The Science of Policing Equity

Measuring Fairness in the Austin Police Department

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Public trust in law enforcement is alarmingly low in many communities nationwide, particularly in those experiencing violent crime coupled with intensive police presence. Research shows that positive police-community relationships are crucial for safer communities: citizens are more likely to engage as witnesses and as partners in crime reduction if they believe in the legitimacy of police as equitable and impartial agents of the law.[1] Yet many community members perceive law enforcement activities to be targeted toward—and biased against—nonwhite people.

Communities wracked by highly publicized shootings of unarmed people of color have called for both greater transparency and accountability on the part of the police. Likewise, law enforcement executives desire hard metrics on current practices and a way to measure changes in response to policies aimed at reducing bias and improving police-community relations.

This brief aims to address the needs of both communities through collaboration between two initiatives: The Center for Policing Equity's **National Justice Database** (NJD) and the White House's **Police Data Initiative** (PDI; see text box). Both NJD and PDI emphasize the importance of collecting and making transparent police data to measure fairness and improve policing equity. NJD also emphasizes applying a rigorous analytic framework to examination of that data.

This brief applies the NJD analytic framework to publicly available PDI data. It focuses on the Austin Police Department (APD) in Texas, one of the first agencies to make its data available through PDI. Importantly, analyses were conducted *independent of any law enforcement agency funding*. In this research brief we present empirical documentation of the degree of racial and ethnic disparities in Austin's policing practices, as well as possible interpretations of such differences.

Our purpose is to demonstrate what can be learned by thoroughly analyzing democratized data. We empirically document the degree of racial and ethnic differences in Austin's policing practices, as well as possible interpretations of such disparities. We hope the brief provides law enforcement officials with a road map for greater transparency and accountability in police practices, so they can transform agencies to adopt more just and equitable means of promoting public safety.

Highlights

The pages that follow present analyses of APD traffic stops and searches, as well as APD officers' use of force, for the calendar years 2014 and 2015. For both yearly analyses we isolate race and ethnicity, exploring differences in practices and modeling these outcomes of interest while controlling for competing factors, such as place-specific crime rates. The raw data point to disparate treatment of Austin citizens based on race and ethnicity in vehicle stops and in use of force. For use-of-force incidents, black and Hispanic communities remain more likely to experience use of force than white communities after adjusting for community-level differences in crime and poverty.

These findings demonstrate that even in an agency such as the APD, which is instituting reforms aimed at enhancing equity in policing, unwelcome disparities remain, indicating that more work is needed within and beyond law enforcement agencies. Our research also underscores the value of rigorous and impartial analysis of police data—together with public dissemination of the findings—as well as the importance of continual analyses that can help promote and measure change over time.

Collaboration between Two Nationwide Efforts to Increase Policing Equity

Since 2012, the Center for Policing Equity has been working with law enforcement leaders, academics, community advocates, and the Department of Justice to create the **National Justice Database** (NJD), a National Science Foundation–supported effort to compile national-level statistics about police behavior and develop a rigorous analytic road map for examining police data. NJD's goal is to independently help police and communities learn about disparities in law enforcement and hold departments accountable to them. To date, NJD has received commitments from police departments nationwide, serving 25 percent of the United States population; the data, however, have yet to be made public.

Against this backdrop, President Obama's Task Force on 21st Century Policing launched in May 2015 the **Police Data Initiative** (PDI), calling on law enforcement agencies across the country to make data publicly available and partner with researchers and technologists to disseminate it. The Police Foundation makes PDI data available through a portal on its website (https://publicsafetydataportal.org/). Through such transparency, PDI aims to rebuild trust between communities and police and, ultimately, to reduce crime. Thus far, over 100 law enforcement agencies have committed to release data files on police actions such as stops, searches, arrests, and uses of force. While dozens of agencies and members of the public have accessed these data, few people have analyzed the data.

Through a collaboration between these two nationwide efforts, this brief demonstrates how the NJD analytic framework can be applied to PDI data to identify the presence (or absence) of unwarranted racial disparities in officer stops, searches, uses of force, and so forth. This brief also shows how the availability of additional police data, advocated by NJD, can increase public knowledge about how to improve policing equity nationwide.

The NJD Analytic Framework

The Austin-specific findings embodied in this brief are an example of the types of questions the NJD analytic framework is designed to answer. The framework aims to distinguish among possible explanations for racial disparities in policing, of which there are three broad classes:

1. **Disparities that arise from community characteristics.** For instance, high crime rates or poverty within a community may draw increased police attention. Individuals within the community may place disproportionately more calls for service to police.
2. **Disparities that arise from police characteristics.** For instance, police may patrol some neighborhoods with less commitment to the dignity of those who live there. Or, deploying more officers to high-crime neighborhoods may produce disproportionately more interactions between police and nonwhite communities.
3. **Disparities that arise from the relationships between communities and police.** For instance, mistrust of law enforcement may incite some communities to flee approaching officers or resist arrest more than other communities do. Similarly, a sense that communities do not trust or respect police may cause officers to feel unsafe or defensive in some neighborhoods.

While the truth likely incorporates elements of each of these explanations, the NJD framework allows departments to learn about how all three contribute to racial disparities. By combining police administrative data with population data (e.g., income, education, racial demographics), police department climate surveys, and community surveys, we can credibly examine the role that each explanation plays in the disparities that both police departments and communities want to reduce.

