

An Assessment of Traffic Stops and Policing Strategies in Nashville

**Prepared by the Policing Project at
New York University School of Law**

www.policingproject.org
info@policingproject.org
(212) 992-6950

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Executive Summary

In response to the Gideon's Army report indicating racial disparities in traffic stops, and the shooting of Jocques Clemmons, the Nashville Mayor's Office asked the Policing Project to help develop strategies to address the disparities and improve community-police relations in Nashville. The Policing Project is an organization devoted to front-end democratic accountability to assure just and effective policing.

The Policing Project talked with dozens of Nashville residents about their experiences with policing. Based on those conversations, we proposed to conduct a thorough assessment of the costs and benefits of using traffic stops to address crime. And we suggested that the City create a Steering Committee to guide work around community-police engagement and policing in Nashville.

We conducted the traffic stop data work in collaboration with the Stanford Computational Policy Lab (SCPL), whose researchers performed the analysis. (The SCPL team's more detailed report is included here as Appendix B.) The Metropolitan Nashville Police Department (MNPDP) provided the necessary data, and has from the beginning shown a strong commitment to re-evaluating its traffic stop strategies and developing alternatives that can achieve public safety with fewer social costs.

As the SCPL report shows, and as we summarize below, there are indeed notable racial disparities in traffic stops in Nashville. These disparities are higher for traffic stops around non-moving violations, such as broken taillights or expired tags. Disparity, however, is not necessarily evidence of *discrimination*. Any number of neutral factors, including officer deployment patterns or differences in rates of offending, may explain these and other disparities in the criminal justice system. MNPDP explains these racial disparities in traffic stops on the ground that officers go where the crime is, and that in Nashville, high-crime neighborhoods tend to have larger minority populations. The SCPL analysis bears this out. However, even controlling for crime, unexplained racial disparity still remains.

More importantly, the SCPL report shows that traffic stops are not an effective strategy for reducing crime. In particular, MNPDP's practice of making large numbers of stops in high crime neighborhoods does not appear to have any effect on crime.

We make a number of recommendations, including that MNPDP:

- reduce the number of traffic stops
- acknowledge black residents have been disproportionately affected by MNPDP's stop practices
- monitor racial disparities on an ongoing basis
- redeploy officer resources toward more effective crime-fighting tools
- consider adopting a Neighborhood Policing strategy
- post its department policies online
- conduct a review of certain key policies such as use of force
- conduct a review of training around use of force, traffic stops, and procedural justice
- adopt a body camera policy with attention to transparency regarding the release of body camera footage

In addition, we suggest that Nashville engage in a public process of strategic planning around public safety, bringing together the voices of the community and MNPDP officials in doing so.

Background

In 2016-17, two events took place that focused public attention on policing in Nashville—and revealed longstanding tensions around police-community relations, particularly in some of Nashville’s communities of color. In October 2016, Gideon’s Army released a report that pointed to MNPDP’s longstanding practice of making large numbers of stops in high crime neighborhoods—and it pointed to substantial racial disparities in those stops. Then, in February 2017, an MNPDP officer shot and killed Jocques Clemmons, leading to protests and further concern about policing in Nashville.

Later that year, then-Mayor Megan Barry reached out and asked the Policing Project at NYU Law to offer suggestions for a plan to address community concerns, and help chart a path to strengthen the partnership between MNPDP and the communities it serves. Although the nature of our assignment changed somewhat at the mayoral transition, in general we were asked to continue our efforts.

In the succeeding sections, we explain the approach we recommended to Mayors Barry and Briley, what we learned from our work, and our recommendations for how Nashville and MNPDP might move forward in light of what we have learned.

Before doing so, though, we introduce the Policing Project. This is important because we take a somewhat unique approach to issues of public safety reforms, which necessarily frames the recommendations we make.

About the Policing Project

The Policing Project at NYU Law is a not-for-profit center at New York University School of Law dedicated to assuring just and effective policing through democratic accountability. It is led by Professor Barry Friedman, who for over a decade was a law professor at Vanderbilt School of Law. He is the author of *Unwarranted: Policing Without Permission*, and is leading a national standard-setting effort on policing for the American Law Institute, *Principles of the Law: Policing*.

Although there are many organizations that work in the area of policing and public safety, the Policing Project takes a unique approach, focused on what we call “front-end accountability.” Most of the attention on policing in this country is on the back end, after something has gone wrong. Remedies that are proposed run from civil lawsuits to criminal prosecutions of officers, to civil rights investigations, to civilian review boards, to inspectors general. Any system of accountability needs a back end, and policing is no different. At the same time, as much media coverage has made clear, there is ongoing concern about the efficacy of those back-end approaches.

The Policing Project focuses on the front end of policing: the need for democratic voice around how policing should occur to avoid problems in the first place. Such front-end engagement has historically been lacking around policing, and we believe changing this could have a transformative effect. To this end, we advocate for transparency around policing (so the public can make sound choices); we identify best practices and write model policies on issues ranging from use of force to the use of policing technologies such as body cameras, predictive policing, or police searches of social media; and we work with communities and the police on ways to ensure an effective means for the community to have a voice in how it is policed.

More information on our projects can be found on our website, www.policingproject.org, but here we mention just a few:

- **Chicago:** We worked closely with the Grassroots Alliance for Police Accountability to assist them in drafting an ordinance to create a Community Police Commission for the City of Chicago. We also are working in two Chicago police districts to pilot a comprehensive Neighborhood Policing Initiative, and to help facilitate more robust community engagement around policing practices and priorities.
- **Body Cameras:** We have worked with police departments in New York City, Los Angeles, and Camden, New Jersey, to gather public views on the policies that should govern how body cameras are deployed. In Los Angeles, we focused specifically on the question of whether and when footage ought to be released to the public after a police shooting or other serious use of force incident. The policy that LAPD ultimately adopted became a model for a state-wide law that recently went into effect.
- **Cleveland:** We are working with the federal monitor in Cleveland to help implement the reforms required under the City's agreement with the U.S. Department of Justice. We have helped facilitate community-wide conversations around use of force and community policing, worked with the department to develop community policing and bias-free training, and assisted with various other aspects of the monitoring team's work.
- **Racial Disparities in Policing:** In partnership with the NYPD and Open Society Foundations, we recently co-hosted an event that brought together agency heads from across the City of New York, from education to housing to public health, in order to address the root causes of racial disparities in policing. The goal of the gathering was to identify the various steps that each agency could take in order to reduce racial disparities in the outcomes for which they are responsible—and which may contribute to racial disparities throughout the criminal justice system.

Initial Approach and Recommendations in Nashville

Because community voice is central to what we do, the Policing Project began its work by making several trips to Nashville in the summer and fall of 2017. We met with dozens of Nashville residents representing a variety of stakeholders, including representatives from various communities of color, faith-based and professional leaders, the legal community, and the agencies concerned with criminal justice. We also met with MNPD Chief Steve Anderson, members of the department's command staff, and representatives from both the Fraternal Order of Police and the Black Police Officer's Association. (A complete list of individuals and organizations is included as Appendix A.)

Over the course of several trips it became clear to us that traffic stops were of great concern. In particular, our visits clarified two things. First, the frustration in minority communities—well beyond individuals discussed in the Gideon's Army report—was acute. And second, there were many in the white community who were largely unaware of this, and were quite concerned at the stories they were hearing from their fellow residents from communities of color. As one prominent Nashvillian said quite emphatically, he had been “ignorant” and was “appalled.”

After hearing from all these individuals, we proposed a two-pronged approach: a thorough cost-benefit analysis of MNPD's traffic stop practices, and a broader community conversation about policing, led by a steering committee of Nashville residents. In the fall of 2017, we began working

with MNPB and a national team of social scientists on the data portion of our work, while continuing to work with the Mayor's office to put together a plan for the rest.

The change in administration—and the surrounding uncertainty about the City's broader agenda around police reform—put plans for a broader engagement on hold, but all agreed that we should continue with the data work. So, we did.

On July 26, 2018, an MNPB officer shot Daniel Hambrick (in the course of a traffic stop). That once again brought policing issues to the fore. At the invitation of Mayor Briley, we recommenced conversations with his office about what measures might be taken to promote front-end accountability in Nashville. Most recently, a referendum on the Community Oversight Board passed by a large margin. That Board is largely configured to conduct "back end" review of policing, but it also has front-end authority to issue policy recommendations to the Department and other criminal justice agencies.

At the conclusion of this Report we make Recommendations as to the steps we believe that Nashville should pursue to assure effective and equitable policing. Whatever else is true, we believe it is essential that the community and MNPB work together to "co-produce" public safety for all of Nashville. But first we turn to the results of the data work.

What We Did

With respect to traffic stops, we sought to answer four questions:

- **Are there racial disparities in traffic stops?**
- **If so, what explains the racial disparities?**
- **Are traffic stops an effective crime reduction tool?**
- **What are the social costs of these stops?**

In order to conduct this cost-benefit analysis, the Policing Project assembled a national team of social scientists. In addition to the four researchers affiliated with Stanford's Computational Policy Lab (SCPL), the team included a number of prominent researchers who advised on various aspects of the project, including Jack Glaser (U.C. Berkeley), Mark Cohen (Vanderbilt), Crystal Yang (Harvard), and Richard Carson (U.C. San Diego). Between them, the social scientists have extensive experience working with policing and criminal justice research. Several are renowned experts on cost-benefit analysis, and in particular on incorporating intangible social benefits and costs.

We also benefited greatly from the assistance of Robert Haas, who was formerly the police commissioner of Cambridge, Massachusetts, and Massachusetts' Executive of Public Safety. More recently, Bob Haas has been working with the Policing Project to pilot the Neighborhood Policing Initiative in Chicago, and also is working separately with MNPB to pilot a variety of crime reduction strategies as part of the national Public Safety Partnership.

