UNIVERSITY OF SOUTHERN CALIFORNIA

RACE AND VEHICLE STOPS

BY THE SACRAMENTO COUNTY SHERIFF'S DEPARTMENT:

December, 2003 through December, 2009

FINAL REPORT

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Executive Summary

This report presents findings from a six year and one month study of vehicle stops by Sacramento County Sheriff's deputies. The study's objectives were to determine whether, in comparison with their representation in the driving population, minorities are overrepresented among drivers stopped, and whether any overrepresentation found may reflect racial bias. The study also addressed the question of whether drivers of different races were treated differently during stops and whether differences in treatment reflected bias.

For the purpose of this study, Sheriff' deputies were required to report characteristics of each vehicle stop they made, including the driver's race, age, gender, and residence, as well as the legal authority for the stop and its duration and disposition. Sheriff's deputies also reported on whether a search had taken place and, if so, whether suspicious items or contraband was found. This report covers 73 months of data collection (December 1, 2003 through December 31, 2009) and is based on records of 193,139 vehicle stops.

The USC research team compared percentages of drivers stopped in each racial group with the percentages of driving age individuals in Sacramento County as a whole and the portion of Sacramento County that comprises the Sheriff's Department jurisdiction.

In comparison with both baselines, African-Americans were found to be overrepresented among drivers stopped. Overrepresentation was greater among drivers residing in the City of Sacramento than those residing in the actual Sheriff's Department jurisdiction, that is, areas outside the City of Sacramento within Sacramento County. No other racial group appeared to be overrepresented among drivers stopped.

Differences were found among racial groups in likelihood of being searched, with Sheriff's deputies searching Hispanic and African-American drivers more often than Caucasian drivers. These searches yielded no suspicious items or contraband with about equal likelihood in these three races.

Hispanic and African-American deputies were more likely than Caucasian deputies to stop Hispanic and African-American drivers.

The presence of video cameras in Sheriff's Department vehicles resulted in no substantial change in the percentages of drivers of each race stopped or searched.

A comparison of the characteristics of stops as reported by deputies and recorded via video camera supports the reliability of the deputy reports. Correspondence of crucial variables such as the visibility of a driver's race prior to his or her being stopped was found to be high.

Differences in calls for service and crime rates across areas within the Sacramento Sheriff's Department jurisdiction help explain the overrepresentation of African Americans among drivers stopped. Licensure status completely explains the overrepresentation of Hispanic drivers among those searched. However, this study cannot completely rule out bias among officers, at least as individuals. These findings have implications for continued alertness to the possibility of biased policing and future training needs.

Introduction

To promote informed public discussion, the University of Southern California has conducted a collaborative study with the Sacramento County Sheriff's Department of vehicle stops by Sheriff's deputies between 2003 and 2009.

The objectives of the Sheriff's Department and USC have been: to ensure that accurate data on vehicle stops are available for analysis; to interpret the data to provide a clear picture of how and why stops are made; to help identify possible training needs; and, to foster a constructive dialogue between the community and law enforcement. The study's impetus has been to assist the Sheriff's Department's in finding ways to better serve the community.

Biased Policing as a National Concern

Today, the question of racial bias confronts law enforcement officials throughout the United States. At its most obvious, bias may involve *harassment*: initiating contact to inconvenience, frighten, or humiliate a member of a particular race or group. A less obvious form of bias is *racial profiling*. Racial profiling takes place when an officer stops or detains a person simply because he or she believes the individual's racial or ethnic group to be frequently involved in crime. Racial profiling de-emphasizes characteristics other than race, such as the citizen's appearance and behavior, the time and place of the officer's encounter with the citizen, or actual crime patterns within the jurisdiction.

The matter of racial profiling presents challenges from a research, policy, and training perspective. It is impossible to determine whether a particular vehicle stop, for example, represents an instance of racial profiling. Police officers in some locations may indeed disproportionately stop members of certain ethnic groups. But their action cannot automatically be attributed to racial profiling. Law enforcement officers are more likely to stop individuals who fit a "criminal" profile, whatever their ethnicity may be. Without being able to assess an officer's actual thought process, it is impossible to determine for sure whether racial stereotyping, profiling, or simply good policing has been involved.

Likewise, members of the public may feel that they have been profiled when they have not. Members of ethnic groups that account for a high proportion of the crimes in a particular area are relatively likely to be stopped. After repeated stops, it is difficult for a person to believe he or she has *not* been profiled. This problem is aggravated when law enforcement officers leave the citizen with the feeling that he or she is generally regarded as a suspect.

Addressing the issue of racial profiling requires a better understanding by both the public and the law enforcement officer. The public need to understand why officers sometimes stop individuals in a particular ethnic group more often than their representation in the driving age population seems to warrant. Law enforcement officers need to better understand why citizens feel they have been subject to bias, and what they can do to

reduce such an impression. This report is intended to promote these educational objectives, encouraging dialogue with the aid of large-scale data on vehicle stops.

National concern with the issue of racial profiling began with reports from New Jersey during the 1990s. The state police were found to be following a policy of targeting African-Americans as potential drug traffickers. An investigation by the New Jersey Attorney General's office reported overrepresentation of minorities among those stopped and searched on the state's highways.[1]

Since the New Jersey findings, leaders and residents of numerous communities have asked whether racial profiling takes place in their towns, cities, and states. Many communities have carried out studies to learn more about which drivers its police officers stop and how these drivers are treated. Most if not all of these studies have found that one or more minorities are stopped more often than their representation in the driving-age population would suggest. In addition, minorities are often found to be searched and arrested more often than non-minorities.[2,3]

Defining Bias-Based Policing

More recent thinking about race and law enforcement has come to reflect the complexity involved in a police officer's decision to initiate an encounter with a specific citizen. The term "biased-based policing" goes beyond the criterion of sole or predominant reliance upon race in initiating police action. A widely-read Police Executive Research Forum

(PERF) document conceives of bias-based policing as "law enforcement (which) inappropriately considers race or ethnicity in deciding with whom and how to intervene in an enforcement capacity."[4]

This definition is more flexible than the traditional definitions of racial profiling. As considered by PERF in its discussion of racially-based policing, *sole* use of race and *reliance* upon race are set aside in favor of *appropriateness* of race as the test of whether bias does or does not exist. Emerging from this discussion is the possibility that a police officer may use race as an important—though not exclusive—reason for stopping a citizen. The PERF document cites the following as examples of conditions under which race is an appropriate criterion for helping identify an individual to approach or question:

- A white college student observed making a late-night visit to an inner-city apartment building at which drug trafficking is known to occur

- A Hispanic observed exchanging goods for cash in the vicinity of a school whose students have reported gun sales carried out by a Hispanic individual

The document explicitly excludes the following case from the criterion of appropriateness:

- A poorly dressed African-American male seen walking through an upper-class, white neighborhood.

An important perspective generated by the PERF document is that overrepresentation of one or more minority groups among citizens apprehended or drivers stopped does not necessarily indicate that racially-biased policing has occurred. Biased-based policing, the document indicates, does not occur when an officer initiates an encounter with a citizen under conditions in which "trustworthy, locally-relevant information links a person or persons to a particular unlawful (incident or incidents)." Thus, in a geographical area where a particular race was often involved in crime, it would not be unexpected that good police work would result in a large number of contacts between officers and members of that race.

Overrepresentation of Minorities in Vehicle Stops and Searches

Although overrepresentation of minority drivers in vehicles stops does not in itself indicate racial bias, such overrepresentation is widely apparent. A review of 12 studies published over the ten years preceding this report (please see *Appendix 1*) in jurisdictions throughout the United States indicates that African-Americans are often overrepresented in stops of drivers relative to their representation in the population. Studies in eleven jurisdictions found African-American drivers to be overrepresented by a margin of at least 10 percent compared with their representation in the driving population. In two jurisdictions, African-Americans were between twice and 2 ½ times as likely to be

stopped as the percentage they comprised of the driving-age population. Eleven studies reported data on Hispanic drivers, and four of these indicated that Hispanics were stopped more frequently than their representation in the driving-age population would have suggested.

Six of the above studies indicated reported racial differences in searches taking place during vehicle stops. Five of these studies suggest that African-American drivers are more likely to be searched than Caucasians. Four suggest that Hispanic drivers are more likely to be searched than Caucasians.

The Sacramento County Sheriff's Department Study Research Methods

Beginning in 2003, the Sacramento County Sheriff's Department contracted with the University of Southern California to assist in a study to examine possible racial bias in vehicle stops made by Sheriff's deputies. This report presents conclusions from that study.

In collaboration with the University of Southern California, Sacramento Sheriff's Department personnel developed a data collection system capable of reporting the number and characteristics of vehicle stops made by deputies. Quantitative data used in this report were obtained in whole or in part through this system. To obtain background and guidance in data analysis, University of Southern California personnel also interviewed deputies of several ranks, accompanied deputies on ride-alongs, and

observed roll calls and operations at the department's dispatch unit and at the Sacramento County Jail.

The core component of the data collection system was a screen which appeared on computer terminals installed in the Department's patrol vehicles (hand-held data entry devices were issued to motorcycle officers). Using this screen, deputies reported information such as the time the stop began and ended, the location of the stop, the driver's perceived race, gender, age, and residential zip code, the reason for the stop, whether a search was conducted, whether illegal items were found in a search, and what disposition resulted from the stop. An item on the screen asked deputies to indicate whether they were able to identify the driver's race prior to the stop.

A full illustration of the screen is presented as *Appendix 2* of this report. Data entered by deputies were immediately transmitted to the Department's Computer-Aided Dispatch (CAD) system. Deputies were unable to clear the stop and proceed to their next assignment until the information was transmitted.

Deputies often cannot identify a driver's gender, age, or race prior to stopping his or her vehicle. The above photograph, taken through a Sheriff's Department vehicle's windshield, provides an illustration. A tinted rear window obscures the officer's view.

The data base for the study reported here includes one record for each vehicle stop. In each stop record, the officer-reported data described above were supplemented with data from Sheriff's Department records on the deputy involved. Data of this kind included the deputy's gender, race, age, years of service, and unit assignment.

This final report covers the data collected during the entire study period (December 1, 2003, through December 31, 2009) and records of 193,139 vehicle stops. Because all data obtained on vehicle stops were based on self-reports by deputies, a separate study of the reliability of these reports was conducted. The results of this study (please see

Appendix 3) generally support the reliability of information transmitted by deputies to the CAD system.

Study Findings

Analysis of data was divided into four parts. First, the analysis focused on the distribution of drivers stopped and how this distribution compares with that of the relevant populations of drivers. Second, the analysis considered developments and events taking place after the stop had been initiated. Third, the analysis addressed possible explanations for decisions by deputies such as the deputy's race, experience, and perception of the driver before actually stopping the vehicle. Fourth, the analysis examined impact of video cameras deployed in Sheriff's Department vehicles during the study period. Finally, the analysis examined neighborhood characteristics and crime patterns as a possible explanation of which drivers are stopped.

Key findings are presented in the text as graphs and illustrations labeled Figure 1 through Figure 8. The text also refers to a number of tables, labeled Table 1 through Table 16. Several of these tables correspond to graphic representations, providing more precise percentages than can be conveniently represented in graphic display. The tables referenced in the text appear in a section (*Statistical Tables*) located at the end of this report.