However, because NJD data on police behavior are neither publicly accessible nor integrated into the PDI rubric, this brief carefully analyzes the role that community-level factors play in racial disparities—that is, explanation 1. The resulting analyses can be used to steer community engagement, relationship building, and continued department reform. Importantly, the persuasive power of analytics grows substantially the longer a department measures and analyzes important indicators. As a result, we encourage the APD, the people of Austin, and all PDI-participating communities to see these analyses as a *first benchmark* against which progress can be measured. With many departments set to receive similar briefs in the coming years, we hope this analytic framework can be a road map for police and communities—establishing where they are now and charting a path toward a more just future.

In fairness, no police department in the country currently collects all the data recommended in the NJD analytic framework (though several departments collect each element of non-survey data). CPE and Urban chose the APD as our partners for this brief because its use-of-force dataset is among the most comprehensive in the country and is the single most comprehensive *publicly available* use-of-force dataset. In addition to its use-of-force dataset, the APD publishes a dataset on citations and arrests resulting from vehicle stops.

The APD does not publish any officer-level data because of officer privacy considerations; police departments rarely make these data public. As a result, we are unable to analyze how much racial disparities are attributable to individual officers (compared to the department or the region). The APD also does not publish data on complaints against officers, so we are unable to examine racial disparities in complaints using PDI data (Austin's Office of the Police Monitor publishes an annual report on citizen complaints, but these data are not in the PDI portal and thus not subject to analysis here). Additionally, though the APD does make its disciplinary matrix and general orders available to the public, these are not in the PDI portal, so we do not explore questions about policy comprehensiveness in our analyses.

The APD documents, but does not publish data on, pedestrian stops or vehicle stops not resulting in citation or arrest. As a result, we are unable to ask questions about racial disparities in pedestrian stops, and our ability to ask questions about the source of disparities in vehicle stops is limited. We encourage the APD to begin data collection of these fields while noting that new data collections are time consuming, may lower morale in the short term, and require technical infrastructure to aggregate and analyze.

The above description of APD's data holding and publicly available data is offered to demonstrate the tremendous opportunity for greater clarity on fairness in policing that could be afforded by further democratization of policing data. These opportunities are not for the APD alone but for law enforcement agencies nationwide.

The dashboard on the next page illustrates the types of data that could—and arguably should—be collected and disseminated through the PDI portal, whether Austin currently has these data publicly available, and how analyses of these data can answer critical questions that can help move the needle in reducing racial and ethnicity-based bias in policing and enhancing trust between community members and the police. The dashboard is designed to articulate the questions that can be asked of police departments using their data as well as community survey data (while the City of Austin conducts an annual police satisfaction survey of residents, it is not representative of communities most likely to experience violent crime and heavy police presence). The dashboard underscores that because certain data are not currently published through the PDI portal several questions in the NJD analytic framework cannot be posed and answered.

Austin Police Department Data

The Austin Police Department embodies 1,900 officers serving the 11th-largest city in the United States, with 930,000 residents as of 2015. The population of the Austin greater metropolitan statistical area (MSA) is more than double that of the city: 2 million residents, many of whom commute into Austin daily.

Austin, Texas

In this brief, we focus on two types of Austin police data made available through the PDI portal: vehicle stops that resulted in citation or arrest in 2015, and incidents involving police use of force in 2014. We show total counts of vehicle stops and use-of-force incidents and counts by white, black, and Hispanic race and ethnicity. Over half of Austin MSA's residents are non-Hispanic white (53 percent), nearly a third are Hispanic (32 percent), and less than one-tenth are non-Hispanic black (7 percent). Because urban centers such as Austin experience an

Availability of Austin PD Data to Answer NJD Analytic Questions

	Are there racial disparities?	How much are disparities attributable to officers?	How well do officer-level psychologies predict disparities?	What accounts for disparities?	How healthy are officers?	How comprehensive are departmental policies?
Administrative Datasets						
Vehicle Stops	**Moderate**	Not in PDI	Not in PDI			
Pedestrian Stops	Not in PDI	Not in PDI	Not in PDI			
Use-of-Force	**Rich Data**	Not in PDI	Not in PDI			
Complaints	Not in PDI	Not in PDI	Not in PDI			
Crime/Calls				**Rich Data**		
Officer Discretion				**Moderate**		
Neighborhood				**Rich Data**		
Police Climate Surveys						
Psychological Health					Not in PDI	
Physical Health					Not in PDI	
Job Health					Not in PDI	
Policy Analyses						
Racial Equity						Not in PDI
Trust						Not in PDI
Reduce Force						Not in PDI
Thorough						Not in PDI
Effective						Not in PDI

influx of regional residents who visit the city for work and recreation, MSA population figures are more appropriate measures to adjust police data counts for exposure to different citizens. Racial and ethnic differences in police data must also be contextualized with other contributing factors, including level of illegal activity, something we model in the use-of-force analysis by using Census tract-level Part I crimes as a proxy.

Vehicle Stops and Searches

Over time, the volume of vehicle stops in Austin resulting in a citation remained fairly constant, at approximately 10,000 stops a month, with one sharp drop during September 2015. The number of