Together with Bob Haas and our social science partners, we conducted two rounds of focus groups with MNPB commanders and officers to learn more about the department's strategy, and to better understand the patterns we were seeing. We joined officers on ride-alongs both to hear from officers directly and to learn more about how they record data and conduct stops. We also worked closely

with crime analysts at MNPDP to identify the data sets that we would work with, and to resolve various confidentiality concerns.

Throughout the Spring and Summer of 2018, Policing Project team members met weekly with the SCPL data team to work through the analysis and identify follow-up questions. The report that follows is the product of this work. Stanford's Computational Policy Lab prepared a more detailed technical analysis, which is included as Appendix B.

Traffic Stops in Nashville

The Metro Nashville Police Department (MNPDP) has for many years employed a strategy of making large numbers of traffic stops in high crime areas as a way to address crime and violence. The strategy is thought to work in one of two ways: (a) deterring crime in the area by establishing a visible officer presence, or (b) creating opportunities for officers to identify suspects or seize contraband. While on patrol, officers are instructed to be on the lookout for potential traffic violations and—after making a stop—to be on the lookout for signs of possible criminal activity including, if appropriate, asking additional questions or seeking permission to search the car. At the height of this strategy in 2012, MNPDP conducted nearly 450,000 stops. The number of stops has since gradually gone down.

In 2017, MNPDP conducted approximately 250,000 traffic stops—approximately 458 stops for every 1,000 driving-age residents. Of these, nearly half (45%) were for non-moving violations, which mostly consist of equipment or registration violations (e.g. broken tail lights, broken headlights, expired tags).

It is not uncommon for police departments to utilize stops (traffic and pedestrian) as a tool to fight crime and violence. What the SCPL team found, however, is that Nashville's per capita stop rate is considerably higher than in other cities of approximately the same size. Nashville makes more than twice the number of stops per capita than Raleigh or Charlotte, and more than five times the number in Austin and Columbus. See SCPL Report at p. 2.

Racial Disparity in Traffic Stops

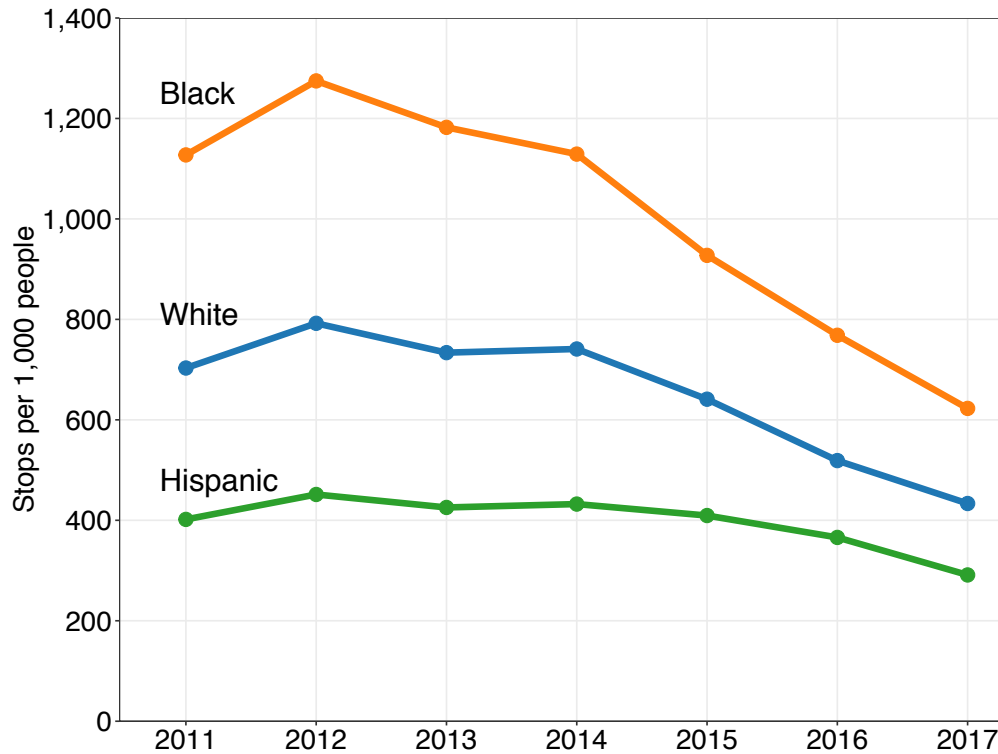
I. The Data on Disparity

Nashville's driving-age population is 58% white, 27% black, 9% Hispanic, and 6% other.

Over the course of many years, black drivers have been stopped at a higher rate than white drivers relative to their percentage of Nashville's population. As the overall number of stops has gone down over time, the racial gap has narrowed as well. Still, in 2017, the per capita stop rate was 44% higher for black drivers than for white drivers. What this means is that while MNPDP made approximately 433 stops for every 1,000 white residents of driving age, it made 623 stops for every 1,000 black residents of driving age.

Racial disparities are notably higher for non-moving violation stops than for moving violations. Thus, if one disaggregates the 44% figure into moving and non-moving violations, in 2017 the per capita stop rate for black drivers was 68% higher for non-moving violations—as compared to 24% for moving violations. For that reason—and because non-moving violation stops are arguably less important for traffic safety—the data team focused much of its analysis on non-moving violation stops.

Figure 1: Racial Disparity in All Traffic Stops



II. Understanding racial disparities

It is important to understand that the fact that black drivers are stopped at a higher rate than white drivers is not, in and of itself, evidence of racial *bias* or what is often referred to legally as “discrimination.” Racial disparities in policing may reflect a variety of factors, including where officers are deployed, the crimes that they are instructed to prioritize, as well as potential differences in rates of offending among different demographic groups. Still, racial disparities are concerning and so it is important to look for causes—first, to try to rule out intentional racial discrimination, but second, because disparities should be reduced if possible no matter what their causes.

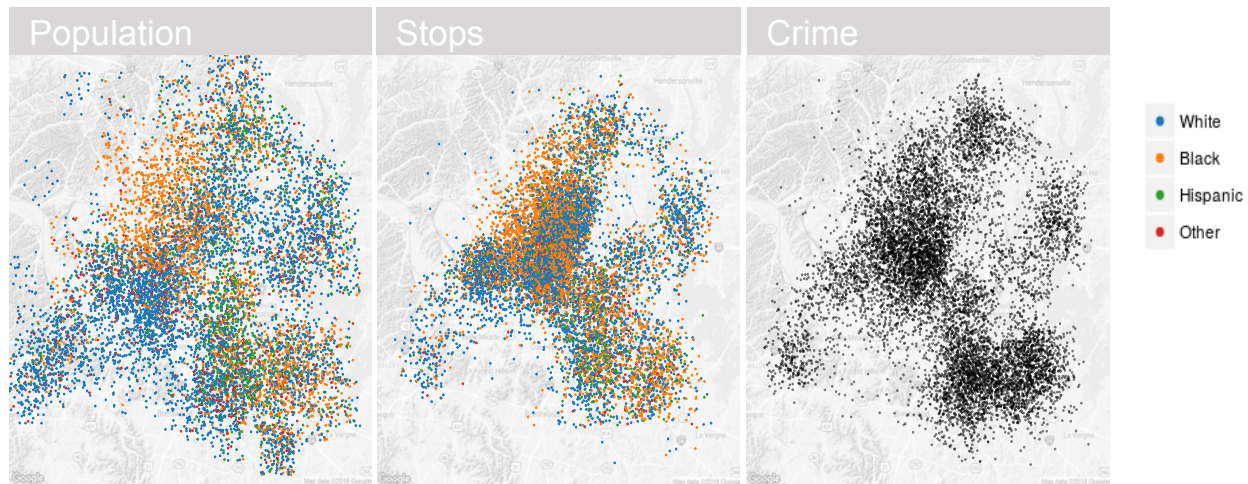
In response to the Gideon’s Army report, MNPDP argued that officers go where the crime is—and that the racial disparities in traffic stops are largely attributable to the fact that Nashville’s high crime neighborhoods tend to have larger minority populations.

The SCPL team examined this argument and found that:

- Nashville officers do make more non-moving violation stops in high crime neighborhoods, regardless of their racial composition. That is, stop rates in higher crime, predominantly white neighborhoods, are comparable to stop rates in higher crime, predominantly non-white neighborhoods. This is consistent with MNPDP’s explanation that officers go where the crime is.

- However, officer deployment patterns explain only part of the overall racial disparity in traffic stops. On average, within a neighborhood, black drivers are still 37% more likely than white drivers to be stopped for a non-moving violation.

Figure 2: Distribution of Residents, Stops, and Reported Crimes



The first map shows the population of Nashville by demographic group. The second map shows the distribution of non-moving violation stops, and the race or ethnicity of the person stopped. The third shows the distribution of reported crimes.

The question, then, is what explains these within-neighborhood disparities? The sorts of factors that may be in play here certainly include the possibility of either implicit or explicit biases on the part of officers. There is a large and growing literature about the impact of implicit racial biases in society, and policing is not immune from the biases that affect us all. But it is important to recognize some other possible causes, especially when it comes to solutions. For example, lower-income residents may drive older cars, or may lack the resources to get broken taillights or plate-lights repaired as quickly as other drivers. They also may be more likely to have expired tags. If lower-income residents tend to be disproportionately black, this could explain at least some of the remaining disparity. There also may be differences between the demographic distribution of residents in a particular neighborhood (which is what was used as the “baseline”), and the makeup of drivers actually on the road at any given time.

More work could, and perhaps should, be done to assess the precise cause of these disparities. If they were part of a crime-fighting strategy that was successful, it would be very important to do so. But that raises the question—to what extent are traffic stops, especially for non-moving violations, an important crime-fighting tool?

