



# The California Highway Patrol:

An Evaluation of Public Contacts in Stop Data from 2022,  
with a Focus on Moving and Non-Moving Violations

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*The California Policy Lab generates research insights for government impact. We are an independent, nonpartisan research institute at the University of California with sites at the Berkeley and Los Angeles campuses.*

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# EXECUTIVE SUMMARY

We analyze 2.3 million stops made by the California Highway Patrol (CHP) in 2022 to better understand who is being stopped (or helped in non-enforcement stops), if there are racial and ethnic disparities in who is being stopped, and suggest possible strategies the CHP could use to reduce unwarranted disparities in stops while also promoting public safety.

## KEY FINDINGS:

- 1. As compared to 2019, there were fewer enforcement and non-enforcement stops made by the CHP in 2022.** This is likely driven by changes in the number of California drivers and their behavior or by the number of CHP Officers, rather than a reduction in CHP enforcement effort.
- 2. The overall size of Black-White and Hispanic-White disparities in stop rates, benchmarked to non-enforcement stops, is about the same as it was in 2019.** This is true both state-wide, and within individual CHP Divisions.
- 3. In 2022, CHP Officers were more likely to stop Black or Hispanic people for moving violations than White people.** A Veil of Darkness test also suggests the potential presence of bias in stops for moving violations.
- 4. In 2022, 21% of the traffic enforcement stops made by the CHP were for non-moving violations.** These stops for non-moving violations led to 35% of all serious contraband seizures by CHP Officers and 12% of DUI arrests. Officers are more likely to discover serious narcotics in searches following non-moving violations than in searches following moving violations.
- 5. Black-White and Hispanic-White disparities in stop rates for non-moving violations made a small contribution to overall disparities in stops rates.** If the CHP did not make any stops for non-moving violations in 2022, Black-White disparities in stop rates would have been 2.9% lower, and Hispanic-White disparities would have been 2.2% lower.

## RECOMMENDATIONS:

1. **The CHP should consider further investigation into the quantity and specific type of contraband seized when conducting searches; this information is currently not included in RIPA data.** This would allow for a more formal cost-benefit analysis of making stops for non-moving violations.
2. **The CHP may want to consider increased use of technology in making stops for moving violations.** Statistical tests suggest that stops made where speed information is gathered by radar, lidar, or airplane, are less likely to involve non-White drivers than stops made when a CHP Officer collects speed information by driving alongside or behind the potentially speeding car.

# The California Highway Patrol: An Evaluation of Public Contacts in Stop Data

In 2015, the California legislature passed Assembly Bill 953 — the Racial and Identity Profiling Act (RIPA). As of 2023, almost all law enforcement agencies in California are required to report information on almost every enforcement stop made by peace officers. The purpose of RIPA is to allow the California Office of the Attorney General (OAG) to identify, and take steps to reduce, racial and other identity group disparities (e.g. age, gender expression, sexual orientation, or religion) in law enforcement contacts.

Identifying a relationship between a Californian’s identity and their likelihood of being stopped or searched by law enforcement is in the shared interest of law enforcement agencies, and the OAG, when this identification leads to improvements in how law enforcement officers target their attention and enforcement efforts to increase public safety. In contrast, when officers make stops and conduct searches according to policies or practices that are perceived by the public as potentially driven by bias, it reduces public trust in law enforcement broadly, increases civilian complaints, reduces witness cooperation, and lowers officer morale (Quattlebaum et al. 2018). If stops and searches that are more likely to be perceived as biased do not lead to contraband discovery or remove dangerous drivers from the roads, adopting strategies to minimize or eliminate these “high-cost, low-return” officer actions will improve the overall quality of policing in California (Owens and Ba 2021).

In this report, we use the term “bias” to describe a CHP Officer making a law enforcement decision using one standard for people with one type of identity, and a different standard for people with a different identity. RIPA data represent a large increase in what is known about actions and decision-making of law enforcement, and allows for statistical testing that can, under certain assumptions, identify decisions where, on average, bias is more or less likely to be present. These tests can allow the CHP to better target further investigation into how policies and practices are being implemented, with the aim of improving overall public safety and reducing bias.

We received data on 2,530,641 stops made by the CHP from January 1 to December 31, 2022. In this report, we conduct three sets of analyses on 2,348,842 of those stops that were either enforcement stops reportable under RIPA, or non-discretionary, non-enforcement stops, to better understand who is being stopped (or assisted in a non-enforcement stop) and subsequently searched to shed light on the potential costs and returns of these stops.

In our first test, we compare the racial and ethnic identities of people stopped by CHP Officers to two different estimates of the racial and ethnic identities of people who could have been stopped by the CHP, an exercise known as “benchmarking.” We compare people stopped by the CHP to the residential population, and also to people who come into contact with the CHP via non-enforcement stops. We compare these benchmarked estimates to estimates in a previous report that analyzed 2019 stop data (Owens and Rosenquist 2021).

Benchmarking enforcement stops to the California population creates a measure of overall disparities in the probability of CHP contact, but does not necessarily identify bias in CHP stop decisions. This is because differences across groups in factors like rates of car ownership and driving behavior can create differences in benchmarked stop rates, when those group differences impact the composition of drivers who are “at risk” of being stopped. While not an exact measure, we use the composition of drivers the CHP interacts with during non-enforcement stops as an estimate of this “at-risk” population. Non-enforcement stops occur when a driver requests CHP assistance – most frequently for assistance with a disabled vehicle. Using non-enforcement stops (rather than population) as a benchmark allows us to account for some potential group-level differences in driving patterns that may lead population benchmarks to overstate possible bias in CHP stops.

State-level disparities could also be the result of residential choice if, across California, people in different identity groups are more likely to live in CHP Divisions that engage in more or less aggressive enforcement, or if driving conditions systematically lead to more accident risk. In order to better understand how geographic differences may influence non-enforcement benchmarked stop rates, we conducted a multivariate regression analysis that incorporates Division-level information on population and drivers in serious or fatal accidents. This allows us to generate predicted benchmarked stop rates for White, Black, Hispanic, and Asian drivers, in a hypothetical case where there were no regional differences in population, policing, and very risky driving behavior across people in those groups.

In our second test, for the 1,598,643 enforcement stops made in 2022, we conduct an analysis of stop rates, search rates, and contraband finding (“hit-rates”) across racial and ethnic groups, based on the reason for the stop. Stops are divided into two groups: moving violations and non-moving/equipment violations. A CHP Officer makes a stop for a moving violation when that officer believes that the motorist is driving in a way that threatens public safety, e.g. speeding or failing to obey traffic signals. A non-moving or equipment violation occurs when a CHP Officer believes that the motorist is violating a California statute or ordinance that may not immediately threaten public safety — e.g. failure to wear a seatbelt (non-moving), broken taillight (equipment), a cracked windshield (equipment) or expired registration (non-moving). In this report, we include equipment in our definition of “non-moving violations.”

To the extent that non-moving violations do not lead to immediate threats to public safety, and these stops disproportionately affect drivers in a particular identity group, then eliminating stops for non-moving violations could reduce real, or perceived, bias in CHP actions without sacrificing safety. On the other hand, stops for non-moving violations could provide an important social benefit if these stops are more likely to lead to the discovery of serious contraband as compared to stops for moving violations. While we cannot conduct a full cost-benefit analysis with RIPA data, we can use data collected under RIPA to compare contraband discovery, or “hit rates,” across different types of stops. If RIPA data show racial or ethnic disparities in stops for non-moving violations, and also that contraband is less likely to be discovered during these types of stops (as compared to other types of stops), then the overall cost of this type of traffic enforcement may be larger than the benefit.

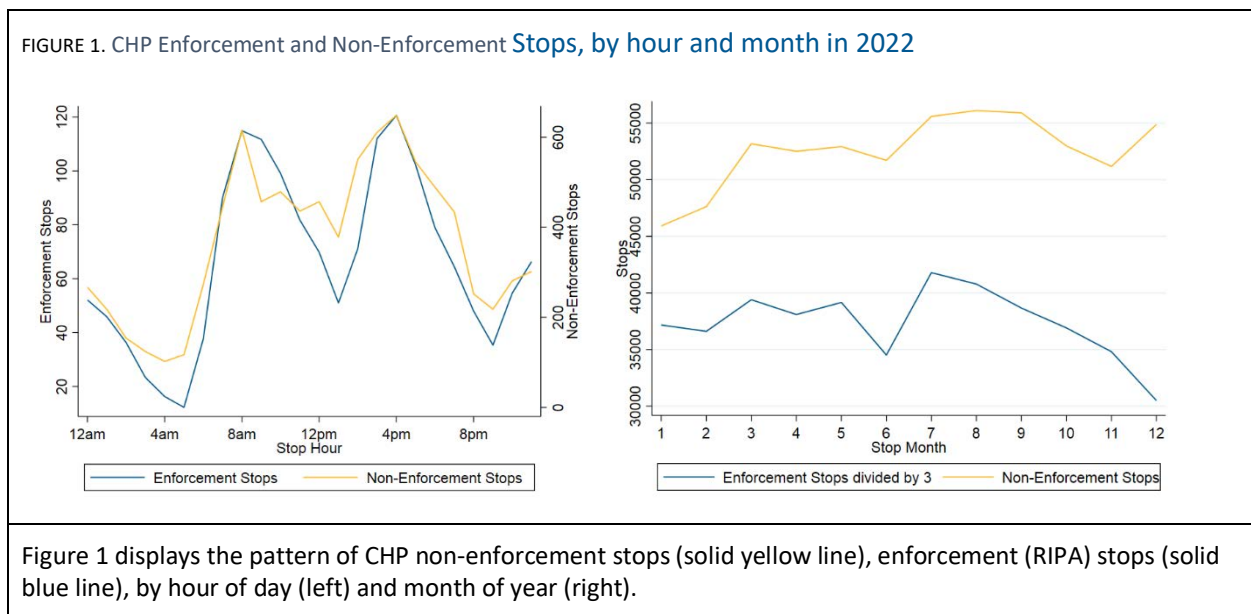
In our third test, we conduct an analysis for the use of racial or ethnic identity in CHP Officer stops for moving violations, using RIPA data on how a CHP Officer measured a driver’s speed. Known as a “Veil of Darkness Test,” it compares the relative fraction of non-White and White people stopped for moving violations following identification by airplane, radar, or lidar equipment to the fraction of White and non-White people stopped following identification by a CHP Officer driving close to the suspected vehicle. This test essentially asks whether Non-White drivers are more likely to be stopped when CHP Officers are more likely to observe the driver’s identity.

## What is Benchmarking?

Law enforcement officers are tasked with identifying and apprehending people who the officers believe have violated the statutes and ordinances that govern society. Biased enforcement occurs when a law enforcement officer uses different decision rules to identify and apprehend suspected violators from different identity groups. Because outside parties can never truly measure the exact way in which an individual officer makes decisions, and because individual officer-civilian encounters are frequently nuanced and unique, no one statistical test can conclusively rule out, or rule in, biased enforcement. Rather, there are currently three statistical tests that can be used to identify systematic disparities in police-public contact. In some cases, these tests can provide law enforcement with information on where unwarranted biased enforcement may be occurring, allowing managers to prioritize further detailed investigation and review.

One statistical test that is used to identify potential bias in policing is known as “benchmarking.” Benchmarking involves comparing the distribution of people in a particular criminal justice circumstance with the distribution of people “atrisk” of being in that particular circumstance (the “benchmark.”) Statistical evidence that the distributions are different (for example, if 50% of the people who are stopped are Black, and 50% of people who are stopped are White, but 10% of residents are Black and 90% are White) is evidence of disparate outcomes, and consistent with biased enforcement. In this theoretical example, Black people are eight times more likely than White people to be stopped relative to their population benchmarks.

In practice, benchmarking with population data alone is generally insufficient to establish why a disparity exists, and particularly the role that one specific entity had in creating the disparity. In the case of enforcement stops, doing so requires not only information on who is stopped, the benchmark “numerator,” but also who could have been stopped, the benchmark “denominator.” The later number is rarely observed. In the context of the CHP, calculating a benchmark for people stopped for speeding that isolates the role of CHP traffic enforcement requires information on every person who was stopped for speeding, and every person who was driving in excess of 65 mph on the highway. In the absence of detailed information on CA drivers, researchers must rely on proxies for this population “at risk” of being stopped. Following Owens and Rosenquist (2021), we use information on people who encounter the CHP for non-enforcement reasons, such as a disabled vehicle. As discussed in Owens and Rosenquist (2021), these non-discretionary stops are a plausible representation of the population of drivers. As shown in the left panel of Figure 1, over the course of a day, the number of non-enforcement stops tracks the number of enforcement stops very closely, suggesting that both measures reflect the volume of traffic on California’s roads. The right panel shows that with the exception of December, month-to-month fluctuations in enforcement and non-enforcement stops also appear to mirror each other.



Deciding which benchmark to use (population or drivers) matters for how the benchmark estimate can be used. Population benchmarks provides insight into the actual differences in expected outcomes for people in different populations groups. If non-enforcement stops are a better measure of the population of “risky” drivers, these benchmarks provide more information about why population-level disparities exist, and what role CHP policy and practice may play in mitigating or exacerbating them. For example, if differences in access to quality driver’s education programs meant that people in group A drove 15 mph faster than people in group B, population benchmarking would reveal a disparate number of group A members in CHP stops. The disparity would not be due

to CHP policy, but rather the fact that people in group A were overrepresented in the population of speeders at risk of being stopped (the numerator of the benchmark). If speeders were also more likely to need roadside assistance, non-enforcement stop benchmarking would reduce the estimated disparities in how frequently As were stopped relative to Bs — there would be more type As in both the numerator and denominator of this benchmark.

It is also important to acknowledge that non-population benchmarks can also underestimate the amount of bias in CHP actions, when the benchmarks are themselves shaped by CHP decisions. For example, using the population of people stopped by CHP in 2019 would not necessarily be a good benchmark for 2021 stops. In an extreme case where officer bias influenced stop decisions in exactly the same ways both in 2019 and in 2021, using a 2019 benchmark would reveal no disparities in benchmarked stop rates in 2021.

In our previous report, we noted that the residential population of California is not necessarily reflective of the number of people at risk of being stopped by the CHP — who have jurisdiction on U.S, state, and interstate highways, and public roads. Benchmarking RIPA stops to the number of likely drivers, based on the number of residents who reported driving their car to work (likely commuters), mechanically increased the benchmarked stop rate (since not all residents are commuters), and also increases the Black-White and Hispanic-White stop disparities. We previously concluded that the commuter benchmark increased benchmarked disparities in CHP stops, but that this measure could potentially also include racial and ethnic disparities not caused by CHP actions, such as disparities in household income and access to personal vehicles. As a result, we do not estimate a commuter-based benchmark for this report.

## What is a Hit-Rate Test?

Hit-rate tests use the outcomes of police-public encounters to estimate whether the officers are holding similar people, in different identity groups, to similar standards. For the CHP, a hit-rate test might calculate the total number of times a search of a Black person revealed contraband, and divide that by the total number of times Black people were searched (the Black “hit rate”). That ratio would then be compared to the total number of times a search of a White person revealed contraband divided by the total number of times White people were searched (the White “hit rate”).

Under a specific set of assumptions about the behavior of people in different groups, the relative size of the two hit rates can be informative about how officers decide to search Black and White people. If officers apply the same standards to behavior of Black and White people, then even if there are more people in one identity group who are searched, the fraction of times a search reveals contraband should be the same across groups — meaning officers are equally proficient at discovering criminal activity among Black and White people. Alternatively, if the White hit rate is much lower than the Black hit rate, it suggests that officers are not successfully distinguishing when White people are engaging in criminal behavior vs noncriminal behavior. As a result, officers are searching White people unnecessarily, imposing costs on the searched White people (and potentially the officers) that are not offset by increases in public safety.

One important limitation of the Hit-rate test is that it can “rule in” racial bias, but cannot credibly verify the absence of racial bias. The motivating idea of hit-rate test is that if officers attribute some level of intrinsic level of suspicion to people with a certain identity, then one might expect that the “least suspicious” searched person in the suspect identity will be less likely to actually have contraband than the “least suspicious” searched person in the non-suspect identity. However, in the absence of data that identifies the least suspicious people, hit-rate tests instead calculate the average contraband finding rate of all people in an identity group.

If officers are aware that certain characteristics, like identity, can increase the probability of finding contraband, but those search efforts are not well targeted, hit-rate tests can fail to identify bias. For example, suppose a very small



number of people in a particular group are highly likely to have contraband and, based on this, officers stopped a large number of people in that group — including those who never carry contraband. If researchers cannot distinguish between these two groups of people, the high “hit rate” for the small fraction of people impacted by the search strategy could, mathematically, outweigh the fact that the majority of people stopped never had contraband — and would not have been stopped if they had been in a different group.

## What is a Veil of Darkness Test?

We conduct a Veil of Darkness (VOD) test as a third way to estimate the scope for bias in stops for moving violations. VOD tests examine whether people in a particular group are more or less likely to be stopped when information about their group membership is hidden (behind a “veil of darkness”). In canonical work by Grogger and Ridgeway (2006), stops made by the Oakland Police Department are evaluated during inter-twilight hours, when it is light outside during daylight savings time and dark otherwise. An increased probability of a stopped driver being Black during daylight savings time means that there is a non-trivial set of drivers who would only be stopped if an officer observed their race, and the presence of natural light impacts the stop decisions of a non-trivial number of officers who observe those marginal drivers. In the Grogger and Ridgeway (2006) framework, stops are summed up over two identity groups (e.g. White vs non-White), whether information on race is available to an officer (e.g. daytime or nighttime), and period of time (e.g. each day). The natural log of the ratio of the fraction of people stopped who are non-White to the fraction of people who are White (the “log odds”) is calculated when information on race is and is not available. A reduction in this ratio when racial information is not available is indicative of officers using race in their stop decisions.

Some VOD tests rely on actual darkness as the tool to disguise racial information, however, one commonly cited concern is the role of natural light in revealing a driver’s race. If, in practice, officers are equally able (or unable) to identify a driver’s race, due to artificial lighting or window tinting, the VOD test will fail to identify potential differences in how CHP Officers make stop decisions. In this report, we are able to reduce that concern by using method of speed data collection, rather than the presence of natural light, as an indicator of whether an officer could see a driver. The method of speed data collection is reported in the narrative field of the RIPA stop data., We will assume that officers do not know driver race before stops made for moving violations initiated by speed data collected by aircraft, lidar, or radar. For stops made by pacing or visual estimation, which involve more officer discretion and closer following by the officer, we assume the driver's race is known at the time of the stop. “Darkness” in this case includes stops made from longer distance and less officer discretion: lidar, radar, and airplane.

# Benchmarking the CHP

We begin our analysis with the broadest benchmark by calculating the number of stops of White, Black, Asian, and Hispanic drivers in 2022 to the estimated number of California residents with that racial or ethnic identity in the American Community Survey (ACS), conducted by the Census Bureau.

Figure 2A shows that in 2022, 4.2 White people were stopped for every 100 White residents, which is roughly half the stop rate of Black residents, 8.3 stops per 100 Black people, and equivalent to the stop rate of Hispanic residents, 4.5 stops per 100 people. Asian people were stopped at a rate of 1.8 per 100 residents. As shown in Figure 2B, these are lower rates of enforcement stops than in 2019, when 5.8 White people (1.6 more) 10.1 Black people (1.7 more), 5.3 Hispanic people (0.8 more), and 2.5 Asian people (0.7 more) were stopped per 100 California residents.

One potential explanation for this across-the-board reduction in enforcement stops could be a reduction in CHP enforcement activity — a phenomenon referred to as “de-policing” — which has been raised as a potential trend in response to the nationwide protests after the murder of George Floyd, and subsequent “de-fund the police” movements in the summer of 2020 (e.g. Badger and Blatt 2024).

