. District 1 deputies made 33 traffic stops while working on DUI Taskforce special assignments (1.76% of all District 1 traffic stops). District 1 deputies made a high proportion of traffic stops that involved criminal traffic violations (7.86% of stops) when compared to other districts.

The racial/ethnic composition of drivers stopped by District 1 deputies was as follows: 8.37 percent Black, 25.13 percent Hispanic, and 62.41 percent White. 37.59 percent of drivers stopped by District 1 deputies were perceived as non-White minority.

District 1 had the longest average length of stop of any District with an average stop length of almost 22 minutes. Stops of Hispanic drivers in District 1 averaged about six minutes longer than stops of White drivers. When excluding stops that were considered extended, average stop length for White and Hispanic drivers were similar in District 1.

The most common reason for extended stops in District 1 was driving documentation issues with almost 40 percent of stops delayed for this reason. Forty-nine percent of stops of Hispanic drivers were delayed for this reason while about 33 percent of stops of White drivers were delayed because of driving documentation issues.

District 1 deputies issued a citation during 50.35 percent of stops. Hispanic drivers were cited 56.61 percent of the time. Black drivers were cited during 50 percent of stops and White drivers were cited during 52.81 percent of stops. Non-White Minority drivers were cited during 51.37 percent of traffic stops.

The most common violation that was cited or warned in District 1 was for driving documentation issues (46.82% of stops) and citations/warnings for speed occurred during 19.72 percent of traffic stops. District 1 differs from all other districts in this regard. District 1 had a higher rate of custodial arrests (3.58% of stops) than any other district and a higher rate of discretionary searches (N = 19; 1.02% of stops) than any other district.

Results modeling stop length and stop outcomes (citation/warning, arrests, and searches) found District 1 differed from other districts in several ways. Stop lengths for District 1 traffic stops were longer than stops made by deputies from District 5 or District 7. These differences were statistically significant and differed by about 100 seconds and 44 seconds, respectively.

Citation activity was modeled in two ways in this research. The first utilized control variables of violation type and speed over the speed limit. When modeled in this way, we found that drivers stopped by District 1 deputies were more likely to receive a citation than drivers stopped by deputies from Districts 2, 3, and 5 but were not statistically different from drivers stopped by District 5 or District 7 deputies. When violation type and speed were removed as statistical controls, we found that drivers stopped by District 1 deputies were more likely to receive a citation than drivers stopped by deputies from District 2, 3, or 7.

In modeling arrest outcomes, we found that drivers stopped by District 1 deputies were less likely to be arrested than drivers stopped by deputies from Districts 3 or 7. Analyses comparing district search activity could not be conducted for any district.

Propensity score matching results identified no statistically significant disparity in any of the core metrics used in the TSAR with any racial/ethnic group in District 1. Specifically, there were no statistically significant difference in stop length, citation/warning outcomes, arrest outcomes, or searches for Hispanic and White drivers, Black and White drivers, and non-White Minority drivers. However, when the propensity score models excluded violation types and speed, we identified statistically significant disparity in citation outcomes when comparing White and Hispanic drivers. The difference between Hispanic and White drivers was estimated to be almost 8 percent in this model. District 1 did not have any statistically significant disparities for arrests, however there was a statistically significant difference between Black and White drivers for discretionary searches with White drivers searched nearly two percent more often than Black drivers.

In comparing District 1's disparities to other district disparities, we found that District 1 has significantly higher levels of disparity in arrests between Black and White drivers and Minority and White drivers when compared to District 3. However, this disparity did not significantly contribute to the overall disparity in arrests measured at the office-level. There were no other statistically significant differences in disparity between District 1 and other districts.

## District 2

Deputies assigned to District 2 made a total of 3,574 traffic stops in 2023. This was slightly above the MCSO district average of 3,106 stops. Forty-eight percent of deputies making traffic stops in District 2 made fewer than 20 stops in 2023. District 2 had three deputies who made between 200 and 500 traffic stops. Of all districts, District 2 had the second highest number of traffic stops made by supervisors (N = 287). Traffic stops made by supervisors in District 2 accounted for about 8 percent of District 2 traffic stops. District 2 deputies made 40 traffic stops while working on DUI Taskforce special assignments (1.12% of all District 2 stops).

The racial/ethnic composition of drivers stopped by District 2 deputies was as follows: 13.63 percent Black, 49.92 percent Hispanic, and 32.90 percent White. 67.10 percent of drivers stopped by District 2 deputies were non-White minorities. District 2 had the highest proportion of Hispanic drivers stopped compared to all other districts and the highest proportion of non-White Minority drivers when compared to other districts.

District 2 had an average stop length of 19.27 for all drivers. Excluding extended stops, District 2 traffic stops averaged 12.37 minutes. The most common extended stop reason in District 2 was driving documentation issues with about 38 percent of stops being delayed for this reason. District 2 had more training stops than any other district (12 percent of traffic stops).

District 2 had the lowest citation rate (40.49%) of any district and drivers were issued warnings during 59 percent of stops. District 2 had similar citation rates across racial/ethnic groups. The most common type of violation that was cited or warned in District 2 was speeding. During about 36 percent of stops in District 2, this offense was identified. District 2 had the highest rate of non-speed moving violations (25.77%) when compared to other districts.

District 2 deputies made custodial arrests of 54 drivers during 2023. This accounted for 1.51 percent of all District 2 stops. During 2.60 percent of traffic stops, District 2 deputies made non-custodial arrests. District 2 deputies made discretionary searches of persons or vehicles during 0.42 percent of traffic stops (N = 15).

Results modeling stop length and stop outcomes found District 2 differed from other districts in several ways. Stop lengths for District 2 deputies were longer than those of District 5 and District 7. District 2 stop lengths were shorter than stops made by deputies from District 4. These differences were statistically significant.

In comparing district citation activity, we found that when controlling for violation type and speed, drivers stopped by District 2 deputies were less likely to receive a citation than drivers stopped by deputies from Districts 1, 4, or District 7. These differences were statistically significant.

Results from modeling citation activity when excluding offense categories and speed as control variables differed. In this case, models indicated that drivers stopped by District 2 deputies were less likely to receive a citation than drivers stopped by deputies from Districts 1, 4, or 5.

In comparing arrests across districts, we identified three statistically significant differences between District 2 and other districts. Drivers stopped by District 2 deputies were less likely to be arrested than drivers stopped by deputies from Districts 3, 5, and 7. There were no other statistically significant differences in arrest activity between District 2 and other districts.

Analyses comparing district search activity could not be conducted for any district.

Results of the propensity score matching modeling procedure identified three statistically significant findings for District 2. In comparing stop lengths, we found that Hispanic drivers had stop lengths that were about 54 seconds longer than White drivers and that Black drivers had stop lengths that were about 77 seconds longer than White drivers in District 2. In comparing citation rates (without offense and speed as matching variables), we found that Hispanic drivers were cited 7.9 percent more often than White drivers. When modeling citation outcomes with offense and speed, there were no statistically significant differences for Hispanic, Black, or Minority drivers in District 2.

Analysis of district differences in levels of disparity found no statistically significant difference in disparity levels for District 2 on any benchmark, for any group, when compared to all other districts.

## District 3

Deputies from District 3 made a total of 2,743 traffic stops in 2023. Most deputies (51%) who made traffic stops in District 3 made 20 or more stops in 2022. District 3 deputies made 133 (4.85% of District 3 stops) stops while working on the DUI Taskforce special assignments and 26 stops (0.95%) while on Aggressive Driver patrol. District 3 had the lowest number of criminal traffic violations when compared to other districts (34 stops or 1.25% of District 3 stops).

The racial/ethnic composition of drivers stopped by District 3 deputies was as follows: 8.6 percent Black, 24.86 percent Hispanic, 63.8 percent White. 36.2 percent of drivers stopped by District 3 deputies were non-White Minority.

District 3 had an average stop length of 16.61 minutes for all stops. Excluding extended stops, District 3 stops averaged 11.61 minutes. The most common extended stop reason in District 3 was driving documentation issues and almost 21 percent of stops were delayed for this reason. Minority drivers stopped by District 3 deputies had a driving documentation issue during 28 percent of stops.

District 3 deputies cited drivers during 58.77 percent of traffic stops which was similar to the citation rate in District 5. Hispanic drivers stopped by District 3 deputies were cited at a slightly higher rate (59.82%) than both Black (56.78%) and White (58.63%) drivers. The most common offense that was cited or warned by District 3 deputies was speed. Over 60 percent of stops included a citation or warning for this type of offense.

District 3 deputies made a total of 214 arrests during traffic stops in 2023. Of these, 42 arrests were custodial arrests, and the remaining 172 arrests were non-custodial arrests. Deputies from District 11 made discretionary searches of drivers or vehicles during 0.40 percent of traffic stops.

Results modeling stop length and stop outcomes found District 3 differed from other districts in several ways. Stops made by District 3 deputies were longer, on average, from stops made by deputies from District 5, or District 7. These differences were statistically significant and ranged from about 50 seconds to 66 seconds.

In comparing district citation activity, we identified statistically significant differences in citation activity between District 3 and Districts 1, 4, and 7. Drivers stopped by deputies from District 3 were less likely to receive a citation than drivers stopped by deputies from Districts 1, 4, or 7. When offense categories and speed were excluded from the model, we identified statistically significant differences in citation activity between District 3 and Districts 1 and 5. Using this model, drivers stopped by District 3 deputies were less likely to receive a citation than drivers stopped by deputies from Districts 1 or 5.

Comparing arrests across districts, modeling identified three statistically significant differences between District 3 and other districts. Drivers stopped by District 3 deputies were more likely to be arrested than drivers stopped by deputies from Districts 1, 2, or 4.

Analyses comparing district search activity could not be conducted for any district.

Results of the propensity score matching procedure identified statistically significant disparity for citations (when excluding violation categories and speed as matching variables) for Hispanic and White drivers and Minority and White drivers. According to this model, Hispanic drivers were cited almost 9 percent more often than White drivers and Minority drivers were cited about 6 percent more often than White drivers. There was no statistically significant difference in citations for any groups in District 3 when modeling citation outcomes accounting for speed and violation type. We identified no other statistically significant differences for any other benchmark or group in District 3.

Analysis of district differences in disparity found that District 3 disparity in arrest outcomes for Minority drivers was significantly higher than that of District 1. However, this disparity did not significantly contribute to the overall disparity in arrests measured at the office-level. There were no other statistically significant differences in disparity between District 1 and other districts.

There was no significant difference in the distribution of searches with and without seizures across driver race/ethnicity.

## **District 4**

Deputies from District 4 made a total of 2,412 traffic stops in 2023. About forty-six percent of deputies making traffic stops in District 4 made fewer than 20 stops. District 4 had the largest

number of stops that were made by a deputy in a traffic car. 1,229 stops were made by deputies designated as traffic patrol (50.95% of District 4 stops). District 4 deputies made 80 traffic stops while working DUI Taskforce special assignments which accounted for about 3 percent of District 4 stops.