Assessing the Efficacy of Traffic Stops

Therefore, we next considered to what extent traffic stops are in fact an effective crime reduction tool. The theory, as we indicated at the outset, is that stops may act as a deterrent: when officers step up activity, would-be offenders decide it is too risky to try anything. Stops also may lead to arrests, taking would-be offenders off the street.

However, the SCPL team found that:

- Traffic stops do not appear to have a significant impact on long-term crime trends. As the number of traffic stops declined between 2012 and 2017, crime rates remained quite flat. See SCPL Report at Fig. 6, p. 6.
- Traffic stops also do not appear to have any effect on crime in the short-term. This was some of the SCPL team’s most sophisticated and important analysis. As officers increase the number of stops in a particular area, crime does not necessarily fall as a result. In some weeks, officers made an above average number of stops—and crime indeed went down. But sometimes crime went down without *any* change in the number of stops. And sometimes crime would go up despite the stops. On average, we simply did not find a relationship between stops and crime. See SCPL Report at pp. 6-7.
- Finally, non-moving violation stops rarely lead to an arrest, or to the recovery of drugs or weapons. For every 1,000 non-moving violation stops, just over 2% (or 21) resulted in an arrest, or the recovery of drugs or other contraband. An additional 61 stops (6.1%) resulted in a misdemeanor citation for a non-drug related charge.¹ The vast majority of these citations (89%) were for driving with a revoked or suspended license.²

This suggests that MNPDP could safely reduce the number of stops—and in doing so, reduce the overall racial disparities in stops as well.

Officer-Level Differences in Traffic Stop Practices

We also examined whether particular officers or units make a disproportionate number of stops.

Each of MNPDP’s eight precincts has patrol officers who respond to calls for service, and make stops and engage in other activities between calls. Each precinct also has 2-3 “flex” teams of 6 officers each. Flex officers typically do not respond to calls for service, and are expected by MNPDP to engage in various proactive activities, including making traffic stops.

During our focus groups, we learned that individual officers, supervisors, and district commanders are given a great deal of leeway to decide what strategies to pursue, including the degree to which they ought to rely on traffic stops. Some flex officers, for example, reported making few if any traffic stops in a given week, while others said they typically made eight or more stops each shift.

The SCPL team found that flex officers conduct about twice as many non-moving violation stops per officer. Whereas the average patrol officer makes 109 stops each year, the average flex officer makes 217. However, because there are far more patrol officers than flex officers, patrol officers still make 60% of all non-moving violation stops.

Consistent with the focus group discussions, the data team found that a small number of officers conduct a very large proportion of non-moving violation stops. The ten most active officers—which

¹ Under Tennessee law, a misdemeanor citation is considered a non-custodial “arrest.”

² The large number of citations for driving with a suspended license may reflect in part Tennessee’s longstanding practice of revoking the drivers’ licenses of individuals who were unable to pay traffic fines or court costs. A federal district court recently deemed this practice unconstitutional—and ordered the state to reinstate these licenses.

includes both flex and patrol officers—made approximately 9,399 stops (about 9% of stops).³ The most active 125 officers (17% of officers) made 50% of all stops.⁴

Social Costs

From the outset of our evaluation we have expressed interest in examining the social costs of traffic stops. Social costs are the costs that are felt by individuals subjected to a particular policing tactic, and by the communities of which they are apart. When it comes to traffic stops, those costs could include the lost time of the driver, psychological costs of an unwelcome encounter with the police, dignitary costs felt by those who perceived the stop as imposed for illegitimate racial reasons, and loss of trust in particular communities from the negative perceptions of the stops.

In the course of our work, we had many conversations with a diverse group of Nashvillians across many walks of life. In those conversations, we found ample evidence that frequent stops were having these effects, particularly among communities of color.

Valuing social costs precisely can be expensive. We believe this is important work, and it could be done in Nashville. However, there is a foundational rule in cost-benefit analysis: if there are no identifiable benefits in the first place, costs should be avoided altogether. As indicated, we have not found any crime-fighting benefits in MNPDP's strategy of proactive traffic stops.

Recap

To summarize, in 2017, black drivers in Nashville were 68% more likely to be stopped for a non-moving violation than were white drivers. A substantial portion, but certainly not all of, this disparity stems from the fact that MNPDP officers spend more of their time in high crime neighborhoods—and make more stops in these neighborhoods as well.

Yet, non-moving violation stops do not appear to have a discernible effect on either long-term or short-term crime rates. And they result in a relatively small number of arrests.

This suggests that if MNPDP's primary concern is crime reduction, it could reduce the number of equipment and registration stops, and direct officer resources to more productive strategies that could potentially lead to greater reductions in crime, while strengthening the relationship between MNPDP and the communities it serves.

We note that this is an important result, not only for Nashville, but for other communities as well. Police in many places rely heavily on stops as a crime-fighting tactic. Although the value of these stops may vary from locale to locale, our work suggests the use of such stops should be explored carefully, especially given that racial disparities frequently result from such stops.

Recommendations

Although considerable effort went into the traffic stop study, in the course of our work we had a chance to talk with many Nashvillians, from many walks of life, about policing and public safety. This includes members of the black and white communities, other communities of color and immigrant

³ Of these, 8 were flex officers and 2 were patrol officers.

⁴ Again, 46.5% of these were flex officers, and 53.5% were patrol officers. 19 of the officers served as both flex and patrol over the course of the year.

communities, key leadership in the criminal justice system, and members of MNPDP, both line officers and command staff.

We believe it appropriate to share a set of recommendations, not only about traffic stops, but other aspects of policing and public safety that were raised in these conversations, and about which we have expertise. These other recommendations relate to the work we were asked to do around both traffic stops and the issue of community-police relations.

I. Traffic Stops

Traffic stops impose obvious costs—even if we have not quantified them precisely—and seem to produce few crime reduction benefits. The question then arises, what should be done to rectify the racial disparities caused by these stops?

The first answer is that Nashville ought to recognize in some official way the burden that these racial disparities have imposed on communities of color in Nashville, particularly the African American community. This sort of recognition has proven important and effective throughout the country in opening up dialogue about next steps.

The second answer is to reduce the number of stops, as well as tracking, remaining conscious of, and working to eliminate as much as possible any disparity. That is true for reasons of racial justice, but also for reasons of overall public safety.

For many years, MNPDP has used traffic stops to pursue two goals at once: to promote traffic safety, and to address crime. Given that there do not appear to be any crime reduction benefits to stops, we encourage MNPDP to focus traffic enforcement efforts in areas where traffic safety is of particular concern—and to direct crime-reduction resources toward more successful crime-fighting strategies.

As noted above, relatively few officers perform a very high number of stops, which may facilitate bringing down the number of stops. Based on conversations with MNPDP, it appears that many of these officers are some of the department's most dedicated and high-performing officers—whose efforts may simply need to be directed toward other strategies.

In making this recommendation we want to emphasize that this change will not happen overnight and not without substantial effort and direction. As the high number of traffic stops shows, this has been one of MNPDP's core strategies for fighting crime for some time now. MNPDP will need to develop a set of alternative strategies, and its officers will need to be trained accordingly.

We note, however, that MNPDP may face some difficulty in adopting these new strategies and likely will require outside assistance. Because traffic stops have been a core MNPDP strategy for so long, there is not necessarily the expertise or knowledge base within the department to transition to new strategies. Throughout our conversations with MNPDP, officials have been willing to consider alternatives, but are not certain what those alternatives are. In addition, Nashville uses a command structure that gives a great deal of discretion to precinct commanders to pursue their own enforcement strategies. Although discretion may have its benefits, for example in terms of fostering individual initiative, the amount of such discretion in Nashville is uncommon in our experience and may hinder system-wide change.

As of the time of this report, we are engaged in discussion with MNPDP leadership, including the precinct commanders, about what a change in deployment might look like, and alternative strategies

they might pursue. In particular, Robert Haas, who has a great deal of experience with policing models, and also is working with MNPDP through the U.S. Department of Justice violence reduction efforts, has been consulting on our behalf with MNPDP. Those conversations are ongoing.

II. Neighborhood Policing

The most promising strategy is likely to move toward a model of neighborhood policing in communities suffering from high crime. Here we explain what that might look like, as well as challenges of implementation. MNPDP has expressed interest in piloting the model in one or more precincts.

Neighborhood policing is based on the philosophy that officers ought to be familiar with and engaged with people in the neighborhood they police, and work collaboratively with those residents to achieve public safety in a just and effective way.

The theoretical basis for this sort of policing is that violence-torn or crime-ridden neighborhoods in particular cannot be made safe unless the police and the community work together to do so. All over the country we hear the same thing: there is crime, or there are homicides, and the community does not “cooperate” with the police. Yet, what city police chiefs have come to recognize is that relations in those communities are sundered by heavy enforcement efforts: stop-and frisk, aggressive enforcement of low-level offenses, the imposition of fines and fees, and high levels of incarceration. People in those communities are reluctant to interact with the police.

The alternative is a form of policing, which we specify in greater detail below, in which the police actively work to partner with communities to address problems of crime and blight.

In talking about neighborhood policing, we want to distinguish it from community policing, about which much is said in the public sphere. Beginning in the late 1970s, and continuing to the present, many have recommended community policing as an alternative to aggressive enforcement and random patrols. The difficulty, as our extensive research shows, is that the phrase community policing came to mean so many different things to so many different people, that it lost all coherent meaning. In many departments, it involved little more than assigning a couple of officers in various locales to attend community meetings, while the rest of the department went on with the “real” business of policing. Another difficulty with community policing is that a typical meeting held by police involves the police talking at a group of people, largely those who already have good relationships with the police. There is very little engagement of a meaningful sort with the community at large and in particular with members of heavily-policed communities.