FIGURE 1

Vehicle Stops Resulting in a Citation, 2015

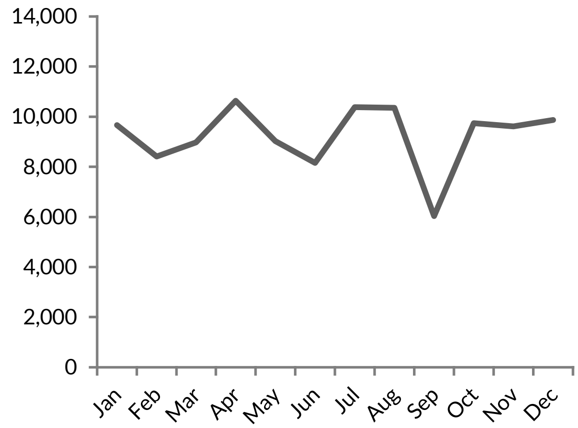
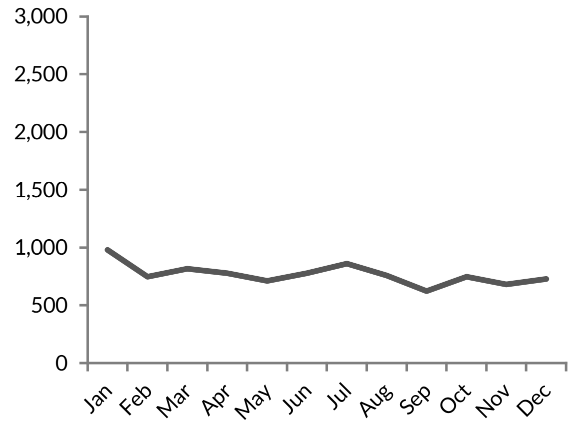


FIGURE 2

Vehicle Stops Resulting in an Arrest, 2015



vehicle stops resulting in an arrest was much lower, averaging 750 a month and remaining fairly constant across time after peaking in January 2015.

VEHICLE STOPS BY RACE OR ETHNICITY

In total, Austin police stopped more white and Hispanic than black drivers in each month of 2015, an expected pattern given the higher share of white and Hispanic residents in the Austin metropolitan area. However, among stops resulting in a citation, more white than Hispanic drivers were stopped each month, while the opposite was true for stops resulting in an arrest. Each month of 2015, a higher number of stopped Hispanic drivers were arrested than either white or black stopped drivers. These counts are not adjusted for differential rates of driving, involvement in illegal activity, or exposure to police.

FIGURE 3

Vehicle Stops Resulting in a Citation by Race or Ethnicity, 2015

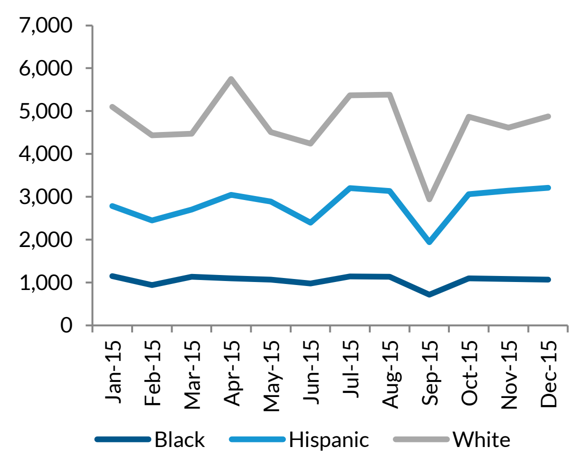
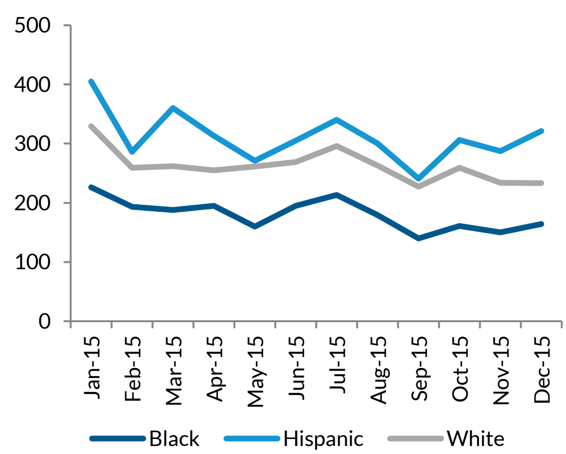


FIGURE 4

Vehicle Stops Resulting in an Arrest by Race or Ethnicity, 2015



When accounting for underlying population, however, we see that rates of vehicle stops resulting in citation or arrest were highest for black drivers throughout the year. In other words, while the fewest number of vehicle stops occurred for black drivers, a higher proportion of black people was stopped than Hispanic or white people. Similar proportions of white and Hispanic drivers experienced vehicle stops resulting in citations, but stop rates resulting in arrests were twice as high among Hispanic drivers as white drivers. Again, these rates are not adjusted for differential rates of driving, involvement in illegal activity, or exposure to police.

FIGURE 5

Per Capita Stops Resulting in a Citation by Race or Ethnicity, 2015

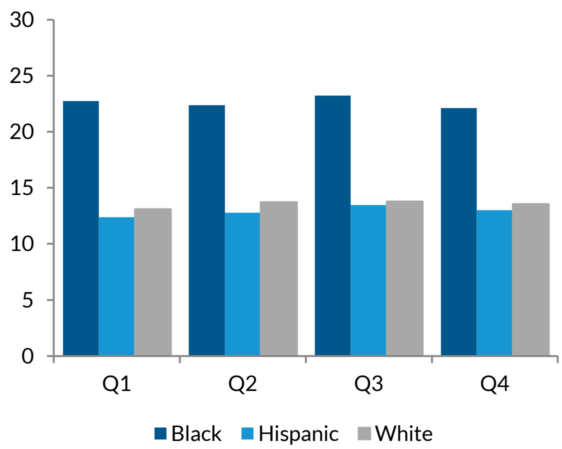
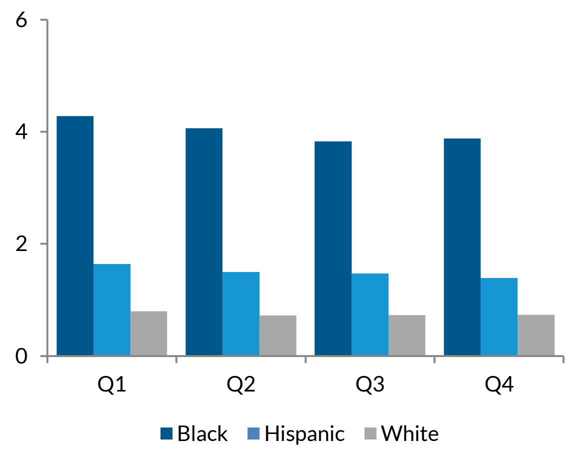