FIGURE 2A. Statewide stop rates by the CHP, by race and benchmark, in 2022

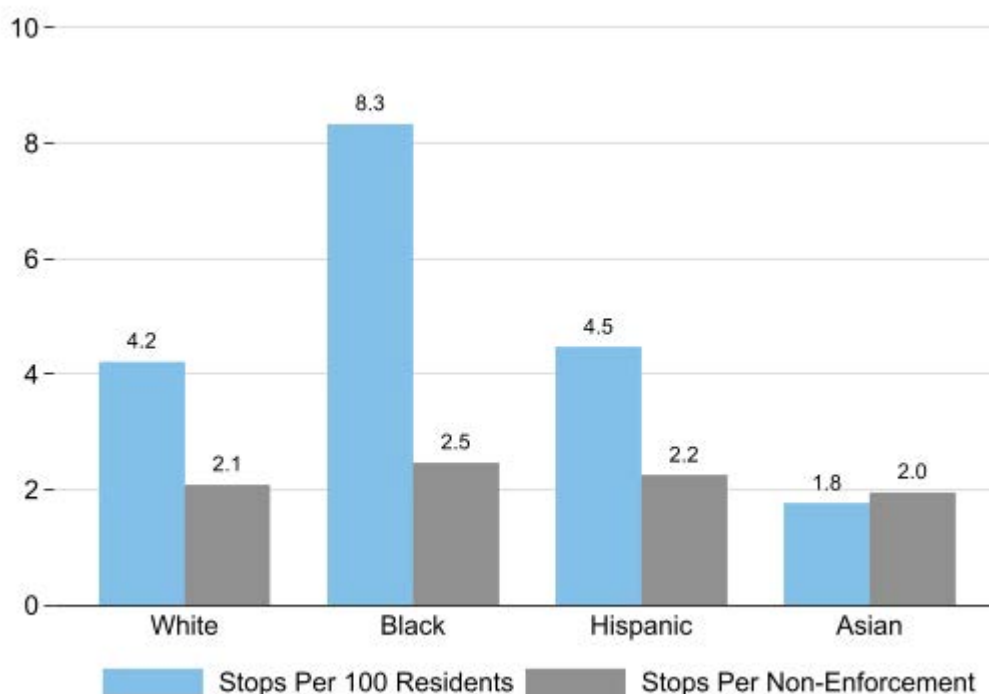
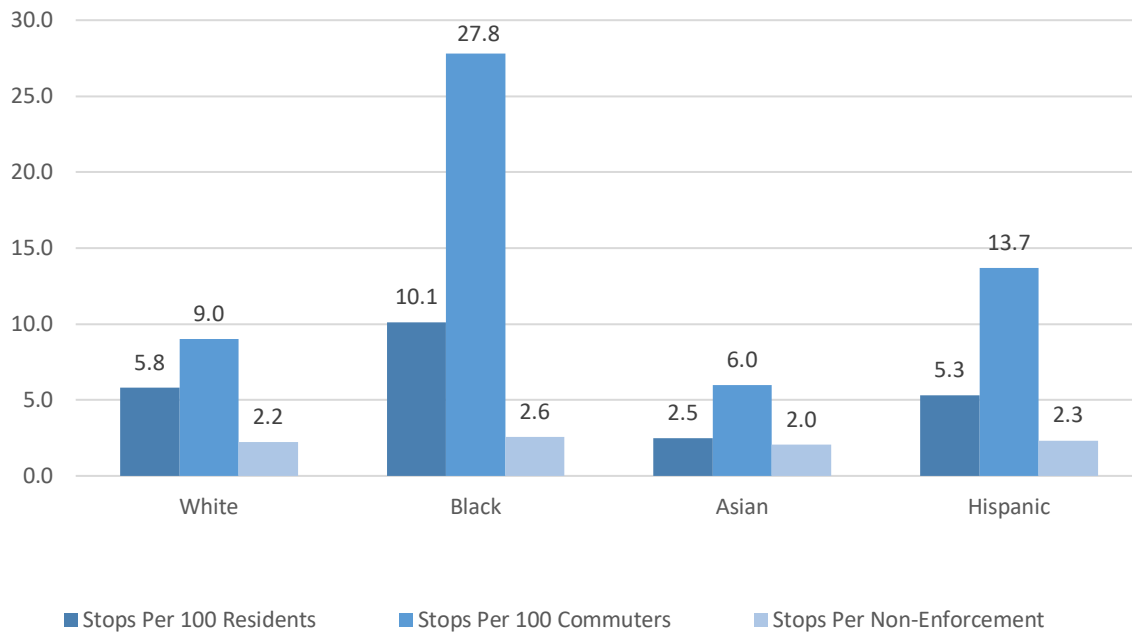


FIGURE 2B. Statewide stop rates by the CHP, by race and benchmark, in 2019 (Owens and Rosenquist, 2021)



Benchmarking RIPA enforcement stops by non-enforcement stops provides an alternate benchmark against which to estimate potential disparities in stop rates that could be generated by CHP Officer discretion, and also provides a straightforward test of the de-policing hypothesis. Non-enforcement stops are non-discretionary on the part of CHP Officers, meaning that, just as the number of people living in California is not affected by de-policing, we would also not expect non-enforcement stops to fall as a result de-policing. However, non-enforcement stops might decline if there were fewer drivers, or if disabled motorists were less likely to request CHP assistance in 2022 compared with 2019.

While we do find slightly attenuated stop rates in 2022 compared to 2019 using the non-enforcement benchmarks, the reductions are substantially smaller, both in level and percentage reductions (Figure 2A and 2B). In 2022, CHP Officers made 2.1 enforcement stops of White people per non-enforcement stop (0.1 fewer than in 2019), 2.5 enforcement stops of Black people per non-enforcement stop (0.1 fewer than in 2019), 2.2 enforcement stops of Hispanic people per non-enforcement stop (0.1 fewer than in 2019), and 2.0 enforcement stops of Asian people per non-enforcement stop (same value as 2019).

FIGURE 3A. Statewide relative stop rates by the CHP, by race and benchmark, in 2022

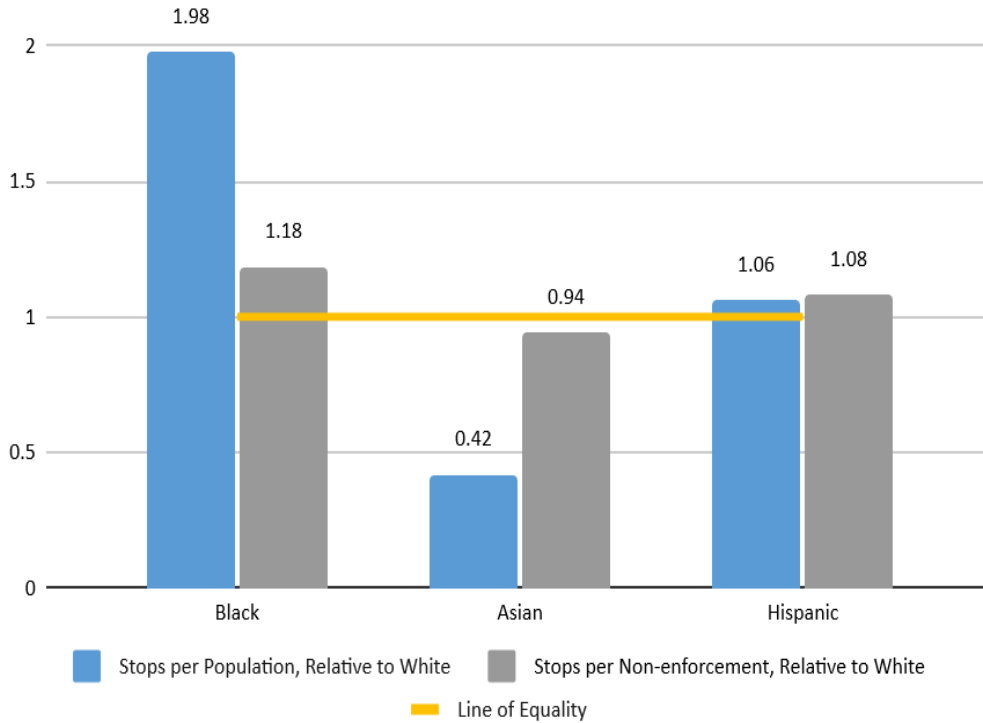


FIGURE 3B. Statewide relative stop rates by the CHP, by race and benchmark, in 2019 (Owens and Rosenquist, 2021)

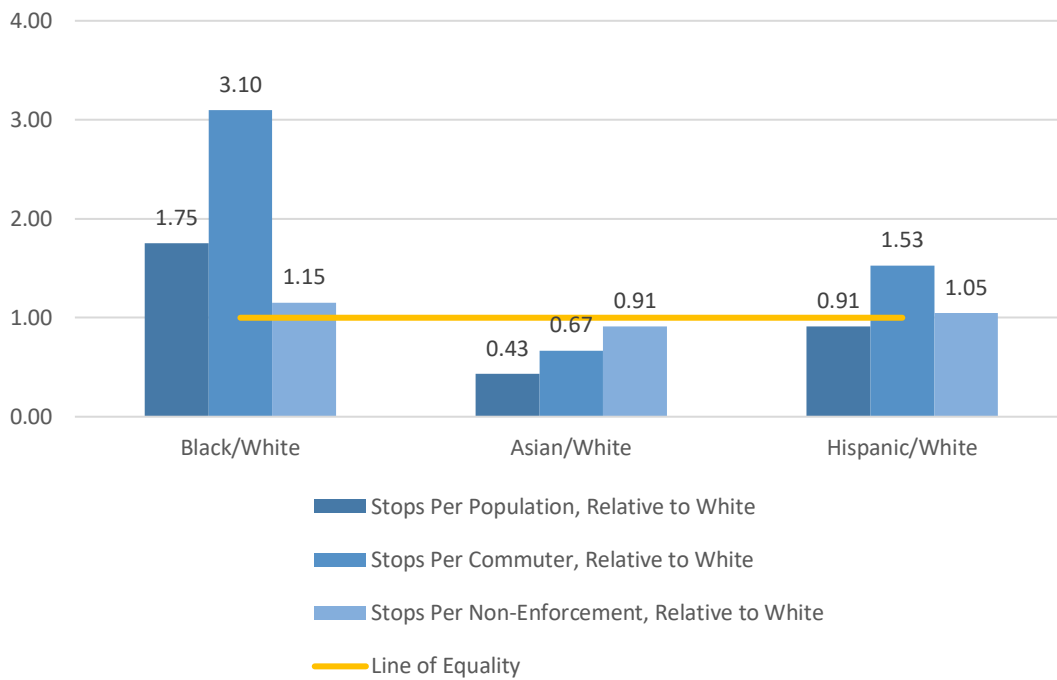


Figure 3 displays relative stop rates, presented so that estimated disparities are comparable across benchmarks. The adjustment scales the stop rate of a particular racial or ethnic group relative to the stop rate for White drivers, such that the relative stop rates equal 1 (line of equality) when stop rates between a group and White drivers are equal (i.e. when there are no disparities). Panel A displays results for 2022 data, and panel B displays the results for 2019, as shown in Owens and Rosenquist, 2021.

Figure 3 provides an alternate way to understand the estimated racial and ethnic disparities by directly comparing the benchmarked enforcement stops of Black, Hispanic, and Asian drivers to the benchmarked number for White drivers. Values large than one indicate more stops for that group than White drivers, values close to one indicate an equal benchmarked stop rate (for that group and for White drivers), and values less than one indicate that drivers in this group are stopped less often than White drivers, per non-enforcement stop.

Using non-enforcement stops as a benchmark, rather than the CA population, substantially reduces the 2022 Black-White disparity in stop rates from 97.6% to 19%. This benchmark also brings White and Asian stop rates closer together, from a -133% difference to a -5% difference. The Hispanic-White stops disparity is less sensitive to the chosen benchmark, as the difference between the two is essentially a rounding error.<sup>1</sup>

When RIPA stops are benchmarked by non-enforcement stops, Black people were stopped by CHP Officers 0.4 additional times, and Hispanic people just over 0.1 additional times per non-enforcement stop relative to White people in both 2019 and 2022. Because there were slightly fewer RIPA stops per non-enforcement stop in 2022 than in 2019, these same level differences correspond to a slight increase in estimated disparities between 2019 and 2022 when transformed into percentage terms.

Notably, small reductions in the non-enforcement benchmark does not suggest that individual CHP Officers engaged in substantial de-policing of traffic violations in 2022 relative to 2019. Rather, because CHP Officers engaged in fewer discretionary (RIPA) and non-discretionary (non-enforcement stops) in 2022, the data are consistent with a reduction in the number of motorists driving in CHP's jurisdiction as an explanation for the lower number of RIPA stops. Per state employment records, from 2019 to 2021, the total number of CHP officer fell from 6,068 to 5,702 – these staffing reductions may have contributed to fewer CHP-civilian encounters of all types.

## Benchmarked Stop Rates Across Divisions

The CHP is operationally divided into eight geographic Divisions. Officers in each of these Divisions patrol demographically and geographically distinct regions, and patrol priorities and style may also vary across Division. A relationship between who drives in different parts of the state and these patrol priorities may lead to different levels of racial and ethnic disparities in CHP-civilian contact. Figure 4 displays the relative benchmarked stop rates in each Division, showing how patterns of patrol have changed, within Divisions, between 2022 (Figure 4 panel A) and 2019 (Figure 4 panel B), and how using a population benchmark affects the apparent geographic patterns (Figure 4 panel C).

As in the state as a whole, benchmarking enforcement stops by non-enforcement stops (panel A), rather than population (panel C), reduces estimated Black-White disparities in every Division. Hispanic-White disparities in the Bay Area, the Central Coast, LA, and San Diego counties are also smaller when non-enforcement stops are used to benchmark enforcement stops, but Hispanic-White stop rates become larger in Division 1, meaning there are fewer non-enforcement stops of Hispanic people than might be expected based on population. With that note, we focus on enforcement benchmarks in our remaining discussion. We provide similar sub-Division maps in the appendix.

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<sup>1</sup> There are 4.45975 enforcement stops of Hispanic drivers per 100 Hispanic residents, and 4.2145 enforcement stops of White drivers per 100 White residents, for a relative benchmarked stop rate of 1.0582. There are 2.24297 enforcement stops of Hispanic drivers per non-enforcement stop, and 2.078436 enforcement stops of White residents per enforcement stop, meaning a relative benchmarked stop rate of 1.0792 — higher than the relative benchmarked rate using population. Rounding all four benchmarked stop rates to 4.5, 4.2, 2.2 and 2.1, however, means the relative benchmarks are 1.07 using population, and 1.05 using non-enforcement stops, implying the non-enforcement benchmark stop rate is lower.

### Stops of Hispanic Drivers vs Stops of Non-Hispanic White Drivers

Hispanic drivers appear to be stopped for enforcement vs non-enforcement reasons at substantively equivalent rates as White drivers in the majority of the California Coast and the Inland Desert regions. However, in the Far North (Division 1) and Central Corridor (Division 4), the relative enforcement stop rate of Hispanic drivers is 44% and 36% higher than it is for White drivers. This geographic pattern of Hispanic-White stop disparities is notably similar to the patterns observed in 2019.

### Stops of Black Drivers vs Stops of White Drivers

In 2022, relative to how frequently CHP Officers encountered White drivers for non-enforcement reasons, Black drivers were more likely to be stopped than White drivers for enforcement reasons in every CHP Division, and these disparate stop rates in most Divisions are equal to or larger than they were in 2019. In Divisions 1, 3, 4, and 7, the ratios of enforcement to non-enforcement stops of Black drivers are 35 to 40% larger than the ratios for White drivers. The largest change occurred in Division 7, the Central Coast, where the ratio of enforcement to non-enforcement stops for Black drivers relative to White drivers increased from 1.17 (17% higher) in 2019 to 1.38 (38% higher) in 2022.

### Stops of Asian Drivers vs Stops of White Drivers

The relative enforcement stop rate of Asian drivers compared to White drivers in the Northernmost Division and in Los Angeles County was roughly constant from 2019 to 2022. Asian drivers were stopped 56% more often than White drivers in Division 1, but relatively less often than White drivers in the two Divisions bordering Division 1 to the south, as well as in LA County. In Division 8, the Inland Desert, and Division 7, the Central Coast, we observe an 11-percentage point increase in the relative enforcement stop rate of Asian Drivers.

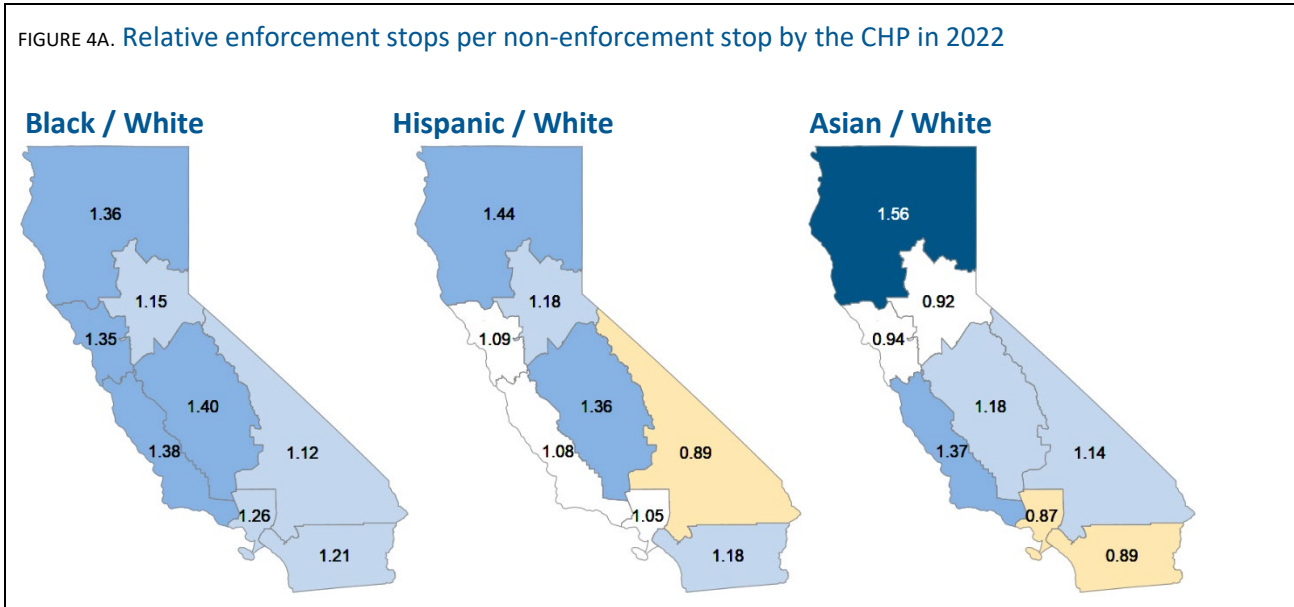


FIGURE 4B. Relative enforcement stops per non-enforcement stop by the CHP in 2019

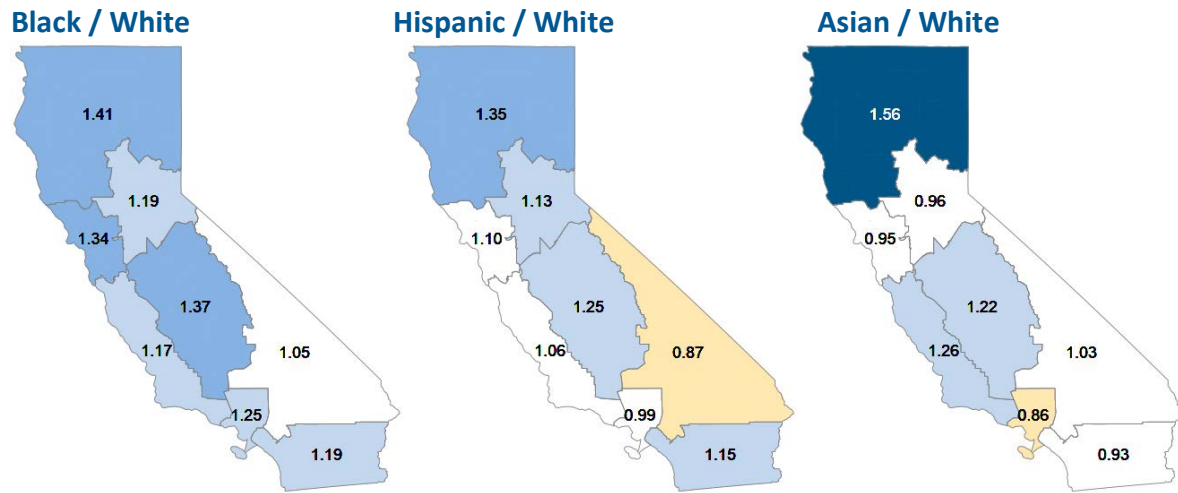
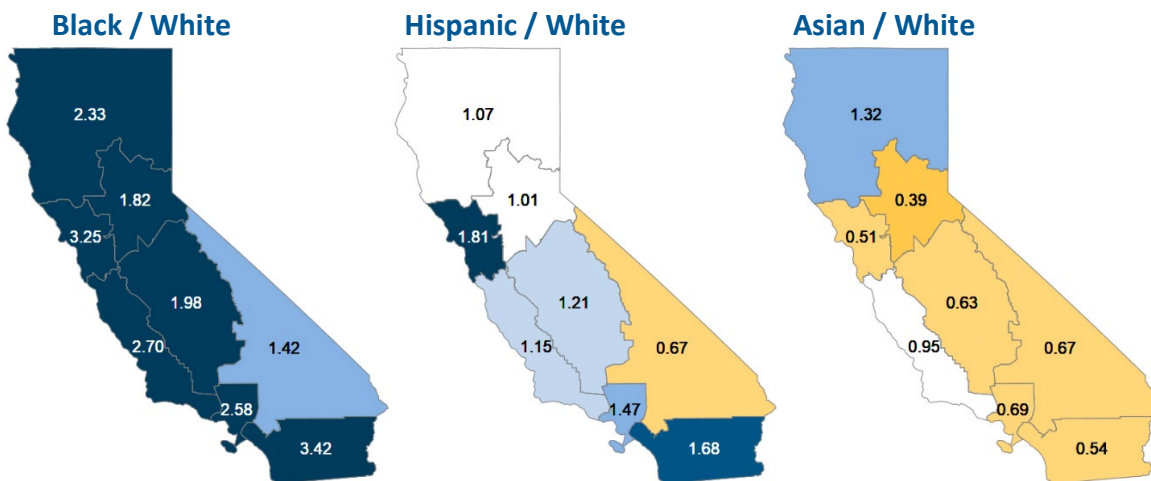


FIGURE 4C. Relative CHP enforcement stops per 100 residents in 2022



- $x > 1.7$
- $1.5 < x \leq 1.7$
- $1.3 < x \leq 1.5$
- $1.1 < x \leq 1.3$
- $0.9 < x \leq 1.1$
- $0.7 < x \leq 0.9$
- $0.5 < x \leq 0.7$
- $0.3 < x \leq 0.5$
- $x \leq 0.3$

Each map of figure 4 depicts RIPA stops per non-enforcement stops of the same race, relative to White RIPA stops per White non-enforcement stops: e.g. (Black stop rate) / (White stop rate). Divisions are colored white when stop rates are equal. Darker colors represent more disparate stop rates. Yellow tones mean the stop rate of the racial/ethnic group is lower than the White stop rate and blue tones mean the stop rate of the group is higher than the White stop rate.