The racial/ethnic composition of drivers stopped by District 4 deputies was as follows: 3.19 percent Black, 10.99 percent Hispanic, 83.80 percent White. 16.92 percent of drivers stopped by District 4 deputies were non-White Minority. District 4 had the lowest number and proportion of non-White drivers stopped when compared to all other districts.

The average length of stop for all drivers stopped by District 4 deputies was 14.88 minutes. Excluding extended stops, District 4 stop lengths averaged 11.52 minutes. The most common extended stop reason in District 4 was driving documentation issues and 17.7 percent of stops were delayed for this reason.

District 4 deputies cited drivers during 64.34 percent of stops. This was the highest citation rate of any district. There were some differences in citation rates across racial/ethnic groups in District 4. In District 4 White drivers were cited during 63.67 percent of stops while Hispanic drivers were cited during 69.81 percent of stops. Black drivers were cited during 57.14 percent of stops. The most common violation that was cited or warned in District 4 was speeding. Nearly 64 percent of stops in District 4 identified violations of this type and this offense category was higher than any other district.

District 4 deputies had the lowest number (16) and percent (0.66%) of custodial arrests compared to all other districts. Drivers stopped by District 4 deputies experienced a non-custodial arrest during 59 stops (2.45% of District 4 stops). District 4 deputies made discretionary searches of drivers or vehicles during 4 stops (0.17% of traffic stops).

Results modeling stop length and stop outcomes identified several ways District 4 differed from other districts. In comparing district stop lengths, District 4 stops were longer, on average, than stops made by deputies from District 2, District 5, and District 7. These differences were statistically significant. These differences ranged from about 30 seconds for District 2 to about two minutes for District 5.

In comparing district citation activity, when controlling for violation type and speed, drivers stopped by District 4 deputies were more likely to receive a citation than drivers stopped by Districts 2, 3 or 5 deputies. These differences were statistically significant. In contrast, drivers stopped by District 4 deputies were less likely to receive a citation than drivers stopped by deputies from Districts 1 and 7. When modeling citation activity without violation types and speed as statistical controls, drivers stopped by District 4 deputies were more likely receive a citation than drivers stopped by deputies from Districts 2, 3, or 7. These differences were statistically significant. In contrast, drivers stopped by District 4 deputies were less likely to receive a citation than drivers stopped by District 5 deputies and this difference was statistically significant.



Results modeling arrest activity for District 4 identified two statistically significant differences between District 4 and other districts. Based on these results, drivers stopped by District 4 deputies were less likely to experience an arrest than drivers stopped by deputies from District 3 or District 7.

Analyses comparing district search activity to other districts could not be conducted for any district.

Results of the propensity score matching modeling procedure identified several statistically significant disparities in District 4. In District 4, Minority drivers were cited more often than White drivers. This finding was consistent across both PSM models analyzing citation outcomes. In this case, Minority drivers were cited between 7.6 and 5.5 percent more often than White drivers. drivers had longer stop lengths than White drivers.

The PSM estimating procedure identified one statistically significant disparity in searches for District 4 stops. In this case, White drivers were more likely to be searched than Minority drivers.

Finally, results estimating disparities in arrest outcomes in District 4 found no statistically significant differences for Hispanic, Black or Minority drivers when compared to White drivers.

There were no statistically significant differences in arrests for any group in District 4.

Analysis of differences in disparity found that District 4 disparity in arrests for Black drivers was significantly lower than disparity in arrests for Black drivers in District 3 and District 5. There were no significant differences in district-level disparity for any other benchmark or racial/ethnic group for District 4.

There was no significant difference in the distribution of searches with and without seizures across driver race/ethnicity for District 4.

## **District 5**

Deputies from District 5 (Lake Patrol) made a total of 3,792 traffic stops in 2023. District 5 had the second largest number of stops of all districts. The majority (62.7%) of District 5 deputies who made traffic stops, made 20 or more stops in 2023. Almost 15 percent (N = 559) of traffic stops made by District 5 deputies were made when deputies were working on DUI Taskforce special assignments. An additional 256 traffic stops were made while District 5 deputies were working on Aggressive Driver special assignments and 79 stops were made when District 5 deputies were working Click-it-or-ticket special assignments.

District 5 deputies had the largest proportion of stops that involved criminal traffic offenses with nearly 9 percent of stops classified in this way.

The racial/ethnic composition of drivers stopped by District 5 deputies was as follows: 6.04 percent Black, 21.73 percent Hispanic, and 67.85 percent White. 32.15 percent of drivers stopped by District 5 deputies were non-White Minority.

The average length of stops for all drivers stopped by District 5 deputies was 15.82 minutes. Excluding extended stops, District 5 stop length averaged 10.76 minutes. The most common extended stop reason during District 5 traffic stops was driving documentation issues (22.65%). District 5 traffic stops were delayed for technical issues more often (8.52%) than all other districts and District 5 deputies experienced delays from DUI investigations (4.01%) more often than stops from all other districts.

District 5 deputies issued citations during 57.41 percent of all stops. This was the third highest citation rate of all districts. Citation rates between racial/ethnic groups varied in District 5. Hispanic drivers were cited during nearly 60 percent of stops while Black drivers were cited during 54 percent of stops. White drivers were cited almost 57 percent of the time.

The most common violation type that was cited or warned by District 5 deputies was speeding. Nearly 59 percent of stops identified this violation type.

District 5 had the highest arrest rate compared to other districts. During 7.38 percent (N = 280) of traffic stops made by District 5 deputies, drivers were arrested. The majority of these arrests were non-custodial arrests (N = 211). Custodial arrests occurred during 1.82 percent of District 5 stops (N = 69).

Discretionary searches were conducted by District 5 deputies during 0.29 percent of stops (N = 11). This was the second lowest search rate of all MCSO districts.

Results modeling district differences in stop length and stop outcomes identified several statistically significant differences. Drivers stopped by District 5 deputies experienced shorter stop lengths than drivers stopped by deputies from all other districts. Differences in stop length when compared to other districts ranged from 60 to 120 seconds.

Comparison of district-level citation activity for District 5 was not consistent across the two modeling procedures. When including violation type and driver speed, drivers stopped by District 5 deputies were less likely to receive a citation than drivers stopped by deputies from Districts 1, 4, or 7. These differences were statistically significant.

When violation type and speed were removed as statistical controls, results comparing district citation activity changed markedly. Based on this modeling, drivers stopped by District 5 deputies were more likely to receive a citation than drivers stopped by deputies from Districts 2, 3, 4, and 7. These differences were also statistically significant.

In comparing arrest activity among districts, this research found that drivers stopped by District 5 deputies were more likely to experience an arrest than drivers stopped by deputies from District 2. This difference was statistically significant. There was no statistical difference in arrest activity between District 5 and other districts.

Analyses comparing district search activity to other districts could not be conducted for any district.

Results of the propensity score matching identified one statistically significant disparity in District 5. When modeling citation activity without speed and violation categories used as matching variables, Hispanic drivers were cited 7.72 percent more often than White drivers. There was no statistically significant difference in citation outcomes for any group when speed and violation categories were used in the propensity score matching procedure. We did not identify any other statistically significant disparity in stop length or stop outcomes of citations, arrests, or searches for any other group in District 5.

Analysis of district-level differences in disparity found that District 5 disparity in stop length for Black and White drivers was significantly lower than that of District 7. We also found that district-level disparity in citation outcomes between Hispanic and White drivers (when ignoring speed and violation types) was lower than that of District 7. Finally, District 5 had significantly higher disparity for arrests of Hispanic and White drivers than District 4. This disparity did not significantly contribute to the overall disparity in arrests measured at the office-level. There were no significant differences in district-level disparity for any other benchmark or racial/ethnic group for District 5.

There was no significant difference in the distribution of searches with and without seizures across driver race/ethnicity for District 5.

## **District 7**

Deputies from District 7 made a total of 4,241 traffic stops in 2023. This was the most stops of any district during that year. The majority (58.3%) of deputies who made traffic stops in District 7 made 20 or more stops during the year. District 7 had 730 traffic stops that were made by deputies working in a traffic car.

In District 7, 120 (2.83%) stops were made by deputies working DUI Taskforce special assignments. District 7 also had 127 stops made on Aggressive Driving campaigns which accounted for about 3 percent of District 7 stops.

The racial/ethnic composition of drivers stopped by District 7 deputies was as follows: 6.06 percent Black, 13.20 percent Hispanic, and 75.03 percent White. 24.97 percent of drivers stopped by District 7 deputies were non-White Minority.

The average length of stops for all drivers stopped by District 7 deputies was 14.35 minutes. Excluding extended stops, District 7 stop length averaged 11.23 minutes. The most common reason identified for extended stops in District 7 was Driving Documentation Issues with 15 percent of stops experiencing this type of delay. District 7 deputies identified few extended stops relative to other districts.

Deputies in District 7 cited 47.37 percent of drivers that were contacted although there were some differences across racial/ethnic groups. Specifically, Hispanic drivers were cited 55.89 percent of the time while White drivers were cited during 46 percent of stops.

In District 7, speeding was the most common violation type that was cited or warned with over 53 percent of stops involving this violation.

Deputies from District 7 arrested 176 drivers in 2023. Of these arrests 33 were custodial arrests while the remaining 143 were non-custodial arrests. Deputies from District 5 had the lowest discretionary search rate (0.07%) compared to all other districts and conducted three discretionary searches in 2023.

Results modeling district differences in stop length and stop outcomes identified a number of notable differences for District 7. Stop lengths for District 7 stops were shorter than those of Districts 1, 2, 3, and 4., but were longer than stop lengths for stops made by deputies from District 5. These differences were statistically significant.

When modeling citation activity using violation type and speed as statistical controls, we identified that drivers stopped by District 7 deputies were more likely to be cited than drivers stopped by deputies from Districts 2, 3, 4, and 5. Each of these differences was statistically significant. When excluding violation type and speed as controls, we found that drivers stopped by District 7 deputies were less likely to receive a citation than drivers stopped by deputies from Districts 1, 4, or 5. These differences were statistically significant.

In comparing arrest activity across districts, we found that drivers stopped by District 7 deputies were more likely to be arrested than drivers stopped by deputies from Districts 1, 2, or 4.

Analyses comparing district search activity to other districts could not be conducted for any district.

Results of the PSM analysis identified one statistically significant disparity for District 7. The analysis identified that White drivers experience longer stops than Black drivers in District 7. This difference of about 41 seconds was statistically significant. Propensity score analysis found no other statistically significant differences for any other group on any other benchmark in District 7.

Analysis of district-level differences in disparity found that District 7 had a significantly higher level of disparity in stop length for Black and White drivers when compared to District 5. When not accounting for speed or categories of violations, we found that District 7 had significantly higher levels of citation disparity between Hispanic and White drivers than District 5. When speed and violation categories were accounted for, there was no statistically significant differences in citation disparity for any groups when comparing District 7 to other districts. This disparity did not significantly contribute to the overall disparity in citations measured at the office-level. There were no significant differences in district-level disparity for any other benchmark or racial/ethnic group for District 7.