FIGURE 6

Per Capita Stops Resulting in an Arrest by Race or Ethnicity, 2015



VEHICLE SEARCHES BY RACE OR ETHNICITY

Vehicle stops may result in a search following arrest and may precede arrest if reasonably necessary for officer protection (e.g., weapons search), there is probable cause of evidence of crime, or upon the driver's consent. Because only 2 percent of APD's vehicle stops that resulted in a citation involved searches, this section focuses on vehicle stops resulting in arrest.

Three-quarters (76 percent) of APD's arrest stops involved a vehicle search; of those searches, 77 percent were described as occurring for reasons "incidental to arrest." Following *Arizona v. Gant*, 556 U.S. 332 (2009), searches performed incidental to arrest are conducted after an arrest has been made to address continuing safety threats or preserve criminal evidence. Searches performed for other reasons not incidental to arrest, including for "probable cause," as a "frisk for safety," or by driver's "consent," are assumed to have been conducted before arrest and were subjected to greater officer discretion. We focus analysis on these latter searches, which made up 23 percent of those conducted in 2015.

Focusing on searches *not* incidental to arrest, **Figure 7** shows the percentage of vehicle stops resulting in a search, broken down by drivers' race/ethnicity. In general, search rates were highest for stopped black drivers and lowest for Hispanic and white stopped drivers. The search rate for black drivers peaked early in 2015 at 32 percent, meaning 1 in 3 stops of black drivers involved a search, and was lowest at the end of 2015, when one in six stops (16 percent) of black drivers resulted in a search.

Search rates for Hispanic and white drivers were generally similar, averaging 16 percent and 14 percent respectively, across the time period. By the end of 2015, the racial gap in percentage of drivers searched by race/ethnicity had closed somewhat.

The APD also records whether contraband (drugs, weapons, cash, alcohol, and “other items”) was recovered from vehicle searches. One in three (32 percent) vehicle searches yielded contraband, compared with almost half (48 percent) of nonincidental vehicle searches. **Figure 8** shows the search “hit” rates, or percentage of nonincidental searches resulting in contraband discovery, by race/ethnicity. Although hit rates vary, few discernible patterns of differences by race/ethnicity are evident; hit rates average 47 percent for Hispanic drivers, 49 percent for black drivers, and 50 percent for white drivers.

This lack of hit rate differences can typically be interpreted as evidence of lack of bias in decisions to stop or search,[2] but in this case, because the data include only cases in which arrests were made, we do not know the rates at which different groups were searched and contraband was *not* found. Consequently, we cannot draw any conclusions about bias from hit rates among arrest stops. Regardless, APD’s hit rates are very high and may be explained, at least in part, by the fact that APD has one of the strictest consent search requirements in the country, for which officers must have probable cause to conduct a search. These hit rates also appear high because they are limited to stops resulting in arrest; other jurisdictions looking at *all vehicle stops* have found hit rates ranging from 7 percent to 34 percent.[3]

FIGURE 7

Share of Drivers Subject to Nonincidental Searches by Race or Ethnicity, 2015

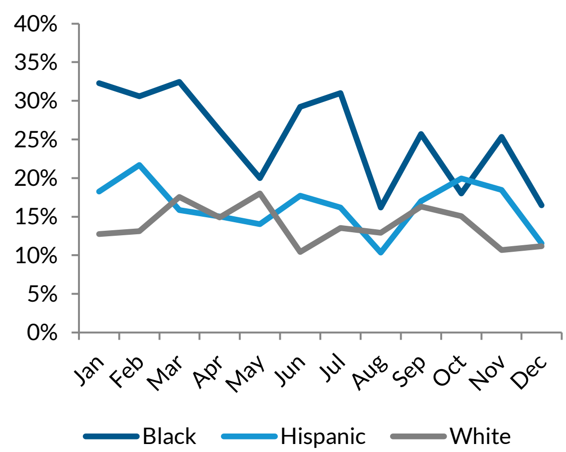
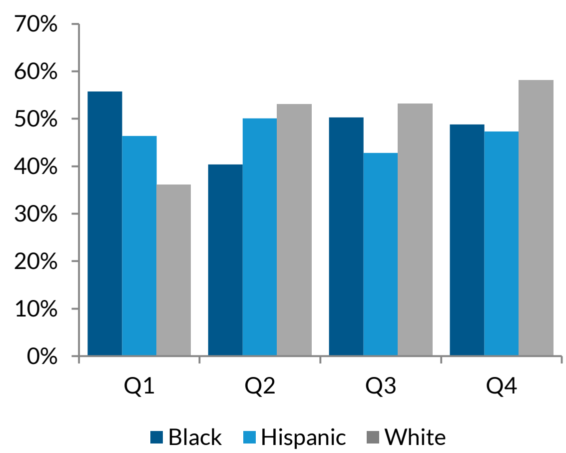


FIGURE 8

Nonincidental Search “Hit” Rates by Race or Ethnicity, 2015



MODELING OFFICER DISCRETION IN VEHICLE STOPS AND SEARCHES

In this section, we present analyses that help us explore whether racial disparities in vehicle stops that lead to citations and arrests are potentially warranted or unwarranted. First, we examine the role of officer discretion in deciding whether to make a stop; second, we model the decision to search a vehicle once a stop is made.