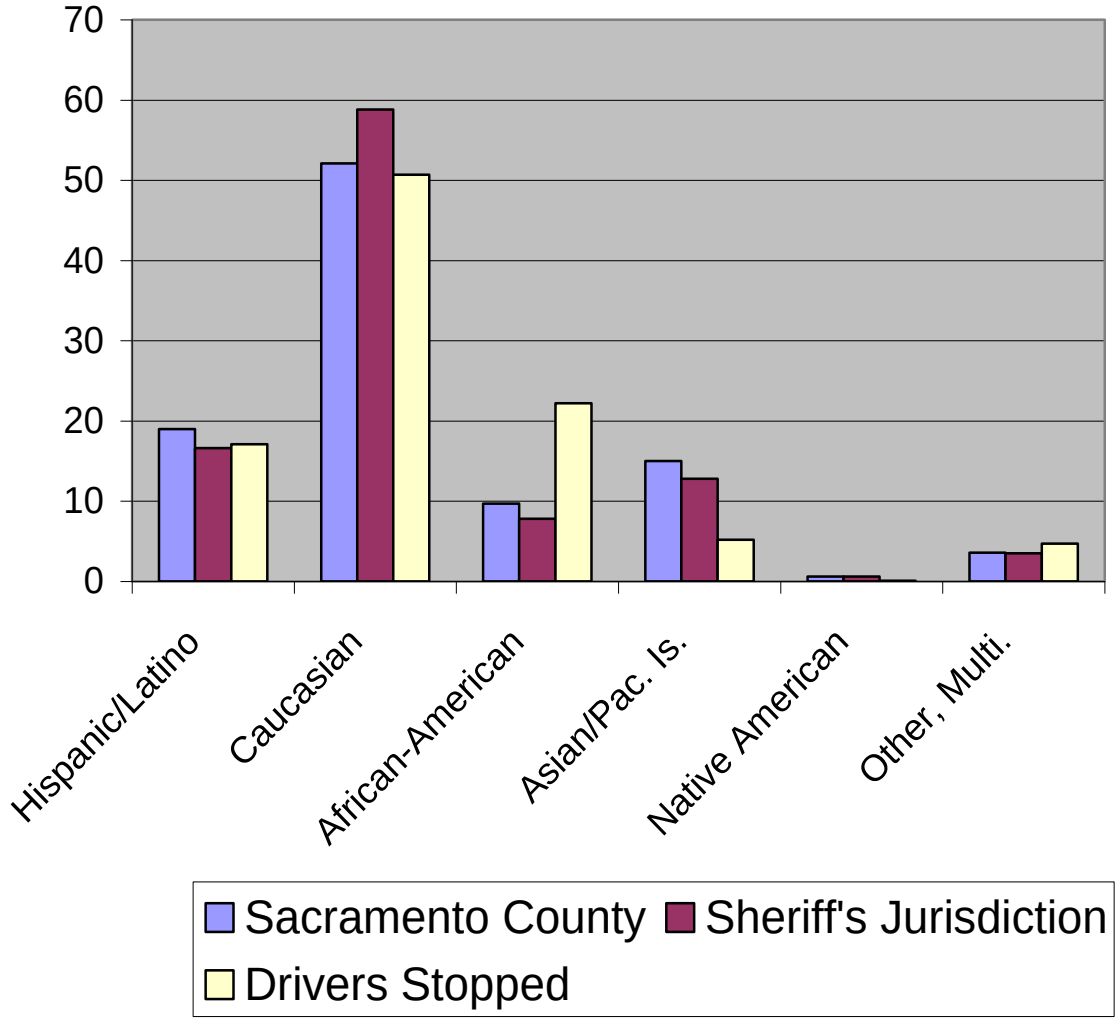
Baseline and Driver Comparisons

Figure 1 summarizes major findings from the first part of the analysis, addressing the question of whether persons belonging to any of the major racial groups in the jurisdiction are overrepresented among drivers stopped. Figure 1 compares the percentages of stops comprised by members of each race with two alternative population "baselines." The first baseline comprises all residents of Sacramento County of legal driving age (15 years and above). The second baseline comprises all individuals of legal driving age residing in the jurisdiction of the Sacramento Sheriff's Department during most of the study period (Sacramento County outside the City of Sacramento). Although the Sheriff's Department jurisdiction does not include the City of Sacramento, city residents comprised percent of the 45 percent of the drivers stopped during the study period. The alternative baselines are presented because racial distributions of people actually driving within the Sheriff's Department jurisdiction cannot be determined. Racial distributions for both baselines were computed on the basis of data from the 2010 United States Census enumeration.

Figure 1 was formulated on the basis of percentages presented in Tables 1 and 2 (please see *Statistical Tables*).

Table 1 provides numbers and precise percentages of each race among driving age individuals residing in all Sacramento County and in the Sacramento County Sheriff's jurisdiction. The distribution in Table 1, it should be emphasized, is intended specifically

Figure 1.
Percentages of Driving Age Residents of Sacramento County and Sheriff's Jurisdiction, and Drivers Stopped, by Race



to reflect *resident driving age populations*. The racial distribution of actual drivers on the streets of the Sheriff's Department's jurisdiction may be different due to driving patterns,

destinations, and routes used by people of different races and from both inside and outside the jurisdiction.

Table 2 presents numbers and precise percentages of each race among drivers stopped by Sheriff's deputies according to data transmitted by the deputies to the CAD system. A comparison of Table 2 with Table 1, reflected in the graphic presentation in Figure 1, addresses the initial concern of this inquiry: In comparison with their representation in the driving age population, are minorities overrepresented among drivers stopped by Sheriff's deputies?

There is no firm rule for deciding whether overrepresentation by any specific magnitude is meaningful. Often, the criterion of "statistical significance" is applied to assess differences between characteristics of distinct groups. But the criterion of statistical significance indicates only whether differences observed can be attributed to chance rather than an underlying phenomenon (such as bias in policing). When cases as numerous as those available in this study are analyzed, differences can be very small, yet statistically significant.

In addition, it seems reasonable to assume that at least occasional error is made in observation, recording, and transmission of crucial variables such as race. Deputy-driver encounters often occur under poor lighting conditions, where keyboard errors are always possible. Data presented later in this report suggest that the races of a high percentage of drivers are unidentifiable before the deputy makes actual face-to-face contact with the

driver. Deputies were not given the option of indicating "don't know" with regard to race; thus, an unknown percentage of the racial category responses amounted to guesswork.

For the purposes of this study, the numerical criterion of a ten percent difference has been adopted to denote meaningful differences between percentages in Table 1 and Table 2 (i.e., percentages of area residents and drivers stopped in each racial group), and between percentages appearing within later tables. This criterion reflects an expectation of small error rates in observation, recording, and reporting by deputies. The ten percent rule also reflects a degree of differences which, though not large, appears worthy of attention and discussion.

It is noteworthy that other studies have used more conservative criteria for determining whether bias-based policing may have taken place. At least one prominent researcher, for example, has written that a 50 percent overrepresentation indicates the possibility of racial bias in vehicle stops.[5] It is important to remember, however, that no definite percentage difference can itself indicate bias. Rather, it is necessary to interpret observed overrepresentation of any race in the context of a variety of factors, such as the demographics and service requirements of individual communities.

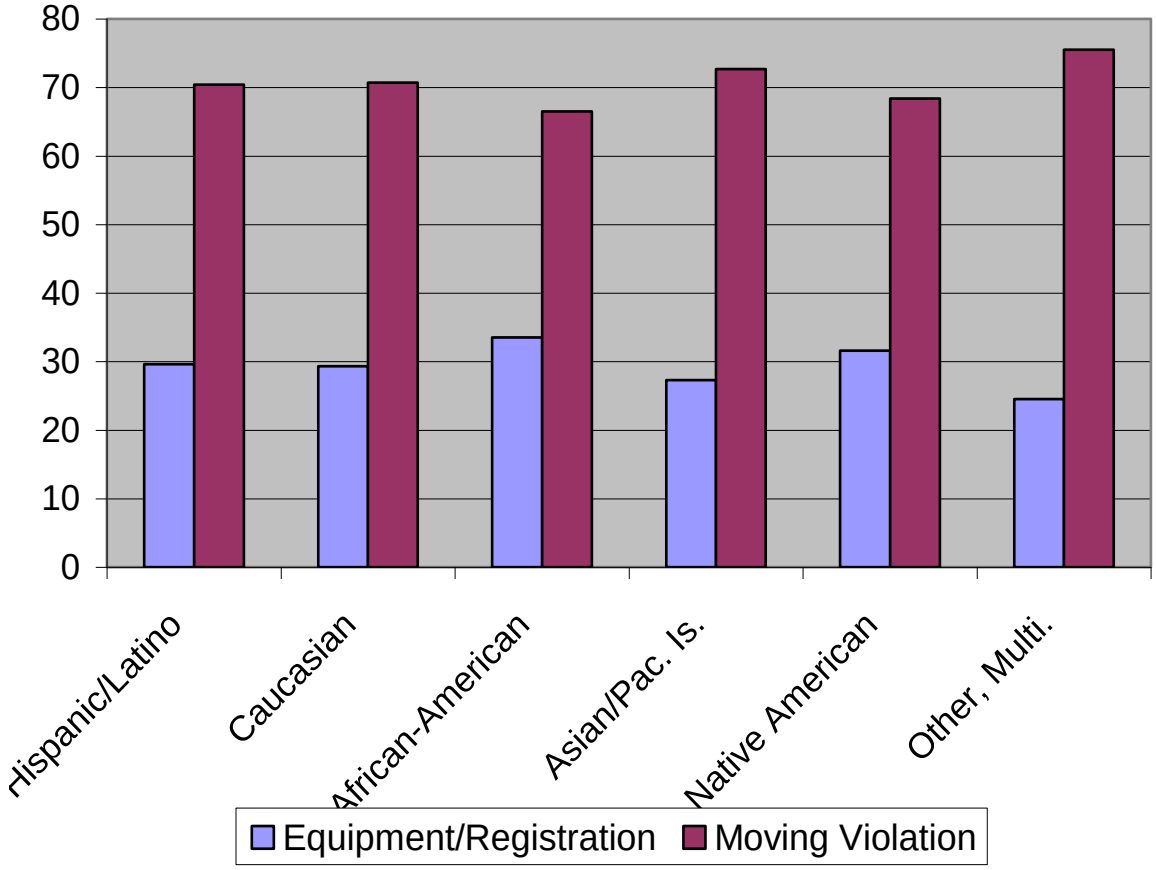
According to the ten percent criterion, Figure 1 and the corresponding tables indicate an overrepresentation of African-Americans among drivers stopped. In all Sacramento County, for example, African-Americans comprise 9.7 percent of the driving age

population. Increasing this percentage by ten percent would yield a figure of 10.8 percent, much smaller than the 22.2 percent actually represented by African-Americans among drivers stooped in the Sheriff's Department jurisdiction. By this same logic, African-American drivers are also overrepresented when compared with residents of Sacramento County outside the City of Sacramento. With the exception of Other/Multiracial, no other group can be said to be overrepresented according to the ten percent criterion. Because of their relatively small size, statistics for both this group and Native Americans tend to be unstable, and receive minor attention in this report.

Figure 2 compares each racial group with respect to the legal authority used by the deputy for the stop. The graph in Figure 2 compares two types of legal authority for stopping drivers, equipment/registration violations and moving violations. These two types of legal authority account for over 90 percent of all stops.

Table 3 presents the precise percentages on which Figure 2 is based. It is noteworthy that, among all drivers stopped, stops for moving violations are over twice as numerous as stops for equipment/registration. The rates at which stops for equipment/registration and moving violations occur are similar for most racial groups. According to the ten percent criterion introduced above, African-Americans are stopped for equipment/registration violations slightly more often than Caucasians, Hispanics, and Asian-Americans.