The evolving concept of neighborhood policing seeks to build on the sentiments that drove a push toward community policing, but to take it seriously as a holistic form of policing that should extend to every aspect of a department’s operations. Although various communities are experimenting with aspects of neighborhood policing, to date the most comprehensive form of it is in New York City. The NYPD has deployed an intensive neighborhood policing model with great success. Under the NYPD’s plan, officers are expected to stay within their assigned sectors or beats throughout the day. In order to enable them to get to know residents, officers are given substantial time “off the radio” to engage with their communities. Any overflow in calls for service is handled by a small number of rapid response cars. Meanwhile, neighborhood coordinating officers work closely with community groups to identify community concerns and develop response strategies.

Each city of course needs its own tailored form of Neighborhood Policing. We are in the process of implementing such a model in pilot districts in Chicago. To deal with the huge break in community trust in that city, we are incorporating a very heavy community engagement component, in which community members are given real voice in how they are policed. In a city like Nashville, this approach may make more sense in some neighborhoods or communities than in others. But we believe that in terms of reducing crime and developing healthy police-community relations, it ought to be considered seriously.

III. Strategic Vision

Implementing Neighborhood Policing, or anything like it, requires addressing a host of issues, from resources to the style of policing best suited to a community. We will address some of these below, but it brings us to an umbrella issue that needs to be addressed.

It is no secret to anyone that Nashville is a fast-growing metropolitan area with a host of concerns from gentrification to displacement of residents to a booming city center. This sort of transformation has both good and ill effects. And one key area of focus necessarily must be public safety. Indeed, perhaps public safety should be the initial focus.

Yet, it is our sense that although MNPDP has taken a number of steps to respond to these trends, there has not been an opportunity to engage in strategic, holistic thinking around public safety in a changing Nashville.

We recommend that the City consider initiating this conversation. It is an essential step in developing leadership in the department, approaches to public safety, and addressing resource concerns.

This sort of strategic planning could be done in any of a number of ways, but what is certain is that it should bring a variety of city stakeholders into dialogue with MNPDP about what the future of public safety in Nashville should look like.

IV. Front End Accountability

We believe a strong system of front-end accountability around policing leads to safer communities, better relations between the police and communities, greater legitimacy of policing, and better outcomes. There are a number of steps we think MNPDP and Nashville should take in this regard. We have discussed several of these with MNPDP and there is a willingness to consider or pursue them.

First, we believe MNPDP's policy manual should be put on the web so that anyone can see its policies. Many departments throughout the country do this, and we have given assistance to others. There are undoubtedly some policies—such as how active-shooter situations are handled—that should not be public. But that is not true of most of the policies that govern policing.

Second, we think it would be useful to conduct a policy review of some of the critical MNPDP policies, especially around Use of Force and aspects of stops and searches such as Consent Searches. The goal is to make sure MNPDP is adhering to best practices in these areas.

Similarly, we believe it would be valuable to review some of MNPDP's training around things like Use of Force. We have not done so and express no views whatsoever, but given community concern on these issues such a review would make sense. It also might be profitable to examine other areas of training like Procedural Justice or community engagement.

We have consistently heard disagreement about the functioning of the Office of Professional Accountability, including wildly different estimates of the “sustain” rate of complaints. We would point out this is a complicated issue. Even if sustain rates are low, this could be for very different reasons: officers could be behaving very well, or OPA may not be sufficiently diligent. We have no basis for an opinion one way or another, but public faith in the back-end system of police discipline is essential. It could well be that the creation of the COB will address this sufficiently, but one item to consider is an audit of OPA and a report to the community so that there is a common set of facts from which to start.

Nashville is transitioning to body cameras, an area in which we have considerable expertise. If there is one lesson we have learned, it is that the substantial money spent on BWCs is squandered without sound policy in place that deals with, among other things, release of the video to the public, or to individuals who wish to file a complaint.

Appendix A: Partial List of Individuals with Whom Policing Project Has Met or Spoken⁵

Educational & Religious Institution Affiliated

Dr. Emilie Townes (Vanderbilt Divinity School)
Amy Steele (Vanderbilt Divinity School)
Herbert Marbury (Vanderbilt Divinity School)
Candice Ninn (Vanderbilt Divinity School)
A. Dexter Samuels (Meharry Medical College)
Aerial Ellis (Lipscomb University)
Sekou Franklin (Middle Tennessee State University; Community Oversight Now)
Brodrick Thomas (Trevecca Nazarene)
David Tucker (American Baptist College)
Pastor Darrell Drumwright (Temple Church)
Bishop Joseph Walker (Mt. Zion Baptist Church)
Pastor Breonus Mitchell (Greater Grace Temple Community Church; Mount Gilead Missionary Baptist Church)
Rev. Martin Espinoza (Ray of Hope Community Church)
Harold Love (International Ministerial Fellowship, Lee Chapel AME Church)

Advocacy Organization Affiliated

Heidi Weinberg (ACLU)
Ludye Wallace (NAACP)
Sharon Roberson (YWCA)
Hanna Cornfield (YWCA)
Jessica Guzman (YWCA)
Bishop Campbell (Gentlemen and not Gangsters)
Gerald Brown (Nashville Dismas House)
Marsha Edwards (Martha O'Bryan Center)
Walter Searcy (NOAH)
Martin Hodge (NOAH)
Joe Engle (NOAH)
Kyle Mothershead (NOAH)
Rev. W. Antoni Sinkfield (NOAH)
Rev. Ed Thompson (NOAH)
Eric Brown (Forward Nashville)
Fallon Wilson (Black in Tech Nashville)
Jurnell Cockhren (Black in Tech Nashville)
Eric Brown (Children's Defense Fund Nashville Team)
Rashed Fakhruddin (Islamic Center of Nashville)
Kasar Abdulla (Tennessee Immigrant and Refugee Rights Coalition) |
Rasheedat Fetuga (Gideon's Army; Community Oversight Now)
Theeda Murphy (Community Oversight Now)
Sheila Clemmons Lee and Mark T. Lee (Justice for Jocques Coalition)

⁵ This list of individuals has been reconstructed from Policing Project staff notes, taken during Nashville based meetings, and may not be comprehensive.

Ethan Link (Laborers' International Union of North America (LIUNA))

Government Affiliated

Reggie Miller (Black Police Officers Association)
James Smallwood (Fraternal Order of Police)
Jimmy Gafford (Fraternal Order of Police)
Bob Nash (Fraternal Order of Police)
Brenda Wynn (Davidson County Clerk)
Jocelyn Stevenson (Tennessee Bar Association)
Judge Sheila Calloway (Davidson County Juvenile Court Judge)
Mel Fowler Green (HRC)
Dr. Phyllis Hildreth (HRC)
Dawn Deaner (MPDO)
Martesha Johnson (MPDO)
Glen Funk (DA)
Mary Carolyn Roberts (City Council)
Bob Mendes (City Council)
Scott Davis (City Council)
Hershell Warren (Mayor's Office, Senior Advisor)

Miscellaneous Affiliations

Charles Bone (Bone McAllester Norton PLLC)
Wallace Dietz (Bassy Berry & Sims)
Byron Trauger (Trauger & Tuke)
Steven A. Riley (Riley Warnock & Jacobson)
Jarrett Strickland (UBS Financial)
Ben Rechter (President of Rogers Group Investments, Inc.)
Amy Adam Strunk (Tennessee Titans)
Fina Tuggle (Tennessee Titans)
Burke NiHill (Tennessee Titans)
Demetria Kalodimos (WSMV)
Itzel Gonzalez Patino
Narnelle Cochran
Avi Poster (Community Organizer)
Paul Galloway (Executive Director of The American Muslim Advocacy Center)

**Appendix B: Report Prepared by the Stanford
Computational Policy Lab**

An Analysis of the Metropolitan Nashville Police Department's Traffic Stop Practices

Alex Chohlas-Wood^{*}, Sharad Goel[†], Amy Shoemaker[‡] and Ravi Shroff[§]

Stanford Computational Policy Lab
November 19, 2018

EXECUTIVE SUMMARY

For the last several years, Nashville has made considerably more traffic stops per capita than the national average, with stops disproportionately involving black drivers. Here we examine the Metropolitan Nashville Police Department's (MNP) traffic stop practices in 2017, drawing on an extensive dataset of records provided by the department. Black drivers were stopped 44% more often per driving-age resident when compared to white drivers; this gap is particularly pronounced among stops for non-moving violations (68%), such as broken tail lights and expired registration tags. These disparities stem, in part, from a strategy that concentrates traffic stops in high-crime areas. In particular, after controlling for location, disparities among non-moving violation stops drop from 68% to 37%. This policy of concentrating stops in high-crime areas may be predicated on the belief that traffic stops are an effective tactic for reducing burglaries, robberies, and other criminal activity. We find, however, no immediate or long-term impact of traffic stops on serious crime. We further find that only 1.6% of stops result in a custodial arrest—often for license violations or drugs. These findings suggest that the MNP could reduce traffic stops without an associated rise in serious crime, while bringing Nashville's traffic stop rates more in line with similar cities around the country. In particular, the MNP could substantially reduce racial disparities by curtailing stops for non-moving violations. Notably, a small proportion of active MNP officers conduct the majority of non-moving violation stops, potentially facilitating any effort to reduce such stops.

Commissioned by the Metropolitan Government of Nashville and Davidson County, Office of the Mayor.

Like all police departments, the Metropolitan Nashville Police Department (MNP) uses a wide range of enforcement tools to ensure public safety. Traffic stops are one such tool. These interactions typically involve an officer pulling over a motorist, issuing a warning or citation, and—more rarely—conducting a search for contraband or making a custodial arrest. The prevalence and nature of traffic stops vary widely across American cities, but they are generally the most common way police departments initiate contact with the public [6].