Officer Discretion. To understand whether racial disparities in officer-initiated (discretionary) stops exceed racial disparities in nondiscretionary stops, such as those initiated by citizens through calls for service and commission of felony or misdemeanor, we compute the officer discretionary index (ODI) as follows:

$$ODI = \frac{Officer\ Initiated\ Stops\ of\ B/H/W}{All\ Officer\ Initiated\ Stops} - \frac{Citizen\ Initiated\ Stops\ of\ B/H/W}{All\ Citizen\ Initiated\ Stops}$$

The ODI compares the proportion of officer discretionary stops of blacks (B), Hispanics (H), and whites (W) with the proportion of citizen-initiated stops of the same racial/ethnic group. If a racial group's proportion among officer discretionary stops differs from that among nondiscretionary stops, there may be indication of racial bias. **A positive (or negative) ODI indicates that officers are initiating a higher (or lower) share of stops of that racial or ethnic group than are citizens.** A null result (0) indicates that officer discretion judgment is on pace with that of citizens.

For the Austin police data, we examined the reason recorded for making a stop to distinguish between officer-initiated (discretionary) and citizen-initiated (nondiscretionary) stops. Discretionary stops were defined as those of a "suspicious person," while nondiscretionary stops were defined as those stemming from calls for service or violations of Texas penal code, Austin city ordinance, or the Texas water safety act.[4]

Table 1 shows the ODIs calculated for blacks, Hispanics, and whites in Austin, based on vehicle stops resulting in citation or arrest for 2015. As shown, there is no evidence of racial bias in stops of Hispanic drivers. By contrast, among stops resulting in citation or arrest, a higher share of officer-initiated stops of black drivers was present than citizen-initiated stops of black drivers (the difference is higher among stops resulting in arrest). An equivalently *lower* share of officer-initiated stops of white drivers was present than citizen-initiated stops of white drivers.

TABLE 1

Officer Discretionary Indices, 2015

	Stops Resulting in Citations			Stops Resulting in Arrests		
	% discretionary	% non-discretionary	ODI	% discretionary	% non-discretionary	ODI
Blacks	21	13	0.09	31	19	0.12
Hispanics	41	41	0.01	38	38	0.00
Whites	38	47	-0.09	31	43	-0.12

Note: Discretionary stops are initiated by police officers; nondiscretionary stops are initiated by citizens.

Decision to Search. To understand officers' decision to search a vehicle following a stop, we examined four possibly predictive factors available in the Austin police data, simultaneously in a logistic regression model: driver's race or ethnicity (black, Hispanic, white), driver's gender (male, female), driver's age, and whether the officer indicated he or she knew the driver's race or ethnicity before making the stop.[5] We also tested the possibility that these factors interacted to predict a decision to search.

For this model, we again focused on vehicle stops resulting in arrest and on searches that were not described as incidental to that arrest. Overall, 23 percent of the arrest stops resulted in a search for which the recorded reason was either "probable cause" (18 percent), "frisk for safety" (4 percent), "contraband in plain view" (0.5 percent), or driver's "consent" (0.3 percent).

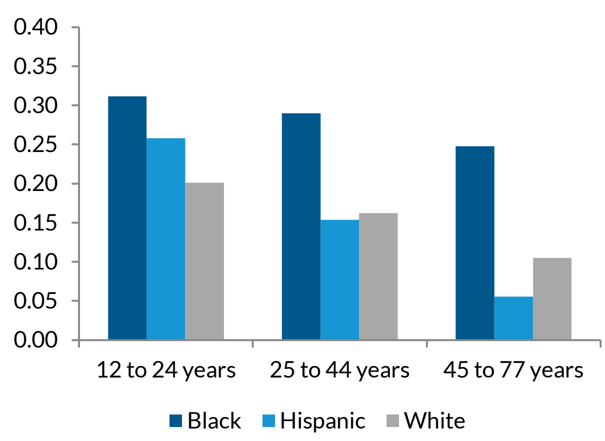
In the regression model, drivers' race/ethnicity and age interacted to predict Austin police officers' decisions to conduct searches on stopped vehicles. This finding remained true after adjusting for driver's gender, whether driver's race was known before the stop, and an interaction between driver's gender and age. **Figure 9** graphs the model-estimated probabilities that a vehicle would be searched by drivers' race/ethnicity and age. Three findings are noteworthy:

- Stopped black drivers of all ages had the highest probabilities of vehicle search.
- Stopped, young Hispanic drivers had the second-highest probability (.26) of vehicle search, at a rate comparable to that of older black drivers (.25).
- Age-related reductions in the probabilities of vehicle search were greater for stopped white and Hispanic drivers than for black drivers.

We also noted (but did not graph) that the estimated probabilities of vehicle search were higher when the driver's race was known before a stop (.30 compared with .19) and for younger male (.28) than older female drivers (.15). These findings were included as controls in the model.

FIGURE 9

Probability of Vehicle Search by Age and Race or Ethnicity, 2015



Source: Logistic regression model predicting vehicle search, among 7,870 APD vehicle stops ending in arrest in 2015.
Note: Model included drivers' race, age, gender, whether race was known before the stop, and interactions between race and age and between age and gender.

This model provides insight into the relative importance of different factors in predicting Austin officers' decision to conduct a vehicle search on stops ending in arrest, but is unable to control for drivers' differential involvement in illegal activity or exposure to police.