The panels of Figure 4 show clear and persistent geographic differences in how likely Asian, Black, and Hispanic drivers are to be stopped relative to White drivers, using non-enforcement stops as a benchmark for enforcement stops. These differences may be warranted, for example, if they are driven by regional differences in driver behavior that is also correlated with race or ethnicity and is not reflected in non-enforcement stops. Lower population Divisions, with more unincorporated regions, also may be places where the CHP engages in more traditional crime-focused police patrol activity beyond traffic stops, which could affect the benchmarked stop rate.

FIGURE 5. Predicted CHP enforcement stops per non-enforcement stop in 2022

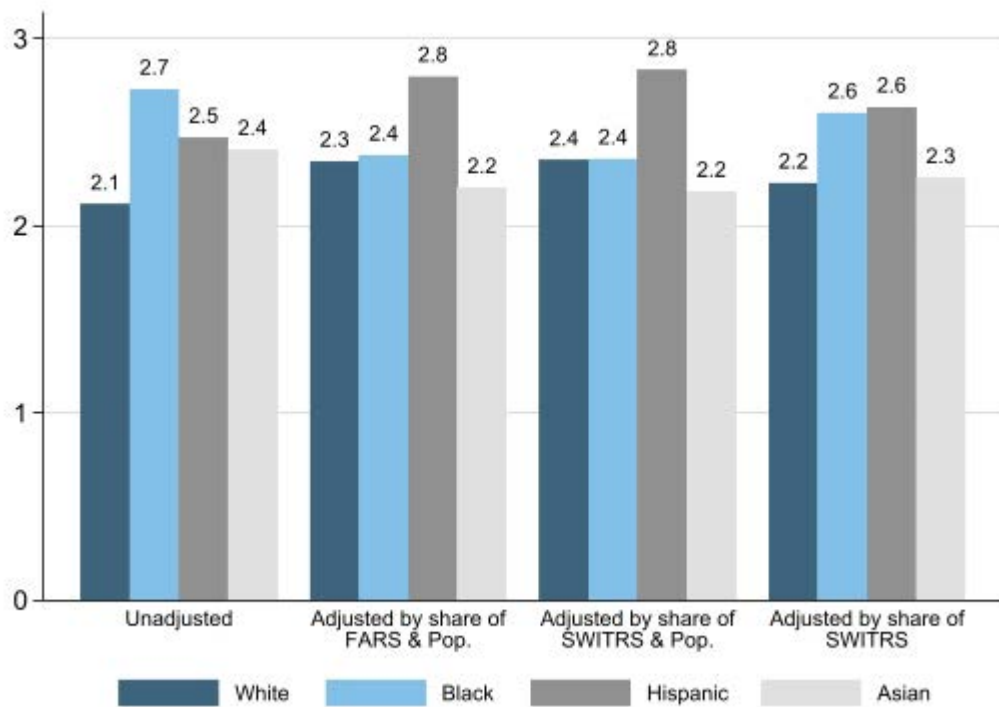


Figure 5 displays the predicted average stop rates by race, using non-enforcement stops as the benchmark. The first set of columns displays the unadjusted stop rates, while the subsequent sections adjust the predictions for population and the racial share of drivers involved in fatal accidents (FARS) or the racial share of at-fault drivers involved in collisions (SWITRS). The final set of columns excludes controls for local population when adjusting for the racial share of at fault-drivers in collisions.

We can further understand how regional variation in Division policies and Division populations affects estimated stop disparities by calculating a predicted benchmarked stop rate. We do this by modeling the benchmarked stop rate for each identity group, in each Division, as a function of the population of the Division, which we interpret as most likely a proxy for the amount of unincorporated areas the CHP may patrol, and two measures of driver involvement in traffic accidents: The Fatal Accident Reporting System (FARS) records the race and ethnicity of drivers involved in fatal accidents. The California State-wide Integrated Traffic Reporting System (SWITRS) records similar data for all crashes known to the CHP. Using both data sets, we calculate the fraction of all accidents in a Division involving drivers of that identity group. When we include these measures in our model, we are able to predict how many RIPA stops, per non-enforcement stop, we would have observed in 2022 if all drivers in California had the same average rate of being involved in an accident and lived in a Division with an average population.

If all drivers also live in Divisions with equally sized populations, and with equal rates of involvement in accidents, this would lead to Black and White drivers being stopped at essentially the same rate (2.3 or 2.4 times per non-enforcement stop), but increase the expected number of times Hispanic drivers are stopped (2.8 versus 2.5 times per non-enforcement stop).



The relationship between benchmarked stop rates and the population of a CHP Division appears to be more important for explaining predicted disparities in stop rates than accident rates. As shown in the far right of Figure 5, adjustments for accidents in SWITRS result in substantively small reductions in benchmarked disparities. If all drivers were equally likely to be involved in SWITRS accidents, Black and Hispanic drivers would be stopped at the same rates (2.6 stops per non-enforcement stop), approximately 15% more often than White and Asian drivers would be stopped.

As in our previous report, RIPA data suggest that CHP practices in different-sized Divisions appear to be an important contributor to Black-White and Hispanic-White disparities in stop rates. As shown in Figure 7, this is also true if the local population is used as a benchmark for enforcement stops — variation in police and practice across different-sized CHP Divisions is responsible for a substantial amount of variation in stop rates across identity groups. Understanding why a Division’s residential population is so predictive of stop rates would help the CHP understand why people with different identities are more or less likely to be stopped for enforcement reasons, and whether these reasons are warranted.

FIGURE 6. Predicted enforcement stops per 100 residents in 2022

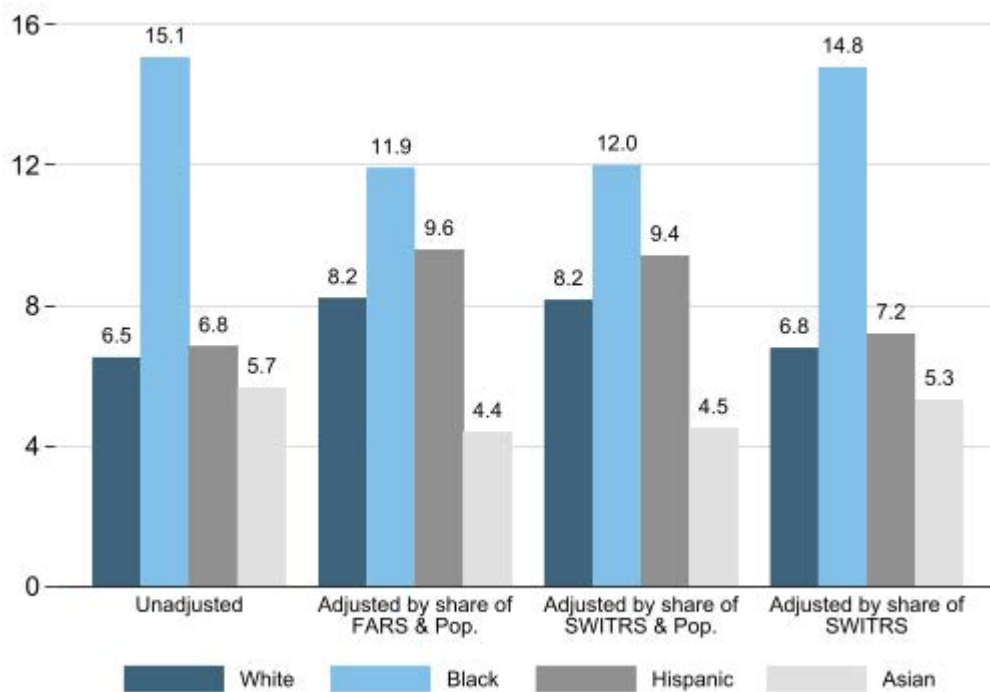


Figure 6 displays the predicted average stop rates by race and ethnicity, using population as the benchmark. The first set of columns displays the unadjusted stop rates, while the subsequent sections adjust the predictions for population and the racial share of drivers involved in fatal accidents (FARS) or the racial or ethnic share of at-fault drivers involved in collisions (SWITRS). The final set of columns excludes controls for local population when adjusting for the racial share of at fault-drivers in collisions.

## Moving vs Non-Moving Violations

We now focus on two types of enforcement stops — stops for moving violations (e.g. speeding, unsafe driving), and non-moving violations (e.g. broken tail lights, expired registration, or seatbelt violations). The 2022 data include records of 1,248,082 enforcement stops for moving violations and 333,497 enforcement stops for non-moving violations. To better understand how each type of stop may contribute to racially disparate CHP enforcement actions, we benchmark each type using non-enforcement stops, calculate the fraction of each type of stop that results in a search, and the fraction of searches that result in contraband discovery.

From a civilian perspective, moving violations are generally more straightforward and recognizable; individuals are typically aware when they or others are breaking the law by speeding, running a red light, driving recklessly, or operating a vehicle under the influence. In contrast, non-moving violations often lack the same level of public awareness, and drivers may not realize they, or others, are in violation regarding issues such as registration, lighting problems, window tint, or a missing license plate. When CHP Officers are more knowledgeable about non-moving violations than the average civilian, they may, or may seem to, exercise more discretion in deciding whether to stop a driver for these infractions. This higher level of officer discretion potentially creates more room for racial biases to influence decisions regarding non-moving violation stops.

## Benchmarking Moving and Non-Moving Violations

FIGURE 7. CHP Enforcement stops per non-enforcement stop, by stop type and race in 2022

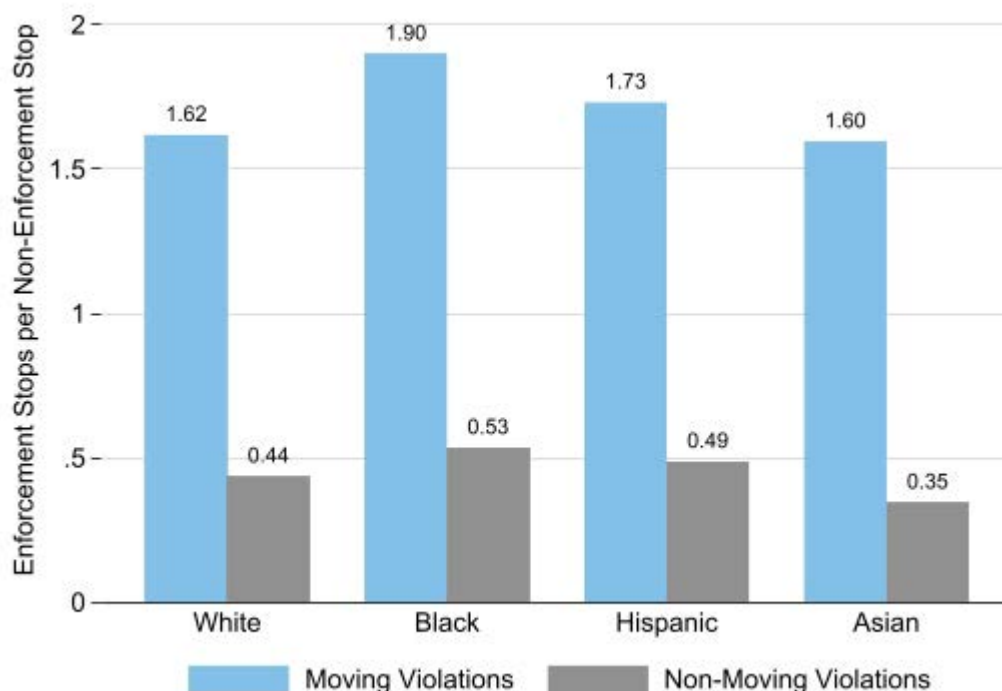


Figure 7 displays the proportion of moving violations to non-enforcement stops in blue and the proportion of non-moving and equipment stops to non-enforcement stops in red.

When scaled by the number of non-enforcement stops of people in each racial and ethnic group, we find that Asian drivers are the least likely to be stopped for all reasons, but the relative rate of moving violations is very close to the rate for White drivers (1.60 for Asian vs 1.62 for White for stops for moving violations relative to non-enforcement stops). The relative stop rate for moving violations is 17% higher for Black drivers than for White drivers (1.90 vs 1.62), and 6.8% higher for Hispanic drivers (1.73 vs 1.62).

We also observe Black-White and Hispanic-White disparities in stop rates for non-moving violations. From a social perspective, if the goal is to increase the quality of law enforcement, whether disparities in stops for non-moving violations are more important to investigate than disparities in stops for moving violations depends on how “size” is defined: the number of additional stops of non-White drivers that were made relative to White drivers (the number of people impacted by the stop decision), or the percentage difference in stops of non-White drivers that were made relative to White drivers (the size of the estimated disparity).

For Black drivers, there were about 0.3 additional stops for moving violations per non-enforcement stop relative to White drivers, and about 0.1 additional stops for non-moving violations. In percentage terms, which divides these levels by the rate at which White drivers are stopped, these differences correspond to a 17% or 20% higher rate for Black drivers than White drivers, respectively. We observe a similar pattern for Hispanic-White disparities by stop type. In level terms, Hispanic drivers are stopped an additional 0.1 times relative to White drivers for moving violations, and 0.05 additional times for non-moving violations. In percentage terms, these numbers correspond to a 6.8% disparity for moving violations and an 11% disparity for non-moving violations.

One way to think about the “size” of a disparity is how many additional people may come into contact with the justice system because of their identity, rather than their actions. In this regard, disparities in stops for moving violations could be seen as most important to further investigate, because there are 0.2 more stops of Black drivers and 0.05 more stops of Hispanic drivers per non-enforcement stop for the former reason, relative to White drivers. However, because CHP Officers make fewer stops for non-moving violations across the board, when the disparity is calculated as a percent of the stop rate for White drivers, disparities are 3 percentage points higher for Black drivers and 3.2 percentage points higher for Hispanic drivers among stops for non-moving violations relative to stops for moving violations; using this measure as a way of identifying where to start further detailed investigation is also justifiable from a mathematical perspective. The value or importance of one measure of size relative to another is beyond the scope of this report; what we can conclude is that RIPA data benchmarked by non-enforcement stops suggests further evaluation of whether CHP Officers may be using race and ethnicity when making stops for both moving and non-moving violations, particularly with regard to stops in low-population Divisions.

## Search Rates

In 2022, CHP Officers conducted a search of either a person or a vehicle in 1.97% of all stops (49,951 stops). Being searched is an invasive and unpleasant process for civilians, and this may be particularly true when civilians feel the search is driven by an officer’s beliefs about the civilian’s identity, rather than the civilian’s actions (Tyler 1990). In extreme cases, civilians may feel that their personal safety is at risk during an encounter with police (Pickett et al 2022). For this reason, when a CHP Officer decides to conduct a search, exposing the civilian to harm, it is important that the CHP Officer reasonably believe the search will result in an increase in public safety that is at least as large as the cost imposed on the civilian. We note that conducting a breathalyzer test is a search.

FIGURE 8A. CHP Search rate by stop type and race or ethnicity in 2022

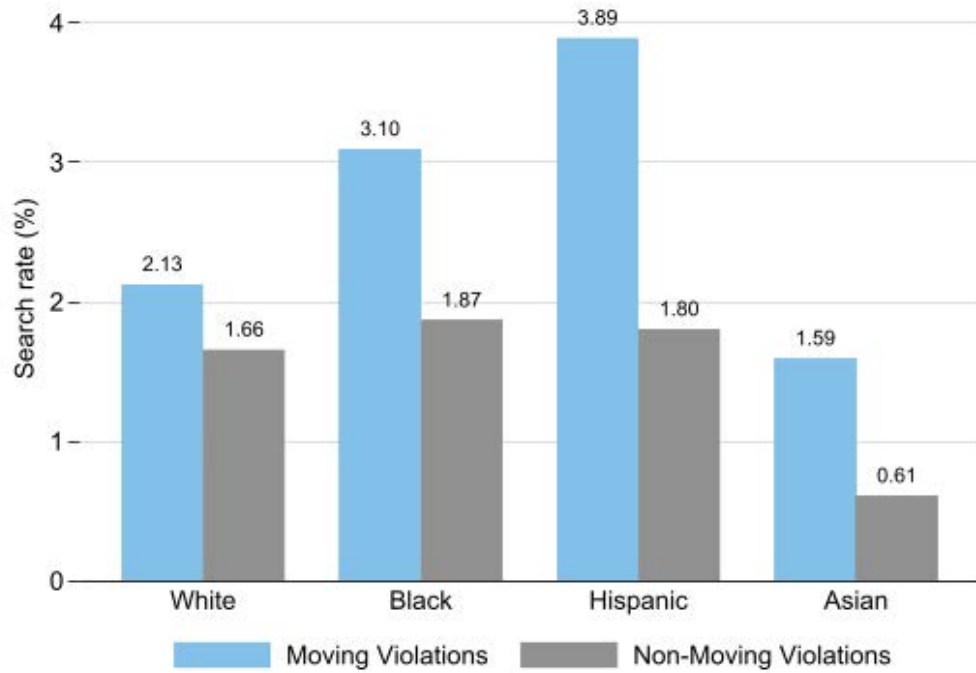


Figure 8A displays the proportion of searches to stops, split by the stop type, either moving or non-moving/equipment.

FIGURE 8B. CHP Hit rate by stop type and race or ethnicity in 2022

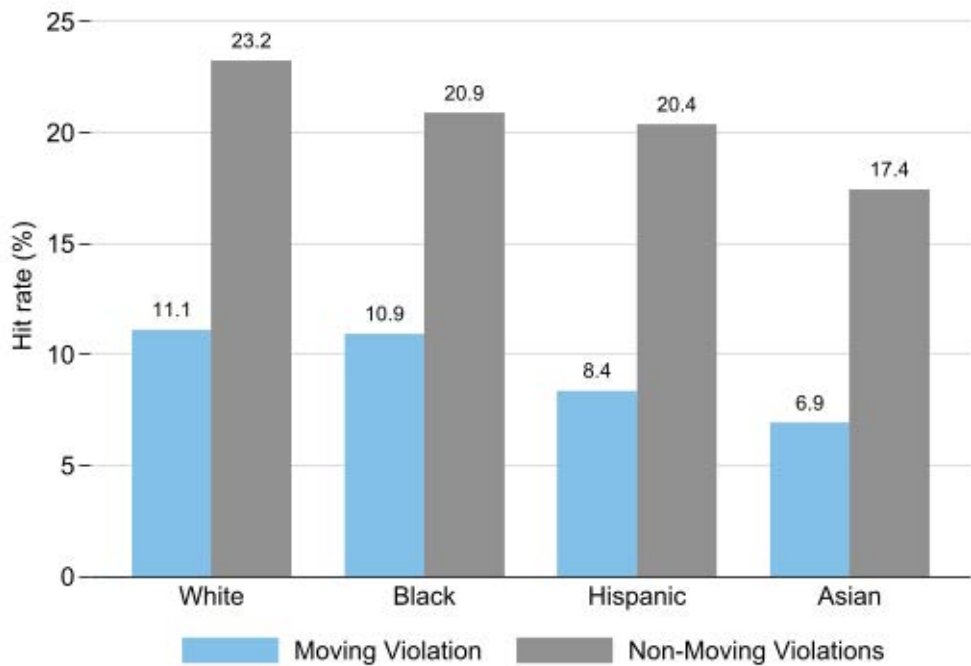


Figure 8B displays the proportion of contraband finds to searches (known as the hit rate), split by the stop type, either moving or non-moving/equipment.