Figure 2.
Legal Authority for Stop: Percentages Represented
by Drivers in Each Racial Group



Readers should note that the number of stops reported in Table 3 (and represented in Figure 2) is less than the total obtained in the data collection period. This is because stops for reasons other than moving and equipment/registration violations are not included. Likewise, most of the tables to follow do not report on the total number of stops. Usually, this is because not all data capable of being entered by deputies for each

stop are correctly recorded, due, in many cases, to initial unfamiliarity with the reporting form. Thus, many parts of the analysis contain missing data.

Table 4 compares racial distributions among drivers stopped who reside in three distinct areas: outside Sacramento County, in the City of Sacramento, and within Sacramento County but outside the City of Sacramento. The last-named area of residence, again, represents the Sacramento County Sheriff's Department's jurisdiction, which included the cities of Elk Grove, Citrus Heights, and Rancho Cordova during the data collection period.

During the data collection period, Sacramento County Sheriff's deputies stopped about the same number of drivers residing inside and outside the jurisdiction. Of people stopped who resided outside the jurisdiction, most had residential addresses in the City of Sacramento.

Table 4 presents racial distributions of drivers stopped according to the three areas of residence. This table indicates that African-American drivers residing in all three residential areas are overrepresented among those stopped. This appears particularly true among drivers residing in the City of Sacramento but stopped in the Sheriff's Department's jurisdiction. According to the 2010 United States Census, African-Americans comprised 13.6 percent of City of Sacramento residents of legal driving age (15 and over); yet, of City of Sacramento residents stopped by Sheriff's deputies, 29.0 percent were African-American.

A vehicle's interior design features can completely hide the driver from the officer's view. In this example, high seatbacks prevent the officer from identifying the driver's gender, age, or race.

Events Following the Vehicle Stop

In terms of a driver's perception of bias, a stop's intrusiveness may be more important than the stop itself. "Intrusiveness" is understood here to mean the degree to which the driver experiences inconvenience, discomfort, or compromise to privacy. For most drivers, perceiving that a stop is excessive in duration and being subject to a search are likely to contribute to the perception of the stop as intrusive. Tables 5 and 6 report the

percentages of drivers in each racial group who experienced a particularly lengthy stop or were searched.

Table 5 presents findings on stop duration and the differences in duration of stops of drivers of different races. According to this table, 46.4 percent of stops are nine minutes in length or shorter; 37.9 percent last between 10 and 29 minutes; 15.7 percent last 30 minutes or longer. Examination of the distribution of races among individuals stopped for 30 minutes or longer is particularly useful in assessing intrusiveness of the stop, since only a small percentage of drivers experience stops of this length.

Among African-American drivers, 16.7 percent were stopped 30 minutes or longer. A slightly smaller percentage (14.6 percent) of Caucasian drivers was stopped for this length of time. A clearly higher percentage (20.8 percent) of Hispanic drivers than either African-Americans or Caucasians were stopped for 30 minutes or longer. In comparison with drivers of these races, smaller percentages of Asian/Pacific Islander and Other/Multiracial drivers were detained for 30 minutes or longer.

Table 6 presents percentages of drivers searched and not searched in each racial category. Of all individuals stopped, 20.1 percent were searched. Among Hispanic drivers stopped, 24.4 percent were searched. Among Caucasian drivers stopped, 17.9 percent were searched. Among African-American drivers stopped, 25.4 percent were searched. In comparison with Caucasians who are stopped, Hispanics and African-Americans have a moderately greater chance of being searched. Asian/Pacific Islanders and drivers in the

Other/Multiracial category again appear less likely to be searched than Hispanics, Caucasians, or African-Americans. Native Americans are too few in number to generate reliable findings.

Tables 7 through 10 present findings on details of the search procedure and provide clues to help explain the overrepresentation of African-Americans and Hispanic drivers among those stopped for extended lengths of time or searched.

Table 7 presents findings on search authority used by deputies to justify searches of individuals in various racial categories. It should be noted that no data were received on search authority for an appreciable number of searches. Overall, searches of drivers on probation or parole, whom deputies often have the right to search at their discretion, comprise the highest number and percentage. Parole and probation was the most frequent justification for all racial categories. Hispanics were more likely than people of other races to be searched in connection with tow of their vehicles.

Table 8 assesses the relationship between search and length of stop. A strong relationship exists between the carrying out of a search and stop duration. While the vast majority of those searched in all racial groups were detained for 30 minutes or more, only small percentages of those not searched experienced detention of this length. The fact that a search has taken place explains differences in the rates at which members of each racial group are detained for 30 minutes or longer. Very low percentages (between 4.0 percent and 9.8 percent) of drivers of all races who were not searched experienced

detentions of 30 minutes or longer. Still, Hispanics who were not searched were more likely to be detained for 30 minutes or longer than Caucasians, African-Americans, or Asian/Pacific Islanders.

Figure 3 compares percentages of individuals searched among drivers of each race during stops by deputies. For each race, the graph in Figure 3 presents three separate percentages. These include all drivers, drivers who presented valid licenses, and drivers without valid licenses. Drivers without valid licenses included both those without licenses and with licenses that had expired or been suspended. Deputies have legal authority to arrest persons who drive without a valid license. Officers do not usually arrest such drivers but do not permit them to continue driving, often ordering their vehicles towed to storage facilities. Tables 6 and 9 present the numbers and precise percentages on which Figure 3 is based.

Within the three racial groups comprising the bulk of the stops, very small and quite similar percentages of those with valid licenses were searched. Table 9 indicates that among Hispanics and Caucasians with valid licenses, 13.2 and 12.0 were searched, indicating that valid license-holders in both these groups had about the same likelihood of being searched when stopped. African-American holders of valid licenses had a greater likelihood of being searched than Caucasians and Hispanics, though the differences were not great.

Figure 3.
Percentages of Drivers Searched in Each Racial Group by Licensure

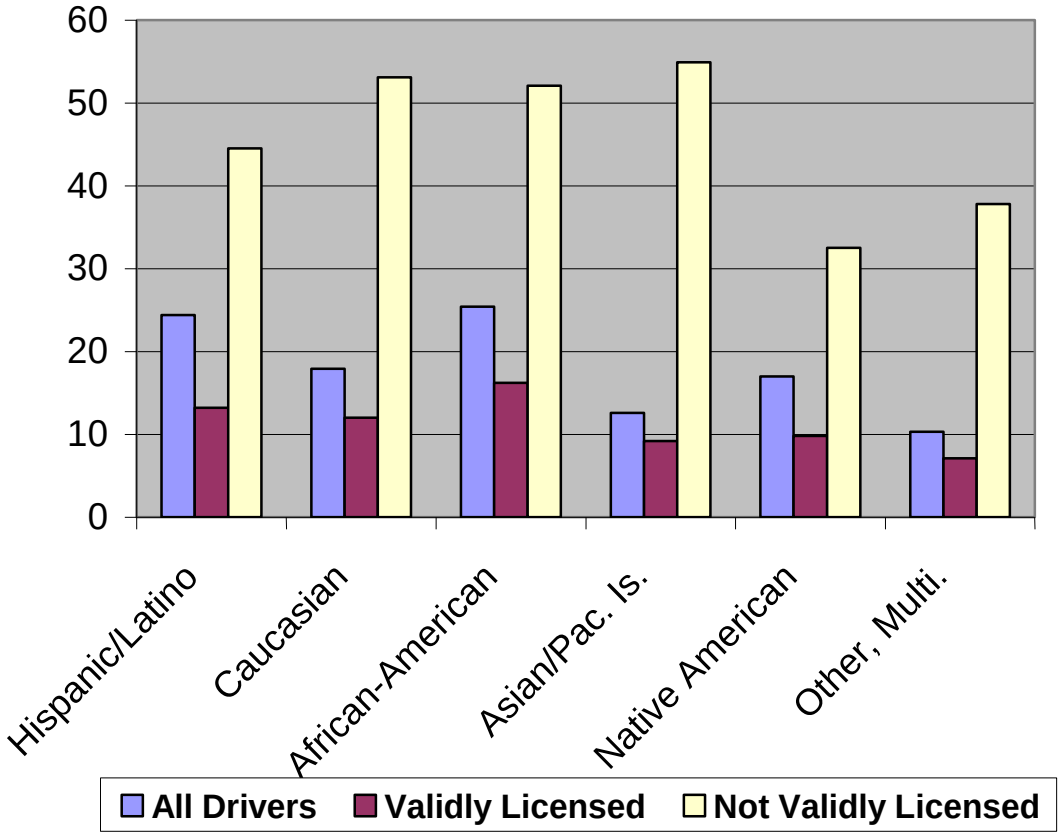


Table 10 reports on the frequency with which searches of individuals from each racial group yielded items potentially associated with crime. Of the 37,117 individuals represented in this table, all of whom were searched, items (including cash, controlled substances, weapons, other items, or the vehicle itself) were seized from 5,615 (15.1 percent). It is notable that among the three most frequently represented races, rates at

which the searches yielded no suspicious items or contraband were highly similar, ranging from 82.9 percent for Caucasians to 87.6 percent for African-Americans.

Deputy Characteristics and Perceptions

Tables 11 through 13 focus on deputy characteristics and perceptions that might be expected to affect decisions about which drivers to stop. Deputy backgrounds can conceivably affect conceptions of which drivers might be involved in criminal behavior. Differences in choices about whom to stop may furnish clues about potential bias. In a related area, officer comments have suggested the race of a driver often cannot be determined before he or she is stopped. This argument against bias is tested here.

Figure 4.
Who Officers of Different Races Stop:
Percentages of Drivers of Each Race
Stopped by Officers of Each Race

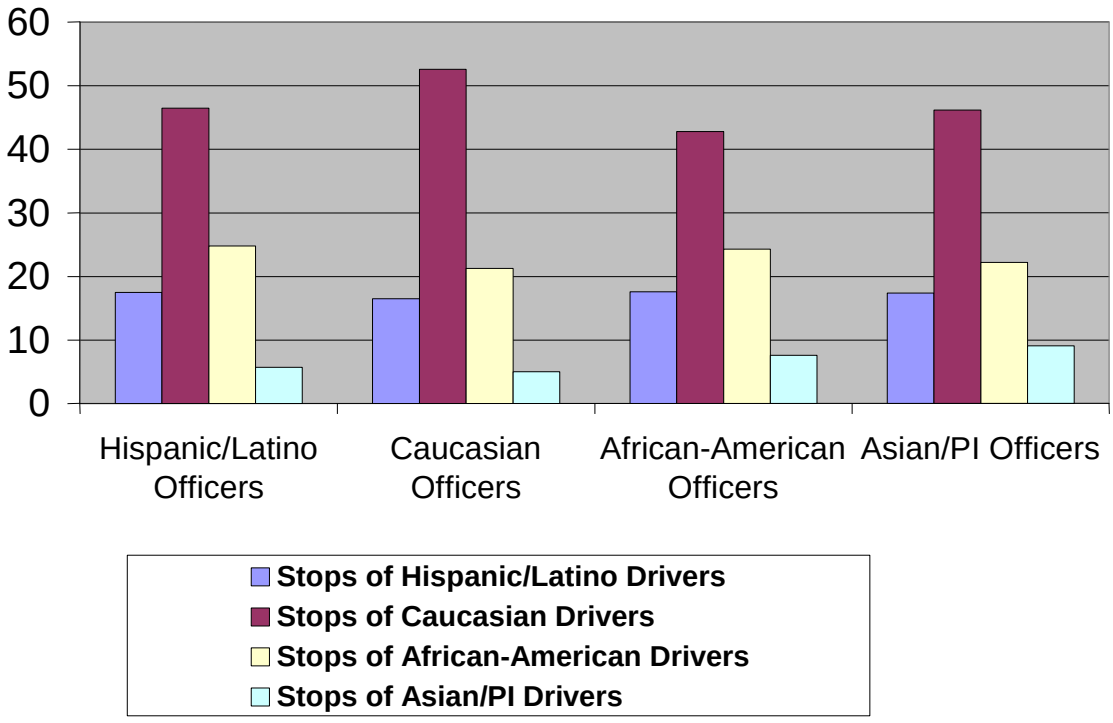


Figure 4 (based on Table 11) compares the racial distribution of drivers stopped by deputies of different races. Only the four most widely represented racial groups in the jurisdiction are represented in Figure 4. The graph in Figure 4 compares the percentages comprised by Hispanic/Latinos, Caucasians, African-Americans, and Asian/Pacific Islanders among drivers stopped by Hispanic/Latino, Caucasian, African-American, Asian/Pacific Islander deputies.