In the past several years, the MNP made more traffic stops per capita than many similarly sized American cities—in some cases, over ten times as many (Figure 1). Local community groups have also raised concerns that the MNP's traffic stop practices disproportionately impact black drivers. In 2016, Gideon's Army published a report, "Driving While Black," documenting racial disparities in MNP traffic stops between 2011 and 2015 [4]. Notably, there were more stops of black drivers per year than the number of black driving-age residents in Nashville. The MNP, in response, argued that such disparities resulted from higher deployment to areas with greater incidence of crime and requests for police services.

Our goals in this report are three-fold. First, we aim to quantify racial disparities in the MNP's current traffic stop practices. In particular, we focus on stops in 2017, a year in which the MNP's traffic stop rates had dropped by almost 50% from their peak during the years covered by the Gideon's Army report. Second, we seek to assess the extent to which any observed racial disparities may be driven by concerns for public safety. Finally, and most importantly, we strive to provide concrete, data-driven insights to improve both the equity and efficacy of the MNP's policing strategies. Our analysis builds on a long line of empirical research examining traffic stops [2, 3, 8, 13–20, 22].

To conduct our analysis, we used several datasets provided to us by the MNP, including traffic stop records and crime reports. We also incorporated information from the U.S. Census to construct population benchmarks for Nashville neighborhoods. Though we focus on 2017, our dataset covers traffic stops occurring between 2011 and 2017, permitting comparisons with historical trends.

Last year, the MNP conducted approximately 246,000 traffic stops, or roughly one stop for every two driving-age residents. We start by comparing stop rates for black motorists and non-Hispanic white motorists. We focus on these two groups, which comprise about 85% of Nashville's population, in part for ease of exposition and

^{*}Deputy Director at the Stanford Computational Policy Lab; [†]Assistant Professor at Stanford University, Department of Management Science & Engineering, and, by courtesy, Computer Science, Sociology, and Stanford Law School; [‡]Data Scientist at the Stanford Computational Policy Lab; [§]Assistant Professor at New York University, Department of Applied Statistics, Social Science, and Humanities

in part to mitigate statistical difficulties with analyzing groups that comprise a smaller share of the local population.^[1] We find that the stop rate for black drivers in Nashville in 2017 was 44% higher than the stop rate for white drivers, where stop rates are computed relative to the driving-age population. Further, certain types of stops exhibited far greater disparities than others. Among moving violations (e.g., speeding or reckless driving), the stop rate for black drivers was 24% higher than white drivers; in contrast, among non-moving violations (e.g., broken tail lights or expired registration tags), the stop rate for black drivers was 68% higher than for white drivers. Moreover, stops for non-moving violations were relatively common, comprising 45% of all traffic stops in Nashville in 2017.

These differences in stop rates are striking. It bears emphasis, though, that such differences may result from a variety of complex factors, and are not necessarily the product of racial bias [1, 5, 9, 13, 19]. In particular, we find that the observed disparities are in part attributable to deployment patterns, particularly the MNPDP's concentration of stops in high-crime neighborhoods, which, in Nashville, tend to have disproportionately large minority populations.

One reason—and arguably the primary rationale—for carrying out large numbers of traffic stops in high-crime areas is a belief that this enforcement strategy has broader benefits for public safety. One might posit that traffic stops deter future crime or lead to apprehending those responsible for past incidents. Though plausible, we find little evidence of such a connection between traffic stops and serious crime levels in Nashville. Over the 2011–2017 time period, crime levels for Part I offenses^[2] remained steady despite substantial reductions in stop rates over the same period. Further, week-to-week changes in area-specific stop rates were uncorrelated with changes in local crime levels.

Traffic stops might also benefit public safety by facilitating the arrest of those individuals charged for past crimes but who may have been difficult to otherwise track down. We find, however, that only 1.6% of traffic stops lead to a custodial arrest, often for license violations or drug possession. An additional 5.8% of traffic stops end in a misdemeanor citation (resulting in a non-custodial arrest), typically for driving without a valid license.

These findings suggest that the MNPDP could curtail traffic stops without increasing serious crime. Given the substantial disparities in non-moving violations, one might first focus on reducing these stops. In particular, we note that a 90% reduction in non-moving violation stops would bring Nashville more in line with per capita traffic stop rates in similar cities across the U.S. (Figure 1), and we estimate this change would reduce stop rate disparities between black and white drivers from 44% to 28%. This reduction in proactive policing would be sizable, though not unprecedented. For example, the New York Police Department reduced pedestrian stops from nearly 700,000 in 2011 to 11,000 in 2017, a reduction of

^[1]In 2017, the driving-age population in Nashville was 58% white, 27% black, 9% Hispanic, and 6% Asian and other groups.

^[2]Part I offenses are murder, rape, robbery, assault, burglary, larceny, and motor vehicle theft.

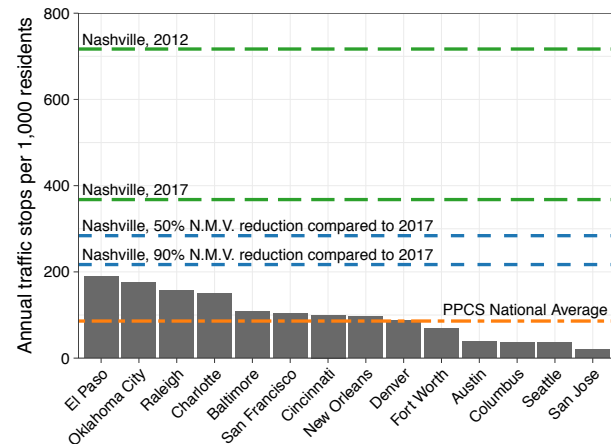


Figure 1: Per capita traffic stop rates in Nashville compared with the national average and activity in other American cities between approximately 2011–2016.^[4] This figure is intended for approximate comparison, not to suggest optimal levels of policing. Traffic stop rates for comparison cities were calculated using data compiled by the Stanford Open Policing Project (OPP). All OPP cities with populations between approximately 500,000 and 1 million were included for comparison. Cincinnati, New Orleans, and Raleigh have populations under 500,000, but were added for additional context. Green reference lines display historical stop rates for Nashville, blue lines display stop rates for hypothetical reductions in non-moving violation stops, and the orange line displays the 2015 Police–Public Contact Survey (PPCS) national average [6].

more than 95%^[3] with no associated increase in crime. Further, the MNPDP itself has nearly halved its use of traffic stops over the last several years, while crime rates have held steady.

Such a reduction may be facilitated by the fact that a relatively small set of officers carry out the bulk of non-moving violation stops, allowing the MNPDP to work directly with that group to redirect enforcement activity. For example, 50% of these stops were conducted by 125 individuals, or 17% of all officers who conducted at least one traffic stop in our observation period. It is unclear why stops are concentrated among such a relatively small group. We note, however, that officers in many jurisdictions are given considerable discretion to enforce traffic laws as they see fit, which may in turn result in the observed pattern.

Background

Police departments may conduct traffic stops for many reasons, including traffic safety, crime reduction, and public engagement and education. Traffic stops and traffic

^[3]<https://www.nyclu.org/en/stop-and-frisk-data>

^[4]Several cities in this chart do not have data over the entire 2011–2016 period. In addition, some cities only share data on stops that ended with a citation. As a result, strict comparisons should be avoided; this chart is intended to demonstrate the notable difference between Nashville traffic stop rates and other proxies for what could be considered typical behavior.

safety have a clear connection, given that certain driving behaviors (e.g., speeding or DUI) directly threaten the safety of motorists and pedestrians. Conducting traffic stops may therefore increase compliance with laws designed to minimize the risk of serious or fatal traffic collisions. Some departments also consider traffic stops to be an effective tool in fighting crime. Under this premise, a traffic stop may directly impede the commission of a crime in progress; less directly, the presence of officers may discourage criminal activity in the areas being patrolled. Traffic stops may also impact crime levels through the discovery of people with outstanding arrest warrants, or by recovering weapons or other contraband. Furthermore, officers may also conduct stops to make contact with members of the public and remind them of traffic laws, inform them about policing programs, or provide educational materials. Finally, we note that some jurisdictions rely on minor infractions like traffic stops to generate revenue [7], a controversial practice that has recently come under scrutiny. Regardless of these broader policy aims, individual officers may simply be enforcing traffic or criminal codes without explicit attention to longer-term objectives.

Government practices which disproportionately burden (or benefit) one racial group in comparison to another are often undesirable, but such practices may be justified by legitimate policy considerations. In the case of traffic stops, it is theoretically possible that such activity has a net benefit for drivers themselves, by deterring unsafe behavior on the road, or by acting as an educational and community relations strategy for police officers to engage with the public. In the specific case of stops for non-moving violations, arguably the primary objective is crime suppression and detection, as the benefits for traffic safety are likely attenuated. Despite such potential benefits, research has shown that police stops also impose a substantial burden on residents. Police stop practices may create stress for stopped individuals, result in fines and fees which are difficult for some residents to pay, and threaten police-community relations [10, 21]. As police rely on residents to report crime and cooperate with investigators, any erosion of trust between residents and law enforcement is a particular concern.

Data

Our analysis primarily used three datasets provided by the MNPDP, restricted to 2017 unless otherwise noted. Traffic stop records were used in every part of the study. We used arrest and crime incident records to gauge the efficacy of traffic stop enforcement. We also used shapefiles of MNPDP geographies, along with publicly available data from the U.S. Census, when calculating per capita stop rates by race and location.