There was no significant difference in the distribution of searches with and without seizures across driver race/ethnicity for District 7.

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## Conclusion and MCSO Response

The purpose of this quarterly report was to investigate disparate outcomes at the district level. TSAR 9 found evidence that MCSO had disparate outcomes for stop length for Minority drivers. Findings from TSAR 9 also indicated that Minority drivers were more likely to receive citations than White drivers.

To investigate disparate outcomes at the district level, MCSO analyzed the 2023 traffic stop data in five ways. First MCSO described the general patterns of traffic enforcement activity from each district. Second, we determined whether districts differed from one another in average stop lengths and stop outcomes of citations, and arrests. Third, we utilized propensity score matching to determine within-district disparity for stop length and stop outcomes. Fourth, we compared between-district levels of disparity to identify whether districts differ from one another in their levels of disparity. Finally, we analyzed search and seizure activity for each district to determine whether different racial/ethnic groups experienced seizures following discretionary searches at different rates.

In comparing differences in stop length, we found that all districts had longer stops, on average, when compared to District 5. Districts 1, 2, 3, and 4 had longer stops, on average, when compared to District 7. District 2 stops were shorter when compared to District 4 but were longer when compared to Districts 5 and 7. Stop lengths for District 1 were not significantly different from stop lengths in Districts , 2, 3, or 4.

Our analysis of citation activity included two models that provided different results. In the first model, we utilized statistical controls of offense types (speed, non-speed moving, equipment, driving documentation, and other violations) and the speed the driver was traveling over the speed limit. In the second model, we did not use these controls. Based on the first model, we found that the likelihood of receiving a citation was highest in Districts 1 and 7 when compared to other districts. The likelihood of receiving a citation was lower in District 5 when compared to Districts 1, 4, and 7. Drivers stopped by District 2, District 3, and District 5 deputies were less likely to receive a citation than drivers stopped by deputies from Districts 1, 4, and 7. Drivers stopped by District 4 deputies were more likely to receive a citation than drivers stopped by deputies from district 2, 3, and 5.

Based on the model that did not use offense categories or speed as controls, we found that the likelihood of receiving a citation was lowest in District 7 when compared to Districts 1, 4, or 5. In contrast, the likelihood of receiving a citation was higher in District 5 when compared to Districts 2, 3, 4, and 7. The likelihood of receiving a citation from District 1 deputies was higher than drivers stopped by deputies from Districts 2, 3, or 7. Analysis of arrest activity in the districts found significant differences in the likelihood of arrest during traffic stops across all districts.

Analysis of arrest activity in the districts found significant differences in the likelihood of arrest across all districts. The likelihood of a driver experiencing an arrest was lower in District 1 when compared to Districts 2, 3, 4, and 7. Similarly, the likelihood a driver experienced an arrest was lower in District 2 when compared to Districts 3, 5, and 7. Drivers stopped by District 3 deputies had a higher likelihood of arrest when compared to drivers stopped by deputies from Districts 1, 2, or 4. Drivers stopped by District 4 deputies had the lowest likelihood of arrest when compared to Districts 3 and 7. Finally, the likelihood of experiencing an arrest by District 5 deputies was higher than District 2 deputies.

This research identified that districts vary in their level of disparity. We found that District 2 have longer stops for Hispanic and Black drivers. Specifically, Hispanic drivers have stops that are nearly one minute longer in this district compared to their White counterparts. Black drivers have traffic stops that average about 77 seconds longer than stops of White drivers in these District 2. In District 7, we found that White drivers have traffic stops that average about 41 seconds longer than Black drivers.

Using the baseline analysis of citations used in the TSAR (matching variables include speed and violation categories) this research identified disparity in citation outcomes in two districts. In District 2 Hispanic drivers were cited approximately 4.7 percent more often than White drivers. In District 4 Minority drivers were cited about 7.6 percent more often than White drivers.

In examining searches, we found disparity in two districts. In District 2, White drivers were searched about 1.8 percent more often than Black drivers. In District 4, Minority drivers were searched 0.11 percent more often than White drivers. We identified no other disparity in searches.

Finally, we identified no statistically significant differences in arrests for any group (Hispanic, Black, and Minority drivers) for any district.

In the third analysis, we identified district-level differences in disparity. With this analysis we also tested whether district-level disparity contributes to the overall disparity at the office level. For each benchmark, and racial/ethnic group we found that district-level disparity did not significantly contribute to the overall disparity measured at the office-level.

In our analysis of stop length we identified one pairwise difference in disparity levels among districts. There were no district-level differences in disparity for Hispanic and White drivers. District 7 had higher levels of disparity in stop length between Black and White drivers when compared to District 5. There were no significant differences in stop length disparity for Minority and White drivers among districts.

In our analysis of citations, we used two analyses to investigate differences in disparity among districts. In the first analysis, using speed and violation categories as control variables, we found no statistically significant differences in citation disparity for any racial/ethnic group among any districts. When excluding speed and violation categories we found one pairwise difference in disparity. Specifically, Hispanic and White disparity in citations was higher in District 7 when

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compared to District 5. There were no other statistically significant differences in disparity for any racial/ethnic group for any districts.

In our analysis of arrests, we found three statistically significant differences in arrest disparity among districts. District 4 had lower levels of disparity in arrests between Black and White drivers than District 3 and District 5. Finally District 3 had higher levels of arrest disparity between Minority and White drivers when compared to District 1.

Finally, in our analysis of seizures following searches, we found no statistically significant difference in the distribution of searches with and without seizures across any driver race/ethnicity and for any district.

## **Additional Actions**

As with every quarterly this report will be made available to the public and Internal Town Halls will be held in each district to brief district commanders and staff on the findings.

It is often challenging to identify new operational measures designed to reduce disparities that may be impactful on top of the already significant efforts that MCSO has been implementing with its continual policy evaluation, training, inspections, and TSMR interventions. To ensure the internal discussions that have historically occurred are evidenced moving forward, the Internal Review Group (IRG) was created in November 2023. The IRG is a multi-disciplinary group of personnel of varied ranks and roles, including patrol representatives from multiple districts, to ensure that findings are interpreted well and to provide advice to Executive Command on potential strategies to implement to address any findings of disparity. This review group will be considering the results of this quarterly along with any recommendations from the Monitor, Parties or Community Advisory Board in response to these results and make recommendations to Executive Command for an appropriate MCSO response. To provide transparency, all recommendations will be documented along with the action items taken in response or reasons why a particular recommendation was not advanced.

## Appendix A: Modeling Fixed-Effects Stop Length Differences for Districts

**Table 1A:** Regression Results for Stop Length, District Fixed-Effects

	Model D1	Model D2	Model D3	Model D4
	Stop Length	Stop Length	Stop Length	Stop Length
Spline Time 1	-0.579* (0.214)	-0.579* (0.214)	-0.579* (0.214)	-0.579* (0.214)
Spline Time 2	0.031 (0.041)	0.031 (0.041)	0.031 (0.041)	0.031 (0.041)
Spline Time 3	0.082* (0.027)	0.082* (0.027)	0.082* (0.027)	0.082* (0.027)
Spline Time 4	-0.009 (0.038)	-0.009 (0.038)	-0.009 (0.038)	-0.009 (0.038)
Spline Time 5	0.281* (0.139)	0.281* (0.139)	0.281* (0.139)	0.281* (0.139)
Driver Sex M	-0.034 (0.092)	-0.034 (0.092)	-0.034 (0.092)	-0.034 (0.092)
Civil Traffic	0.595 (0.550)	0.595 (0.550)	0.595 (0.550)	0.595 (0.550)
Non-AZ Plate	1.705* (0.160)	1.705* (0.160)	1.705* (0.160)	1.705* (0.160)
Arrest	4.118* (0.597)	4.118* (0.597)	4.118* (0.597)	4.118* (0.597)
Search	38.365* (1.072)	38.365* (1.072)	38.365* (1.072)	38.365* (1.072)
<b>Deputy Category</b>				
Traffic	-1.385 (0.919)	-1.385 (0.919)	-1.385 (0.919)	-1.385 (0.919)
Supervisors	-1.830 (0.952)	-1.830 (0.952)	-1.830 (0.952)	-1.830 (0.952)
Off Duty	-0.487 (3.528)	-0.487 (3.528)	-0.487 (3.528)	-0.487 (3.528)
Patrol	0.356 (0.913)	0.356 (0.913)	0.356 (0.913)	0.356 (0.913)
<b>Districts</b>				
District 1	-	0.107 (0.205)	-0.107 (0.207)	-0.402 (0.213)
District 2	-0.107 (0.205)	-	-0.214 (0.175)	-0.509* (0.184)
District 3	0.107 (0.207)	0.214 (0.175)	-	-0.295 (0.165)
District 4	0.401 (0.213)	0.509* (0.184)	0.295 (0.165)	-
District 5	-1.665* (0.203)	-1.558* (0.159)	-1.772* (0.166)	-2.067* (0.174)
District 7	-0.729* (0.190)	-0.622* (0.149)	-0.836* (0.148)	-1.131* (0.155)
Constant	12.076* (1.180)	11.969* (1.176)	12.183* (1.175)	12.478* (1.175)
<i>F</i> (19, 11,656)	123.84*	123.84*	123.84*	123.84*
<i>R</i> <sup>2</sup>	0.167	0.167	0.167	0.167
<i>N</i>	11,676	11,676	11,676	11,676

\**p* < 0.05; “Other” deputies are the reference category.



**Table 1B:** Logistic Regression Results for Stop Length, District Fixed-Effects

	Model D5	Model D7
	Stop Length	Stop Length
Spline Time 1	-0.579* (0.214)	-0.579* (0.214)
Spline Time 2	0.031 (0.041)	0.031 (0.041)
Spline Time 3	0.082* (0.027)	0.082* (0.027)
Spline Time 4	-0.009 (0.038)	-0.009 (0.038)
Spline Time 5	0.281* (0.139)	0.281* (0.139)
Driver Sex M	-0.034 (0.092)	-0.034 (0.092)
Civil Traffic	0.595 (0.550)	0.595 (0.550)
Non-AZ Plate	1.705* (0.160)	1.705* (0.160)
Arrest	4.118* (0.597)	4.118* (0.597)
Search	38.365* (1.072)	38.365* (1.072)
<b>Deputy Category</b>		
Traffic	-1.385 (0.919)	-1.385 (0.919)
Supervisors	-1.830 (0.952)	-1.830 (0.952)
Off Duty	-0.487 (3.528)	-0.487 (3.528)
Patrol	0.356 (0.913)	0.356 (0.913)
<b>Districts</b>		
District 1	1.665* (0.203)	0.729* (0.190)
District 2	1.558* (0.159)	0.622* (0.149)
District 3	1.772* (0.166)	0.836* (0.148)
District 4	2.067* (0.174)	1.131* (0.155)
District 5	-	-0.936* (0.134)
District 7	0.936* (0.134)	-
Constant	10.411* (1.174)	11.347* (1.177)
<i>F</i> (19, 11,656)	123.84*	123.84*
<i>R</i> <sup>2</sup>	0.167	0.167
<i>N</i>	11,676	11,676

\**p* < 0.05; Other deputies are the reference category.