Figure 4, as well as Table 11 which presents numbers and precise percentages, provide no consistent evidence that the deputy's own race affects whom he or she stops. No relationship is visible between a deputy's race and the percentage of Hispanics drivers among those he or she stops. African-American and Hispanic deputies are more likely than Caucasian and Asian/Pacific Island deputies to stop African-Americans. Asian/Pacific Island, Hispanic, and African-American deputies are more likely than Caucasian officers to stop Asian Pacific/Island drivers. Although these differences deserve attention due to the ten percent criterion, they are small in magnitude. Differences in the assignments of deputies of different races (for example, to different neighborhoods) may explain the differences visible in Table 11.

Table 12 presents information on the deputy's self-reported ability to recognize a driver's race prior to a stop. Race was reported to be apparent in only 18.2 percent of the drivers later stopped. Of particular importance is the racial distribution of drivers whose races were not apparent before they were stopped. The racial distribution of these drivers approximates the racial distribution presented in Table 2. Photographs appearing in the text of this report provide examples of conditions that can prevent an officer from identifying the race of a drive before stopping his or her car. Tinted windows, interior design features (such as high seatbacks), and glare often make identification of a driver's race impossible even during daylight hours. Difficulty or impossibility of identifying driver characteristics prior to a stop is confirmed by a study of reliability of the data reported by deputies (please see *Appendix 3*).

Table 13 compares distributions of drivers stopped across different levels of deputy experience. To analyze possible effects of experience level, the number of years of employment (all ranks) among deputies was divided into three ranges: two years or less (deputies who made 7.6 percent of all stops), 3-11 years (deputies who made 74.5 percent of all stops), and 12 years or more (deputies who made 17.9 percent of all stops). A slight tendency is visible for the most experienced deputies to stop a greater percentage of Caucasian drivers and a smaller percentage of African-American drivers. This observation may be interpreted in the light of possibly differing assignments held by more experienced personnel.

The analyses reported above were based on data from the entire jurisdiction. In addition, separate analyses were performed on data collected on three Sacramento County cities served under contract by the Sacramento County Sheriff's Department through most of 2006: Rancho Cordova, Citrus Heights, and Elk Grove. Findings for each of these cities did not differ from those for the jurisdiction as a whole.

Video Camera Impact

Gradual deployment of high-resolution video cameras in Sheriff's Department vehicles between December, 2006 and December, 2009 provided an important resource for this study. By directly recording interactions between deputies and citizens, the video cameras ensure a high degree of public accountability. It may be expected that, all things being equal, deputies in vehicles with cameras would apply the strictest of professional

and legal standards in stopping drivers and conducting associated procedures. According to this reasoning, apparent bias in stopping or subsequent treatment of drivers would be greater among deputies in vehicles without cameras. The absence of differences in stops and procedures among deputies in vehicles with and without video cameras could be taken as evidence that racial bias occurred in few if any cases.

Table 14 indicates that deployment of video cameras had negligible impact on the racial percentages of drivers whom Sheriff's Department deputies stopped. The percentages of drivers in each racial group stopped by deputies in vehicles with and without cameras hardly differed. Table 15 indicates that deputies in vehicles with cameras were less likely to detain drivers for 30 minutes or longer than were deputies in vehicles without cameras. However, members of all races were about equally less likely to be detained 30 minutes or longer by officers in vehicles with cameras. Table 16 indicates no differences in the percentages of drivers in any race who were searched by deputies in vehicles with and without cameras.

Neighborhood Characteristics and Crime Patterns

In general, the areas to which deputies are assigned, as well as the parts of assigned areas where they spend their time during a shift, may affect the racial distribution of the drivers they stop. Figure 5 presents the density of calls for service for 2004 within the most heavily populated sections of the jurisdiction, and Figure 6 the density of vehicle stops within the same area. In Figures 5 and 6, the colors yellow, red, and dark red represent

areas of high concentration of calls for service and vehicle stops, with dark red indicating the highest concentrations. It is apparent that high concentrations of calls for service and vehicle stops generally occur in the same locales, for example, nearby the same segments of selected arterials and the same street intersections.

Figures 7 and 8 present data on vehicle stops, calls for service (CFS), selected Part 1 crimes ("Crimes"), and African-American residents age 18 years or over, for the six districts into which the jurisdiction is divided. In these charts, data on vehicle stops were obtained from reports by deputies through the Sheriff's Department CAD system. Data on calls for service and Part 1 crimes were obtained from Sheriff's department records. Only data on the highest priority calls for service and most severe Part 1 Crimes (assault and homicide) are presented. Data on distribution of African-American residents were obtained from the 2010 United States Census.

In Tables 7 and 8, data are presented side-by-side for each district, so that stops, calls for service, assaults and homicides, and African-American residents appear in a series of clusters that can readily be compared with each other. Within each cluster, the bars represent the percentage of the jurisdiction-wide total of stops, calls for service, assaults and homicides, and African-Americans residents in the relevant district. For example, in Figure 7, the blue bar labeled "stops" in the Northwest district cluster indicates that slightly less than 15 percent of all stops that occurred in the jurisdiction during the study period took place in the Northwest district, the orange bar labeled "CFS" in the

Northwest district cluster indicates that about 23 percent of calls for service in the jurisdiction occurred in the Northwest district, etc.

Figure 5.

Density of Calls for Service

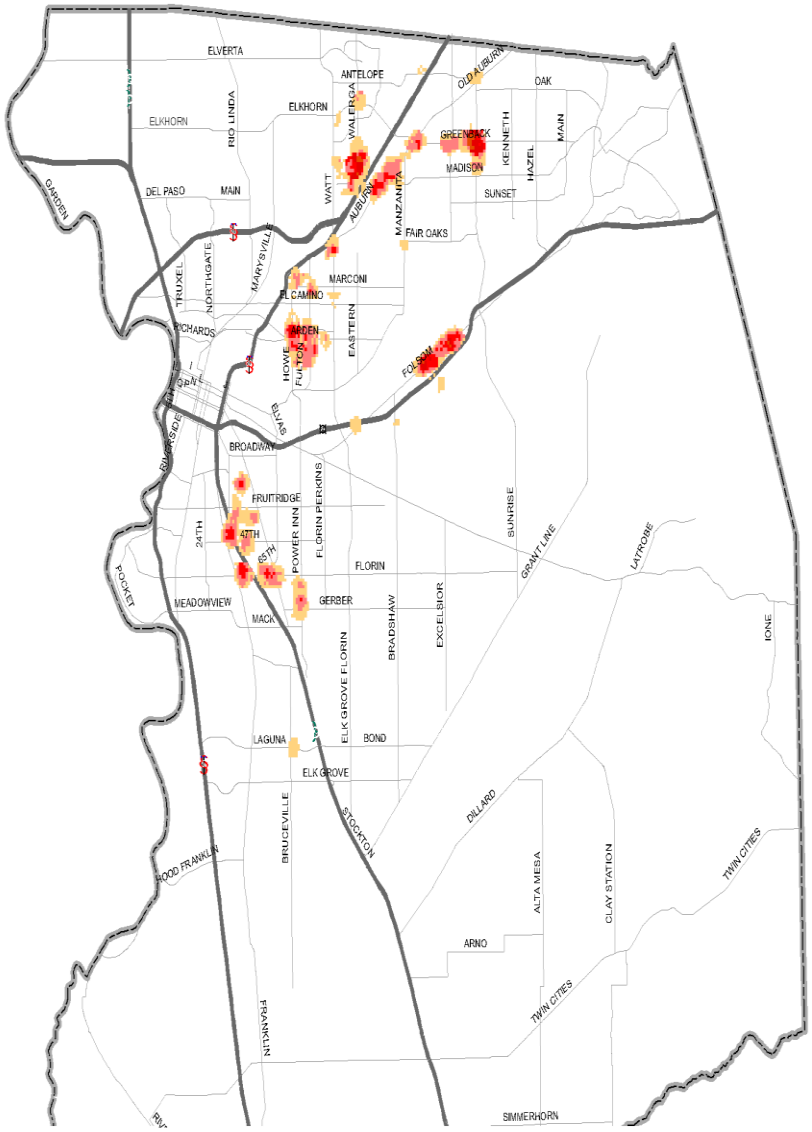


Figure 6.