Use-of-Force Incidents

Next, we examined APD's 2014 data on recorded use of officer force against citizens, made public for the PDI and the most comprehensive, publicly available use-of-force dataset. Use-of-force incidents included a range of physical responses to citizens' failure to comply with officers' verbal commands.

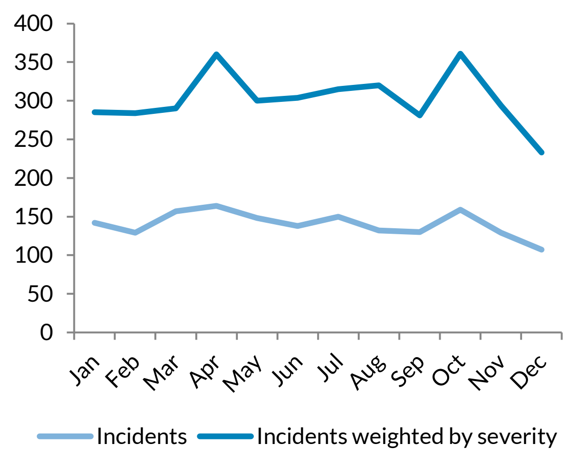
Six general categories of force were distinguishable in the APD data: (1) weaponless use of hands or feet to target pressure points; (2) use of an impact weapon such as a baton; (3) use of a chemical agent such as pepper spray; (4) canine bites; (5) use of a conducted energy device (Taser) or less-lethal impact weapon, such as beanbag/rubber bullets; and (6) lethal firearm use. By far, the largest category of force used was (1), which comprised over two-thirds of force incidents.

Following the NJD analytic framework, we applied a weighted severity scale to these force incident categories so use of a firearm, for example, was weighted more severely than use of a baton. Accordingly, the severity weighting consisted of a 6-point scale aligned with the six categories of force above (e.g., 1 = hands/body, 2 = impact weapon, 3 = pepper spray, 4 = canine, 5 = Taser/less-lethal weapon, 6 = lethal firearm). Higher scores corresponded with more severe levels of force.

Throughout this section, we analyzed both the *counts* of force incidents as well as the *severity* of force incidents. As shown in **Figure 10**, both the counts and severity of APD force incidents remained fairly constant over time from January to December 2014.[6] This finding is similar to that for the counts of APD vehicle stops in 2015.

FIGURE 10

Use-of-Force Incidents, 2014



USE OF FORCE BY RACE OR ETHNICITY

Figure 11 and **Figure 12** display the counts and severity of force incident rates by citizen's race or ethnicity (per 1,000 citizens). Racial disparities are evident when comparing the racial/ethnic composition of APD's use-of-force incidents to the racial/ethnic composition of the Austin MSA. However, this descriptive analysis of differential exposure to use of force provides no insight on the complex factors and characteristics that might give rise to such disparities. To explore those factors, more advanced statistical modeling was necessary, as advocated by the NJD analytic framework.

FIGURE 11

Use-of-Force Rates by Citizen Race or Ethnicity, 2014

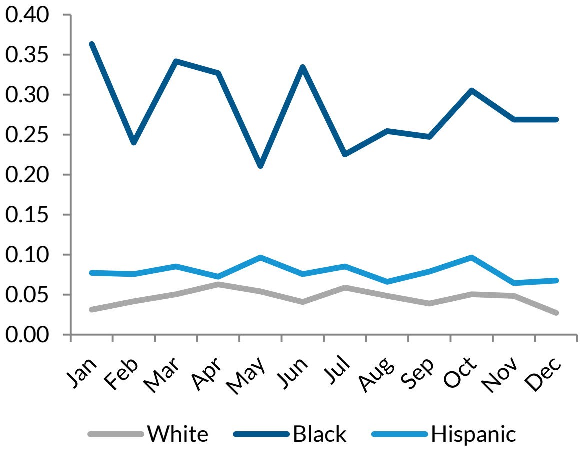
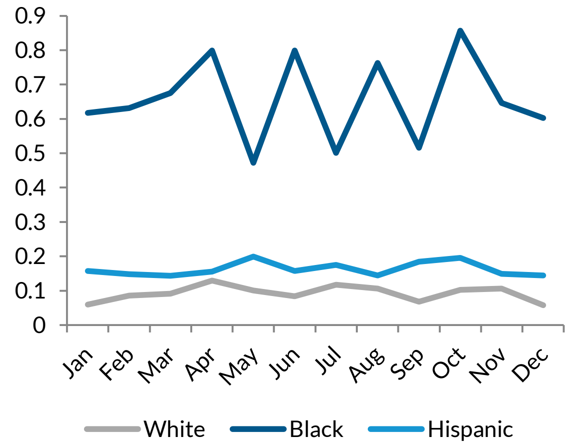


FIGURE 12

Use-of-Force Severity Rates by Citizen Race or Ethnicity, 2014



MODELING USE OF FORCE

To better understand apparent disparities in APD's citywide use of force, we tested the effect of neighborhood-level characteristics on the number of use-of-force incidents that occurred within a census tract, as well as the cumulative severity of force used in those same events.[7]

For these two analyses, we aggregated use-of-force events/severity to the tract level, estimating the independent effects of six neighborhood and demographic characteristics on police use of force: Part I crime rate, median household income, percentage of college-educated residents, homeownership rate, percentage of black residents, and percentage of Hispanic residents.[8] The first four of these characteristics represent theoretically relevant predictors of police use of force, and so they function as control variables in our models. The percentages of black and Hispanic residents help test whether disparities in police use of force persisted after controlling for those community characteristics.