## Appendix B: Modeling Fixed-Effects Citation Outcomes for Districts

**Table 1A: Logistic Regression Results for Citations, District Fixed-Effects**

	Model D1	Model D2	Model D3	Model D4
Spline Time 1	1.134 (0.110)	1.134 (0.110)	1.134 (0.110)	1.134 (0.110)
Spline Time 2	1.013 (0.018)	1.013 (0.018)	1.013 (0.018)	1.013 (0.018)
Spline Time 3	0.996 (0.012)	0.996 (0.012)	0.996 (0.012)	0.996 (0.012)
Spline Time 4	0.974 (0.016)	0.974 (0.016)	0.974 (0.016)	0.974 (0.016)
Spline Time 5	1.107 (0.066)	1.107 (0.066)	1.107 (0.066)	1.107 (0.066)
Driver Sex M	1.007 (0.041)	1.007 (0.041)	1.007 (0.041)	1.007 (0.041)
Civil Traffic	0.059* (0.010)	0.059* (0.010)	0.059* (0.010)	0.059* (0.010)
Non-AZ Plate	0.693* (0.050)	0.693* (0.050)	0.693* (0.050)	0.693* (0.050)
<b>Deputy Category</b>				
Traffic	6.560* (2.273)	6.560* (2.273)	6.560* (2.273)	6.560* (2.273)
Supervisors	1.506 (0.534)	1.506 (0.534)	1.506 (0.534)	1.506 (0.534)
Off Duty	1.049 (0.078)	1.049 (0.078)	1.049 (0.078)	1.049 (0.078)
Patrol	1.669 (0.569)	1.669 (0.569)	1.669 (0.569)	1.669 (0.569)
<b>Districts</b>				
District 1	–	1.517* (0.116)	1.532* (0.129)	1.138* (0.102)
District 2	0.659* (0.050)	–	1.010 (0.074)	0.751* (0.059)
District 3	0.653 (0.106)	0.990 (0.073)	–	0.743* (0.059)
District 4	0.879 (0.087)	1.332 (0.105)	1.346* (0.106)	–
District 5	0.680* (0.077)	1.031 (0.065)	1.041 (0.077)	0.774* (0.061)
District 7	1.086 (0.067)	1.648* (0.104)	1.664* (0.117)	1.237* (0.001)
<b>Offense Categories</b>				
Speed	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Non-Speed Moving	1.127* (0.097)	1.127* (0.097)	1.127* (0.097)	1.127* (0.097)
Driving Documentation	8.378* (0.683)	8.378* (0.683)	8.378* (0.683)	8.378* (0.683)
Equipment	0.137* (0.016)	0.137* (0.016)	0.137* (0.016)	0.137* (0.016)
Other Offense	3.986* (0.527)	3.986* (0.527)	3.986* (0.527)	3.986* (0.527)
Speed 0–4 mph	<0.001 (<0.001)	<0.001 (<0.001)	<0.001 (<0.001)	<0.001 (<0.001)
Speed 5–9 mph	0.259 (0.329)	0.259 (0.329)	0.259 (0.329)	0.259 (0.329)
Speed 10–14 mph	0.086* (0.105)	0.086* (0.105)	0.086* (0.105)	0.086* (0.105)
Speed 15–19 mph	1.148 (1.398)	1.148 (1.398)	1.148 (1.398)	1.148 (1.398)
Speed 20–24 mph	4.446 (5.420)	4.446 (5.420)	4.446 (5.420)	4.446 (5.420)
Speed 25–29 mph	9.407 (11.501)	9.407 (11.501)	9.407 (11.501)	9.407 (11.501)
Speed 30–34 mph	6.614 (8.158)	6.614 (8.158)	6.614 (8.158)	6.614 (8.158)
Speed 35–39 mph	11.134 (14.359)	11.134 (14.359)	11.134 (14.359)	11.134 (14.359)
Speed 40–44 mph	16.803 (27.767)	16.803 (27.767)	16.803 (27.767)	16.803 (27.767)
Speed 45–49 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 50–54 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 55–59 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 60–64 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 65–69 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 70–74 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Constant	2972553 (1.28e+09)	1959974 (8.44e+08)	1940878 (8.36e+08)	2611519* (1.12e+09)
$\chi^2$	14,791.44	14,791.44	14,791.44	14,791.44
$R^2$	0.372	0.372	0.372	0.372
$N$	18,585	18,585	18,585	18,585

\* $p < 0.05$ ; Other deputies are the reference category; <sup>a</sup>Variable omitted because of collinearity.

**Table 1B:** Logistic Regression Results for Citations, District Fixed-Effects

	Model D5	Model D7
Spline Time 1	1.134 (0.110)	1.134 (0.110)
Spline Time 2	1.013 (0.018)	1.013 (0.018)
Spline Time 3	0.996 (0.012)	0.996 (0.012)
Spline Time 4	0.974 (0.016)	0.974 (0.016)
Spline Time 5	1.107 (0.066)	1.107 (0.066)
Driver Sex M	1.007 (0.041)	1.007 (0.041)
Civil Traffic	0.059* (0.010)	0.059* (0.010)
Non-AZ Plate	0.693* (0.050)	0.693* (0.050)
<b>Deputy Category</b>		
Traffic	6.560* (2.273)	6.560* (2.273)
Supervisors	1.506 (0.534)	1.506 (0.534)
Off Duty	1.049 (0.078)	1.049 (0.078)
Patrol	1.669 (0.569)	1.669 (0.569)
<b>Districts</b>		
District 1	1.471* (0.117)	0.920 (0.070)
District 2	0.970 (0.061)	0.607* (0.038)
District 3	0.961 (0.071)	0.601* (0.042)
District 4	1.292* (0.101)	0.809* (0.060)
District 5	–	0.626* (0.039)
District 7	1.598* (0.100)	–
<b>Offense Categories</b>		
Speed	0.000 (0.001)	0.000 (0.001)
Non-Speed Moving	1.127* (0.097)	1.127* (0.097)
Driving Documentation	8.378* (0.683)	8.378* (0.683)
Equipment	0.137* (0.016)	0.137* (0.016)
Other Offense	3.986* (0.527)	3.986* (0.527)
Speed 0–4 mph	<0.001 (<0.001)	<0.001 (<0.001)
Speed 5–9 mph	0.259 (0.329)	0.259 (0.329)
Speed 10–14 mph	0.086* (0.105)	0.086* (0.105)
Speed 15–19 mph	1.148 (1.398)	1.148 (1.398)
Speed 20–24 mph	4.446 (5.420)	4.446 (5.420)
Speed 25–29 mph	9.407 (11.501)	9.407 (11.501)
Speed 30–34 mph	6.614 (8.158)	6.614 (8.158)
Speed 35–39 mph	11.134 (14.359)	11.134 (14.359)
Speed 40–44 mph	16.803 (27.767)	16.803 (27.767)
Speed 45–49 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 50–54 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 55–59 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 60–64 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 65–69 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Speed 70–74 mph	Omitted <sup>a</sup>	Omitted <sup>a</sup>
Constant	2020679 (8.70e+08)	3229581 (1.39e+09)
$\chi^2$	14,791.44	14,791.44
$R^2$	0.372	0.372
$N$	18,585	18,585

\* $p < 0.05$ ; Other deputies are the reference category; <sup>a</sup>Variable omitted because of collinearity.

**Table 2A: Logistic Regression Results for Citations, District Fixed-Effects**

	Model D1	Model D2	Model D3	Model D4
	Citations	Citations	Citations	Citations
Spline Time 1	1.004 (0.077)	1.004 (0.077)	1.004 (0.077)	1.004 (0.077)
Spline Time 2	1.072* (0.016)	1.072* (0.016)	1.072* (0.016)	1.072* (0.016)
Spline Time 3	0.930* (0.009)	0.930* (0.009)	0.930* (0.009)	0.930* (0.009)
Spline Time 4	0.906* (0.012)	0.906* (0.012)	0.906* (0.012)	0.906* (0.012)
Spline Time 5	1.369* (0.063)	1.369* (0.063)	1.369* (0.063)	1.369* (0.063)
Driver Sex M	1.050 (0.035)	1.050 (0.035)	1.050 (0.035)	1.050 (0.035)
Civil Traffic	0.038* (0.006)	0.038* (0.006)	0.038* (0.006)	0.038* (0.006)
Non-AZ Plate	0.795* (0.042)	0.795* (0.042)	0.795* (0.042)	0.795* (0.042)
<b>Deputy Category</b>				
Traffic	12.526* (0.269)	12.526* (0.269)	12.526* (0.269)	12.526* (0.269)
Supervisors	3.299* (1.028)	3.299* (1.028)	3.299* (1.028)	3.299* (1.028)
Off Duty	1.939 (1.471)	1.939 (1.471)	1.939 (1.471)	1.939 (1.471)
Patrol	2.602* (0.785)	2.602* (0.785)	2.602* (0.785)	2.602* (0.785)
<b>Districts</b>				
District 1	–	1.449* (0.090)	1.303* (0.089)	1.112 (0.079)
District 2	0.690* (0.043)	–	0.899 (0.053)	0.767* (0.048)
District 3	0.767* (0.052)	1.112 (0.066)	–	0.853* (0.055)
District 4	0.900 (0.064)	1.304 (0.082)	1.172 (0.076)	–
District 5	1.126 (0.071)	1.631* (0.083)	1.467* (0.088)	1.251* (0.079)
District 7	0.694* (3.706)	1.005 (0.050)	0.904 (0.051)	0.771* (0.046)
Constant	9.795* (3.706)	6.758* (2.549)	7.515* (2.843)	8.812* (3.336)
$\chi^2$	3152.78*	3152.78*	3152.78*	3152.78*
$R^2$	0.122	0.122	0.122	0.122
$N$	18,632	18,632	18,632	18,632

\* $p < 0.05$ ; Other deputies are the reference category.