We find that, for all identity groups, searches were less likely to occur during stops for non-moving violations than for moving violations. As shown in Figure 8A, searches occurred in roughly 2% of all stops of White drivers for moving violations, 3% of all stops of Black drivers for moving violations, and almost 4% of all stops for Hispanic drivers. Asian drivers stopped for moving violations were searched 1.6% of the time. Searches after stops for non-moving violations occurred in less than 2% of stops of White, Black, and Hispanic people, and just over 0.5% of stops of Asian people.

Unlike benchmarked stop rates overall, estimated disparities in search rates are larger for moving violations whether level or percent differences are emphasized. Relative to White people, searches after non-moving violation stops were 0.21 percentage points (13%) more likely to occur when Black drivers were stopped and 0.14 percentage points (8%) more likely to occur after Hispanic people were stopped. During stops for moving violations, Black drivers were 45% more likely to be searched than White drivers, and Hispanic drivers were 83% more likely to be searched.

### Contraband Discovery After Searches: Hit Rates Across Stop Types

In Figure 8B, we display the percent of searches, by stop type and driver identity, that result in contraband being found. When used in conjunction with other measures of racial disparities, “hit rates” that are unequal across identity groups can be evidence that CHP Officers are holding people from different backgrounds to different standards.

We found that benchmarked stops for, and searches after, moving violations are more common than stops and searches for non-moving violations, and we also find that Black drivers are more likely to be stopped and searched than White drivers after moving violations, a disparity that on its own is consistent with anti-Black bias. However, when we calculate the fraction of searches that are successful, we find that 11.1% of searches of White drivers, and 10.9% of searches of Black drivers, yield contraband. This substantively small difference, an approximately 1.8% higher hit rate for White drivers, does not suggest that there is a large amount of racial bias in search decisions, particularly when compared to the 48% higher search rate for Black drivers. However, as previously discussed, while hit rate tests can uncover evidence of bias, they cannot prove that bias does not exist.

Hispanic drivers were 83% more likely to be searched than White drivers after being stopped for a moving violation, but those searches were 24% less likely to reveal contraband than searches of White drivers stopped for the same type of violation. This pattern is consistent with ethnicity being used by CHP Officers as a factor in determining whether to search drivers stopped for moving violations. The relatively high rate at which Hispanic drivers are stopped for moving violations (and the much lower rates of contraband being discovered) suggests that further exploration into the conditions and context in which these stops and searches are made could help ensure that these stops are being made in a way that is consistent with CHP policy.

Most searches made after non-moving violations do not result in contraband being discovered, but searches of White drivers stopped for non-moving violations were the most likely (23%) to result in the CHP Officer discovering drugs or weapons. By comparison, contraband was found in 20% percent of searches of Black drivers stopped for non-moving violations (8% fewer than searches of White drivers), and 20% of searches of Hispanic drivers stopped for non-moving violations (close to 13% fewer than searches of White drivers).

In 2022, Black drivers stopped for non-moving violations were searched 13% more frequently than White drivers, and those searches were 8% less likely to yield contraband than searches of White drivers. Hispanic drivers stopped for non-moving violations were 8% more likely to be searched than White drivers stopped for similar reasons, and those searches were 13% less likely to find contraband. These differences in search rates and contraband discovery

rates are consistent with racial and ethnic identity being a factor in CHP decisions when drivers are searched after non-moving violations.

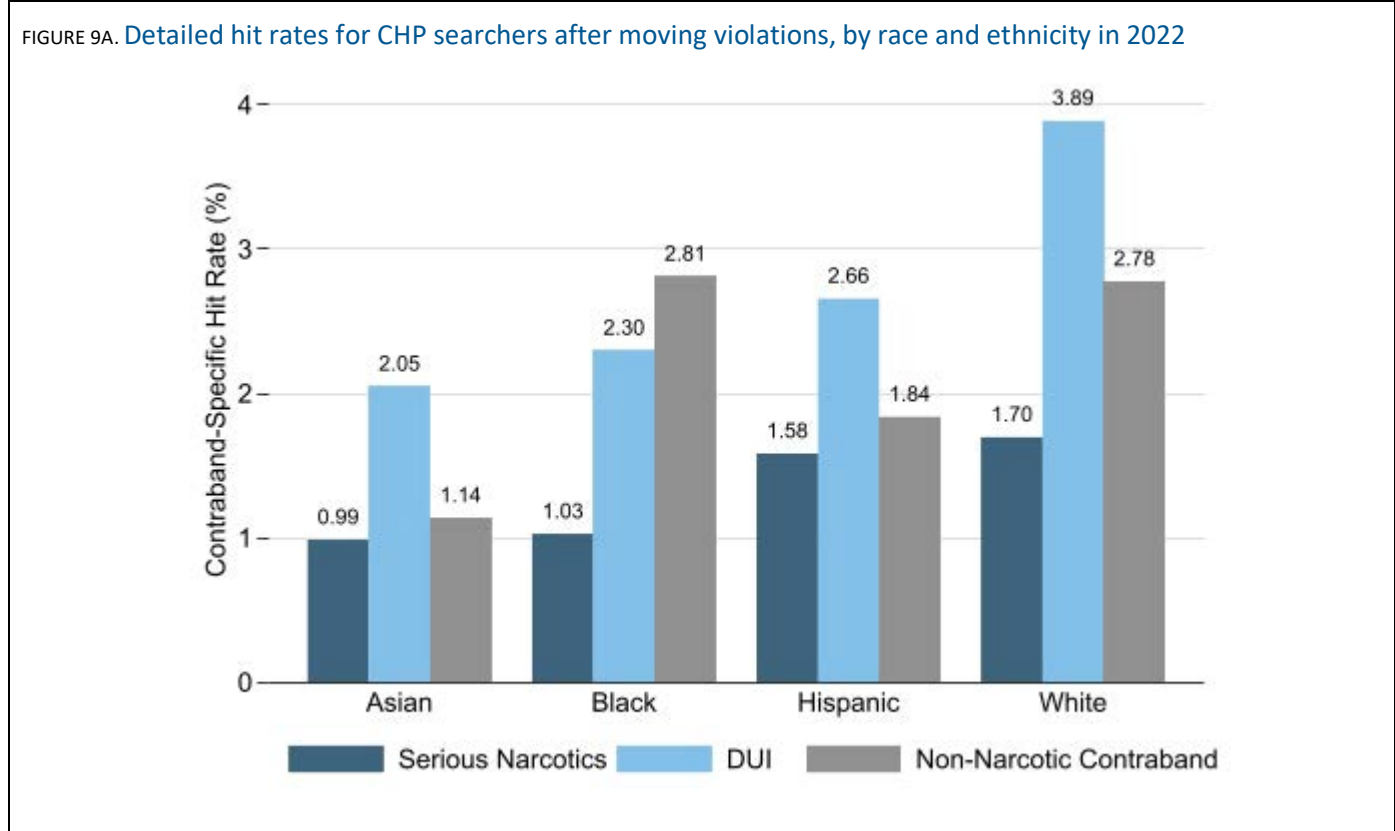


Figure 9A displays a detailed hit rate by type of contraband found: serious narcotics or methamphetamine, marijuana only, DUI without any possession charges, or another outcome. Details regarding type of drug contraband are deduced using warning, citation, and arrest codes. Figure 10B displays this information for non-moving violations.

FIGURE 9B. Detailed hit rate for non-moving violations, by race in 2022

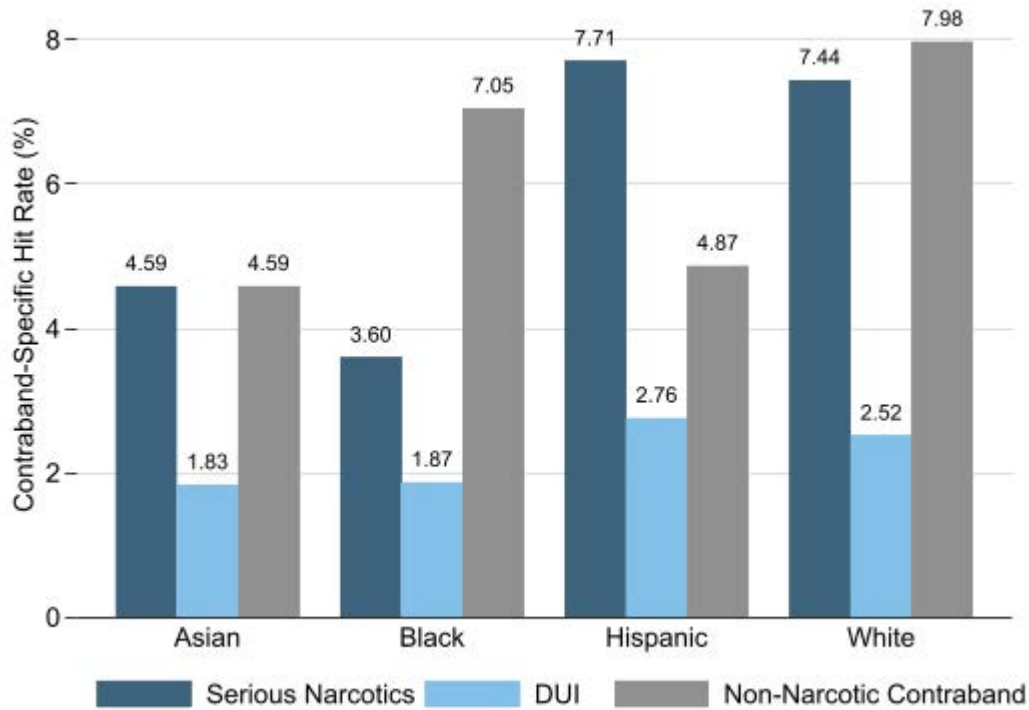


Figure 9A displays a detailed hit rate by type of contraband found after stops for moving violations: serious narcotics, DUI without any possession charges, or discovery of another type of contraband. Details regarding type of contraband are deduced using warning, citation, and arrest codes. Figure 9B displays this information for stops after non-moving violations.

### What is Discovered During Searches?

Conducting searches that are, or are perceived to be, driven by racial or ethnic bias rather than a driver’s behavior can negatively impact the integrity of the CHP and make it more difficult for officers to gain compliance and cooperation from victims, witnesses, and suspects. In order for searches to be in the best interest of society, these costs must be smaller than the benefits associated with searching, which are the identification and confiscation of contraband. This is particularly important in California as fentanyl and methamphetamine epidemics are the source of major social harm.

The RIPA data do not identify the amount or value of contraband seized, but does allow us to identify one type of contraband that many Californians may not feel is as important for law enforcement to seize as fentanyl or methamphetamine: marijuana. While legally sold and consumed across the state, marijuana may still be seized by CHP Officers if a person under the age of 21 is in possession of it, if it’s in an open container in a vehicle, or if the officer believes the amount exceeds statutory limits. Figures 9A and 9B expand on Figure 8B, by showing the fraction of searches that result in the discovery of serious narcotics (defined as something other than marijuana), the discovery of non-narcotic contraband (primarily weapons, but also undetailed drug paraphernalia), or a DUI charge.

The discovery of legally intoxicated drivers is the modal type of “hit” after searches following moving violations, both across the board and after searches of Asian (2%), Hispanic (2.7%), and White (3.9%) drivers. Black drivers stopped for moving violations who were then searched, however, were more likely to be found to have violated another type of ordinance, some of which certainly impose high costs on society (e.g. illegal weapon possession)

and others where the benefit to society of seizing these items may be low (e.g. possession of unlawful paraphernalia).

Searches after stops for non-moving violations also lead to the discovery of drunk drivers, at slightly lower rates than searches after moving violations. However, the discovery of serious narcotics was more common; 4.6% of Asian people stopped for non-moving violations, 3.6% of searches of Black people, 7.7% of searches of Hispanic people, and 7.4% of searches of White people led to the discovery of serious narcotics. Discovery of non-narcotic contraband occurred 7% of the time after a Black driver was stopped for a non-moving violation, 1 percentage point less often than when White drivers were searched. Stops of Asian and Hispanic drivers for non-moving violations were discovered with non-narcotic contraband about half as often (4.6%-4.8% of the time).

Breaking down hit rates by type of seizure suggests a potential difference in how race and ethnicity may play a role in search decisions, if Officers are tasked with searching for a particular type of contraband. Based on the observed hit rate patterns, to the extent that CHP Officers may decide to search for serious narcotics, rather than a more general search, this may lead to excess searches of Black drivers. To the extent that CHP Officers may specifically decide to search for weapons (one type of non-narcotic contraband), the lower “non-narcotic hit rate” for Hispanic drivers may lead to excess searches of Hispanic drivers.

To the extent that reducing unwarranted racial disparities and seizing contraband are both in the public interest, analysis of RIPA data by the basis for a stop provides no simple suggestions for unambiguously improving the quality of law enforcement. Additional information on the type of contraband seized, as well as amounts and quantity, could lead to a more informed conclusion about whether the observed disparities in non-moving stops are “worth it” in terms of overall safety.

## Stops Under a Veil of “Darkness”: A Closer Look at Moving Violations

Our analysis of 2022 RIPA stop data show that Black-White and Hispanic-White disparities in CHP contact are persistent phenomenon, even if they are substantially lower when non-enforcement stops are used as a benchmark rather than population. The majority of potentially disparate CHP contact overall is based on moving violation stops; in percentage terms, the disparity in stops for non-moving violations are large, but these stops make up a small fraction of overall CHP actions, meaning fewer people are affected by them. Search rates are relatively high after moving violations, and hit-rate tests are consistent with ethnicity playing a role in search decisions in these stops, and race playing a role in decisions to make searches targeted at finding serious narcotics.

In order to understand if CHP Officers are using ethnic or racial identity in decisions to stop drivers for moving violations, we implemented a variation on a “Veil of Darkness” test. This type of statistical test, developed in Grogger and Ridgeway (2006), models the likelihood that a stopped driver is from a particular identity group as a function of whether the race or ethnicity of the driver was plausibly available to the officer before the stop was made. In the canonical example, a Veil of Darkness test identifies problematic use of race in officer decision making if the ratio of stops of Non-White people to stops of White people during daylight hours is higher than the same ratio of stops made when it is dark.

We adapt this to the CHP context by dividing speeding violations by whether the reported speed was collected mechanically (by lidar or radar) or by aircraft. Speed information collected in this way is done by an officer at a large distance from traffic, and the decision to stop is more likely to be made without information on the race or ethnicity of the driver than when the stop is made by pacing.

This test involves making some statistical modeling choices, particularly how we think stops might vary over the course of a day. Because each CHP Division may use different speed-gathering technologies, and this may or may not be related to the racial and ethnic composition of drivers, we construct the relevant ratios for each Division and



for each hour of day. In one model, we assume that the ratio of Non-White to White drivers varies over the course of the day in the same way across California, and in another model we allow for daily evolution of the ratio of Non-White to White drivers to be different in each Division. We also incorporate information that we used to predict the number of benchmarked enforcement stops, including which Division the stop occurred in, the month of the year, and how many accidents drivers in that racial and ethnic group had in that CHP district in that year. Finally, we also conduct tests where we only examine stops made during daylight hours, nighttime hours, and in the “inter twilight” period, where the amount of daylight in a given hour depends on whether Daylight Savings Time is in effect.

Results from the Veil of Darkness tests are consistent with a driver’s identity being a factor in stops for moving violations. Notably, the impact of a CHP Officer’s potential knowledge of a driver’s identity on the stop ratio is the smallest at nighttime. This is important because in some geographic areas, race and ethnicity may be the least visible during pacing at nighttime.

TABLE 10A. CHP Baseline Veil of Darkness Model Estimates		
	Baseline Veil of Darkness Model	Baseline Model with Division-specific hourly fluctuation in stop frequency
Veil of Darkness effect on Non-White stops	-0.25	-0.24
Margin of Error	+/- 0.14	+/- 0.20
Are results consistent with racial and ethnic bias? (Veil of Darkness Effect + Margin of Error < 0)	Yes	Yes

TABLE 10B. CHP Veil of Darkness Model Estimates in Subsamples			
Baseline Model with Division-specific hourly fluctuation in stop frequency estimated using ...			
	Day time stops only	Night time stops only	Inter-twilight Stops only
Veil of Darkness Effect on Non-White Stops	-0.28	-0.18	-0.28
Margin of Error	+/- 0.22	+/- 0.26	+/- 0.28
Are results consistent with Racial and Ethnic Bias? (Veil of Darkness Effect + Margin of Error < 0)	Yes	No	No

# CONCLUSION

Relative to 2019, CHP Officers stopped fewer people in 2022 in California per resident, and relative to the general population, Black and Hispanic people in California were more likely to have an enforcement encounter with CHP Officers than White or Asian people. The decline in number of enforcement stops made in 2022 (as compared to 2019) appears substantial when compared to the number of CA residents, but is similar to the decline in non-enforcement stops made over the same time period. Similar to our 2019 analysis, when we use the number of non-enforcement stops, rather than population, as a benchmark for enforcement stops the estimated Black-White stop disparity falls by almost 80%; the magnitude of Hispanic-White disparity in stops, smaller to begin with, is less impacted. Because of the declining number of enforcement (and non-enforcement) stops overall, racial differences in stop rates have remained constant in absolute terms, but increased in percentage terms.

We also found geographic differences in benchmarked stop disparities, and disparities were the largest in Division 1. Accounting for regional differences in the race- and ethnicity- specific propensity of drivers to be involved in accidents further reduces estimated racial and ethnic disparities in benchmarked stop rates, but the population of the Division made the biggest difference, leading us to conclude that Division-level differences in priorities or practices are correlated with the racial composition of the driver population, and impact who is stopped for enforcement reasons.

Drivers engaged in moving violations can create dangerous road conditions for others. Drivers engaged in non-moving violations are breaking laws or ordinances, but not necessarily creating an immediate danger. We find, in percentage terms, larger racial and ethnic disparities in the stop rate for non-moving violations. However, only 20.9% of enforcement stops are made for non-moving violations — the larger volume of stops for moving violations means that, if the goal is to reduce disparate and unwarranted law enforcement contact, changing practice and policy around moving violations would have a larger impact than changing policies for non-moving violations. Results from a Veil of Darkness test suggests that some officers may be using race and ethnicity in their decision to make stops for moving violations.

Finally, we conducted an analysis of the outcome of stops and searches, comparing the hit rate for searches across race and ethnicity and type of stop. Searches are more common after moving violations. Black drivers are almost 50% more likely to be searched after a moving violation than White drivers, but the fraction of those searches that result in contraband discoveries are equal across those two racial groups. Hispanic drivers are almost 90% more likely to be searched than White drivers after moving violations, but those searches are less likely to yield contraband.

Searches after stops for non-moving violations appear to be an important source of serious, non-marijuana, contraband discovery, and identify intoxicated drivers only slightly less often than searches after moving violations. At the same time, we identify a notable pattern of contraband discovery that is most obvious after non-moving violations, but also occurs in moving violations: searches of White drivers and Hispanic drivers are roughly equally likely to yield serious narcotics, and searches of White and Black drivers are roughly equally likely to yield non-narcotic contraband.

While there is evidence of disparities in stops and searches for non-moving violations, eliminating these stops would have a limited effect on racial disparities in CHP contact. Figure 10 recreates Figure 2 excluding enforcement stops of non-moving violations. This change would reduce Black-White disparities in benchmarked stop rates by 2.9% and Hispanic-White disparities in benchmarked stop rates by 2.2%. Such a policy would have minimal impact on the geographic distribution of stop disparities, with relatively small changes, both positive and negative in relative benchmarked enforcement stop rates across Divisions (Figures 10B and 10C). At the same time, the stops where contraband was discovered would fall by 26.8%. Eliminating racial and ethnic bias in criminal justice contact

and also removing serious narcotics and illegal weapons are important strategic goals, and RIPA data suggests that achieving both will require thoughtful evaluation of how CHP Officers work on California roadways.