Traffic stop records were provided by the MNPDP for the period 2011–2017, during which MNPDP conducted 2.57 million traffic stops. However, as noted previously, traffic stops in Nashville have seen a marked decline since their peak in 2012: the MNPDP conducted almost 450,000 traffic stops that year, but fewer than 250,000 stops in 2017. The traffic stop dataset includes many relevant attributes, including the date and time of the stop; the reason for the stop (chosen from among several standard-

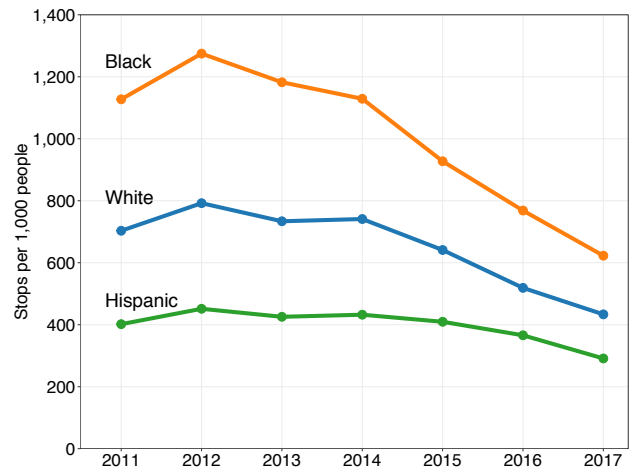


Figure 2: While stop rates (for all types of traffic stops) of both black and white drivers have been decreasing since 2012, the stop rate for black drivers has remained consistently higher than the stop rate for white or Hispanic drivers.

ized responses, described below); the zone and reporting area of the stop (two MNPDP-specific geographies); the race of the stopped driver; information about the officer who conducted the stop; whether weapons or other contraband were found, a custodial arrest was made, or a misdemeanor citation was issued; and narrative details about the incident.

Almost all traffic stops in 2017 were categorized with one of four stop reasons. Moving violations were the most common, constituting 51% of all traffic stops. These violations include illegal driving behavior such as speeding, talking on a cellphone while driving, or reckless driving. The next most common categories were equipment violations (27%), registration violations (9%), and safety violations (9%), comprising 45% in aggregate. A manual review of the narrative details for 100 records marked as safety violation stops found that they most often involved equipment violations (like broken headlights or tail lights).^[5] Throughout this report, we refer to stops for these latter three reasons—equipment, safety, and registration violations—as *non-moving violation stops*. The remaining 4% of stops are marked with other stop reasons, including investigatory stops, seatbelt violations, and child restraint violations. We note that regardless of the type of stop, officers may issue a verbal or written warning instead of a citation. In Nashville, warnings are a frequent occurrence—in 2017, roughly three out of every four traffic stops ended in a warning alone.

We use the MNPDP’s incident-record dataset to investigate the relationship between reported crime and the enforcement of traffic violations. The MNPDP receives over 80,000 incident reports annually, with over 100,000 reported crimes, for a total of approximately 725,000 reported crimes between 2011 and 2017.^[6] These records

^[5]We note that the narrative details of all other types of stops were more closely aligned with their marked reasons.

^[6]These figures exclude non-crime incidents, which MNPDP marks as “matter of record.”

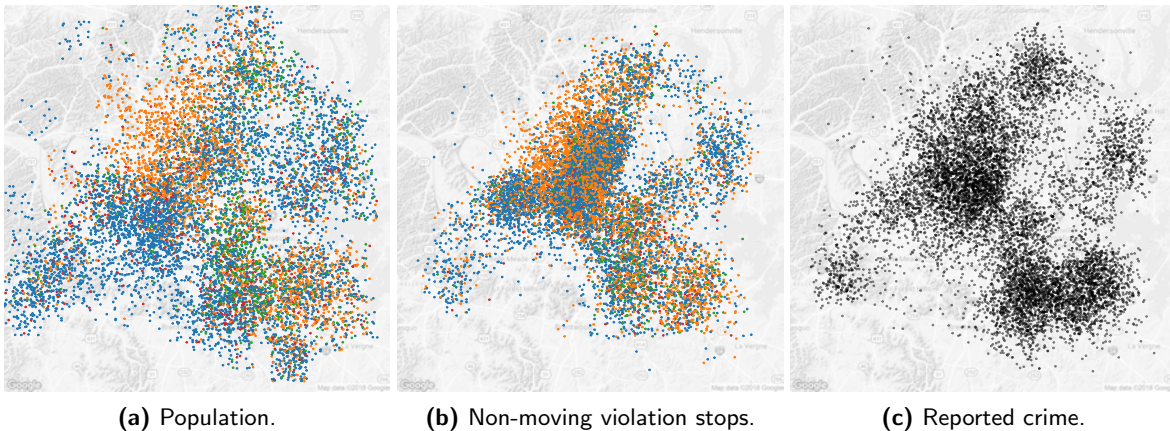


Figure 3: The distribution of Nashville's residential driving-age population (3a) and locations of non-moving violation stops (3b), colored by race (white, black, Hispanic, and other). Non-moving violation stops are concentrated in neighborhoods where reported crimes (3c) are the most dense, which, in Nashville, also have disproportionately large minority populations.

contain a date and time; a reporting area, marking the location of the alleged crime; and the Federal Bureau of Investigation's National Incident-Based Reporting System categorization. In the case of drug-related incidents, we also have drug type and quantity.

Finally, we combine MNPDP shapefiles with public U.S. Census records to generate population benchmarks for each MNPDP geographic unit. The MNPDP uses three geographic divisions of increasing resolution: precincts (8), zones (65), and reporting areas (2,003). We translated American Community Survey (ACS) estimates^[7] to MNPDP geographies by distributing population from each block group proportionally according to the area of each MNPDP geography that overlaps. To calculate per capita stop rates, we then compare stop counts in each geography with the driving-age residential population recorded by the Census in that area.^[8]

Racial disparities in stop rates

Since 2012, the per capita traffic stop rate has decreased substantially for both black and white drivers. However, the stop rate for black drivers has been consistently higher than for white drivers across all years (Figure 2).^[9] In 2012, the stop rate disparity was 61% (1,275 stops per 1,000 black driving-age residents vs. 792 stops

per 1,000 white driving-age residents), and this disparity dropped to 44% by 2017 (623 vs. 433 stops per 1,000). These stop rate disparities are particularly pronounced for non-moving violation stops, though they have also been declining over time. Among stops for non-moving violations, the disparity dropped from 82% in 2012 (578 vs. 317 stops per 1,000) to 68% (309 vs. 184 stops per 1,000) in 2017.

Such disparities may arise from a variety of factors, including a deployment strategy that concentrates officers in high-crime areas. We next examine this possibility in several different ways. Given the substantial disparities associated with stops for non-moving violations, we focus this analysis on that subset, though we note that qualitatively similar patterns hold for the full set of stops.

First, we visually investigate the geographic distribution of residents and non-moving violation stops, disaggregated by race. As shown in Figures 3a and 3b, non-moving violation stops occur largely in predominantly black neighborhoods. In particular, there are relatively few such stops in the predominantly white neighborhoods on the southwestern side of Nashville. Figure 3c further shows that the geographic distribution of non-moving violation stops is quite similar to the geographic distribution of reported crimes throughout the city. These maps thus provide some indication that the racial disparities in non-moving violation stops are at least partly attributable to such stops being made in high-crime areas—which, in Nashville, tend to be predominantly black.

To more rigorously quantify this pattern, we next compare non-moving violation stop rates in predominantly white and predominantly non-white zones, controlling for reported Part I crime. As shown in Figure 4, we see stop rates and crime rates are positively correlated, meaning that officers are making more stops in zones with higher crime rates. Also, among zones with similar crime rates,

^[7]Due to data availability, we use ACS block-group estimates for 2013–2016. When analyzing 2011 and 2012 traffic stop data, we benchmark to 2013 estimates; we similarly use 2016 ACS estimates as a benchmark for the 2017 traffic stop data.

^[8]To our knowledge, driving-age population estimates by race are not available at the block-group level. We accordingly estimate these figures as follows: for each block group, we compute the fraction of driving-age residents, and scale the population of each race group by that fraction. Citywide estimates are computed by aggregating these block-group level estimates. We note that these driving-age benchmarks are only a proxy for the number of drivers, and do not account for daytime populations, or the amount of time drivers spend on the road. In rare cases, we exclude extreme instances of areas with high daytime populations as outliers.

^[9]Throughout this period, we find lower stop rates for Hispanic drivers, consistent with a national analysis of police stops by Pierson et al. [13], and with results from the Police-Public Contact

Survey (PPCS), which is based on a nationally representative sample of approximately 50,000 people who report having been recently stopped by the police [6, 11].

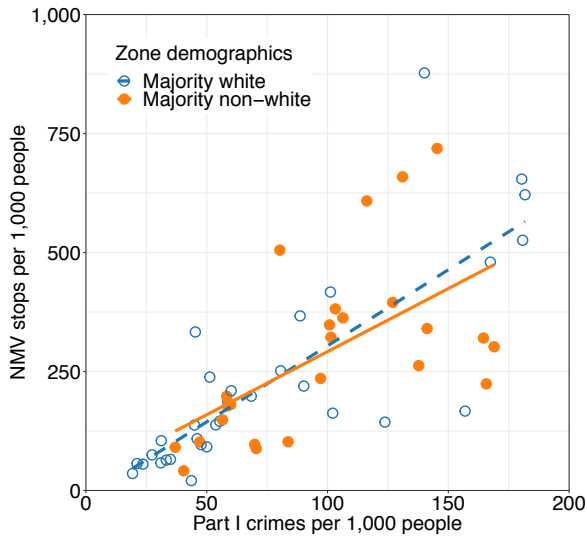


Figure 4: Per capita stops for non-moving violations (NMV) vs. per capita Part I crimes for the year 2017, by police zone. Each circle represents a police zone, colored by whether the zone population is majority white (open circles, dashed line), or majority non-white (shaded circles, solid line). Zones with similar levels of reported crime have similar stop rates, regardless of the zones' racial compositions.

stop rates in predominately white zones are similar to stop rates in predominately non-white zones. It thus appears that stops are concentrated in neighborhoods where crimes are most frequently reported, regardless of the demographic composition of the zone.