Both the model of use-of-force incidents and the model of use-of-force severity suggested that Austin's neighborhoods with a higher percentage of black or Hispanic residents experienced a disproportionate amount of police use of force. The percentage of black and percentage of Hispanic residents in a neighborhood were statistically significant positive predictors of police use of force. The percentage of black residents in a neighborhood had a larger effect than percentage of Hispanic residents in both models.

Median household income and crime rate were also impactful and statistically significant predictors of police use of force. The results of the use-of-force incidents model and the use-of-force severity model were largely the same. The statistically significant predictors—median household income, Part I crime rate, percentage of black residents, and percentage of Hispanic residents—were identical between models. As one would expect, estimated effect sizes were larger for the force severity model because of the multiplicative severity-weighting procedure.

According to the model of use-of-force incidents, a one-point rise in the percentage of black residents increased the expected number of use-of-force incidents by 2.6 percent, holding all other variables constant. The percentage of Hispanic residents had a smaller effect: a one-point rise in the percentage of Hispanic residents increased the expected number of use-of-force incidents by 1.1 percent.

Comparing effect sizes across all independent variables was challenging because the variables were measured in vastly different units. Using standard deviation units, we compared the estimated percentage change in use-of-force incidents uniformly. Increasing the percentage of black residents in a tract by a standard deviation—about 8 percent—led to a 24 percent increase in expected use-of-force incidents. By contrast, a standard deviation increase in the percentage of Hispanic residents—almost 22 percent—led to a 27 percent increase in expected use-of-force incidents.

A standard deviation increase in a tract's Part I crime rate—an upswing of 50 crimes per 1,000 residents—increased the expected number of use-of-force incidents by 92 percent. A standard deviation increase in median household income—a rise of $28,000—decreased the expected number of use-of-force incidents by 33 percent.

FIGURE 13

Estimated Percentage Change in Use-of-Force Incidents Resulting from a Percentage-Point Increase

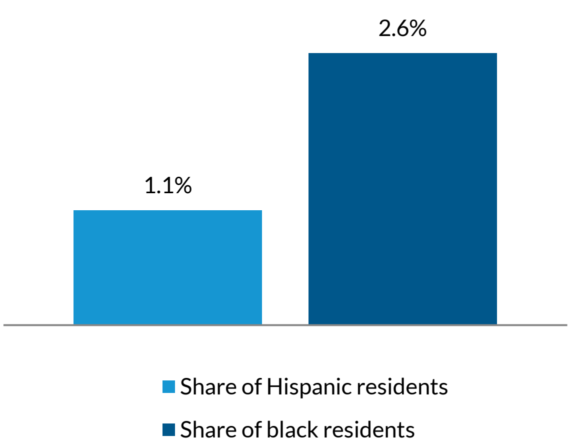
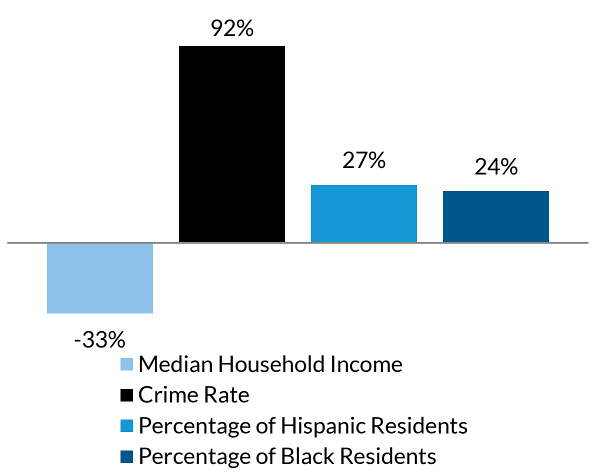


FIGURE 14

Estimated Percentage Change in Use-of-Force Incidents Resulting from a Standard Deviation Increase



Lessons Learned

This report is the first to apply NJD's independent analytic framework to police data made available through the White House's PDI. Although several limitations applied to the findings, as noted throughout, the analyses are encouraging because they represent the start of a more comprehensive and transparent effort to understand—and help correct—the degree of racial and ethnic disparities in policing practices. The information presented is beneficial to both community members and policing executives alike.

As described earlier, the NJD analytic framework identifies three categories of explanation for racial disparities in policing: community level, police level, and relationship level. Given the limited availability of publicly available APD data, and that which is housed on the PDI portal, our analyses are only able to examine community-level explanations. Specifically, this brief analyzes racial disparities in APD police vehicle stops and use of force. The results are mixed.

Analyses of vehicle stop data reveal three important findings.

First, APD searches appear to be highly effective. Searches left to officer discretion (that is, not incidental to arrest) returned contraband roughly 48 percent of the time. While this result may stem in part from APD's unusually stringent policy on consent searches, which require probable cause, it also may be the result of missing data. Given that APD does not publish data on all vehicle stops, an unknown number of vehicle stops and searches did not result in arrest. *To address this omission, APD Chief Acevedo has instructed the department to collect and publish data on both pedestrian and vehicle stops that do not result in citation or arrest by January 2017.*[9] Presumably fewer of those searches end in arrest given the lack of contraband found. Still, the relatively high hit rate should be a goal of law enforcement, and APD's available data suggest reasons for optimism.

Second, there are racial disparities in the decision to stop and search a suspect. Both our models of decisionmaking around searches, the officer discretionary index and the probability of vehicle search model, reveal disparities by race. The ODI revealed that, for vehicle stops ending in citation or arrest, stopped black motorists made up a higher share of officer-discretionary stops than of stops mandated by citizen complaints or by statutes requiring officers to stop a citizen. Similarly, the ODI revealed that stopped white motorists made up a lower share of officer-discretionary stops. Finally, a model of the decision to search revealed that blacks and Hispanics, once stopped, were more likely to be searched than would be indicated by their representation among those stopped. These findings, however, are qualified by our final finding.