FIGURE 11A. CHP Relative enforcement stop rates, by race and benchmark, moving violations only in 2022

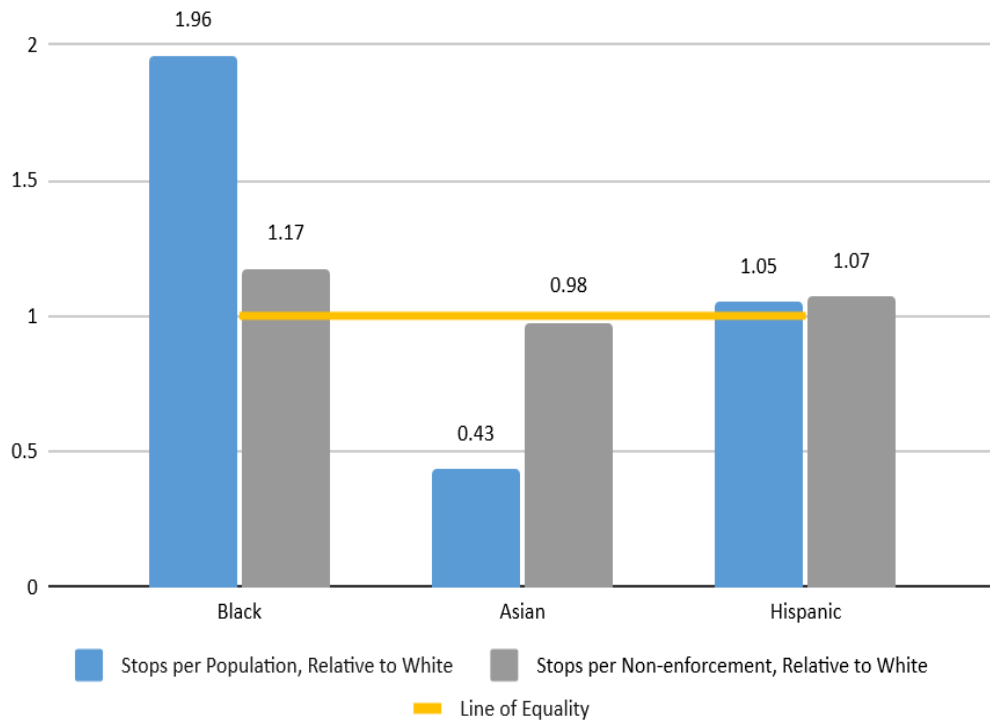


FIGURE 11B. CHP Relative enforcement stops per non-enforcement stop, moving violations only in 2022

**Black / White Hispanic / White Asian / White**

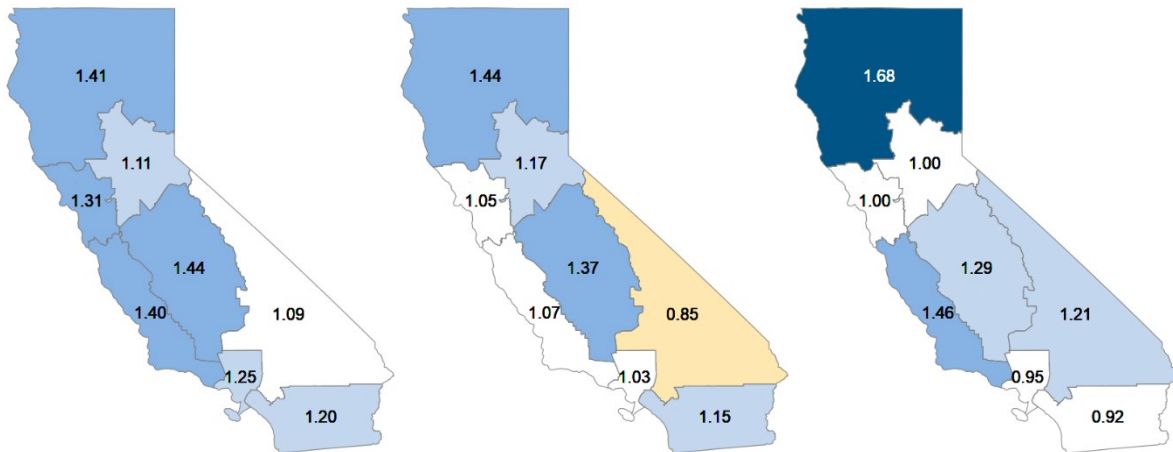
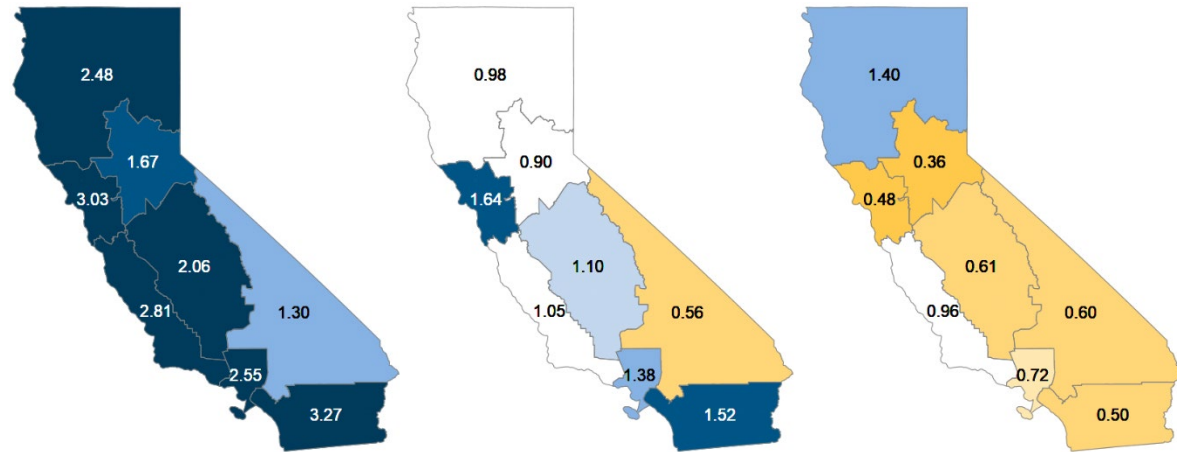


FIGURE 11C. CHP Relative enforcement stops per 100 residents, moving violations only in 2022

**Black / White Hispanic / White Asian / White**



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## Appendix A: Auxiliary Tables & Figures

FIGURE A1. CHP Divisions

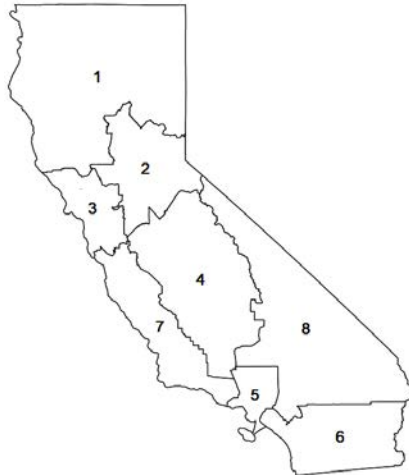
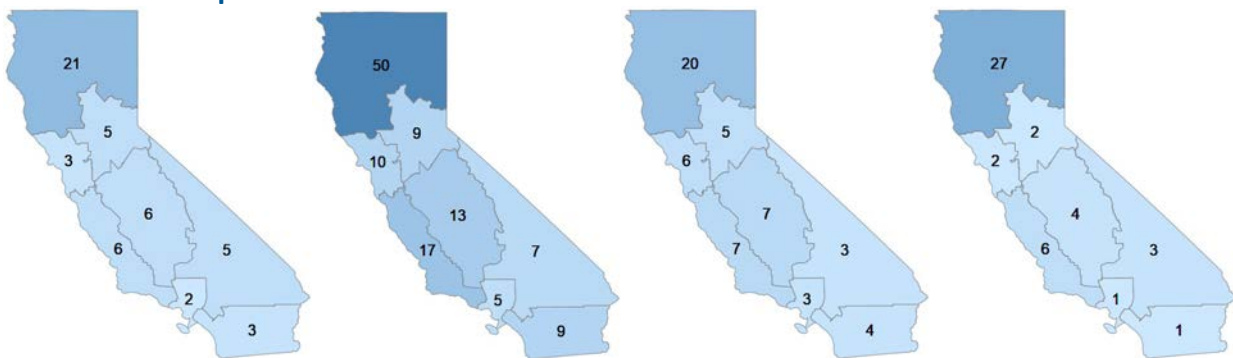


Figure A1 displays the geographic location of each CHP Division.

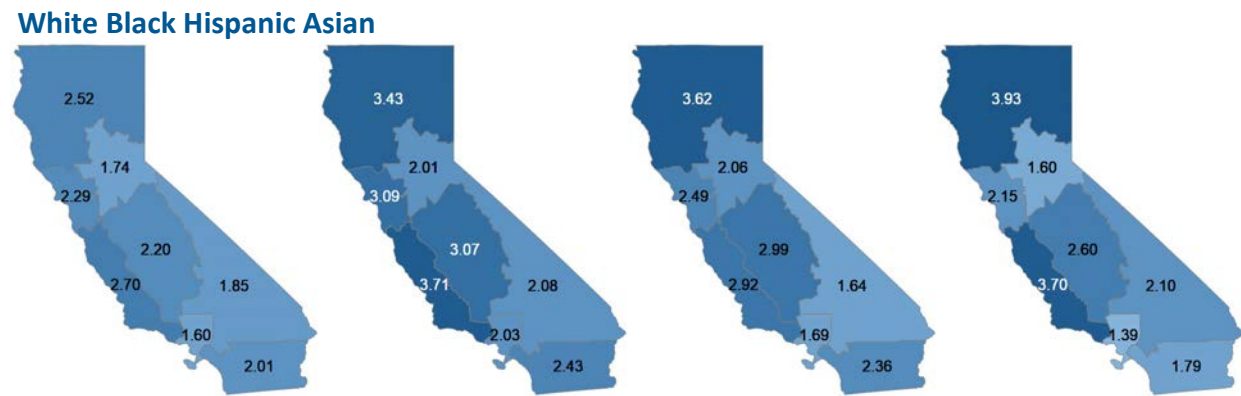
FIGURE A2. CHP RIPA Stops Per 100 Population

### White Black Hispanic Asian



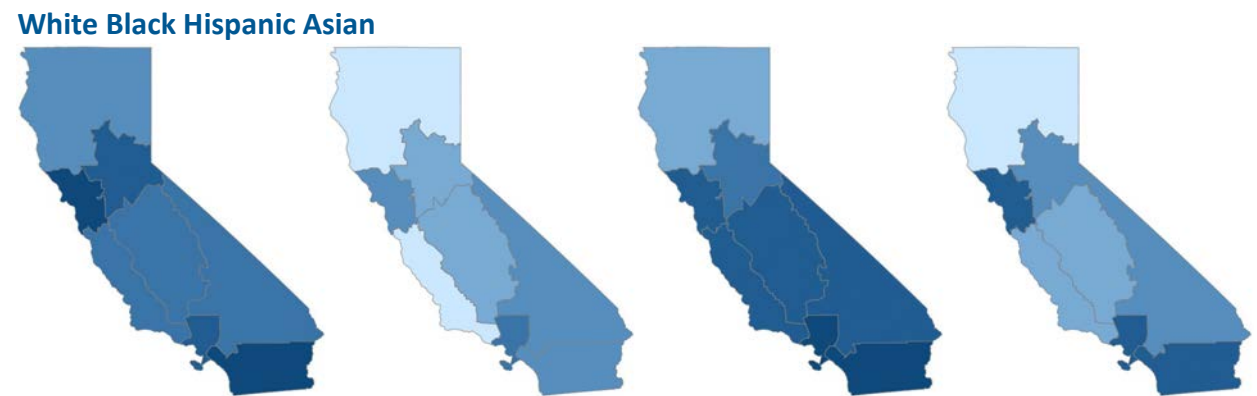
Each Division of Figure A2 depicts the number of stops per 100 population of the same race, where darker shades of blue represent higher stop rates per capita.

FIGURE A3. CHP RIPA Stops Per Non-Enforcement Stop



Each Division of Figure A4 depicts the RIPA stops per non-enforcement stops of the same race, where darker shades of blue represent higher stop rates.

FIGURE A4. Population estimates for CHP Divisions

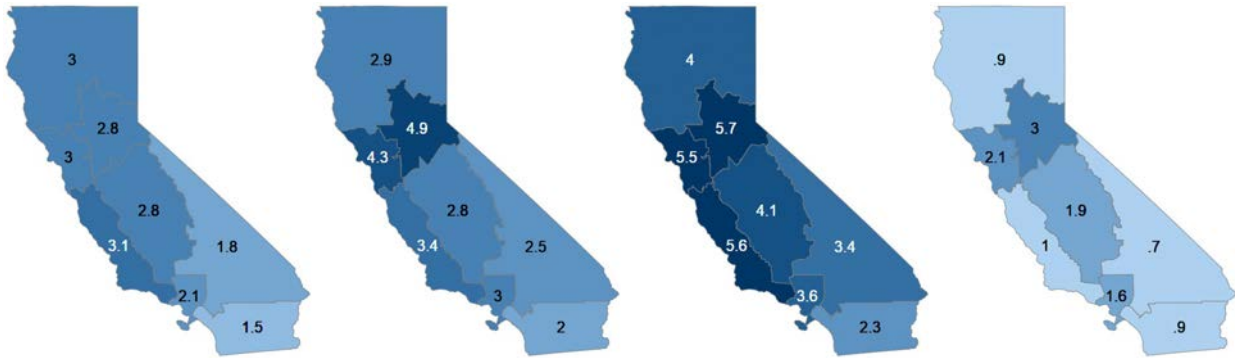


- 5M to 10M
- 2.5M to 5M
- 1M to 2.5M
- 500K to 1M
- 250K to 500K
- 100K to 250K
- 50K to 100K
- 0 to 50K

Figure A5 depicts racial and ethnic group residential population estimates of each CHP Division based on data from the 2018-2022 ACS.

FIGURE A5. CHP Searches Per 100 RIPA Stops

**White Black Hispanic Asian**



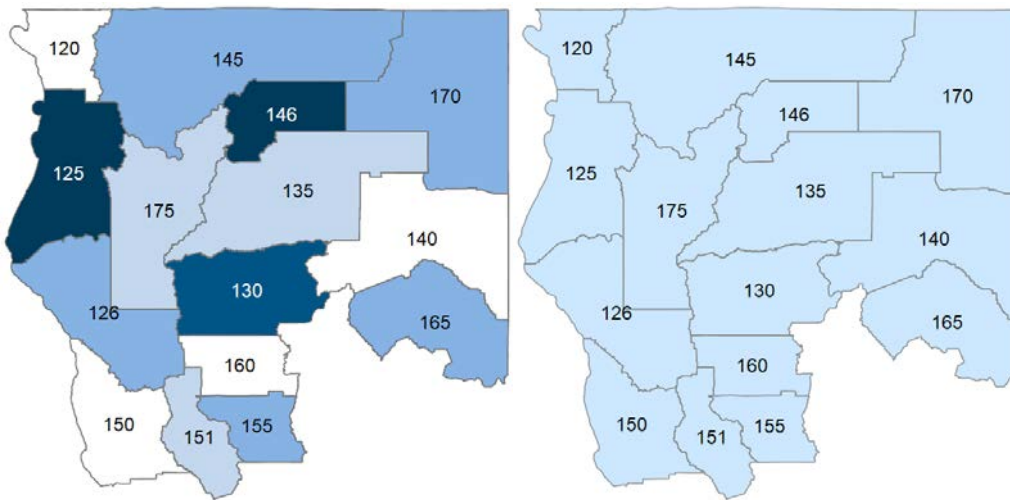
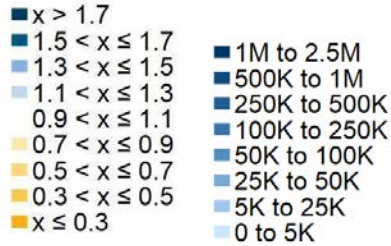
Each Division of Figure A6 depicts searches per 100 RIPA stops, where darker shades of blue represent higher search rates.



## Appendix B: Division by Area Office

FIGURE B1.1 CHP Division 1: Relative Non-Enforcement Stop Rate and Population, for Black Californians

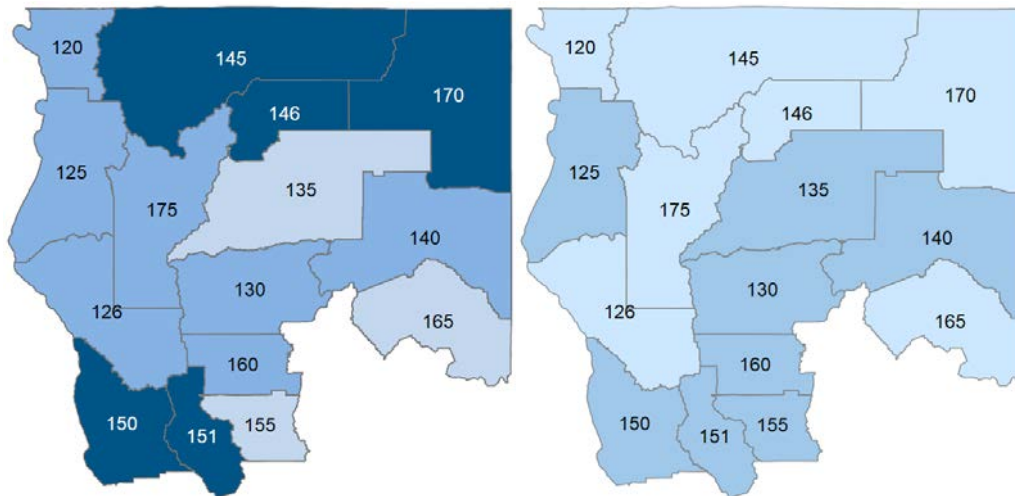
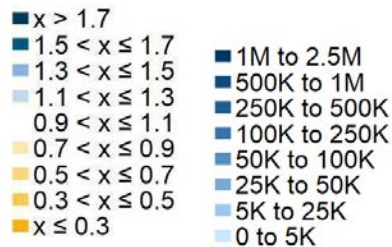
### Relative Benchmark Population



Each area office is labeled with the area office number. The left column of Figure B1.1 depicts RIPA stops per non-enforcement stops for Black drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Black stop rate is lower than the White stop rate and blue tones mean the Black stop rate is higher than White stop rate. The right column of Figure B1.1 depicts population estimates of each CHP area office within Division 1 based on data from the 2018-2022 ACS.

FIGURE B1.2 CHP Division 1: Relative Non-Enforcement Stop Rate and Population, for Hispanic Californians

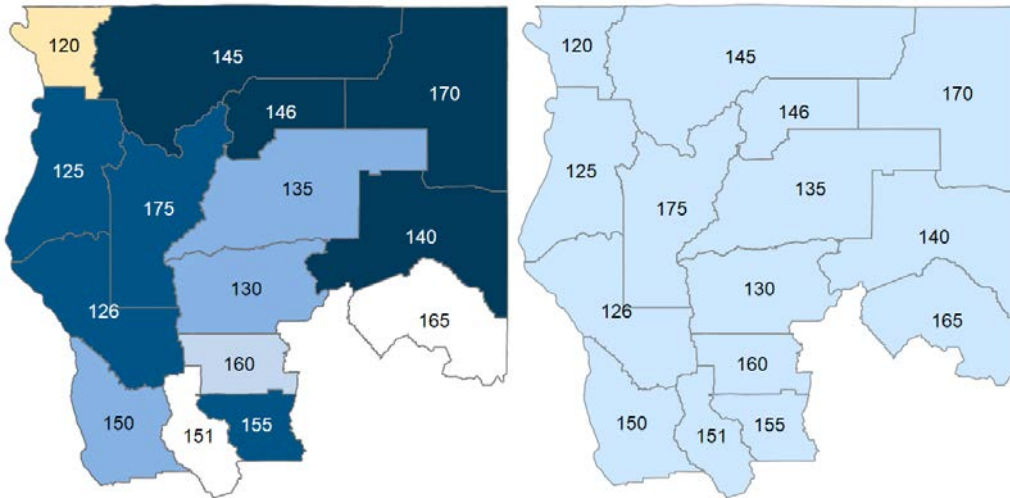
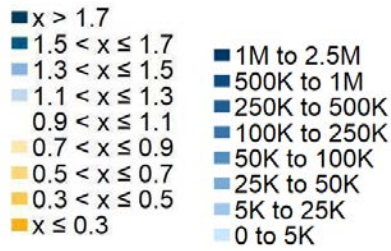
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B1.2 depicts RIPA stops per non-enforcement stops for Hispanic drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Hispanic stop rate is lower than the White stop rate and blue tones mean the Hispanic stop rate is higher than White stop rate. The right column of Figure B1.2 depicts population estimates of each CHP area office within Division 1 based on data from the 2018-2022 ACS.