**Table 2B:** Logistic Regression Results for Citations, District Fixed-Effects

	Model D5	Model D7
	Citations	Citations
Spline Time 1	1.004 (0.077)	1.004 (0.077)
Spline Time 2	1.072* (0.016)	1.072* (0.016)
Spline Time 3	0.930* (0.009)	0.930* (0.009)
Spline Time 4	0.906* (0.012)	0.906* (0.012)
Spline Time 5	1.369* (0.063)	1.369* (0.063)
Driver Sex M	1.050 (0.035)	1.050 (0.035)
Civil Traffic	0.038* (0.006)	0.038* (0.006)
Non-AZ Plate	0.795* (0.042)	0.795* (0.042)
<b>Deputy Category</b>		
Traffic	12.526* (0.269)	12.526* (0.269)
Supervisors	3.299* (1.028)	3.299* (1.028)
Off Duty	1.939 (1.471)	1.939 (1.471)
Patrol	2.602* (0.785)	2.602* (0.785)
<b>Districts</b>		
District 1	0.888 (0.056)	1.441* (0.088)
District 2	0.613* (0.031)	0.994 (0.049)
District 3	0.682* (0.041)	1.106 (0.062)
District 4	0.799* (0.050)	1.297* (0.077)
District 5	–	1.622* (0.079)
District 7	0.616* (0.030)	–
Constant	11.025* (4.162)	6.796* (2.571)
<i>F</i>	3152.78*	3152.78*
<i>R</i> <sup>2</sup>	0.122	0.122
<i>N</i>	18,632	18,632

\**p* < 0.05; Other deputies are the reference category.

## Appendix C: Modeling Fixed-Effects Arrest Outcomes for Districts

**Table 1C: Logistic Regression Results for Arrests, District Fixed-Effects**

	Model D1	Model D2	Model D3	Model D4
	Arrests	Arrests	Arrests	Arrests
Spline Time 1	1.254 (0.327)	1.254 (0.327)	1.254 (0.327)	1.254 (0.327)
Spline Time 2	0.958 (0.062)	0.958 (0.062)	0.958 (0.062)	0.958 (0.062)
Spline Time 3	1.067 (0.044)	1.067 (0.044)	1.067 (0.044)	1.067 (0.044)
Spline Time 4	1.109* (0.055)	1.109* (0.055)	1.109* (0.055)	1.109* (0.055)
Spline Time 5	0.850 (0.153)	0.850 (0.153)	0.850 (0.153)	0.850 (0.153)
Driver Sex M	1.241 (0.179)	1.241 (0.179)	1.241 (0.179)	1.241 (0.179)
Civil Traffic	0.001* (0.000)	0.001* (0.000)	0.001* (0.000)	0.001* (0.000)
Non-AZ Plate	0.880 (0.205)	0.880 (0.205)	0.880 (0.205)	0.880 (0.205)
<b>Deputy Category</b>				
Traffic	2.309* (2.320)	2.309* (2.320)	2.309* (2.320)	2.309* (2.320)
Supervisors	1.102 (0.281)	1.102 (0.281)	1.102 (0.281)	1.102 (0.281)
Off Duty	7.228 (15.570)	7.228 (15.570)	7.228 (15.570)	7.228 (15.570)
Patrol	1.299 (1.275)	1.299 (1.275)	1.299 (1.275)	1.299 (1.275)
<b>Districts</b>				
District 1	–	1.097 (0.268)	0.513* (0.134)	1.050 (0.322)
District 2	0.912 (0.223)	–	0.468* (0.114)	0.958 (0.286)
District 3	1.950* (0.510)	2.139* (0.520)	–	2.048* (0.585)
District 4	0.952 (0.292)	1.044 (0.312)	0.488* (0.139)	–
District 5	1.469 (0.334)	1.611* (0.347)	0.753 (0.175)	1.543 (0.445)
District 7	1.985* (0.495)	2.177* (0.519)	1.018 (0.236)	2.085* (0.586)
Constant	1.125 (1.277)			
$\chi^2$	5901.40	5901.40	5901.40	5901.40
$R^2$	0.747	0.747	0.747	0.747
$N$	18,632	18,632	18,632	18,632

\* $p < 0.05$ ; Other deputies are the reference category.

**Table 2C: Logistic Regression Results for Arrests, District Fixed-Effects**

	Model D5	Model D7
	Arrests	Arrests
Spline Time 1	1.254 (0.327)	1.254 (0.327)
Spline Time 2	0.958 (0.062)	0.958 (0.062)
Spline Time 3	1.067 (0.044)	1.067 (0.044)
Spline Time 4	1.109* (0.055)	1.109* (0.055)
Spline Time 5	0.850 (0.153)	0.850 (0.153)
Driver Sex M	1.241 (0.179)	1.241 (0.179)
Civil Traffic	0.001* (0.000)	0.001* (0.000)
Non-AZ Plate	0.880 (0.205)	0.880 (0.205)
<b>Deputy Category</b>		
Traffic	2.309* (2.320)	2.309* (2.320)
Supervisors	1.102 (0.281)	1.102 (0.281)
Off Duty	7.228 (15.570)	7.228 (15.570)
Patrol	1.299 (1.275)	1.299 (1.275)
<b>Districts</b>		
District 1	0.681 (0.155)	0.504* (0.126)
District 2	0.621* (0.134)	0.459* (0.109)
District 3	1.328 (0.309)	0.983 (0.227)
District 4	0.648 (0.187)	0.480* (0.135)
District 5	–	0.740 (0.740)
District 7	1.351 (0.296)	–
<b>Constant</b>		
$\chi^2$	5901.40	5901.40
$R^2$	0.747	0.747
$N$	18,632	18,632

\* $p < 0.05$ ; Other deputies are the reference category.

## Appendix D: Modeling District Differences in Disparity in Stop Length

### Hispanic v. White

**Table 1A:** Results for Differences in District-level Disparity in Stop Length (Hispanic v. White)

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1 Stop Length	Model D2 Stop Length	Model D3 Stop Length	Model D4 Stop Length
Hispanic	0.324 (0.722)	0.974 (0.512)	0.340 (0.284)	0.048 (0.347)
District 1	–	0.254 (0.302)	0.400 (0.326)	0.507 (0.272)
District 2	–0.254 (0.302)	–	0.634 (0.585)	0.253 (0.204)
District 3	–0.340 (0.325)	–0.146 (0.271)	–	0.108 (0.237)
District 4	–0.507 (0.272)	–0.253 (0.204)	–0.108 (0.237)	–
District 5	–1.521* (0.296)	–1.267* (0.236)	–1.121* (0.265)	–1.013* (0.196)
District 7	–1.008* (0.283)	–0.754* (0.219)	–0.608* (0.250)	–0.500* (0.175)
District 1*Hispanic	–	–0.650 (0.885)	–0.016 (0.776)	0.276 (0.801)
District 2*Hispanic	0.650 (0.885)	–	–0.634 (0.585)	0.927 (0.618)
District 3*Hispanic	0.016 (0.776)	–0.634 (0.585)	–	0.292 (0.449)
District 4*Hispanic	–0.276 (0.801)	–0.927 (0.618)	–0.292 (0.448)	–
District 5*Hispanic	0.025 (0.776)	–0.675 (0.584)	–0.041 (0.401)	0.251 (0.447)
District 7*Hispanic	–0.159 (0.756)	–0.809 (0.558)	–0.175 (0.361)	0.117 (0.412)
Constant	12.308* (0.248)	12.054* (0.172)	11.908* (0.209)	11.801* (0.110)
<i>N</i>	10,431	10,431	10,431	10,431
<i>F</i>	7.11*	7.11*	7.11*	7.11*
<i>R</i> <sup>2</sup>	0.011	0.011	0.011	0.011
Linear Hypothesis <i>F</i>	0.52	0.52	0.52	0.52

\**p* < 0.05



**Table 1B:** Results for Differences in District-level Disparity in Stop Length (Hispanic v. White)

	Reference Group	
	District 5	District 7
	Model D5 Stop Length	Model D7 Stop Length
Hispanic	0.299 (0.282)	0.165 (0.223)
District 1	1.521* (0.296)	1.008* (0.283)
District 2	1.267* (0.236)	0.754* (0.219)
District 3	1.121* (0.265)	0.609* (0.250)
District 4	1.013* (0.196)	0.501* (0.175)
District 5	–	–0.513* (0.212)
District 7	0.513* (0.212)	–
District 1*Hispanic	0.025 (0.759)	0.159 (0.756)
District 2*Hispanic	0.674 (0.589)	0.809 (0.558)
District 3*Hispanic	0.041 (0.401)	0.175 (0.361)
District 4*Hispanic	–0.251 (0.447)	–0.117 (0.412)
District 5*Hispanic	–	0.134 (0.360)
District 7*Hispanic	–0.134 (0.340)	–
Constant	10.788* (0.162)	11.300* (0.136)
<i>N</i>	10,431	10,431
<i>F</i>	7.11*	7.11*
<i>R</i> <sup>2</sup>	0.011	0.011
Linear Hypothesis <i>F</i>	0.52	0.52

\**p* < 0.05

## Black v. White

**Table 2A:** Results for Differences in District-level Disparity in Stop Length (Black v. White)

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1 Stop Length	Model D2 Stop Length	Model D3 Stop Length	Model D4 Stop Length
Black	-0.275 (0.419)	1.278 (1.156)	0.794 (0.601)	0.290 (0.619)
District 1	-	0.137 (0.333)	0.246 (0.346)	0.420 (0.297)
District 2	-0.137 (0.333)	-	0.109 (0.289)	0.283 (0.228)
District 3	-0.246 (0.346)	-0.109 (0.289)	-	0.174 (0.199)
District 4	-0.420 (0.297)	-0.283 (0.228)	-0.174 (0.246)	-
District 5	-1.494* (0.314)	-1.357* (0.193)	-1.248* (0.266)	-1.074* (0.199)
District 7	-0.946* (0.305)	-0.809* (0.177)	-0.700* (0.254)	-0.526* (0.183)
District 1*Black	-	-1.553 (1.229)	-1.069 (0.732)	-0.565 (0.747)
District 2*Black	1.553 (1.229)	-	-0.485 (1.303)	0.988 (1.311)
District 3*Black	1.069 (0.733)	-0.485 (1.303)	-	0.504 (0.863)
District 4*Black	0.565 (0.657)	-0.988 (1.311)	-0.504 (0.863)	-
District 5*Black	1.761 (0.919)	0.208 (1.416)	0.692 (1.016)	1.196 (1.026)
District 7*Black	-0.099 (0.510)	-1.653 (1.192)	-1.168 (0.668)	-0.664 (0.684)
Constant	12.310* (0.271)	12.173* (0.193)	12.064* (0.214)	11.8908* (0.121)
<i>N</i>	8,887	8,887	8,887	8,887
<i>F</i>	6.34*	6.34*	6.34*	6.34*
<i>R</i> <sup>2</sup>	0.012	0.012	0.012	0.012
Linear Hypothesis <i>F</i>	1.71	1.71	1.71	1.71

\**p* < 0.05

**Table 2B:** Results for Differences in District-level Disparity in Stop Length (Black v. White)

	Reference Group	
	District 5	District 2
	Model D5 Stop Length	Model D7 Stop Length
Black	1.486 (0.819)	-0.374 (0.291)
District 1	1.494* (0.314)	0.946* (0.304)
District 2	1.357* (0.249)	0.809* (0.236)
District 3	1.248* (0.266)	0.700* (0.254)
District 4	1.074* (0.199)	0.526* (0.183)
District 5	-	-0.548* (0.209)
District 7	0.548* (0.209)	-
District 1*Black	-1.761 (0.919)	0.099 (0.510)
District 2*Black	-0.208 (1.416)	1.653 (1.192)
District 3*Black	-0.692 (1.016)	1.168 (0.668)
District 4*Black	-1.196 (1.026)	0.664 (0.684)
District 5*Black	-	1.860* (0.869)
District 7*Black	-1.860* (0.869)	-
Constant	10.816* (0.158)	11.364* (0.137)
<i>N</i>	8,887	8,887
<i>F</i>	6.34*	6.34*
<i>R</i> <sup>2</sup>	0.012	0.012
Linear Hypothesis <i>F</i>	1.71	1.71