Density of Vehicle Stops

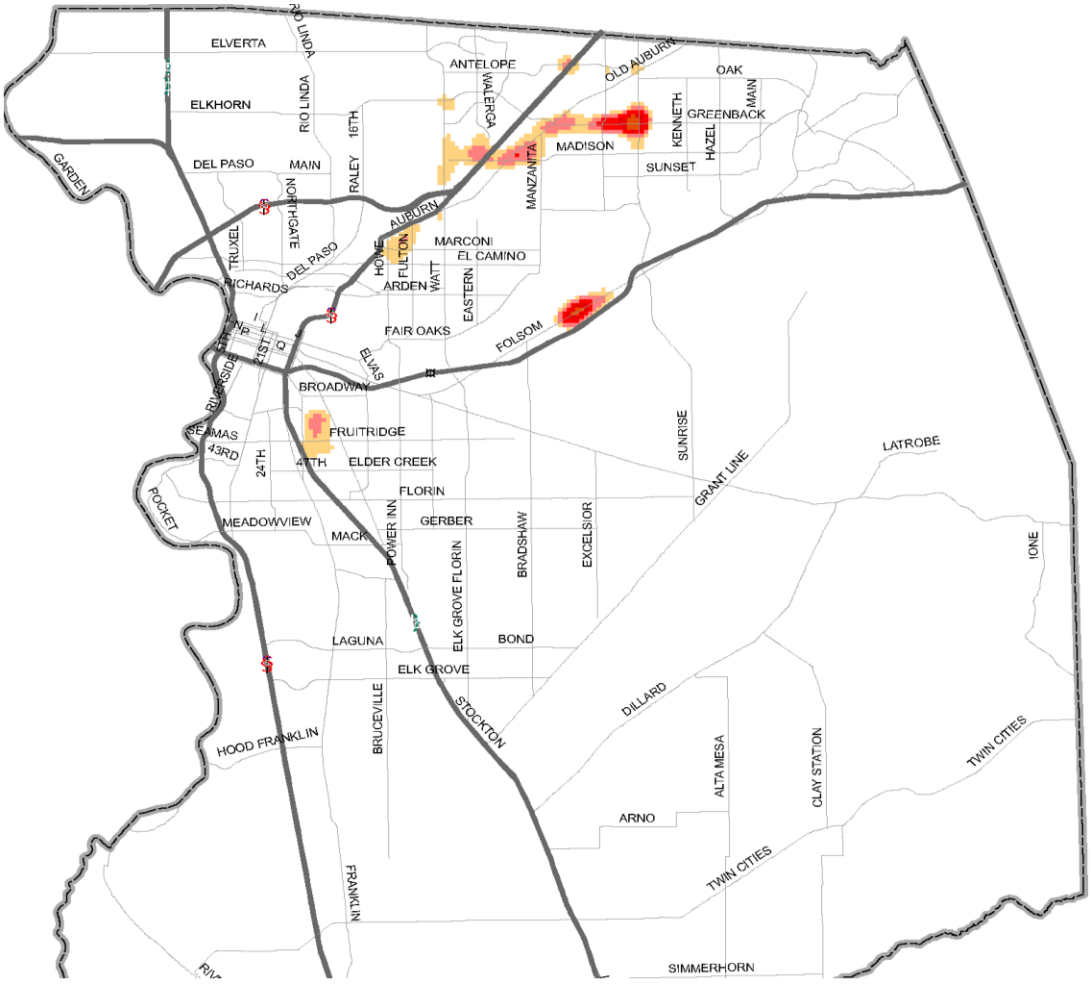


Figure 7 includes 150,145 stops, this total representing all stops recorded minus those taking place in contract cities Citrus Heights and Elk Grove. Data represented in Figure 7, though, include stops taking place in the contract city of Rancho Cordova. It was not possible to delete stops in Rancho Cordova, since the CAD data set did not contain a

code for this locality. In Figure 7, Rancho Cordova stops are coded as part of the East district.

Figure 7.
Stops, Calls for Service, Crimes (Assault and Homicide), and African-American Residents, All Cases (N=150,145), Omitting Citrus Heights and Elk Grove

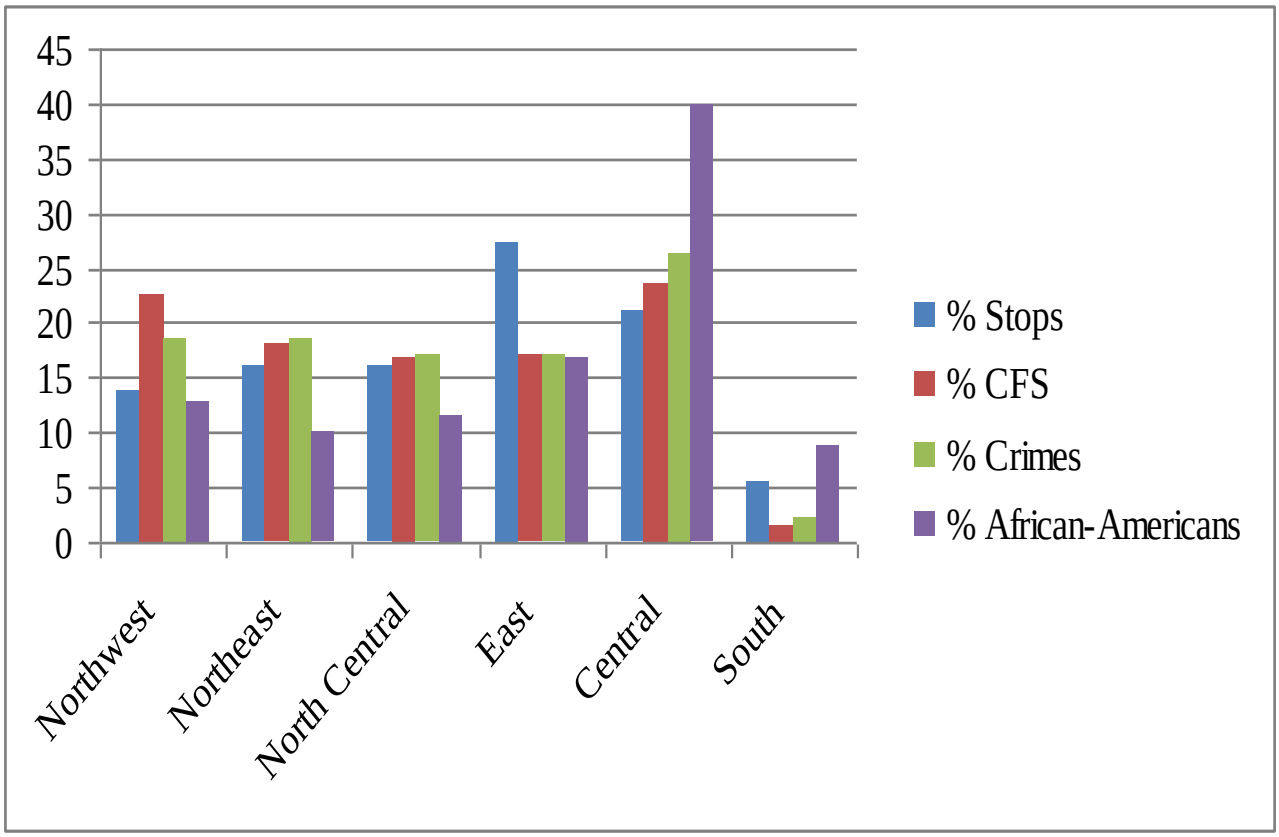
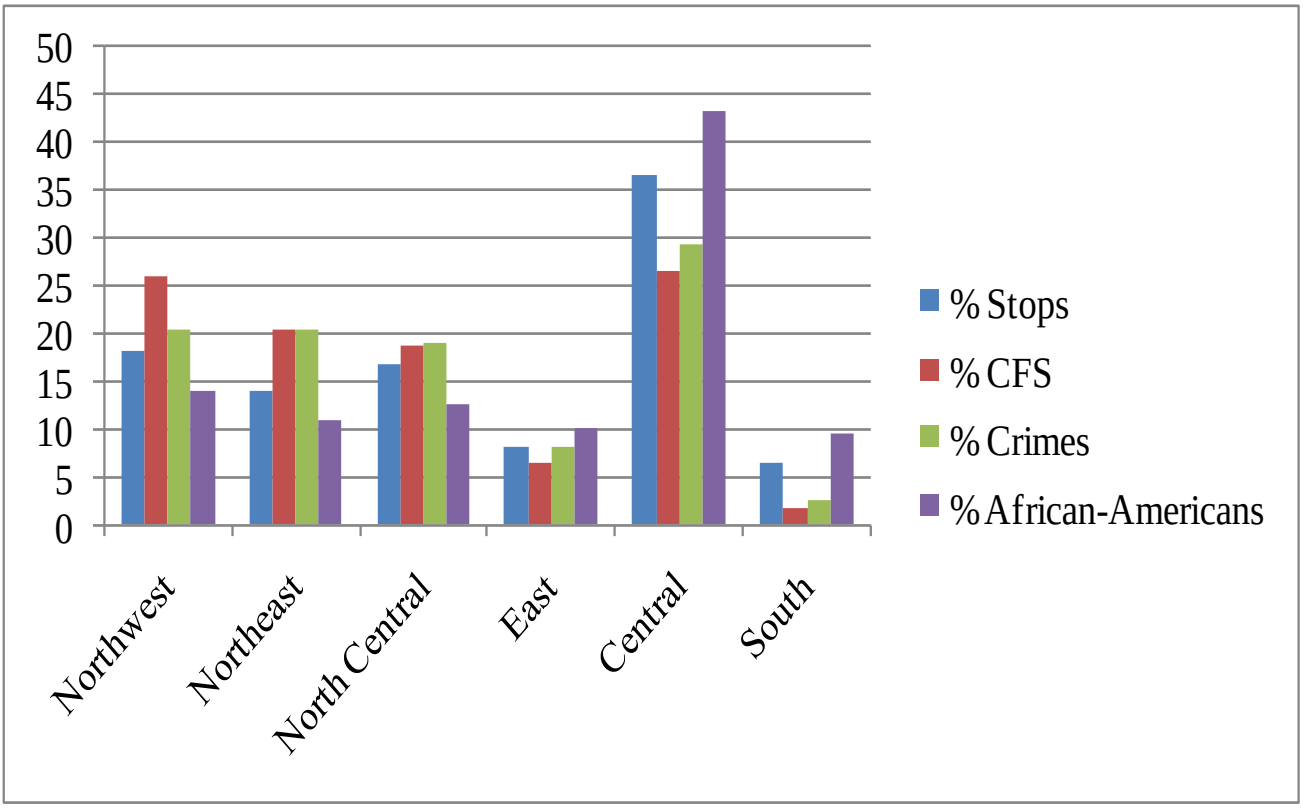


Figure 8 was compiled to present data on the jurisdiction minus stops that occurred in all three contract cities. For part of the data, it was possible to identify Rancho Cordova stops by the census tracts in which the stops occurred. However, census tract data was made available only for a limited number of stops through a hand-coding process

completed in 2006. Thus, the stop data in Figure 8 are from information obtained 2003-2006.

Figure 8.
Stops, Calls for Service, Crimes (Assault and Homicide) and African-American Residents, Only Tract-Coded Cases (N=26,431), Omitting Citrus Heights, Elk Grove, and Rancho Cordova



Figures 7 and 8 both suggest relationships between stops, calls for service, selected Part 1 crimes, and high representation of African-Americans across districts. The picture is clearer in Figure 8, which indicates that, among all districts, the highest percentages of stops, calls for service, assaults and homicides, and African-American residents are found in the Central district. In other words, a high percentage of the jurisdiction's African-

American residents (about 43 percent) live in an area of relatively high crime occurrence and requests for services by the public. A potential explanation of the high representation of African-Americans among drivers stopped by Sheriff's Department deputies may lie here. Many African-Americans not involved in crime (except as victims) live in areas that have high crime rates and frequent calls for service. Thus they are more likely than people who live elsewhere to encounter police and to be stopped when driving.

Conclusions

Interpretation of the data presented in this report must be made in the light of several limitations. As noted elsewhere, data elements in the reporting protocol were subject to varying degrees of completeness. Data elements such as driver and deputy race were available with very few omissions. But data on license status of the driver, search authority, probation status, and zip code were often missing. Census tract, which needed to be manually coded, was not available for a majority of the vehicle stops. Still, the data in this study, 193,139 observations over a period greater than six years, represents a more extensive effort to determine the presence and extent of biased policing than many previously conducted by a law enforcement agency in the United States.

Comparison of the resident driver population with drivers stopped clearly indicates that African-American drivers are overrepresented among those stopped by Sacramento Sheriff's deputies. African-Americans comprise 9.7 percent of driving age individuals residing in Sacramento County and 7.8 percent of driving age individuals residing in the

Sheriff's Department's jurisdiction. Yet African-Americans comprise 22.2 percent of the drivers stopped.

Other than African-Americans, no other race appears overrepresented. The rate at which Hispanic drivers are stopped differs by less than ten percent from the proportion they represent among driving age individuals in both baselines, residents of Sacramento County and the Sheriff's Department jurisdiction. Other/Multiracial drivers are stopped at above their expected rate, but relatively small numbers in this category make inferences unreliable. Asian/Pacific Island and Native American drivers are underrepresented among individuals stopped.