FIGURE B1.3 CHP Division 1: Relative Non-Enforcement Stop Rate and Population, for Asian Californians

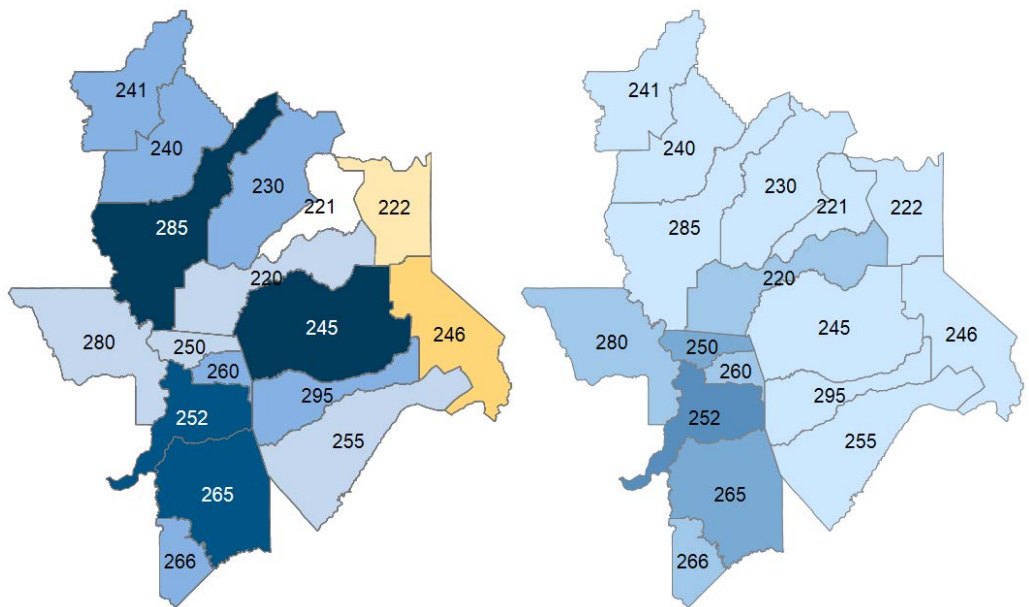
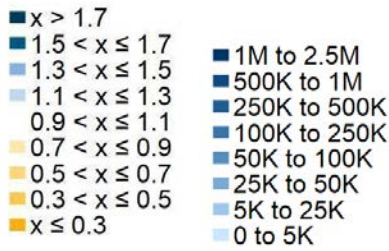
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B1.3 depicts RIPA stops per non-enforcement stops for Asian drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Asian stop rate is lower than the White stop rate and blue tones mean the Asian stop rate is higher than White stop rate. The right column of Figure B1.3 depicts population estimates of each CHP area office within Division 1 based on data from the 2018-2022 ACS.

FIGURE B2.1 CHP Division 2: Relative Non-Enforcement Stop Rate and Population, for Black Californians

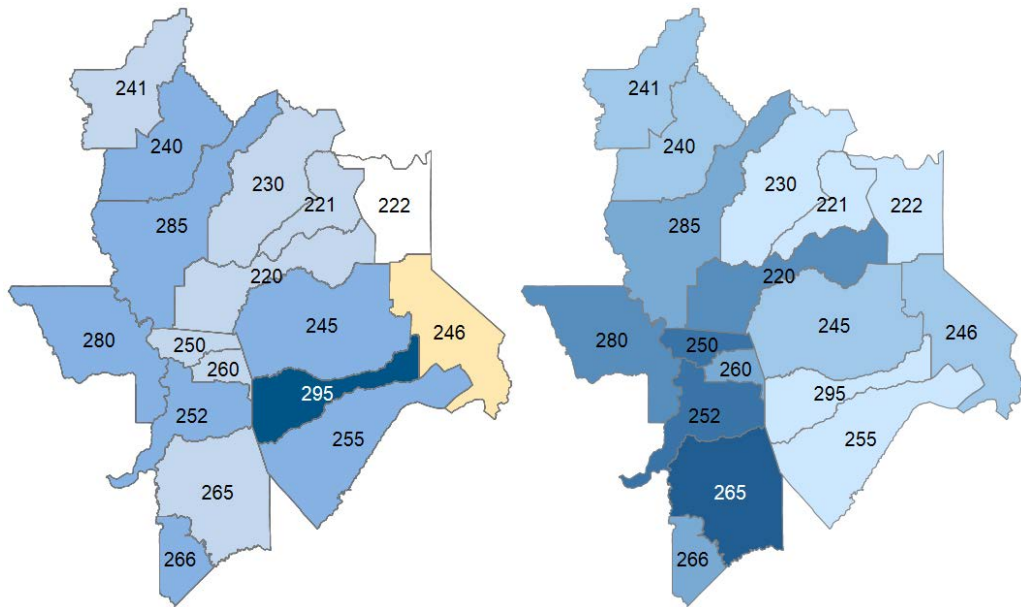
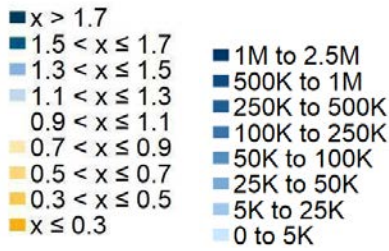
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B2.1 depicts RIPA stops per non-enforcement stops for Black drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Black stop rate is lower than the White stop rate and blue tones mean the Black stop rate is higher than White stop rate. The right column of Figure B2.1 depicts population estimates of each CHP area office within Division 2 based on data from the 2018-2022 ACS.

FIGURE B2.2 CHP Division 2: Relative Non-Enforcement Stop Rate and Population, for Hispanic Californians

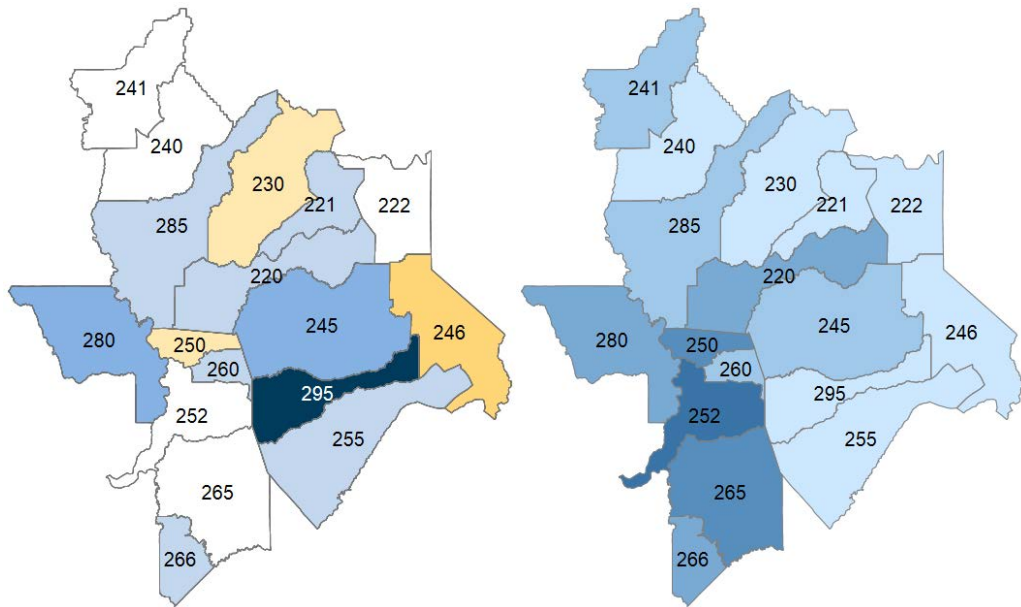
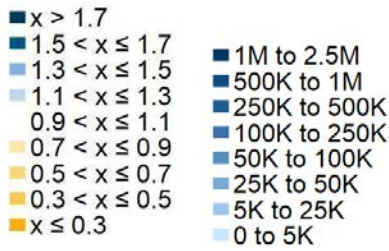
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B2.2 depicts RIPA stops per non-enforcement stops for Hispanic drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Hispanic stop rate is lower than the White stop rate and blue tones mean the Hispanic stop rate is higher than White stop rate. The right column of Figure B2.2 depicts population estimates of each CHP area office within Division 2 based on data from the 2018-2022 ACS.

FIGURE B2.3 CHP Division 2: Relative Non-Enforcement Stop Rate and Population, for Asian Californians

**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B2.3 depicts RIPA stops per non-enforcement stops for Asian drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Asian stop rate is lower than the White stop rate and blue tones mean the Asian stop rate is higher than White stop rate. The right column of Figure B2.3 depicts population estimates of each CHP area office within Division 2 based on data from the 2018-2022 ACS.

FIGURE B3.1 CHP Division 3: Relative Non-Enforcement Stop Rate and Population, for Black Californians

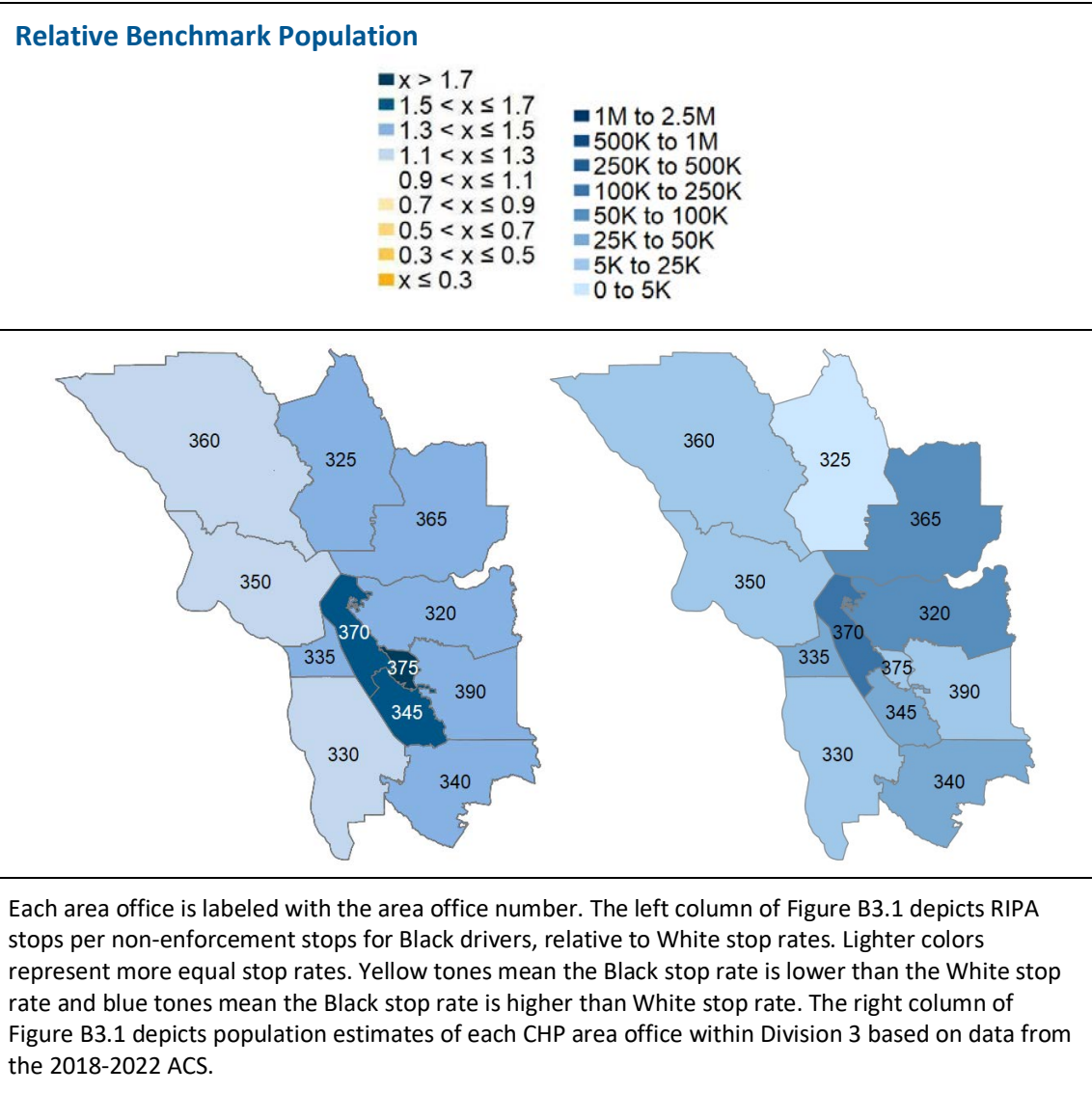


FIGURE B3.2 CHP Division 3: Relative Non-Enforcement Stop Rate and Population, for Hispanic Californians

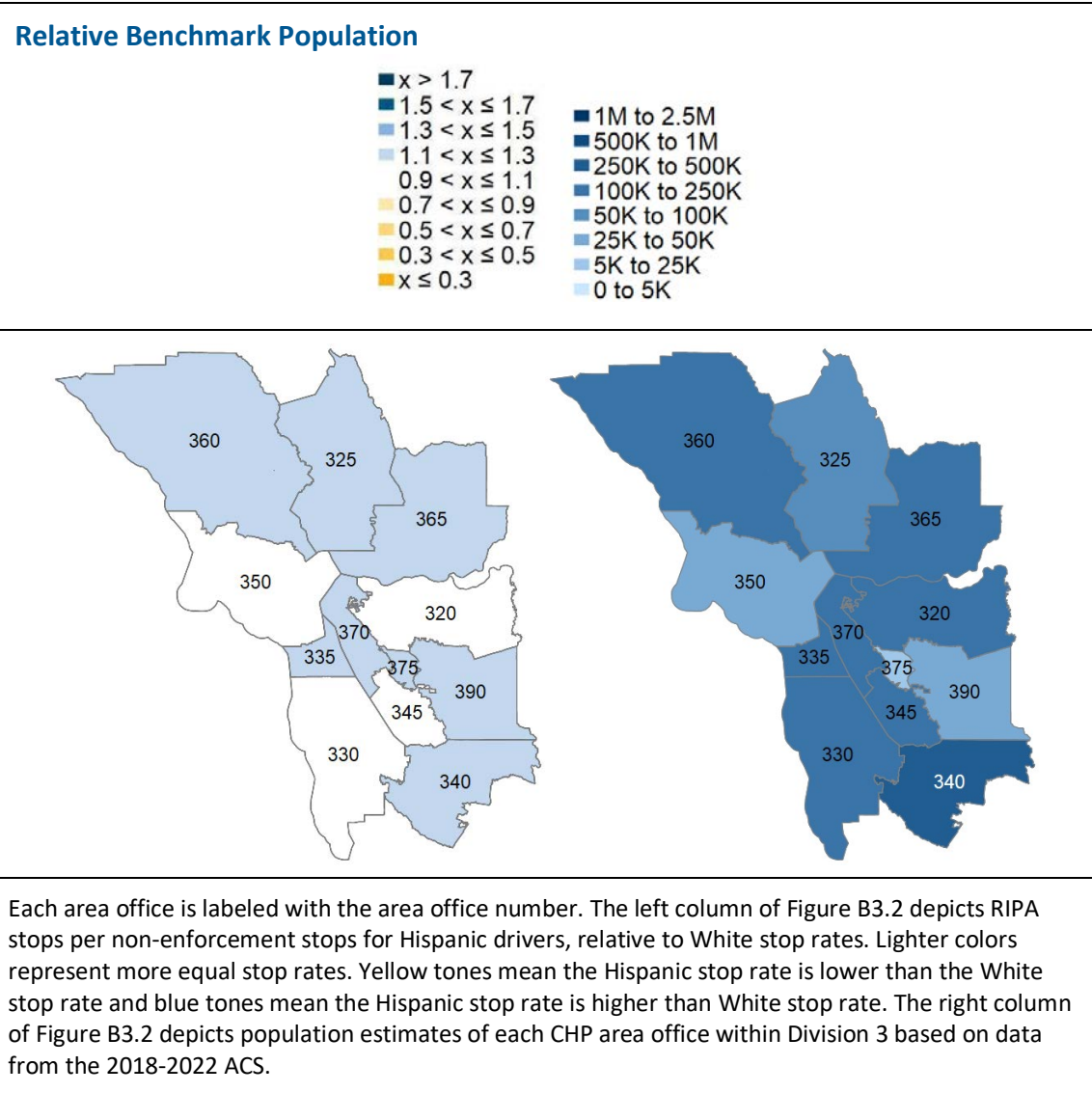




FIGURE B3.3 CHP Division 3: Relative Non-Enforcement Stop Rate and Population, for Asian Californians

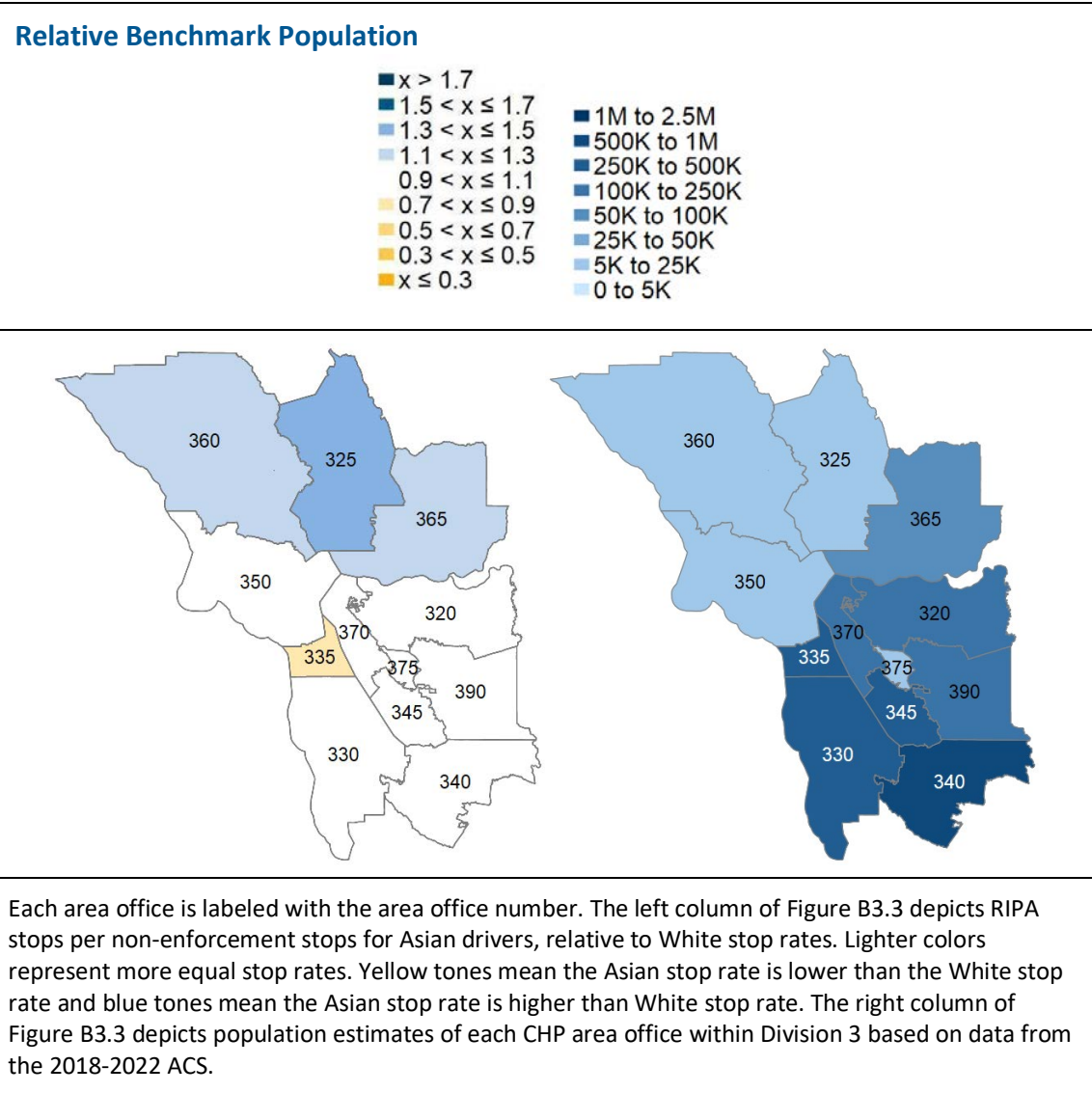
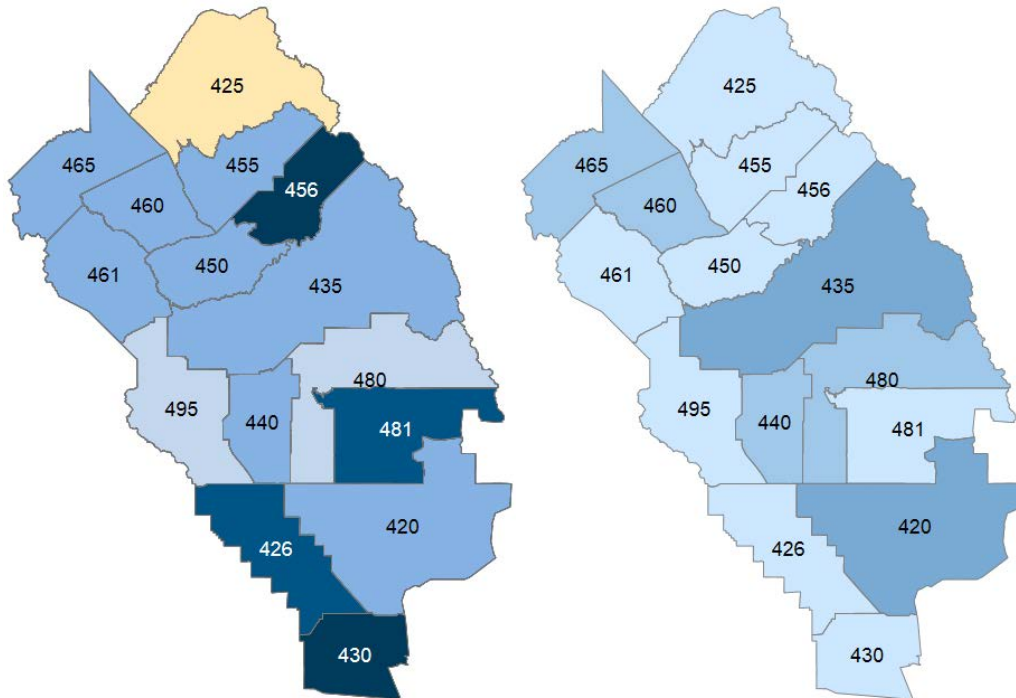
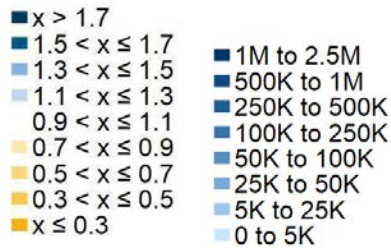