We add quantitative detail to this result by fitting the following Poisson regression model:

$$s_g = \text{Poisson} \left(p_g \cdot e^{\mu + \alpha \log(c_g) + \beta r_g} \right),$$

where s_g is the stop count in zone g , p_g is the number of driving-age residents in zone g , c_g is the number of crimes per capita in zone g , and r_g is the racial composition (proportion non-white) of zone g . Under this model, a positive value of β would indicate that zones with predominately minority populations were being stopped at higher rates than predominately white zones with similar crime rates. We find, however, that β is not statistically significantly different from 0 ($\hat{\beta} = -0.4$, 95% CI: (-1.1, 0.4)).^[10] That is, we do not find statistically significant evidence that predominately white and predominately black zones are differentially policed after adjusting for reported crime.^[11]

^[10] Confidence intervals for Poisson regression in this study use a dispersion parameter that allows variance to scale proportional to the mean, accounting for overdispersion.

^[11] We also fit this model restricting to zones with similar crime profiles. Specifically, for each predominately non-white zone, we selected its nearest-neighbor, matching on reported Part I crime rate, using the MatchIt package in R. Under this matched subset, $\hat{\beta} = -0.5$ with CI (-1.5, 0.4), in line with the model fit on all zones.

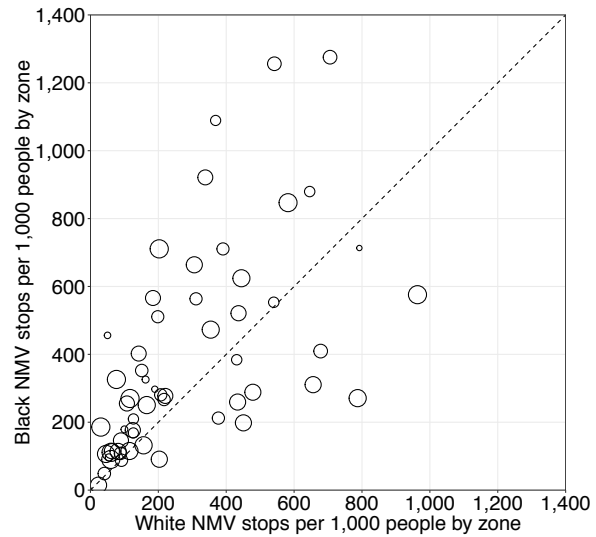


Figure 5: Black versus white per capita stops for non-moving violations (NMV). Each circle represents a police zone, sized by number of stops (black and white) made in each zone in 2017. More points lie above the reference line than below, indicating that within-location stop rates are higher for black drivers than for white drivers.

Instead of looking at patterns across zones, we can also look at patterns within zones. Figure 5 shows that in the majority of zones, the per capita non-moving violation stop rate for black drivers is higher than for white drivers. This visual pattern is corroborated with a statistical model that estimates zone-level disparities:

$$s_{r,g} \sim \text{Poisson} \left(p_{r,g} \cdot e^{\alpha_r + \beta_g} \right),$$

where $s_{r,g}$ is the stop count of drivers of race r in zone g , and $p_{r,g}$ is the driving-age population of race r in zone g . We include coefficients for each race group, denoted by α_r , and for each zone, denoted by β_g . Comparing the coefficients α_{white} and α_{black} , we find that after controlling for location at the zone-level, the non-moving violation stop rate for black drivers is 37% higher (95% CI: (18%, 59%)) than for white drivers.^{[12][13]}

In summary, our analysis of stop rate disparities suggests three high-level trends. First, though racial disparities have been declining over the last several years, black drivers are still stopped more often than white drivers, and this gap is particularly large for the subset of stops for non-moving violations. Second, this pattern is in part driven by the concentration of stops in high-crime neighborhoods, with such activity uncorrelated with zone-level

^[12] Comparing the coefficients α_{white} and α_{hispanic} , we find that after controlling for location at the zone-level, the non-moving violation stop rate for Hispanic drivers is 40% lower (95% CI: (55%, 22%)).

^[13] Using moving violation stops instead of non-moving violation stops, we found that black-white stop rate disparities for moving violations exhibit a small—but not statistically significant—reduction, from 24% to 18% (95% CI: (0%, 41%)).

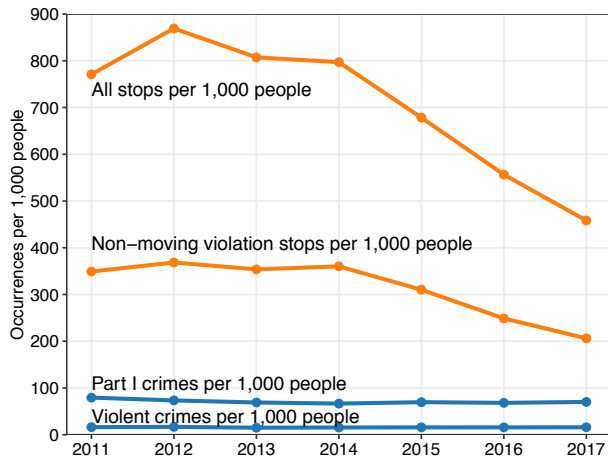


Figure 6: This time series of annual stops and crimes per capita suggests the absence of a long-term connection between traffic stops and crime levels. MNPD substantially reduced traffic stops over the second half of the seven year period without any substantial rise in crime.

demographics after controlling for crime. Finally, such an enforcement pattern does not account for all the observed disparities. In particular, black drivers are stopped more often than white drivers even within most zones. It is unclear what may be driving this remaining disparity. At least in theory, it may arise from differences in violation rates (e.g., if black drivers are disproportionately more likely to have broken tail lights), differences in enforcement (e.g., implicit bias), heterogeneity in population or crime within zone, or some combination of these factors.

Stop efficacy

As described above, the observed racial disparities in stop rates appear to result in part from the concentration of non-moving violation stops in high-crime areas—in line with the MNPD’s explanation. However, unless there are discernible benefits of such a policing strategy, we would still characterize these disparities as problematic. Here we examine one potential benefit—and ostensibly the primary rationale—for such policing practices: that traffic stops are an effective means for reducing more serious crime.

We analyze the efficacy of these stops by measuring two different outcomes: crime levels, and rates of custodial arrest, misdemeanor citation, and contraband recovery. Traffic stops may influence crime levels through direct or indirect mechanisms. For example, traffic stops could directly impede crime by catching criminals (e.g., burglars) driving to or from from the scene of a crime. On the other hand, traffic stops may also indirectly discourage crime in a neighborhood through the active and visible presence of an attentive officer in the area. Some traffic stops will also end with a custodial arrest, a misdemeanor citation, or the recovery of contraband or weapons, potentially preventing future criminal activity or apprehending those involved in past crimes.

Effects on crime. If changes in traffic stop enforcement are connected to changes in crime, one would

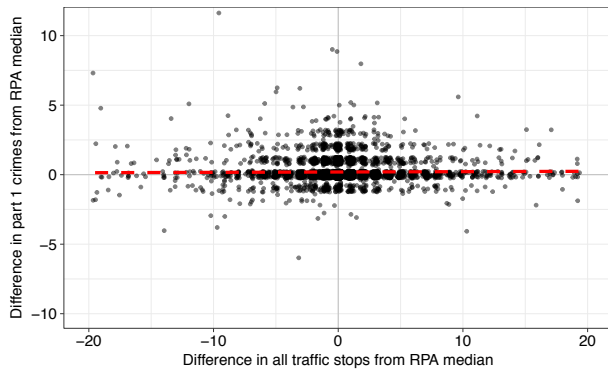
expect to see crime rates change as stop enforcement changes. We examine this potential relationship on two time scales: first, over a longer, multi-year time frame; and second, over many shorter, week-long time frames. We begin by comparing the citywide per capita traffic stop rate with per capita crime rates over the last several years, shown in Figure 6. The crime rates for both Part I crimes and violent crimes are roughly steady over the entire time frame. However, the rate of traffic stops begins to decrease quite substantially in 2014. Between 2014 and 2017, overall traffic stop rates, as well as stop rates for non-moving violations, dropped by more than 40%. Consequently, at least on this time scale, traffic stops do not appear to reduce more serious crime.

In theory, it is possible that other long-term trends—like an improving economy—mask any crime-prevention benefit from traffic stops. That is, crime might have been even lower had traffic stops not declined. To address this concern, we now examine how crime responds to stops on shorter time scales and at higher geographic resolution, where such confounding is less likely. In particular, we consider stops and crime occurring over the course of a week in individual *reporting areas* (RPAs), the MNPD’s most granular unit of geography.

The MNPD generally holds weekly CompStat meetings on Fridays to make deployment decisions for the following week, creating and communicating these directives over the next 1–2 days based on current crime trends. Accordingly, we consider weeks starting on Sunday and ending on the following Saturday. After controlling for information available at CompStat meetings, we consider deployment to be as-if randomly assigned. In practice, it is possible that officer assignments are changed mid-week in response to a serious crime outbreak; further, we cannot fully account for all information available to commanders at the CompStat meetings. Nevertheless, we believe this assumption is a reasonable, though admittedly imperfect, starting point for such an analysis.