In addition to overrepresentation of African-American drivers among those stopped, this study detected differences across racial groups in events taking place during the stop itself. Both Hispanics and African-Americans were more likely to be searched in comparison with drivers of other races. When stopped, Hispanic drivers were more likely to be detained 30 minutes or longer than drivers of other races.

The decision to interpret differences of ten percent or more as meaningful in this study represents a strict approach to potential bias in policing. It is intended to flag differences of potential importance rather than to indicate that they have resulted from bias. Several observations in this study suggest that reasons for key differences observed result from causes other than biased policing.

The limited ability of deputies to determine the race of a driver before he or she is stopped argues against deliberate bias. The claim by deputies that they cannot usually identify a driver's race appears highly credible. The reliability study conducted in connection with this report confirms the claim (please see *Appendix 3*). Researchers reviewing videos of a random sample of stops were in no instance able to identify a driver's race prior to the stop.

Similarly, differences in patterns of vehicle stops among deputies of different races are inconsistent with the large-scale practice of biased policing. According to data analyzed here, Caucasian deputies are less likely to stop minority drivers than Hispanic and African-American deputies.

Close examination of the tendency of Hispanic and African-American drivers to be searched more often than other drivers also supports an explanation other than bias. Deputies routinely search cars of individuals found to lack valid licenses. Among validly licensed drivers, the overrepresentation of African-Americans among drivers searched is greatly diminished, and Hispanics are searched *less* frequently than Caucasians.

Deployment of video cameras in Sheriff's Department vehicles enabled the researchers to assess the impact of increased visibility and accountability. No differences were found in the distribution of races of drivers stopped by deputies whose cars were equipped *versus* not equipped with video cameras. The fact that no change in the racial distribution of

drivers stopped was associated with increased surveillance of deputies *via* video camera is inconsistent with a likelihood of large-scale bias before the cameras were deployed.

Lighting conditions can keep the officer from identifying driver characteristics. Here, strong late-day sun creates intense glare on the officer's windshield. Certain daylight conditions, just as bad weather and darkness, may make it impossible for an officer to identify the driver's age, gender, or race.

A likely contributing factor in overrepresentation of African-Americans among drivers stopped by Sacramento Sheriff's deputies is a geographical correspondence between calls for service, crime, and African-American residence. Such a correspondence is found in many areas throughout the United States. Areas of high crime and frequent calls for service tend to be home to low income earners and minority group members. Simply stated, African-Americans often live in areas where much law enforcement effort is deployed, and, when driving, are more likely to come into contact with law enforcement

personnel. Further evidence for this interpretation is provided by studies in other jurisdictions (please see *Appendix 1*).

All things considered, evidence collected in this study does not suggest significant bias in vehicle stops by Sacramento Sheriff's Department deputies. However, several issues should remain of concern to the Sacramento Sheriff's Department and the community. Phenomena such as the overrepresentation of African-Americans among individuals stopped and searched, and detention of Hispanics for periods longer than non-Hispanics even when not searched, have yet to be fully explained.

It cannot be denied that African-Americans and Hispanics who have no connection whatever with crime are often viewed with suspicion by law enforcement personnel. Individual officers may develop such orientations on the basis of on-the-ground experience or pre-existing personal prejudice. Action by agencies such as the Sacramento Sheriff's Department should focus on maintaining an organizational culture that encourages viewing minority group members as individuals and discourages biases that deputies may individually harbor. Of great importance is adoption of training interventions that promote favorable contacts with citizens who are not perpetrators of crime. Training should enable deputies to transmit to members of the public the feeling that they are respected, that officer and citizen are members of the same community, and that both have an interest in working together.

Statistical Tables

Note on Tables

Percentages appearing in the tables to follow are computed and presented in a varying manner, intended to make the most relevant perspectives apparent to the reader. In some (Tables 1 and 2) "column" percentages are presented, in which individual percentages sum to 100 down individual columns. In others (Tables 3, 5, 6, 7, 10) "row" percentages are presented, in which individual percentages sum to 100 across individual rows. In still others (4, 11, 12, 13, 14), both column and row percentages are presented (the bottom, shaded row containing percentages across the row). In other tables (8, 9, 15, 16), percentages sum to 100 in neither columns nor rows; in these tables, percentages are taken individually from combinations of other tables and presented in a single table for summary purposes.

Table 1. Racial Distribution of Driving-Age Residents in Sacramento County, Total and Non-City

Driver Race	Sacramento County Total		Sacramento County Non-City	
	Number	Percentage	Number	Percentage
Hispanic/Latino	212494	19.0	124412	16.6
Caucasian	583091	52.1	440637	58.8
African-American	108478	9.7	58197	7.8
Asian/Pacific Island	168118	15.0	95800	12.8
Native American	6525	0.6	4366	0.6
Other, Multiracial	41087	3.6	26562	3.5
Total residents	1119793		749974	

Table 2. Racial Distribution of Drivers Stopped

Driver Race	Number	Percentage
Hispanic/Latino	33058	17.1
Caucasian	97874	50.7
African-American	42942	22.2
Asian/Pacific Island	9989	5.2
Native American	241	.1
Other, Multiracial	9035	4.7
Total drivers stopped, all races	193139	

Table 3. Race by Legal Authority for Stop (Equipment/Registration Violations and Moving Violations Only)

Driver Race	Equipment/Registration		Moving Violation	
	Number	Percentage	Number	Percentage
Hispanic/Latino	9536	29.6	22699	70.4
Caucasian	27962	29.3	67514	70.7
African-American	14011	33.5	27832	66.5
Asian/Pacific Island	2659	27.3	7077	72.7
Native American	73	31.6	158	68.4
Other, Multiracial	2149	24.5	6618	75.5
Total drivers stopped, all races	56390		131868	
Percentage drivers (all races) stopped, by reason	Equip./Reg: 30.0%		Moving Viol.: 70.0%	

Table 4. Racial Distribution of Drivers Stopped, by Residential Location

Driver Race	Outside Sacramento County		City of Sacramento		Sacramento County Outside City of Sacramento	
	Number	Percentage	Number	Percentage	Number	Percentage
Hispanic/Latino	1531	16.5	11845	20.0	8837	14.0
Caucasian	5198	55.9	23568	39.7	37954	60.0
African-American	1474	15.9	17183	29.0	10769	17.0
Asian/Pacific Island	535	5.6	3899	6.6	2736	4.3
Native American	22	.2	88	.1	100	.2
Other, Multiracial	546	5.9	2715	4.6	2865	4.5
Total drivers stopped, all races	9296		59298		63261	
Percentage drivers (all races) stopped, by residence	Outside Sac. County: 7.1%		City of Sacramento: 45.0 %		Sacramento County Outside City: 48.0%	

Table 5. Race by Duration of Stop

Driver Race	Less Than 10 Minutes		10-29 Minutes		Thirty Minutes and Over	
	Number	Percentage	Number	Percentage	Number	Percentage
Hispanic/Latino	13483	41.6	12159	37.5	6740	20.8
Caucasian	45317	47.8	35684	37.6	13797	14.6
African-American	18566	43.9	16709	39.5	7061	16.7
Asian/Pacific Island	5294	55.3	3407	35.6	870	9.1
Native American	117	49.6	79	33.5	40	16.9
Other, Multiracial	4532	52.0	3234	37.1	954	10.0
Percentage drivers (all races) stopped, by duration	Less than 10 minutes: 46.4%		10-29 minutes: 37.9%		Thirty minutes and over: 15.7%	

Table 6. Race by Whether Driver Was Searched

Driver Race	Not Searched		Searched	
	Number	Percentage	Number	Percentage
Hispanic/Latino	23795	75.4	7758	24.4
Caucasian	77242	82.1	16790	17.9
African-American	30612	74.6	10298	25.4
Asian/Pacific Island	8383	87.4	1213	12.6
Native American	200	83.0	41	17.0
Other, Multiracial	7709	89.7	887	10.3
Total drivers, all races	147941		37117	
Percentage drivers (all races) searched and not searched	Not searched: 79.9%		Searched: 20.1%	

Table 7. Search Authority by Race (Drivers Searched Only)

Driver Race	Percentage						
	Arrest	Consent	Tow Inventory	Probation/ Parole	Terry Cursory	None Stated	Total (100%)
Hispanic/Latino	15.0	20.2	17.9	27.8	4.1	15.0	7424
Caucasian	14.2	21.2	9.0	39.7	2.0	14.0	15769
African-American	11.1	17.4	9.4	45.3	2.4	14.4	9907
Asian/Pacific Island	11.9	22.3	8.5	45.3	3.0	8.9	1149
Native American	7.7	15.4	17.9	56.4	2.6	.0	39
Other, Multiracial	13.8	25.8	12.6	28.0	2.9	17.0	842
Percentage (all drivers searched) by search authority	13.4	20.0	11.1	38.7	2.6	14.2	35130

Table 8. Race by Duration of Stop 30 Minutes or More by Whether Driver Was Searched

Driver Race	Driver Searched		Driver Not Searched	
	Number 30 Minutes Or More	Percentage 30 Minutes Or More	Number 30 Minutes Or More	Percentage 30 Minutes Or More
Hispanic/Latino	4201	54.7	2268	9.8
Caucasian	8548	51.3	4721	6.4
African-American	4825	46.3	1973	6.6
Asian/Pacific Island	527	43.7	322	4.0
Native American	26	63.4	14	7.2
Other, Multiracial	475	54.1	448	6.1
Percentages of drivers (all races) stopped for 30 minutes or more	If searched: 50.5%		If not searched: 6.8%	

Table 9. Race by Whether Driver Was Searched by License Status

Driver Race	Validly Licensed		No or Expired License	
	Number Searched	Percentage Searched	Number Searched	Percentage Searched
Hispanic/Latino	1972	13.2	4182	44.5
Caucasian	7271	12.0	5942	53.1
African-American	3758	16.2	4621	52.1
Asian/Pacific Island	664	9.2	371	54.9
Native American	16	9.8	25	32.5
Other, Multiracial	410	7.1	276	37.8
Percentages drivers (all races) searched	Validly licensed: 12.6%		Not validly licensed: 49.6%	

Table 10. Race by Item(s) Seized in Search (Drivers Searched Only)

Driver Race	Nothing Seized		Cash, Substance, Paraphernalia, Vehicle, Weapons, or Other Item Seized	
	Number	Percentage	Number	Percentage
Hispanic/Latino	6666	85.8	1092	14.1
Caucasian	13912	82.9	2878	17.1
African-American	9132	87.6	1296	12.4
Asian/Pacific Island	1023	84.3	190	15.7
Native American	35	85.4	6	14.6
Other, Multiracial	734	82.8	153	17.2
Percentages (all drivers searched)	No item seized: 84.9%		Any item seized: 15.1%	

Table 11. Percentages of Drivers Stopped in Each Racial Category by Deputy Race

	Officer Race			
Driver Race	Asian/PI	African-American	Hispanic	Caucasian
Hispanic/Latino	17.5	18.5	17.0	17.1
Caucasian	49.1	41.0	46.9	51.7
African-American	21.3	25.1	24.5	21.9
Asian/Pacific Island	7.2	7.5	6.0	4.8
Native American	.1	.2	.2	.1
Other, Multiracial	4.8	7.6	5.4	4.5
Percentages of all stops made by deputies of each race	9.1%	2.9%	12.1%	74.8%