FIGURE B4.1 CHP Division 4: Relative Non-Enforcement Stop Rate and Population, for Black Californians

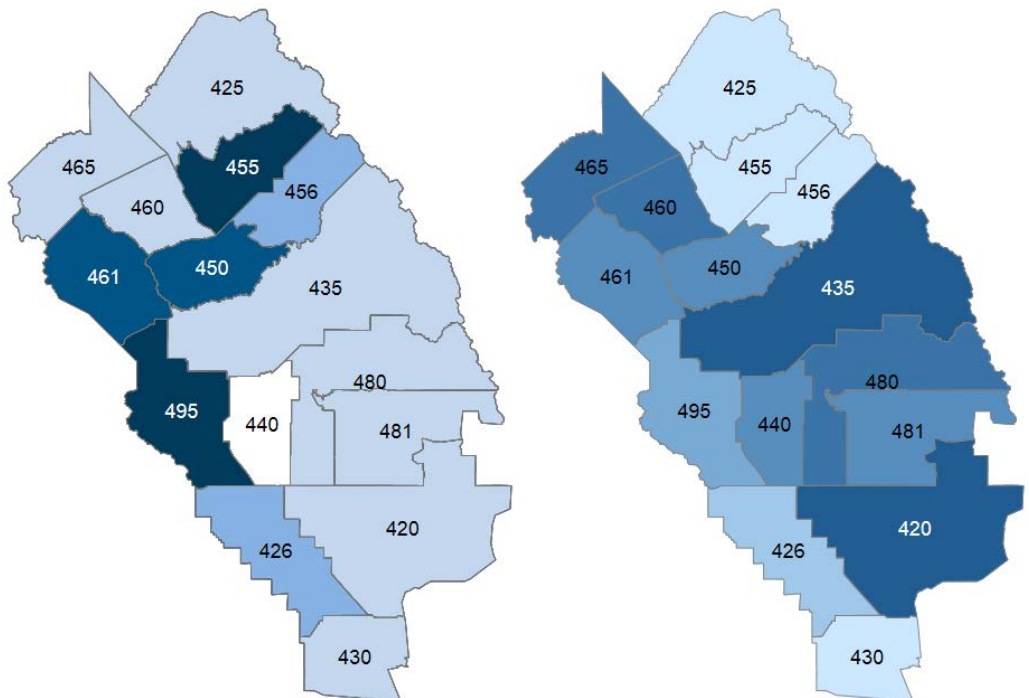
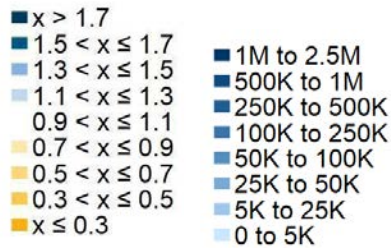
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B4.1 depicts RIPA stops per non-enforcement stops for Black drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Black stop rate is lower than the White stop rate and blue tones mean the Black stop rate is higher than White stop rate. The right column of Figure B4.1 depicts population estimates of each CHP area office within Division 4 based on data from the 2018-2022 ACS.

FIGURE B4.2 CHP Division 4: Relative Non-Enforcement Stop Rate and Population, for Hispanic Californians

**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B4.2 depicts RIPA stops per non-enforcement stops for Hispanic drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Hispanic stop rate is lower than the White stop rate and blue tones mean the Hispanic stop rate is higher than White stop rate. The right column of Figure B4.2 depicts population estimates of each CHP area office within Division 4 based on data from the 2018-2022 ACS.

FIGURE B4.3 CHP Division 4: Relative Non-Enforcement Stop Rate and Population, for Asian Californians

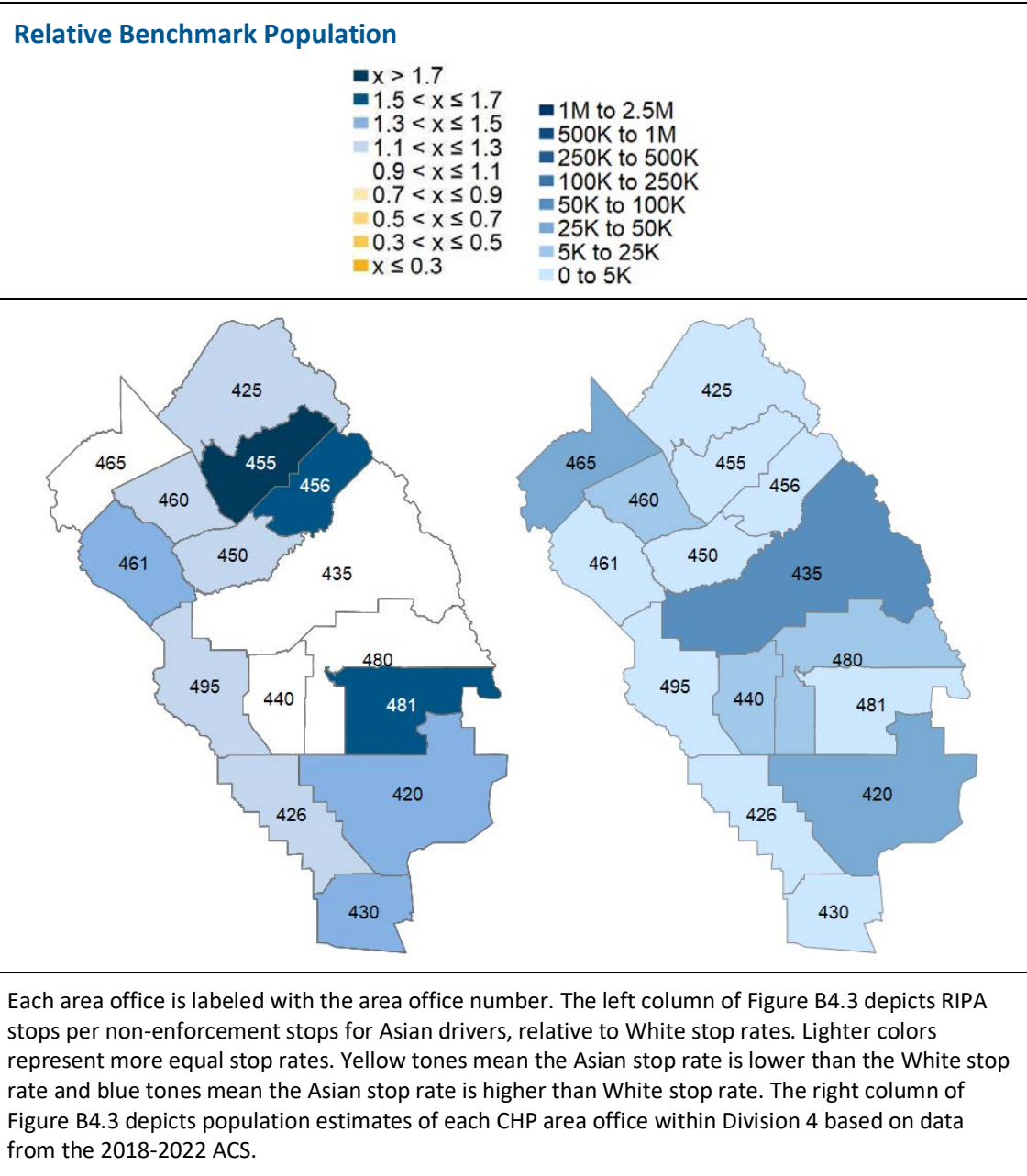
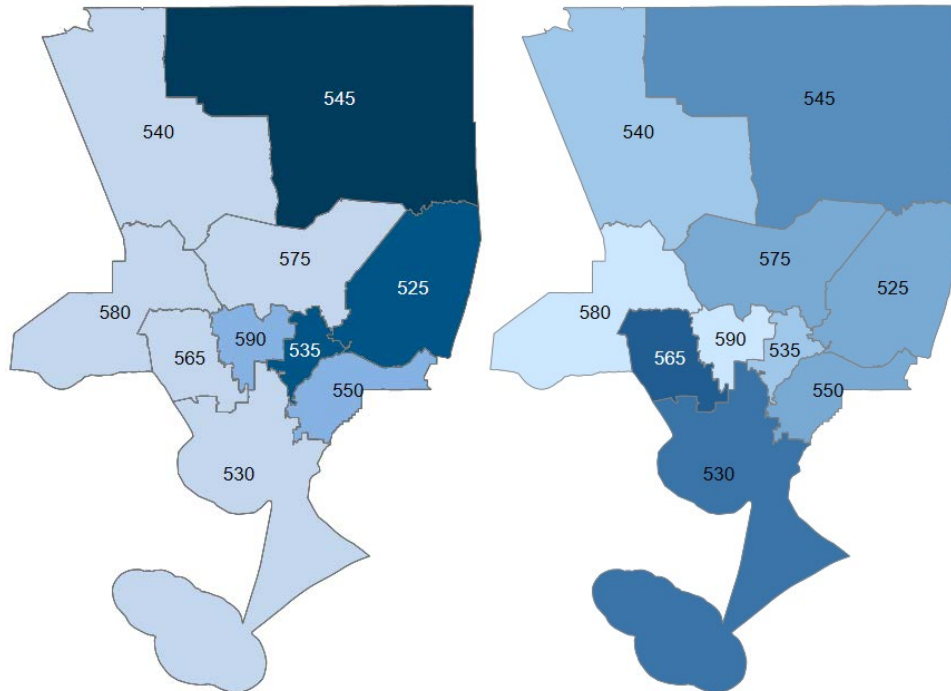
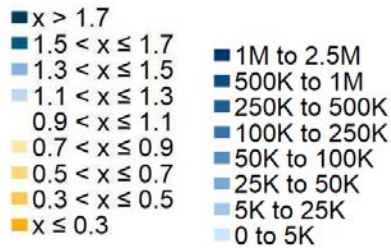


FIGURE B5.1 CHP Division 5: Relative Non-Enforcement Stop Rate and Population, for Black Californians

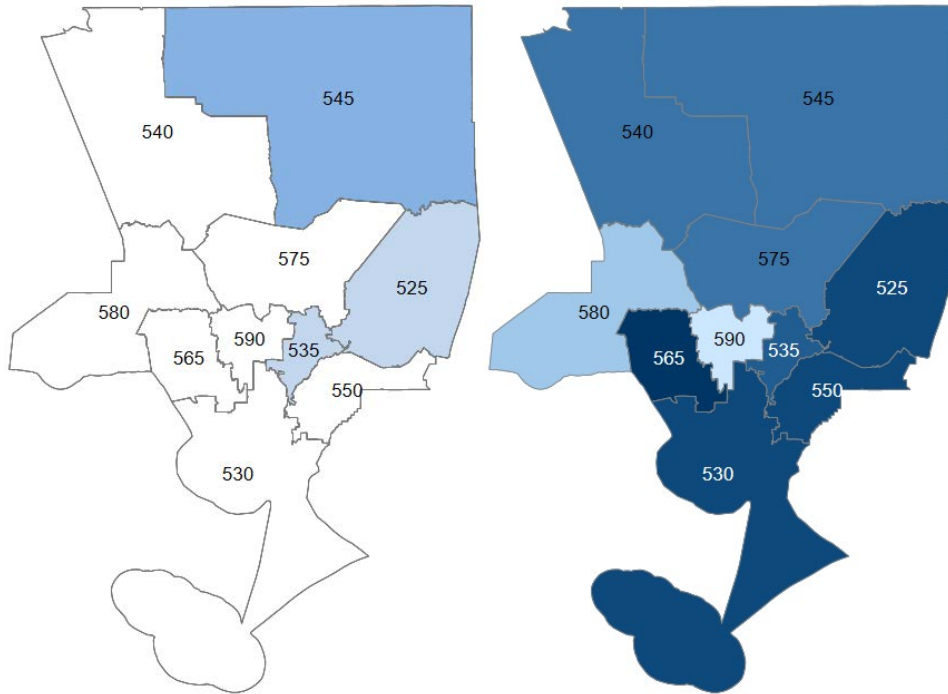
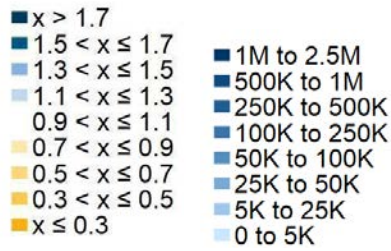
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B5.1 depicts RIPA stops per non-enforcement stops for Black drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Black stop rate is lower than the White stop rate and blue tones mean the Black stop rate is higher than White stop rate. The right column of Figure B5.1 depicts population estimates of each CHP area office within Division 5 based on data from the 2018-2022 ACS.

FIGURE B5.2 CHP Division 5: Relative Non-Enforcement Stop Rate and Population, for Hispanic Californians

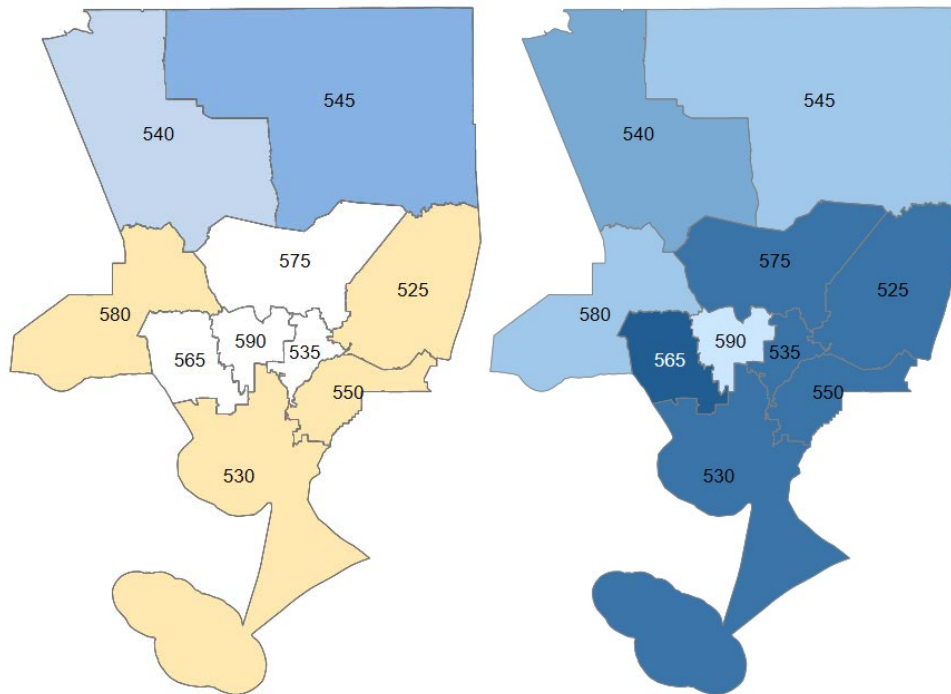
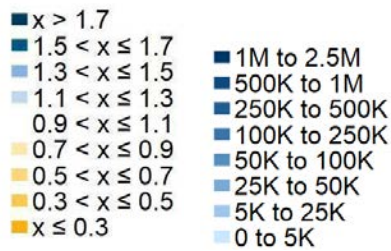
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B5.2 depicts RIPA stops per non-enforcement stops for Hispanic drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Hispanic stop rate is lower than the White stop rate and blue tones mean the Hispanic stop rate is higher than White stop rate. The right column of Figure B5.2 depicts population estimates of each CHP area office within Division 5 based on data from the 2018-2022 ACS.

FIGURE B5.3 CHP Division 5: Relative Non-Enforcement Stop Rate and Population, for Asian Californians

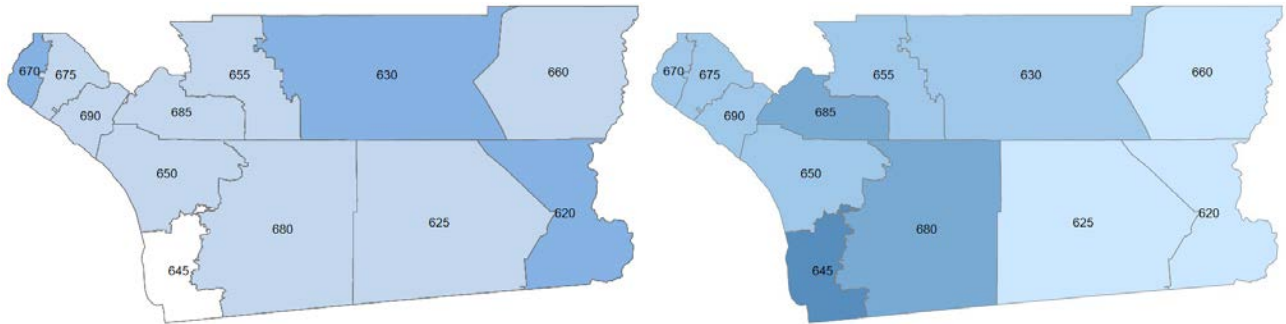
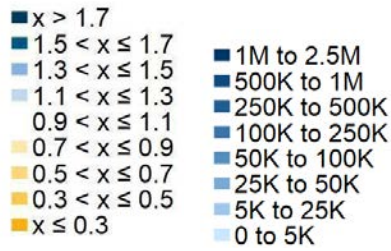
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B5.3 depicts RIPA stops per non-enforcement stops for Asian drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Asian stop rate is lower than the White stop rate and blue tones mean the Asian stop rate is higher than White stop rate. The right column of Figure B5.3 depicts population estimates of each CHP area office within Division 5 based on data from the 2018-2022 ACS.