\**p* < 0.05

## Minority v. White

**Table 3A:** Results for Differences in District-level Disparity in Stop Length (Minority v. White)

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1 Stop Length	Model D2 Stop Length	Model D3 Stop Length	Model D4 Stop Length
Minority	0.108 (0.446)	0.900* (0.410)	0.385 (0.262)	0.089 (0.276)
District 1	–	0.262 (0.288)	0.435 (0.307)	0.540* (0.257)
District 2	–0.262 (0.288)	–	0.173 (0.261)	0.279 (0.198)
District 3	–0.435 (0.307)	–0.173 (0.261)	–	0.106 (0.226)
District 4	–0.540* (0.257)	–0.279 (0.183)	–0.106 (0.226)	–
District 5	–1.520* (0.282)	–1.258* (0.230)	–1.085* (0.255)	–0.979* (0.191)
District 7	–1.010* (0.266)	–0.748* (0.210)	–0.575 (0.237)	–0.469* (0.165)
District 1* Minority	–	–0.792 (0.606)	–0.277 (0.517)	0.019 (0.524)
District 2* Minority	0.792 (0.606)	–	0.515 (0.487)	0.812 (0.494)
District 3* Minority	0.277 (0.517)	–0.515 (0.487)	–	0.297 (0.380)
District 4* Minority	–0.019 (0.524)	–0.812 (0.494)	–0.297 (0.380)	–
District 5* Minority	0.316 (0.515)	–0.477 (0.484)	0.038 (0.367)	0.335 (0.377)
District 7* Minority	0.081 (0.482)	–0.711 (0.449)	–0.196 (0.320)	0.100 (0.331)
Constant	12.308* (0.234)	12.046* (0.168)	11.873* (0.200)	11.767* (0.106)
<i>N</i>	11,676	11,676	11,676	11,676
<i>F</i>	8.10*	8.10*	8.10*	8.10*
<i>R</i> <sup>2</sup>	0.011	0.011	0.011	0.011
Linear Hypothesis <i>F</i>	0.72	0.72	0.72	0.72

\**p* < 0.05

**Table 3B:** Results for Differences in District-level Disparity in Stop Length (Minority v. White)

	Reference Group	
	District 5	District 7
	Model D5 Stop Length	Model D7 Stop Length
Minority	0.424 (0.257)	0.189 (0.183)
District 1	1.520* (0.282)	1.010* (0.266)
District 2	1.258* (0.230)	0.748* (0.210)
District 3	1.085* (0.255)	0.575* (0.237)
District 4	0.979* (0.191)	0.469* (0.165)
District 5	–	–0.510* (0.203)
District 7	0.510* (0.203)	–
District 1* Minority	–0.316 (0.515)	–0.081 (0.482)
District 2* Minority	0.477 (0.484)	0.711 (0.449)
District 3* Minority	–0.038 (0.367)	0.196 (0.320)
District 4* Minority	–0.335 (0.372)	–0.100 (0.331)
District 5* Minority	–	0.235 (0.316)
District 7* Minority	–0.235 (0.316)	–
Constant	10.788* (0.158)	11.298* (0.127)
<i>N</i>	11,676	11,676
<i>F</i>	8.10*	8.10*
<i>R</i> <sup>2</sup>	0.011	0.011
Linear Hypothesis <i>F</i>	0.72	0.72

\**p* < 0.05

## Appendix F: Modeling District Differences in Disparity in Citation Outcomes

### Hispanic v. White Drivers

**Table 1A:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Hispanic v. White)

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1 Citations	Model D2 Citations	Model D3 Citations	Model D4 Citations
Hispanic	1.485* (0.164)	1.209* (0.096)	1.252* (0.122)	1.356* (0.202)
District 1	–	1.469* (0.135)	0.775* (0.066)	0.712* (0.059)
District 2	0.681* (0.062)	–	0.528* (0.043)	0.485* (0.038)
District 3	1.290* (0.110)	1.894* (0.154)	–	0.918 (0.066)
District 4	1.404* (0.117)	2.063* (0.164)	1.089 (0.078)	–
District 5	1.383* (0.109)	2.032* (0.152)	1.073 (0.071)	0.985 (0.063)
District 7	0.831* (0.064)	1.221 (0.089)	0.644* (0.042)	0.592* (0.036)
District 1*Hispanic	–	1.229 (0.167)	1.187 (0.175)	1.095 (0.203)
District 2*Hispanic	0.814 (0.111)	–	0.966 (0.122)	0.891 (0.151)
District 3*Hispanic	0.843 (0.124)	1.035 (0.131)	–	0.923 (0.165)
District 4*Hispanic	0.913 (0.169)	1.122 (0.190)	1.084 (0.193)	–
District 5*Hispanic	0.785 (0.109)	0.965 (0.112)	0.932 (0.121)	0.860 (0.148)
District 7*Hispanic	0.967 (0.141)	1.188 (0.149)	1.147 (0.158)	1.059 (0.188)
Constant	0.971 (0.065)	0.661* (0.041)	1.252 (0.065)	1.363 (0.067)
<i>N</i>	16,310	16,310	16,310	16,310
Wald $\chi^2$	292.94*	292.94*	292.94*	292.94*
Pseudo <i>R</i> <sup>2</sup>	0.015	0.015	0.015	0.015
Linear Hypothesis $\chi^2$	5.16	5.16	5.16	5.16

\**p* < 0.05

**Table 1B:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Hispanic v. White)

	Reference Group	
	District 5	District 7
	Model D5 Citations	Model D7 Citations
Hispanic	1.166 (0.099)	1.436* (0.139)
District 1	0.723* (0.057)	1.204* (0.093)
District 2	0.492* (0.037)	0.819* (0.059)
District 3	0.932 (0.062)	1.552* (0.099)
District 4	1.015 (0.065)	1.690* (0.104)
District 5	–	1.665* (0.093)
District 7	0.601* (0.033)	–
District 1*Hispanic	1.274 (0.177)	1.034 (0.152)
District 2*Hispanic	1.036 (0.120)	0.842 (0.105)
District 3*Hispanic	1.073 (0.139)	0.872 (0.120)
District 4*Hispanic	1.163 (0.199)	0.944 (0.168)
District 5*Hispanic	–	0.812 (0.104)
District 7*Hispanic	1.231 (0.158)	–
Constant	1.343* (0.055)	0.806* (0.030)
<i>N</i>	16,310	16,310
Wald $\chi^2$	292.94*	292.94*
Pseudo <i>R</i> <sup>2</sup>	0.015	0.015
Linear Hypothesis $\chi^2$	5.16	5.16

\**p* < 0.05

**Table 2A:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Hispanic v. White), Excluding Violation Categories and Speed in Generating Propensity Scores

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1 Citations	Model D2 Citations	Model D3 Citations	Model D4 Citations
Hispanic	1.460* (0.161)	1.160 (0.092)	1.206 (0.117)	1.297 (0.192)
District 1	–	1.453* (0.132)	0.766* (0.065)	0.676* (0.056)
District 2	0.688* (0.063)	–	0.527* (0.042)	0.465* (0.037)
District 3	1.305* (0.110)	1.896* (0.152)	–	0.882 (0.063)
District 4	1.479* (0.122)	2.149* (0.169)	1.133 (0.080)	–
District 5	1.424* (0.112)	2.070* (0.153)	1.092 (0.072)	0.963 (0.061)
District 7	0.811* (0.062)	1.178* (0.085)	0.622* (0.039)	0.548* (0.033)
District 1*Hispanic	–	1.259 (0.170)	1.211 (0.177)	1.126 (0.208)
District 2*Hispanic	0.794 (0.108)	–	0.962 (0.120)	0.894 (0.150)
District 3*Hispanic	0.825 (0.121)	1.039 (0.130)	–	0.929 (0.164)
District 4*Hispanic	0.888 (0.164)	1.118 (0.188)	1.076 (0.190)	–
District 5*Hispanic	0.778 (0.107)	0.979 (0.113)	0.942 (0.120)	0.876 (0.149)
District 7*Hispanic	1.002 (0.145)	1.262 (0.156)	1.214 (0.165)	1.128 (0.198)
Constant	0.928 (0.062)	0.639* (0.039)	1.211* (0.062)	1.372* (0.067)
<i>N</i>	16,310	16,310	16,310	16,310
Wald $\chi^2$	332.92*	332.92*	332.92*	332.92*
Pseudo <i>R</i> <sup>2</sup>	0.016	0.016	0.016	0.016
Linear Hypothesis $\chi^2$	7.16	7.16	7.16	7.16

\**p* < 0.05

**Table 2B:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Hispanic v. White), Excluding Violation Categories and Speed in Generating Propensity Scores

	Reference Group	
	District 5	District 7
	Model D5 Citations	Model D7 Citations
Hispanic	1.136 (0.095)	1.464* (0.139)
District 1	0.702* (0.055)	1.233* (0.094)
District 2	0.483* (0.036)	0.848* (0.061)
District 3	0.916 (0.060)	1.609* (0.102)
District 4	1.038 (0.066)	1.823* (0.111)
District 5	–	1.756* (0.096)
District 7	0.569* (0.031)	–
District 1*Hispanic	1.286 (0.178)	0.998 (0.145)
District 2*Hispanic	1.021 (0.117)	0.793 (0.098)
District 3*Hispanic	1.062 (0.136)	0.824 (0.112)
District 4*Hispanic	1.142 (0.194)	0.886 (0.156)
District 5*Hispanic	–	0.776 (0.098)
District 7*Hispanic	1.288 (0.163)	–
Constant	1.322* (0.054)	0.753* (0.028)
<i>N</i>	16,310	16,310
Wald $\chi^2$	332.92*	332.92*
Pseudo <i>R</i> <sup>2</sup>	0.016	0.016
Linear Hypothesis $\chi^2$	7.16	7.16