Third, an analysis of racial disparities in hit rates revealed no reliable differences between blacks, whites, and Hispanics. While previous research demonstrates that this is not proof of the absence of bias,[10] it is a positive indicator. Moreover, these findings suggest that racially disparate rates of vehicle stops may in fact be driven by differential rates of offending.

The takeaway from these findings is that community-level explanations appear to account for a sizable amount in observed racial disparities. We encourage the APD to continue monitoring these issues and to collect data on all its vehicle stops to assess the equity of officer behavior even more accurately.

By contrast, analyses of use-of-force data revealed a more consistent picture of disparity. Even when controlling for neighborhood levels of crime, education, homeownership, income, youth, and unemployment, **racial disparities in both use and severity of force remained.** In other words, community-level explanations of use of force were Not in PDI to explain observed racial disparities in use of force. While crime, poverty, and other factors contributed to these disparities, controlling for these factors did not eliminate disproportionate use of force in communities with higher percentages of Hispanics and blacks.

Still, these discrepancies are not direct evidence of racial prejudice. Rather, they suggest that police-level and/or relationship-level explanations of use-of-force incidents are also implicated. In other words, we advise APD to focus on police-level and relationship-level concerns to reduce racially disparate use of force.

Common police-directed interventions to minimize racially disparate policing include trainings, particularly ones on how to identify and disarm unintended forms of bias (e.g., identity traps and/or implicit bias), policy reviews conducted by external auditors, and collaborative policy reviews with communities. Relationship-directed interventions highlight principles of procedural justice, particularly issues of community voice and police transparency.

Importantly, the APD has recently attempted to promote transparency by instituting a policy governing the use of body-worn cameras. That someone may be terminated immediately if his or her camera is not activated during a deadly force incident (without appropriate justification) is a strong accountability metric. Similarly, new additions to APD's disciplinary matrix on failure to report complaints (with termination recommended after a second infraction) are strong signals of accountability. APD has also stated that effective January 2017 it will include a form on the back of citations that affords citizens an avenue for both complaints and positive feedback following interactions with officers. Finally, APD's leadership on issues of data transparency also signals a willingness to receive criticism and reform in line with the shared values of police and communities—of particular importance given recent concerns about nonreporting in Texas.[11]

We recommend that APD continue each of these initiatives as well as engage the broader communities of Austin in collaborative efforts to reform and implement policies that reflect their shared values. We also encourage police and community collaboration to design metrics of accountability that are easily understood by the community and leveraged for change both inside the APD and in the Austin metropolitan area.

The science of policing equity demonstrates clearly that collaboration between communities and police is necessary to rebuild trust and reduce the negative consequences that can result from racial disparities in police contacts.[12] We encourage further pursuit of those collaborations and the use of these analyses as benchmarks for both racial equity and progress toward that goal.

Notes

1. See Tom R. Tyler, *Why People Obey the Law* (Princeton, NJ: Princeton University Press, 2006).
2. See Nicola Persico and Petra Todd, "Generalising the Hit Rates Test for Racial Bias in Law Enforcement, with an Application to Vehicle Searches in Wichita," *Economic Journal* 116, no. 515 (2006): F351–67.
3. Persico and Todd, "Generalising the Hit Rates Test."
4. Austin has a three-square-mile lake within the city limits.
5. Although officers' recording of whether a driver's race was known before a vehicle stop was missing for 13 percent of cases, including the variable did not alter the substantive effects of other factors in the model, and it was a significant predictor of vehicle search, so it was retained. Regarding the trustworthiness of the variable's values, we note that officers' were half as likely to indicate race was known (7 percent versus 15 percent) during nighttime (9:00 p.m.–2:00 a.m.) vehicle stops as during other hours of the day, and APD policies specified strict guidelines and consequences for failure to record accurate information for this variable.
6. Use-of-force incidents are coded at the citizen level, meaning that an event consisting of two officers using force against one citizen, for example, is counted as a single use-of-force incident. Conversely, an event that consists of one officer using force on two citizens would be counted as two use-of-force incidents.
7. Use-of-force incidents were weighted using the same schema as used previously.
8. Those characteristics are taken from the 2010–14 American Community Survey five-year estimates.
9. Chase Hoffberger, "APD to Collect More Data," Austin Chronicle, April 8, 2016, http://www.austinchronicle.com/news/2016-04-08/apd-to-collect-more-data/.
10. Kate Antonovics and Brian G. Knight, "A New Look at Racial Profiling: Evidence from the Boston Police Department," Review of Economics and Statistics 91, no. 1 (2009): 163–77.
11. Lise Olsen, "In Texas and California, Policy Fail to Report Use-of-Force Fatalities from 2005–2015," Houston Chronicle, October 9, 2016, http://www.houstonchronicle.com/news/houston-texas/houston/article/In-Texas-and-California-police-fail-to-report-9958631.php.
12. Tyler, *Why People Obey the Law*.

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Created in 2008 by a collaborative effort of Dr. Phillip Atiba Goff and then-Denver Police Department Commander Dr. Tracie L. Keesee, the Center for Policing Equity is a research and action think tank that works collaboratively with law enforcement, communities, and political stakeholders to identify ways to strengthen relationships with the communities they serve. Using evidence-based approaches to social justice, we use data to create levers for social, cultural, and policy change.

The Center for Policing Equity is also the home of the National Justice Database, a National Science Foundation effort to standardize national-level data on police behavior. Principal investigators on the National Justice Database are Phillip Atiba Goff, Jack Glaser, Amanda Geller, and Steven Raphael.

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