FIGURE B6.1 CHP Division 6: Relative Non-Enforcement Stop Rate and Population, for Black Californians

**Relative Benchmark Population**

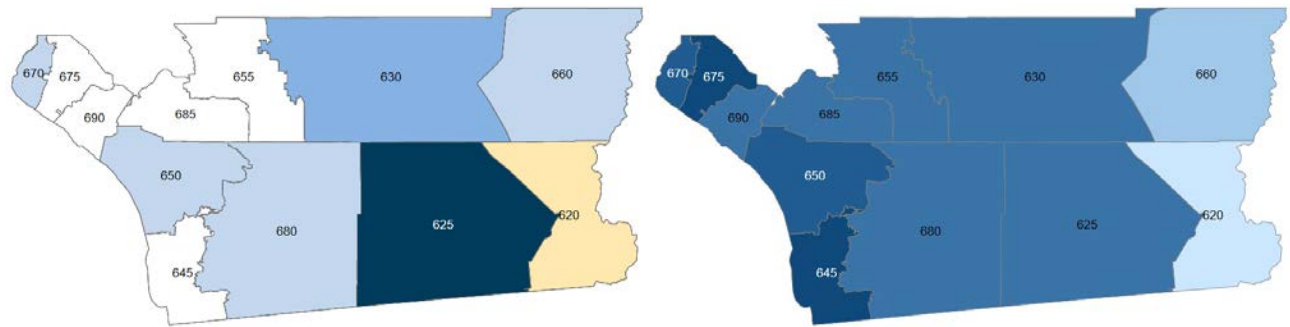
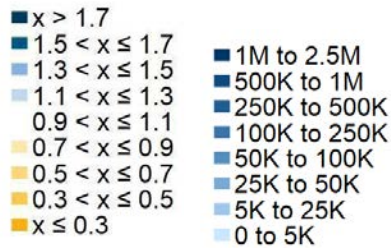


Each area office is labeled with the area office number. The left column of Figure B6.1 depicts RIPA stops per non-enforcement stops for Black drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Black stop rate is lower than the White stop rate and blue tones mean the Black stop rate is higher than White stop rate. The right column of Figure B6.1 depicts population estimates of each CHP area office within Division 6 based on data from the 2018-2022 ACS.



FIGURE B6.2 CHP Division 6: Relative Non-Enforcement Stop Rate and Population, for Hispanic Californians

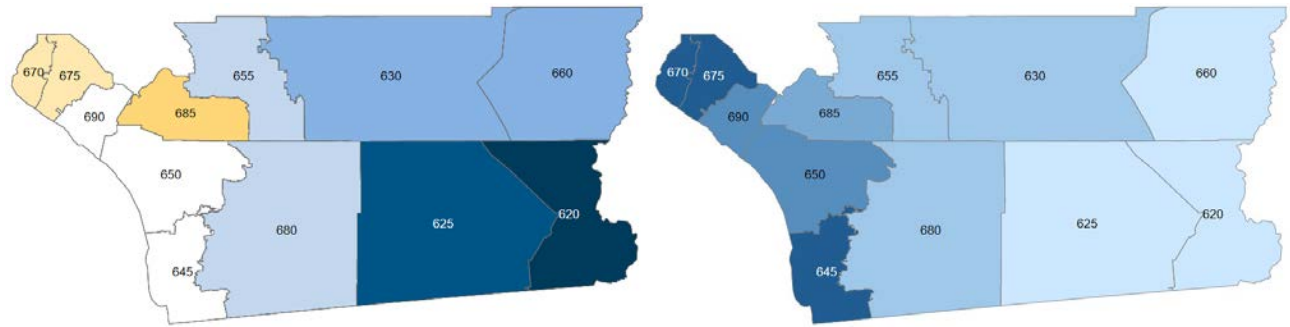
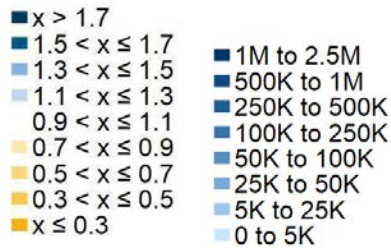
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B6.2 depicts RIPA stops per non-enforcement stops for Hispanic drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Hispanic stop rate is lower than the White stop rate and blue tones mean the Hispanic stop rate is higher than White stop rate. The right column of Figure B6.2 depicts population estimates of each CHP area office within Division 6 based on data from the 2018-2022 ACS.

FIGURE B6.3 CHP Division 6: Relative Non-Enforcement Stop Rate and Population, for Asian Californians

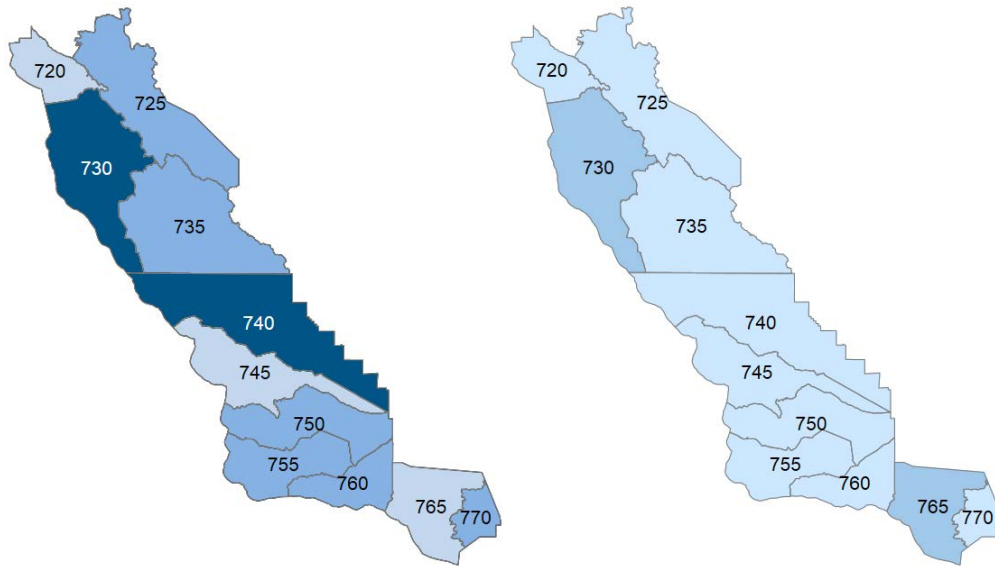
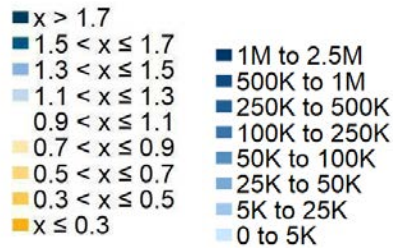
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B6.3 depicts RIPA stops per non-enforcement stops for Asian drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Asian stop rate is lower than the White stop rate and blue tones mean the Asian stop rate is higher than White stop rate. The right column of Figure B6.3 depicts population estimates of each CHP area office within Division 6 based on data from the 2018-2022 ACS.

FIGURE B7.1 CHP Division 7: Relative Non-Enforcement Stop Rate and Population, for Black Californians

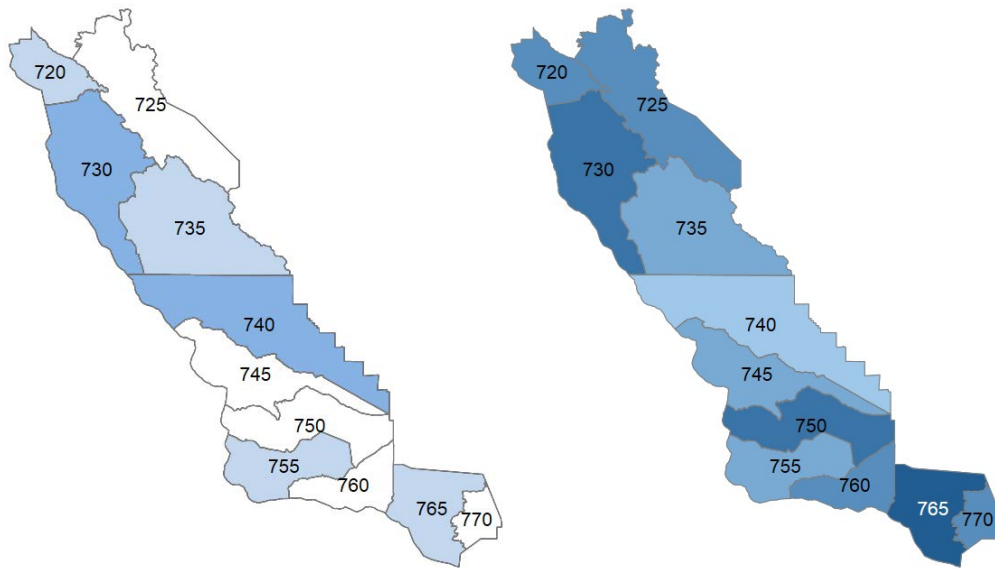
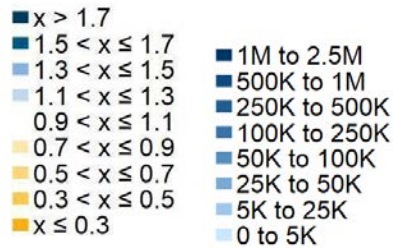
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B7.1 depicts RIPA stops per non-enforcement stops for Black drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Black stop rate is lower than the White stop rate and blue tones mean the Black stop rate is higher than White stop rate. The right column of Figure B7.1 depicts population estimates of each CHP area office within Division 7 based on data from the 2018-2022 ACS.

FIGURE B7.2 CHP Division 7: Relative Non-Enforcement Stop Rate and Population, for Hispanic Californians

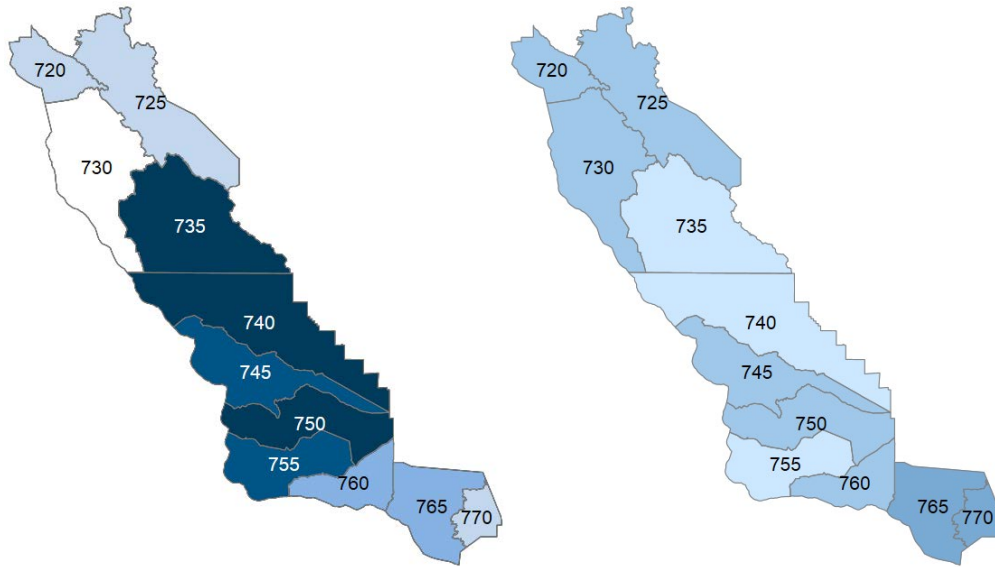
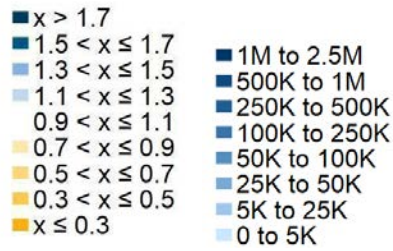
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B7.2 depicts RIPA stops per non-enforcement stops for Hispanic drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Hispanic stop rate is lower than the White stop rate and blue tones mean the Hispanic stop rate is higher than White stop rate. The right column of Figure B7.2 depicts population estimates of each CHP area office within Division 7 based on data from the 2018-2022 ACS.

FIGURE B7.3 CHP Division 7: Relative Non-Enforcement Stop Rate and Population, for Asian Californians

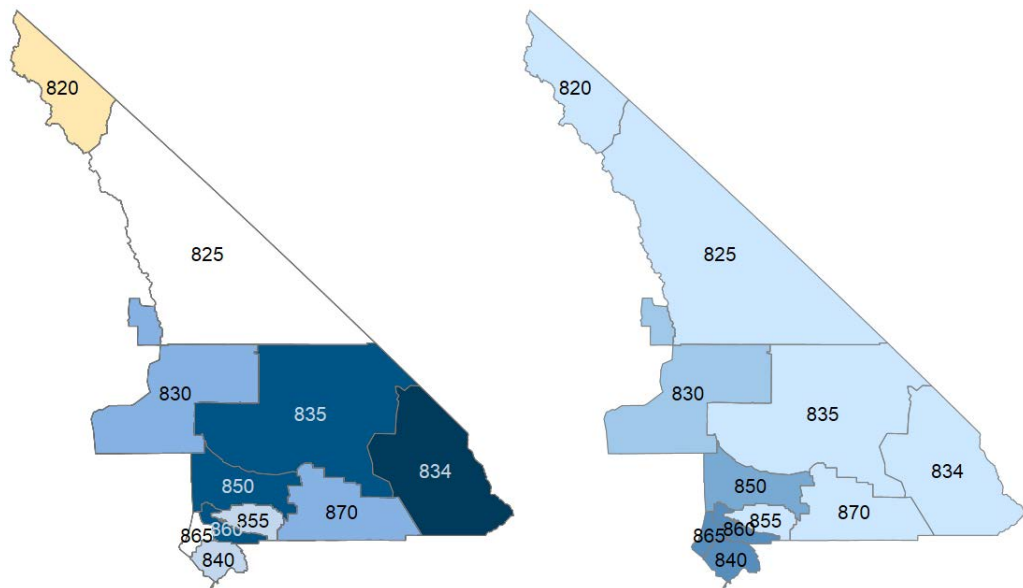
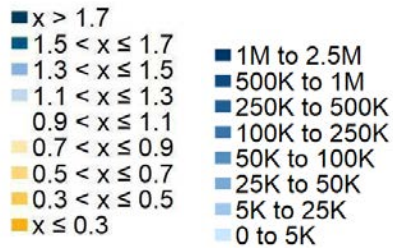
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B7.3 depicts RIPA stops per non-enforcement stops for Asian drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Asian stop rate is lower than the White stop rate and blue tones mean the Asian stop rate is higher than White stop rate. The right column of Figure B7.3 depicts population estimates of each CHP area office within Division 7 based on data from the 2018-2022 ACS.

FIGURE B8.1 CHP Division 8: Relative Non-Enforcement Stop Rate and Population, for Black Californians

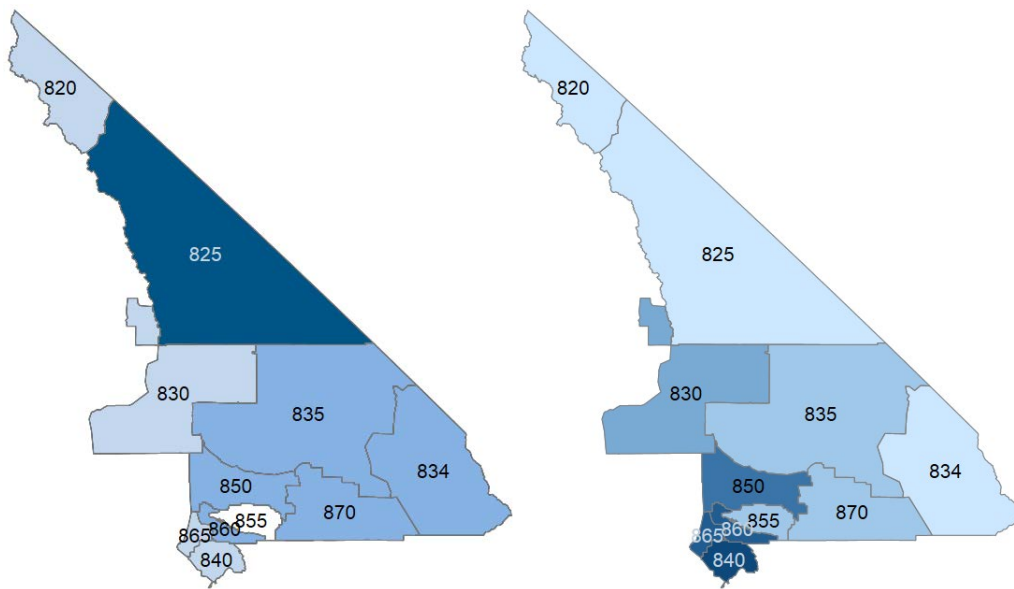
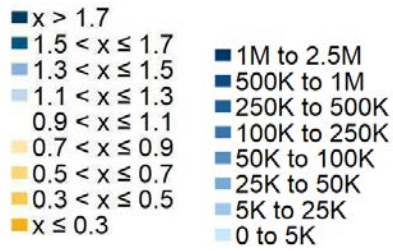
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B8.1 depicts RIPA stops per non-enforcement stops for Black drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Black stop rate is lower than the White stop rate and blue tones mean the Black stop rate is higher than White stop rate. The right column of Figure B8.1 depicts population estimates of each CHP area office within Division 8 based on data from the 2018-2022 ACS.

FIGURE B8.2 CHP Division 8: Relative Non-Enforcement Stop Rate and Population, for Hispanic Californians

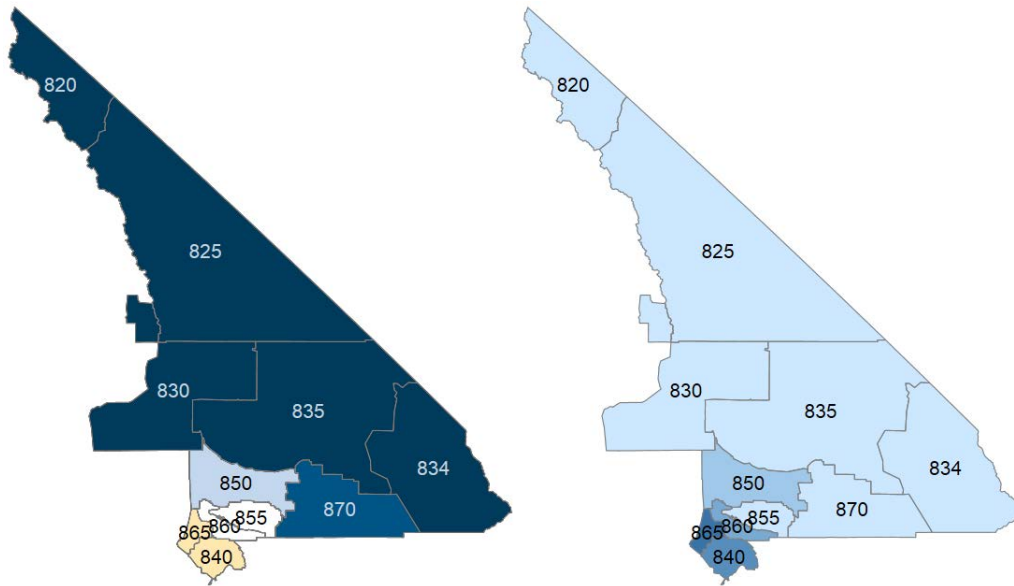
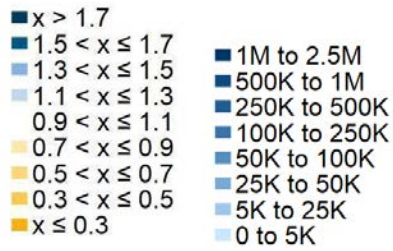
**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B8.2 depicts RIPA stops per non-enforcement stops for Hispanic drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Hispanic stop rate is lower than the White stop rate and blue tones mean the Hispanic stop rate is higher than White stop rate. The right column of Figure B8.2 depicts population estimates of each CHP area office within Division 8 based on data from the 2018-2022 ACS.

FIGURE B8.3 CHP Division 8: Relative Non-Enforcement Stop Rate and Population, for Asian Californians

**Relative Benchmark Population**



Each area office is labeled with the area office number. The left column of Figure B8.3 depicts RIPA stops per non-enforcement stops for Asian drivers, relative to White stop rates. Lighter colors represent more equal stop rates. Yellow tones mean the Asian stop rate is lower than the White stop rate and blue tones mean the Asian stop rate is higher than White stop rate. The right column of Figure B8.3 depicts population estimates of each CHP area office within Division 8 based on data from the 2018-2022 ACS.