\**p* < 0.05

## Black v. White Drivers

**Table 3A:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Black v. White)

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1 Citations	Model D2 Citations	Model D3 Citations	Model D4 Citations
Black	1.106 (0.162)	1.166 (0.142)	1.111 (0.176)	0.741 (0.194)
District 1	–	1.484* (0.144)	0.809* (0.073)	0.736* (0.065)
District 2	0.674* (0.065)	–	0.545* (0.047)	0.496* (0.042)
District 3	1.236* (0.111)	1.835* (0.159)	–	0.910 (0.069)
District 4	1.359* (0.119)	2.017* (0.170)	1.099 (0.084)	–
District 5	1.301* (0.108)	1.932* (0.153)	1.053 (0.074)	0.958 (0.064)
District 7	0.784* (0.063)	1.164* (0.090)	0.634* (0.043)	0.577 (0.037)
District 1*Black	–	0.949* (0.181)	0.995 (0.215)	1.492 (0.448)
District 2*Black	1.054 (0.201)	–	1.049 (0.210)	1.573 (0.455)
District 3*Black	1.005 (0.217)	0.953 (0.190)	–	1.499 (0.459)
District 4*Black	0.670 (0.201)	0.636 (0.184)	0.667 (0.204)	–
District 5*Black	0.841 (0.179)	0.798 (0.157)	0.837 (0.185)	1.254 (0.382)
District 7*Black	0.889 (0.181)	0.843 (0.157)	0.885 (0.188)	1.327 (0.395)
Constant	1.012* (0.072)	0.682* (0.045)	1.251* (0.070)	1.375* (0.071)
<i>N</i>	13,188	13,188	13,188	13,188
Wald $\chi^2$	175.95*	175.95*	175.95*	175.95*
Pseudo <i>R</i> <sup>2</sup>	0.012	0.012	0.012	0.012
Linear Hypothesis $\chi^2$	3.58	3.58	3.58	3.58

\**p* < 0.05



**Table 3B:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Black v. White)

	Reference Group	
	District 5	District 7
	Model D5 Citations	Model D7 Citations
Black	0.930 (0.144)	0.983 (0.139)
District 1	0.768* (0.064)	1.275* (0.103)
District 2	0.518* (0.041)	0.859* (0.066)
District 3	0.950 (0.067)	1.576* (0.107)
District 4	1.044 (0.070)	1.732* (0.112)
District 5	–	1.659* (0.096)
District 7	0.603* (0.035)	–
District 1*Black	1.190 (0.254)	1.125 (0.229)
District 2*Black	1.254 (0.247)	1.186 (0.221)
District 3*Black	1.195 (0.265)	1.130 (0.240)
District 4*Black	0.797 (0.243)	0.754 (0.224)
District 5*Black	–	0.946 (0.198)
District 7*Black	1.058 (0.222)	–
Constant	1.317* (0.056)	0.793 (0.031)
<i>N</i>	13,188	13,188
Wald $\chi^2$	175.95*	175.95*
Pseudo <i>R</i> <sup>2</sup>	0.012	0.012
Linear Hypothesis $\chi^2$	3.58	3.58

\**p* < 0.05

**Table 4A:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Black v. White), Excluding Violation Categories and Speed in Generating Propensity Scores

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1 Citations	Model D2 Citations	Model D3 Citations	Model D4 Citations
Black	1.086 (0.160)	1.171 (0.142)	1.045 (0.164)	0.679 (0.160)
District 1	–	1.453* (0.140)	0.777* (0.070)	0.677* (0.031)
District 2	0.688* (0.066)	–	0.535* (0.046)	0.466* (0.027)
District 3	1.287* (0.115)	1.871* (0.161)	–	0.871 (0.034)
District 4	1.477* (0.129)	2.147* (0.179)	1.148 (0.086)	–
District 5	1.391* (0.114)	2.022* (0.158)	1.081 (0.075)	0.942 (0.063)
District 7	0.734* (0.061)	1.110 (0.084)	0.593* (0.040)	0.517* (0.022)
District 1*Black	–	0.928 (0.177)	1.039 (0.223)	1.600 (0.382)
District 2*Black	1.078 (0.205)	–	1.120 (0.222)	1.725 (0.333)
District 3*Black	0.962 (0.207)	0.892 (0.177)	–	1.539 (0.318)
District 4*Black	0.625 (0.186)	0.580 (0.166)	0.650 (0.197)	–
District 5*Black	0.832 (0.177)	0.772 (0.151)	0.865 (0.190)	1.331 (0.343)
District 7*Black	0.911 (0.184)	0.845 (0.156)	0.947 (0.198)	1.457 (0.344)
Constant	0.911 (0.064)	0.627* (0.041)	1.174* (0.041)	1.347* (0.073)
<i>N</i>	13,188	13,188	13,188	13,188
Wald $\chi^2$	231.42*	231.42*	231.42*	231.42*
Pseudo <i>R</i> <sup>2</sup>	0.015	0.015	0.015	0.015
Linear Hypothesis $\chi^2$	4.64	4.64	4.64	4.64

\**p* < 0.05

**Table 4B:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Black v. White), Excluding Violation Categories and Speed in Generating Propensity Scores

	Reference Group	
	District 5	District 7
	Model D5 Citations	Model D7 Citations
Black	0.904 (0.139)	0.990 (0.137)
District 1	0.719* (0.059)	1.309* (0.105)
District 2	0.495* (0.039)	0.901 (0.068)
District 3	0.925 (0.064)	1.685* (0.113)
District 4	1.062 (0.070)	1.934* (0.123)
District 5	–	1.821* (0.104)
District 7	0.549* (0.031)	–
District 1*Black	1.202 (0.256)	1.098 (0.222)
District 2*Black	1.296 (0.254)	1.183 (0.218)
District 3*Black	1.157 (0.254)	1.056 (0.221)
District 4*Black	0.751 (0.227)	0.686 (0.202)
District 5*Black	–	0.913 (0.189)
District 7*Black	1.095 (0.227)	–
Constant	1.268* (0.054)	0.595* (0.027)
<i>N</i>	13,188	13,188
Wald $\chi^2$	231.42*	231.42*
Pseudo <i>R</i> <sup>2</sup>	0.015	0.015
Linear Hypothesis $\chi^2$	4.64	4.64

\**p* < 0.05

## Minority v. White Drivers

**Table 5A:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Minority v. White)

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1 Citations	Model D2 Citations	Model D3 Citations	Model D4 Citations
Minority	1.256* (0.119)	1.149 (0.071)	1.157 (0.098)	1.165 (0.106)
District 1	–	1.463* (0.095)	0.755* (0.063)	0.674* (0.028)
District 2	0.684* (0.062)	–	0.515* (0.041)	0.461* (0.024)
District 3	1.325* (0.111)	1.939* (0.095)	–	0.894 (0.027)
District 4	1.482* (0.122)	2.168* (0.212)	1.118 (0.079)	–
District 5	1.400* (0.109)	2.047* (0.181)	1.056 (0.069)	0.945 (0.051)
District 7	0.841* (0.064)	1.230* (0.067)	0.634* (0.040)	0.567* (0.018)
District 1*Minority	–	1.093 (0.127)	1.085 (0.138)	1.078 (0.133)
District 2*Minority	0.915 (0.110)	–	0.993 (0.112)	0.986 (0.112)
District 3*Minority	0.921 (0.117)	1.007 (0.115)	–	0.993 (0.124)
District 4*Minority	0.928 (0.142)	1.014 (0.133)	1.007 (0.148)	–
District 5*Minority	0.865 (0.103)	0.945 (0.100)	0.939 (0.105)	0.932 (0.109)
District 7*Minority	0.946 (0.113)	1.034 (0.136)	1.027 (0.115)	1.019 (0.149)
Constant	0.955 (0.064)	0.653* (0.035)	1.265* (0.065)	1.415* (0.077)
<i>N</i>	18,632	18,632	18,632	18,632
Wald $\chi^2$	340.17*	340.17*	340.17*	340.17*
Pseudo <i>R</i> <sup>2</sup>	0.015	0.015	0.015	0.015
Linear Hypothesis $\chi^2$	1.65	1.65	1.65	1.65

\**p* < 0.05

**Table 5B:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Minority v. White)

	Reference Group	
	District 5	District 7
	Model D5 Citations	Model D7 Citations
Minority	1.086 (0.079)	1.188* (0.087)
District 1	0.715* (0.056)	1.189* (0.091)
District 2	0.488* (0.036)	0.813* (0.058)
District 3	0.947* (0.062)	1.576* (0.099)
District 4	1.059* (0.067)	1.762* (0.107)
District 5	–	1.664* (0.091)
District 7	0.601* (0.033)	–
District 1*Minority	1.156 (0.138)	1.057 (0.127)
District 2*Minority	1.058 (0.110)	0.967 (0.101)
District 3*Minority	1.065 (0.119)	0.974 (0.109)
District 4*Minority	1.073 (0.151)	0.981 (0.138)
District 5*Minority	–	0.915 (0.094)
District 7*Minority	1.093 (0.113)	–
Constant	1.336* (0.055)	0.803* (0.030)
<i>N</i>	18,632	18,632
Wald $\chi^2$	340.17*	340.17*
Pseudo <i>R</i> <sup>2</sup>	0.015	0.015
Linear Hypothesis $\chi^2$	1.65	1.65

\**p* < 0.05

**Table 6A:** Results for Differences in District-level Disparity in Citations, Odds Ratios (Minority v. White), Excluding Violation Categories and Speed in Generating Propensity Scores

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1 Citations	Model D2 Citations	Model D3 Citations	Model D4 Citations
Minority	1.251* (0.118)	1.128 (0.071)	1.120 (0.094)	1.142 (0.111)
District 1	–	1.454* (0.094)	0.750* (0.063)	0.649* (0.029)
District 2	0.688* (0.062)	–	0.516* (0.041)	0.446* (0.024)
District 3	1.334* (0.112)	1.940* (0.097)	–	0.866* (0.029)
District 4	1.540* (0.126)	2.241* (0.208)	1.555* (0.081)	–
District 5	1.424* (0.111)	2.071* (0.182)	1.068 (0.069)	0.925 (0.052)
District 7	0.821* (0.062)	1.194* (0.068)	0.615* (0.038)	0.533* (0.019)
District 1*Minority	–	1.109 (0.130)	0.117 (0.141)	1.095 (0.131)
District 2*Minority	0.902 (0.108)	–	1.007 (0.113)	0.987 (0.108)
District 3*Minority	0.895 (0.113)	0.993 (0.117)	–	0.980 (0.122)
District 4*Minority	0.913 (0.139)	1.013 (0.139)	1.020 (0.149)	–
District 5*Minority	0.853 (0.101)	0.946 (0.104)	0.953 (0.105)	0.934 (0.110)
District 7*Minority	0.958 (0.114)	1.062 (0.142)	1.070 (0.119)	1.049 (0.149)
Constant	0.922 (0.061)	0.634* (0.039)	1.230* (0.040)	1.420* (0.077)
<i>N</i>	18,632	18,632	18,632	18,632
Wald $\chi^2$	373.82*	373.82*	373.82*	373.82*
Pseudo <i>R</i> <sup>2</sup>	0.016	0.016	0.016	0.016
Linear Hypothesis $\chi^2$	2.34	2.34	2.34	2.34

\**p* < 0.05

**Table 6B:** HLM Results for Differences in District-Level Disparity in Citations (Minority v. White), Excluding Violation Categories and Speed in Generating Propensity Scores