Table 12. Race of Driver by Race Apparent to Deputy

Driver Race	Race Not Apparent		Race Apparent	
	Number	Percentage	Number	Percentage
Hispanic/Latino	21335	18.3	3173	12.2
Caucasian	57081	48.8	14610	56.1
African-American	25295	21.6	6798	26.1
Asian/Pacific Island	6872	5.9	1036	4.0
Native American	226	.2	15	.2
Other, Multiracial	6089	5.2	412	1.6
Percentages all drivers	Race not apparent: 81.8%		Race apparent: 18.2%	

Table 13. Race of Driver and Deputy Years of Service

	Deputy Years of Experience					
Race	2 Years or Less		3-11 Years		12 Years or More	
	Number Of Stops	Percentage Of Stops	Number Of Stops	Percentage Of Stops	Number Of Stops	Percentage Of Stops
Hispanic/Latino	2374	16.4	24777	17.5	5401	15.8
Caucasian	7376	51.0	70336	49.6	18814	55.1
African-American	3301	22.8	32439	22.9	6529	19.1
Asian/Pacific Island	757	5.2	7451	5.3	1696	5.0
Native American	21	.1	165	.1	51	.1
Other, Multiracial	628	4.3	6633	4.7	1629	4.8
Percentage of all drivers stopped by deputies in each group	Experience 2 years or less: 7.6%		Experience 3-11 years: 74.5%		Experience 12 years or more: 17.9%	

Table 14. Racial Distribution of Drivers Stopped by Video Recorded vs. Not Video Recorded (December, 2006 Through December, 2009 Only)

Driver Race	Not Video Recorded		Video Recorded	
	Number	Percentage	Number	Percentage
Hispanic/Latino	5937	18.1	6199	16.4
Caucasian	16279	49.7	19090	50.6
African-American	7337	22.4	8693	23.1
Asian/Pacific Island	1683	5.1	1962	5.2
Native American	55	.2	52	.1
Other, Multiracial	1479	4.5	1716	4.6
Total drivers stopped, all races	32770		37712	
Percentage drivers (all races) video recorded	Yes: 46.5%		No: 53.5%	

Table 15. Race by Stops of 30 Minutes and Over by Video Recorded vs. Not Video Recorded (December, 2006 Through December, 2009 Only)

Driver Race	Not Video Recorded		Video Recorded	
	Number	Percentage	Number	Percentage
Hispanic/Latino	5183	22.6	1029	16.6
Caucasian	10839	16.1	2004	10.5
African-American	5348	17.9	1227	14.1
Asian/Pacific Island	697	9.9	135	6.9
Native American	36	19.6	4	7.7
Other, Multiracial	726	11.8	164	9.6
Percentage stops 30 minutes or longer (all races)	Yes: 17.1%		No: 12.1%	

Table 16. Race by Whether Driver Was Searched by Video Recorded vs. Not Video Recorded (December, 2006 Through December, 2009 Only)

Driver Race	Not Video Recorded		Video Recorded	
	Number	Percentage	Number	Percentage
Hispanic/Latino	5462	24.7	1473	23.8
Caucasian	12122	18.2	3303	17.3
African-American	7110	24.9	2383	27.4
Asian/Pacific Island	923	13.0	249	12.7
Native American	32	16.9	9	17.3
Other, Multiracial	617	10.3	172	10.0
Percentage drivers searched (all races)	Yes: 20.1%		No: 17.3%	

References

1. Office of the Attorney General (NJ). 1999. Interim report of the State Police Review Team regarding allegations of police profiling. Trenton, NJ: Office of the Attorney General.
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4. Fridell L, Lunney R, Diamond D, Kubu B. 2001. Racially-based policing: a principled response. Washington, D.C.: Police Executive Research Forum.
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Appendix 1

Findings from Other Jurisdictions

Data from Other Jurisdictions

The foregoing study of vehicle stops by Sacramento Sheriff's Department deputies should be viewed alongside studies in other jurisdictions, using both similar and dissimilar methodologies. Comparison of findings obtained in other jurisdictions provides guidelines for helping interpret data on the Sheriff's Department jurisdiction. In Sacramento County, for example, the driving age population (15 years and over) included about 10 percent African Americans and 19 percent Latinos. Among drivers stopped by Sacramento County Sheriff's deputies, 22 percent were African-American and 17 percent were Latinos. In this report, a criterion of 10 percent differences has been applied as a marker for discrepancies worthy of serious attention. However, comparison of these figures with discrepancies reported by other jurisdictions is valuable in that it indicates whether observations in Sacramento County are inside or outside a national norm.

Appendix Table 1, below, summarizes findings from studies of police stops in 12 jurisdictions. Studies summarized in the table covered periods between 2000 and 2009. Only integer percentages are reported here because some of the above-referenced studies reported only integer findings. Generally, stops were self-reported by police officers using media such as data cards and in-car computer screens. Data on populations to be compared with drivers stopped were usually obtained from the United States Census 2000 enumeration. Numbers in Appendix Table 1 were sometimes not reported explicitly but computed on the basis of information presented in the relevant reports. Data in the table have been drawn from only reports that employed a methodology sufficiently similar to the one used by USC it its study of stops by Sacramento Sheriff's deputies.

It is apparent that studies of all jurisdictions with the exception of the State of Connecticut reported that African-American drivers were stopped in higher proportions than suggested by their representation in the driving age population. Differences of ten percent or greater between the percentage of drivers who are African American and percentage of those stopped are African American are visible in most jurisdictions. In two jurisdictions (St. Paul, MN, and Syracuse, NY) the percentage of African-Americans stopped was over twice their representation in the driving age population.

According to the 10 percent criterion, Latinos were overrepresented among drivers stopped in only half the jurisdictions. Where overrepresentation occurred, differences between Latinos in the driving age population and percentages stopped were small in comparison to the differences for African-Americans.

Appendix Figure 2 presents data on six jurisdictions regarding searches conduced during vehicle stops. In most jurisdictions, both African-Americans and Latinos were more

likely to be searched than their proportions of stopped drivers would suggest. There are notable exceptions in the table, however. In Riverside, CA, African-Americans are searched less often than their representation among stopped drivers would suggest, but Latino drivers are searched at more than twice the rate is suggested by their proportion among drivers stopped. The opposite is true in Oakland, where Latinos are searched about as often as their presence among drivers stopped suggests, while African-Americans are searched more often.

Appendix Table 1. African-American and Hispanic Drivers Stopped and Representation Among Residents: Selected Jurisdictions

Jurisdiction	African-Americans: Percentage Residents	African-Americans: Percentage Stopped	Hispanics: Percentage Residents	Hispanics: Percentage Stopped
San Jose, CA	5	7	31	39
Oakland, CA	35	48	22	18
San Diego, CA	8	12	20	29
Riverside, CA	7	13	42	41
Forth Worth, TX	19	27	20	24
Houston, TX	24	39	34	33
St. Paul, MN	10	26	6	7
Cincinnati, OH	42	49	*	*
Syracuse, NY	20	45	4	6
Rhode Island (state)	4	7	7	7
Florida (state)	12	17	16	16
Connecticut (state)	12	12	9	9

*Data not reported

Appendix Table 2. African-American and Hispanic Drivers Searched During, Selected Jurisdictions

Jurisdiction	African-Americans: Percentage Drivers Stopped	African-Americans: Percentage Searched	Hispanics: Percentage Drivers Stopped	Hispanics: Percentage Searched
Riverside, CA	13	3	41	68
Houston, TX	39	46	33	36
San Diego, CA	12	20	29	50
Oakland, CA	48	68	18	20
Florida (state)	12	22	16	23
Connecticut (state)	12	23	9	23

Data in Appendix Tables 1 and 2 were obtained or inferred from the following sources: St. Paul: Report on Traffic Stop Data Collected by the St. Paul Police Dept. University of Minnesota Institute for Race and Poverty, 2001; Florida: Anwar S, Fang H. An Alternative Test of Racial Prejudice in Motor Vehicle Searches: Theory and Evidence, Cowles Foundation, Yale University, 2004; San Jose: Vehicle Stop Demographic Study – Third Report, San Jose California Police Department, 2000; Vehicle Stop Study – Midyear Report, San Diego Police Department, 2000; Houston: Roh S, Robinson M. A Geographic Approach to Racial Profiling, Police Quarterly, 2009; Riverside: Gaines L. An Analysis of Traffic Stop Data in Riverside, California, Police Quarterly, 2006; Richmond: Petrocelli M, Piquero M, Smith M, Conflict Theory and Racial Profiling: An Empirical Analysis of Police Traffic Stop Data, Journal of Criminal Justice, 2003; Cincinnati: Bostaph L, Race and Repeats: The Impact of Officer Performance on Racially Biased Policing, Journal of Criminal Justice, 2007; Rhode Island: Farrell A, McDevitt J Cronin S, Rhode Island Traffic Stop Statistics Act Final Report, Northeastern University Institute on Race and Justice, 2003; Connecticut: State of Connecticut Division of Criminal Justice, Office of the Chief State's Attorney, Interim Report of Traffic Stop Statistics, 2001; Oakland: Rand Corp., Oakland Racial Profiling Study, 2004; Syracuse: Horrace WC, Rohlin, SM, City of Syracuse Policy-Citizen Encounter Study, 2010.

Alternative Approaches to Research on Potential Police Bias

Although a great deal of work has been done on the issue of potential bias in policing over the past decade, methods employed to resolve this issue remain controversial. Identification of an adequate benchmark remains at issue. Appendix Table 1 presents data only from studies using data on driving-age populations obtained from the United States Census as a benchmark. The table presents evidence that can be interpreted as widespread racial bias.

However, use of alternative methods of analysis and benchmarks may support alternative explanations. One direction of research has examined the possibility that African-American drivers commit more traffic infractions than others, and thus would be justifiably overrepresented among drivers stopped. A study by R.J. Lundman and B.R. Kowalski, ("Speeding While Black? Assessing the Generalizability of the Lange and Colleagues' New Jersey Turnpike Speeding Survey Findings," *Justice Quarterly*, 2009), concentrated on driver behavior in Massachusetts. According to these investigators, "Black drivers, young drivers, and male drivers are more likely to speed at high rates in 65 mph speed zones." The authors conclude by asking "whether traffic stops for Driving While Black are in small part the result of Speeding While Black."