	Reference Group	
	District 5	District 7
	Model D5 Citations	Model D7 Citations
Minority	1.067 (0.077)	1.198* (0.087)
District 1	0.702* (0.055)	1.218* (0.092)
District 2	0.483* (0.035)	0.838* (0.060)
District 3	0.936 (0.061)	1.625* (0.101)
District 4	1.082 (0.068)	1.877* (0.113)
District 5	–	1.735* (0.094)
District 7	0.576* (0.031)	–
District 1*Minority	1.173 (0.139)	1.044 (0.124)
District 2*Minority	1.057 (0.109)	0.942 (0.098)
District 3*Minority	1.050 (0.116)	0.935 (0.104)
District 4*Minority	1.071 (0.149)	0.954 (0.133)
District 5*Minority	–	0.891* (0.091)
District 7*Minority	1.123 (0.115)	–
Constant	1.313* (0.053)	0.757* (0.023)
<i>N</i>	18,632	18,632
Wald $\chi^2$	373.82*	373.82*
Pseudo <i>R</i> <sup>2</sup>	0.016	0.016
Linear Hypothesis $\chi^2$	2.34	2.34

\**p* < 0.05

## Appendix G: Modeling District Differences in Disparity in Arrest Outcomes

### Hispanic v. White

**Table 1A:** Results for Differences in District-level Disparity in Arrests, Odds Ratios (Hispanic v. White)

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1	Model D2	Model D3	Model D4
	Arrests	Arrests	Arrests	Arrests
Hispanic	1.487 (0.310)	1.497 (0.315)	2.190* (0.363)	1.487* (0.525)
District 1	–	1.745* (0.395)	0.951 (0.173)	1.729* (0.346)
District 2	0.573* (0.130)	–	0.545* (0.113)	0.990* (0.222)
District 3	1.052 (0.191)	1.836* (0.382)	–	1.818* (0.326)
District 4	0.578* (0.116)	1.010 (0.227)	0.550* (0.113)	–
District 5	1.120 (0.186)	1.956* (0.380)	1.065 (0.149)	1.937* (0.316)
District 7	0.587 (0.103)	1.025 (0.207)	0.558* (0.084)	1.015* (0.174)
District 1*Hispanic	–	0.993 (0.294)	0.679 (0.181)	1.000 (0.410)
District 2*Hispanic	1.007 (0.298)	–	0.684 (0.183)	1.007 (0.414)
District 3*Hispanic	1.473 (0.392)	1.463 (0.392)	–	1.472 (0.574)
District 4*Hispanic	1.000 (0.410)	0.993 (0.408)	0.679 (0.265)	–
District 5*Hispanic	1.204 (0.305)	1.195 (0.305)	0.817 (0.180)	1.203 (0.459)
District 7*Hispanic	1.158 (0.338)	1.150 (0.337)	0.786 (0.207)	1.158 (0.472)
Constant	0.075* (0.011)	0.043* (0.008)	0.079* (0.009)	0.044* (0.006)
<i>N</i>	16,310	16,310	16,310	16,310
Wald $\chi^2$	145.09*	145.09*	145.09*	145.09*
Pseudo <i>R</i> <sup>2</sup>	0.023	0.023	0.023	0.023
Linear Hypothesis $\chi^2$	3.23	3.23	3.23	3.23

\**p* < 0.05

**Table 1B:** Results for Differences in District-level Disparity in Arrests, Odds Ratios (Hispanic v. White)

	Reference Group	
	District 5	District 7
	Model D5	Model D7
	Arrests	Arrests
Minority	1.790* (0.258)	1.722* (0.352)
District 1	0.893 (0.148)	1.703* (0.297)
District 2	0.511* (0.099)	0.976 (0.197)
District 3	0.939 (0.131)	1.791* (0.269)
District 4	0.516 (0.084)	0.985 (0.169)
District 5	–	1.908* (0.249)
District 7	0.524* (0.068)	–
District 1*Hispanic	0.831 (0.210)	0.863 (0.252)
District 2*Hispanic	0.837 (0.214)	0.869 (0.255)
District 3*Hispanic	1.224 (0.269)	1.271 (0.335)
District 4*Hispanic	0.831 (0.405)	0.864 (0.352)
District 5*Hispanic	–	1.039 (0.260)
District 7*Hispanic	0.962 (0.241)	–
Constant	0.084* (0.084)	0.044* (0.004)
<i>N</i>	16,310	16,310
Wald $\chi^2$	145.09*	145.09*
Pseudo <i>R</i> <sup>2</sup>	0.023	0.023
Linear Hypothesis $\chi^2$	3.23	3.23

\**p* < 0.05



## Black v. White

**Table 2A:** Results for Differences in District-level Disparity in Arrests, Odds Ratios (Black v. White)

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1	Model D2	Model D3	Model D4
	Arrests	Arrests	Arrests	Arrests
Black	1.004 (0.294)	1.824* (0.509)	2.605* (0.616)	0.425 (0.312)
District 1	–	1.657* (0.393)	0.939* (0.181)	1.599* (0.338)
District 2	0.604* (0.143)	–	0.567* (0.124)	0.965 (0.227)
District 3	1.065* (0.206)	1.764* (0.385)	–	1.702* (0.324)
District 4	0.625 (0.132)	1.036 (0.244)	0.587* (0.112)	–
District 5	1.085* (0.189)	1.797* (0.363)	1.019 (0.151)	1.734* (0.297)
District 7	0.569* (0.105)	0.943 (0.199)	0.535* (0.085)	0.910 (0.165)
District 1*Black	–	0.550 (0.223)	0.385* (0.145)	2.362 (1.868)
District 2*Black	1.818 (0.736)	–	0.700 (0.256)	4.294 (3.374)
District 3*Black	2.596* (0.978)	1.428 (0.522)	–	6.132* (4.732)
District 4*Black	0.423 (0.335)	0.233 (0.183)	0.163 (0.126)	–
District 5*Black	2.042 (0.811)	1.123 (0.434)	0.786 (0.281)	4.822* (3.771)
District 7*Black	1.727 (0.715)	0.950 (0.384)	0.665 (0.250)	4.078 (3.225)
Constant	0.086 (0.013)	0.052* (0.009)	0.091* (0.011)	0.054* (0.008)
<i>N</i>	13,188	13,188	13,188	13,188
Wald $\chi^2$	83.79	83.79	83.79	83.79
Pseudo <i>R</i> <sup>2</sup>	0.021	0.021	0.021	0.021
Linear Hypothesis $\chi^2$	10.51	10.51	10.51	10.51

\**p* < 0.05

**Table 2B:** Results for Differences in District-level Disparity in Arrests, Odds Ratios (Black v. White)

	Reference Group	
	District 5	District 7
	Model D5	Model D7
	Arrests	Arrests
Black	2.049* (0.549)	1.733 (0.506)
District 1	0.922 (0.161)	1.757* (0.324)
District 2	0.557* (0.112)	1.060 (0.223)
District 3	0.982 (0.145)	1.870* (0.298)
District 4	0.577 (0.099)	1.099* (0.199)
District 5	–	1.905* (0.259)
District 7	0.525* (0.071)	–
District 1*Black	0.490 (0.195)	0.579 (0.240)
District 2*Black	0.890 (0.344)	1.053 (0.425)
District 3*Black	1.272 (0.454)	1.504 (0.565)
District 4*Black	0.207* (0.162)	0.245 (0.194)
District 5*Black	–	1.182 (0.469)
District 7*Black	0.846 (0.335)	–
Constant	0.093* (0.008)	0.049* (0.005)
<i>N</i>	13,188	13,188
Wald $\chi^2$	83.79	83.79
Pseudo <i>R</i> <sup>2</sup>	0.021	0.021
Linear Hypothesis $\chi^2$	10.51	10.51

\**p* < 0.05

## Minority v. White

**Table 3A:** Results for Differences in District-level Disparity in Arrests, Odds Ratios (Minority v. White)

	Reference Group			
	District 1	District 2	District 3	District 4
	Model D1	Model D2	Model D3	Model D4
	Arrests	Arrests	Arrests	Arrests
Minority	1.327 (0.250)	1.549* (0.310)	2.298* (0.342)	1.548 (0.452)
District 1	–	1.784* (0.401)	0.972 (0.175)	1.753* (0.348)
District 2	0.561* (0.126)	–	0.545* (0.112)	0.983 (0.218)
District 3	1.029 (0.185)	1.836* (0.378)	–	1.804* (0.319)
District 4	0.570* (0.113)	1.017 (0.226)	0.544* (0.098)	–
District 5	1.126 (0.186)	2.009* (0.388)	1.094 (0.152)	1.974* (0.319)
District 7	0.591 (0.102)	1.055 (0.211)	0.575* (0.085)	1.037 (0.176)
District 1*Minority	–	0.856 (0.235)	0.577* (0.139)	0.857 (0.298)
District 2*Minority	0.168 (0.320)	–	0.674 (0.168)	1.001 (0.354)
District 3*Minority	1.733* (0.416)	1.484 (0.370)	–	1.485 (0.487)
District 4*Minority	1.167 (0.406)	0.999 (0.354)	0.673 (0.221)	–
District 5*Minority	1.372 (0.312)	1.175 (0.278)	0.792 (0.155)	1.176 (0.375)
District 7*Minority	1.218 (0.305)	1.043 (0.271)	0.703 (0.156)	1.044 (0.351)
Constant	0.074* (0.011)	0.041* (0.007)	0.076* (0.008)	0.042* (0.006)
<i>N</i>	18,632	18,632	18,632	18,632
Wald $\chi^2$	189.57*	189.57*	189.57*	189.57*
Pseudo <i>R</i> <sup>2</sup>	0.025	0.025	0.025	0.025
Linear Hypothesis $\chi^2$	6.40	6.40	6.40	6.40

\**p* < 0.05

**Table 3B:** Results for Differences in District-level Disparity in Arrests, Odds Ratios (Minority v. White)

	Reference Group	
	District 5	District 7
	Model D5	Model D7
	Arrests	Arrests
Minority	1.820* (0.232)	1.616* (0.267)
District 1	0.888 (0.147)	1.691* (0.293)
District 2	0.498* (0.096)	0.948 (0.189)
District 3	0.914 (0.127)	1.740* (0.258)
District 4	0.507* (0.082)	0.964 (0.164)
District 5	–	1.904* (0.246)
District 7	0.525* (0.068)	–
District 1*Minority	0.729 (0.166)	0.821 (0.206)
District 2*Minority	0.851 (0.202)	0.959 (0.249)
District 3*Minority	1.263 (0.247)	1.423 (0.316)
District 4*Minority	0.850 (0.271)	0.958 (0.322)
District 5*Minority	–	1.126 (0.235)
District 7*Minority	0.888 (0.333)	–
Constant	0.103* (0.007)	0.044* (0.004)
<i>N</i>	18,632	18,632
Wald $\chi^2$	189.57*	189.57*
Pseudo <i>R</i> <sup>2</sup>	0.025	0.025
Linear Hypothesis $\chi^2$	6.40	6.40

\**p* < 0.05