Another approach to the question of racial profiling has concentrated on the possibility that apparent bias actually results from deployment of law enforcement resources to areas of high crime, which may incidentally be areas of high residential representation of African-Americans and other economically disadvantaged people. A study by S. Roh and M. Robinson ("A Geographic Approach to Racial Profiling: The Microanalysis and Macroanalysis of Racial Disparity in Traffic Stops," *Police Quarterly*, 2009), presents such an approach. They hypothesize that "more aggressive law enforcement in minority

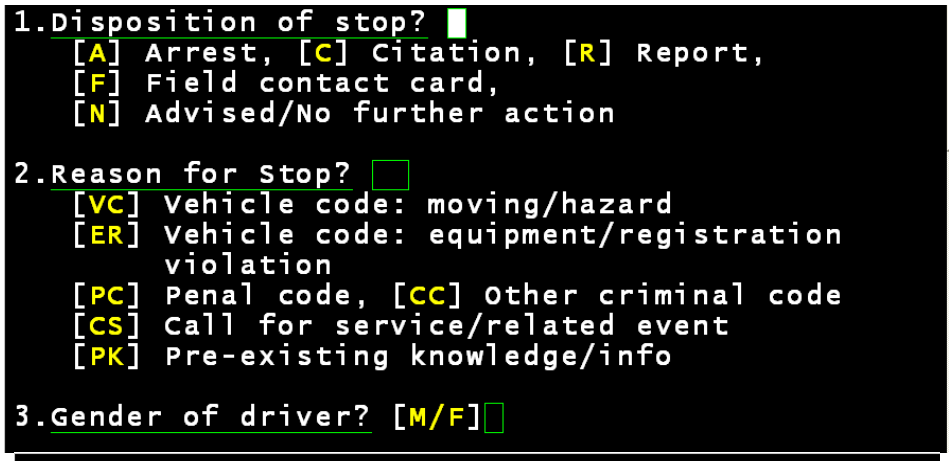
communities may be the primary reason why Black and Hispanic drivers are treated differently by police officers." Based on sophisticated modeling of data collected in Houston, TX, these investigators conclude:

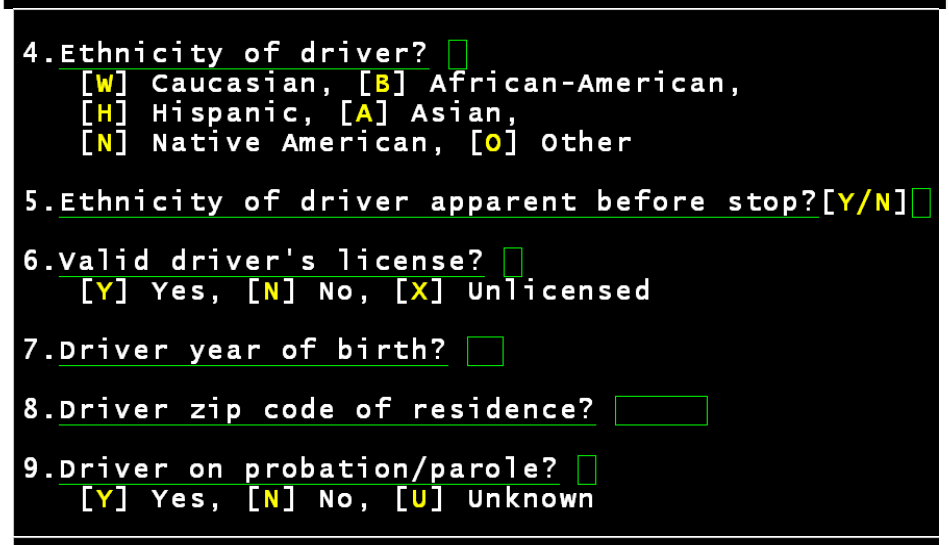
> Simply put, minority drivers may be stopped, searched, arrested, and charged with a felony because they are morel likely to drive in high crime areas where they reside and more vigorous law enforcement is a common practice.

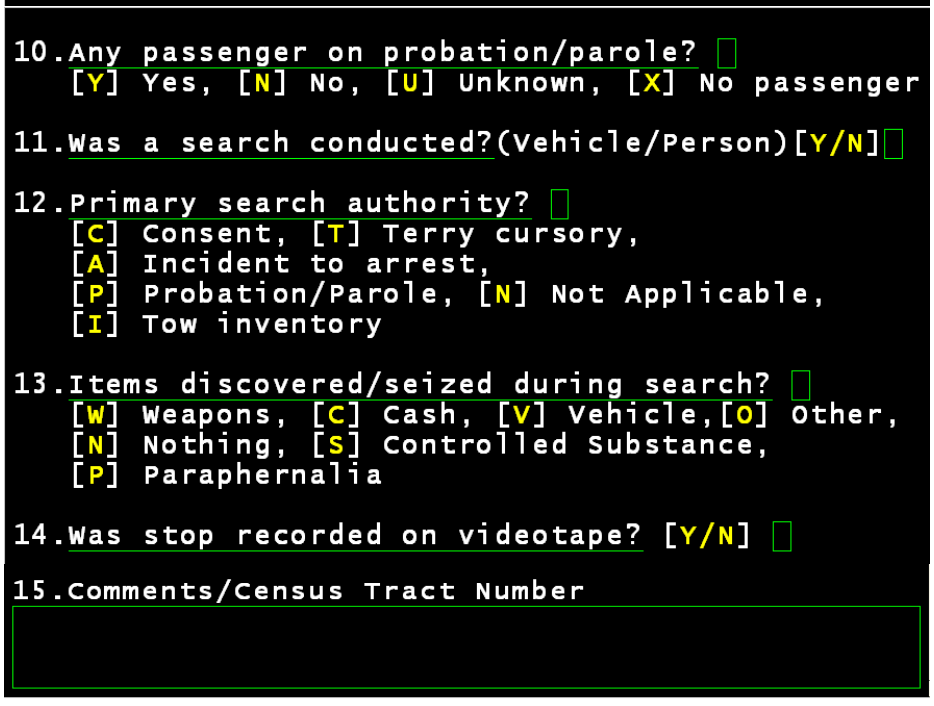
Finally, a number of researchers have approached the biased policing question not by comparing individuals stopped with their representation in an assumed driving population but by comparing drivers stopped under good versus poor lighting conditions. According to these researchers, the observation that similar proportions of minorities stopped at times of poor versus good lighting conditions would constitute evidence of little or no bias in making of stops by police officers. A widely-cited example of this approach is J. Grogger and G. Ridgeway, "Testing for Racial Profiling in Traffic Stops from Behind a Veil of Darkness," *Journal of the American Statistical Association*, 2006. Under this approach, researchers compare proportions of stops made of drivers in various racial categories at times of day when it may be light or dark, depending on the season. In this fashion, similar driving populations are compared under different conditions of visibility. Researching police stops in Oakland, CA using this technique, Grogger and Ridgeway report that "the data yield little evidence of racial profiling in traffic stops." Forthcoming studies have confirmed their findings.

Appendix 2

Officer Reporting Screen


1.Disposition of stop?
[A] Arrest, [C] Citation, [R] Report,
[F] Field contact card,
[N] Advised/No further action
2.Reason for Stop?
[VC] Vehicle code: moving/hazard
[ER] Vehicle code: equipment/registration violation
[PC] Penal code, [CC] Other criminal code
[CS] Call for service/related event
[PK] Pre-existing knowledge/info
3.Gender of driver? [M/F]


4.Ethnicity of driver?
[W] Caucasian, [B] African-American,
[H] Hispanic, [A] Asian,
[N] Native American, [O] Other
5.Ethnicity of driver apparent before stop?[Y/N]
6.Valid driver's license?
[Y] Yes, [N] No, [X] Unlicensed
7.Driver year of birth?
8.Driver zip code of residence?
9.Driver on probation/parole?
[Y] Yes, [N] No, [U] Unknown


10.Any passenger on probation/parole?
[Y] Yes, [N] No, [U] Unknown, [X] No passenger
11.Was a search conducted?(Vehicle/Person)[Y/N]
12.Primary search authority?
[C] Consent, [T] Terry cursory,
[A] Incident to arrest,
[P] Probation/Parole, [N] Not Applicable,
[I] Tow inventory
13.Items discovered/seized during search?
[W] Weapons, [C] Cash, [V] Vehicle,[O] Other,
[N] Nothing, [S] Controlled Substance,
[P] Paraphernalia
14.Was stop recorded on videotape? [Y/N]
15.Comments/Census Tract Number

Appendix 3

Summary of Reliability Study

Background

In analyzing self-reported data of the kind used in the study reported here, it is important to consider possible inaccuracy resulting from errors of observation or recording, bias in favor of socially-desirable behavior, or intentional misreporting. The information presented in this appendix addresses the reliability of data provided to the USC researchers. *Reliability* in this sense refers to the degree of consistency between two methods of observation or between data reported by two different individuals using the same method of observation or instrument. The ability of any research study to accurately address the issues for which it was undertaken – that is, the study's *validity* -- can be no greater than the reliability of the data it uses.

The study reported here makes use of video recording of vehicle stops by Sacramento Sheriff's deputies. High resolution video cameras were installed in patrol vehicles during the latter part of the study period. Video recording of vehicle stops enables a second individual to observe key characteristics of the stop. In this way, reliability of data that were used in the analysis cited above can be assessed. In addition, video recording of the stops promotes an understanding of the degree to which deputies are able to identify features of a driver before a stop takes place.

Methods

Video recording of stops by Sheriff's Department deputies was gradually implemented between 2006 and 2009. In 2009, the USC researchers received information on 16,676 stops. Of these, 15,049, or 90.2 % were video recorded.

To assess reliability of data analyzed by the USC researchers, a random sample of 150 stops made in 2009 was selected. The sample was drawn from only those stops in which the reporting officer indicated that video recording had taken place. The Sheriff's Department provided the research team with video records of 100 of these stops, of which 99 were usable for comparison. Two members of the research team reviewed the video records and coded the following information: driver race, duration of the stop, whether the driver's race was apparent before the stop was made, whether a search took place, and disposition of the stop.

The 99 video records were matched with records of the same stops reported through the CAD. Comparisons were made via contingency table analysis (including the chi-square test for statistical significance) and a statistic (kappa) used to measure agreement between the CAD-reported data and data abstracted from the video records.

Findings

Findings obtained in this manner were as follows:

- There is substantial agreement between the race reported through the CAD system and discerned by the research team from the video. For example, 80 % of drivers identified as African-American in the CAD were also (and independently) determined to be African-American through the video.

- Agreement between the two data sources on duration of stops was found in the vast majority (82.9 %) of stops.

- There was a high level of agreement (87.7 %) between disposition as recorded in the CAD and as inferred from observation of the videos.

Limits in this reliability study must be acknowledged. Often, the researchers reviewing the video records were unable to observe the phenomena they wished to compare with the CAD, or to do so with the desired precision. For example, the videos provided no information regarding the driver's race unless he or she exited the car, an action that did not take place in all stops. In some videos where the driver did exit, poor lighting conditions limited the research team's ability to identify his or her race.

It is important to note that the research team was in no case able to identify a driver's race before the deputy stopped his or her car. In only 17 of 83 CAD records (20.5 %) originally matched with videos (one case was not further analyzed) did deputies report to the CAD that they had been able to identify the driver's race prior to stopping him or her. However, in no cases did the video enable the research team to identify the driver's race prior to the stop.

The kappa statistic is used to assess the strength of agreement between two methods of observations. The table below specifies kappa statistics for the variables compared and the associated strength of agreement according to widely-cited criteria[1]

Variable	**Kappa**	**Strength of Agreement**
Driver Race	.560	Moderate
Elapsed Time Category	.674	Good
Elapsed and Contact Time	.554	Moderate
Driver Searched	.805	Very Good
Disposition	.629	Good

Conclusions

Although some error was likely in the deputy reports, error was if anything more likely in inferences from the videos. No evidence of systematic reporting bias by the deputies was observed. Reliability of data reported by the deputies on visibility of race prior to stops, searches, and elapsed time during the stops was rated good to very good. There is no evidence that deputies underreported visibility of driver races prior to stops or searches during the stops. More disagreement between the CAD and video data was found for the crucial variable of driver race. But no tendency was evident that officers regularly misclassified drivers; for example, the comparison did not suggest that minority individuals were regularly classified as non-minorities.

These findings on reliability confirm the validity of research results reported above on vehicle stops by Sacramento Sheriff's Department deputies. They also provide context for some of these findings. It should be noted, for example, that stop times as experienced by drivers are shorter than those suggested by elapsed time, the basis of earlier reports on this dimension. The inability of the research team to determine the driver's race before being stopped by a deputy is consistent with the frequent report by deputies that they were unable to identify a driver's race prior to a stop.

1. Altman DG. Practical Statistics for Medical Research. London: Chapman and Hall, 1991.