We first visually examine the short-term relationship between stop levels and crime levels. In Figure 7, each point represents a week in an RPA in 2017, and the axes represent departures from each RPA’s median level of crime or median number of traffic stops.^[14] As the flat red trend line indicates, we find that weekly crime levels within an RPA have almost no relationship with that week’s traffic stop levels. For example, an RPA could have a week with the median number of stops for that RPA, another week with ten fewer stops than the median, and another with ten more stops than the median. Despite these variations in stop enforcement, we would still expect crime to occur at the median level for that RPA in all three weeks. This lack of correlation persists when examining more specific crime types, such as violent crimes or burglaries, when considering non-moving violation stops specifically, and when including the effect of the previous week’s crime levels or traffic stop enforcement (as discussed below).

^[14]Outliers that were far from the median, representing roughly 0.05% of all points, were removed from the analysis. Points are downsampled and jittered for the purposes of visualization, but the trend line is constructed from every unjittered point in the domain.



(a) Part I crimes vs. all traffic stops.



(b) Part I crimes vs. non-moving violation stops.

Figure 7: Part I crimes versus both all traffic stops, and also non-moving violation stops specifically, for MNPD reporting areas (RPAs) in 2017. Each point corresponds to a specific week in one RPA, where crime and stop levels are both measured by that week's difference from the RPA's 2016 median. Changes in crime levels are effectively uncorrelated to changes in traffic stop levels, as indicated by the flat slope of the red trend line.

To more quantitatively examine the short-term relationship between non-moving violation stops and crime levels, we fit a Poisson regression model. Specifically, given a crime count $y_{g,t}$ in RPA g in week t , we aim to estimate the relationship with normalized^[15] stop counts $s_{g,t}$ in the same RPA and week. We include the RPA's population p_g as a baseline, normalized counts of the previous week's crimes and stops, coefficients δ_g for each geography, and $\theta_{m[t]}$ for the month in which week t occurs. Accordingly, we fit the following regression model:

$$y_{g,t} \sim \text{Poisson}(p_g \cdot e^{\alpha \cdot s_{g,t} + \beta \cdot y_{g,t-1} + \gamma \cdot s_{g,t-1} + \delta_g + \theta_{m[t]}}).$$

The fitted model suggests that stops do not decrease crime ($\hat{\alpha} = 1.03$, 95% CI: (1.01, 1.04)), confirming our intuition from the graphical representation in Figure 7.^[16]

^[15] Stop and crime counts are normalized for each RPA by subtracting the mean count for that RPA and dividing by the standard deviation of that count.

^[16] The fitted model results in a small positive coefficient on stop levels, indicating—counterintuitively—that crime increases 3% for

Custodial arrest charge	Per 1,000 stops	
	All stops	NMV stops
Suspended/revoked licenses	3.7	5.0
Minor marijuana possession	0.7	0.8
Other drug crimes	2.2	2.4
DUI	4.6	2.0
FTA/parole violation/warrant	1.9	2.2
Driving violation	0.8	0.7
Public misconduct	0.7	0.7
Another crime (burglary, assault)	0.6	0.7
Misdemeanor citation charge		
Suspended/revoked licenses	47.1	53.9
Minor marijuana possession	3.3	3.7
Other drug crimes	2.0	2.0
FTA/parole violation/warrant	3.8	4.5
Driving violation	0.3	0.1
Public misconduct	0.3	0.2
Plate alteration	0.6	1.0
Another crime (burglary, assault)	0.2	0.2

Table 1: Custodial arrest and misdemeanor citation rates for traffic stops.^[17] For example, 5 out of every 1,000 non-moving violation stops resulted in a custodial arrest for a suspended or revoked license. Note that 1 out of every 1,000 stops and 0.8 out of every 1,000 non-moving violation stops also included a weapons charge.

Arrests, citations, and contraband. Stops may additionally have an impact on future crime via the custodial arrest of individuals or the recovery of contraband, including illegal weapons. For example, during a non-moving violation stop, an officer may detain a suspect—who might otherwise be difficult to locate—with an open warrant for a string of recent robberies. It is possible that these custodial arrests prevent future crimes. It is also plausible that contraband recovery, like the recovery of drugs, thwarts the sale and consumption of illegal materials. Finally, weapon recovery by the MNPD may make it harder for individuals to follow through with violent impulses.

Overall, however, both custodial arrests and contraband recoveries were infrequent occurrences. As noted in Table 1, arrest rates were highest for suspended or revoked licenses, or for drug crimes.^[18] Custodial arrests which might be suspected to have a direct impact on future crime (e.g., those arrests which are not solely for holding an invalid license, for minor marijuana possession, for public misconduct, or for driving violations) occur in 0.7% of non-moving violation stops. A larger percentage

every one standard deviation increase in stop activity. The point estimate is statistically significant when using robust standard errors; however, the estimated effect is not statistically significant under an alternative over-dispersed Poisson model. It is also possible that the result is driven by an unmeasured confounding variable that correlates both with stop activity and crime rates.

^[17] When a custodial arrest leads to multiple charges, we count only the most severe charge per incident, using the following hierarchy: serious crime (assault, burglary, theft, sex offense, child crimes), drug crimes (non-marijuana charges, or possession of at least 0.5 oz of marijuana), DUI, minor marijuana possession (less than 0.5 oz), FTA/parole violation/warrant (also includes probation violations and FTB), public misconduct (public intoxication, disorderly conduct, vandalism, trespassing), driving violations, plate alterations, license charges (suspended/revoked license, driving with no license).

^[18] Only 51% of non-moving violation stops that led to a custodial arrest matched a corresponding arrest record. Values reported in Table 1 are over the subset of these matched arrests. The coverage for all stops that led to custodial arrest was 56%. The coverages for all stops and for non-moving violation stops that led to misdemeanor citations were 89% and 91%, respectively.

(6.6%) of non-moving violation stops led to misdemeanor citations. However, the majority of these citations were for license-related charges: 82%^[19] of non-moving violation stops that led to a misdemeanor citation included only a license-related charge, and no other charge. An additional 0.7% of non-moving violation stops resulted in the recovery of other contraband (typically drugs), but did not include a custodial arrest. Altogether, 2.2% of non-moving violation stops resulted either in a custodial arrest or the recovery of contraband.

Quantifying the benefits of such stop outcomes is beyond the scope of this report. We note, however, that it is possible that other police activity may be a more effective use of time. For example, 16% of investigatory stops—which require that officers have reasonable and articulable suspicion of criminal activity—resulted in a custodial arrest or contraband recovery, a rate almost eight times higher than the corresponding rate for non-moving violation stops. This difference suggests the MNPD may be able to more effectively achieve the arrests and contraband recoveries from non-moving violation stops with other enforcement efforts.

Officer-level differences in stop activity

As one might expect, there are significant differences in stop rates across officer assignments. For example, officers assigned to flex units—whose duties allow for more proactive policing—conduct about twice as many non-moving violation stops per officer (217 stops per officer in 2017) as patrol units (109 per officer). Such differences ostensibly reflect the discretion that flex officers have in carrying out proactive policing duties. Similarly, officers working evening shifts make more such stops than those working during the day, likely in part because certain non-moving violations—like broken lights—are more visible at night.

More surprisingly, however, we find that a relatively small number of officers conduct the vast majority of non-moving violation stops. For example, as shown in Figure 8, the 10 most active flex and patrol officers made 9,399 stops, or approximately 9% of all non-moving violation stops over the year; further, half of all non-moving violation stops were conducted by 17% of active officers—125 officers in total.^[20] We find similar patterns when we disaggregate by assignment. For example, among patrol officers working the night shift, 15% made 50% of stops.

It is unclear why such a small group of officers carries out the majority of stops. As in many jurisdictions, it is

^[19]This number considers as a baseline only the 91% of non-moving violation stops that matched an arrest record, since for the remaining 9% we do not have data on charges. Implicit in this computation is an assumption that the remaining 9% have similar charge distributions as the 91%. We can set a lower bound on this estimate by assuming that none of the 9% were license-only charges, and an upper bound by assuming that all of the 9% were license-only charges. With this, we conclude that the number of non-moving violation misdemeanor citations that were charged with only a license-related charge lies between 74% and 84%.

^[20]For this analysis, we consider “active” officers to be flex and patrol officers who conducted at least one stop during 2017, to avoid counting those assigned to administrative duties. These general patterns hold when we use a more stringent definition of “active”. For example, among flex and patrol officers who carried out at least 10 non-moving violation stops in 2017, 19% were responsible for half of stops.

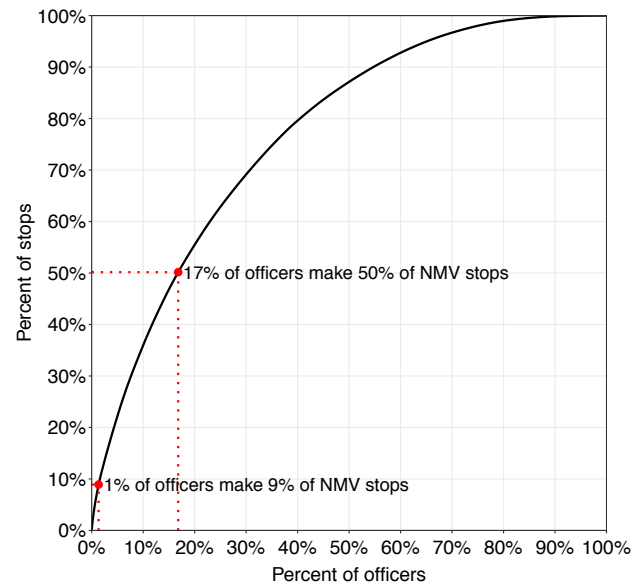


Figure 8: The distribution of the number of non-moving violation stops across MNPD officers in 2017, illustrating that a small number of officers conduct the majority of such stops.

possible that the MNPD gives officers wide leeway to engage in proactive policing, which in turn may result in the observed heterogeneity. It is also possible that these officer-level differences are part of an intentional policing strategy, though we are unaware of any such policy directives. Regardless of the underlying reason, the relatively small number of officers involved makes it easier for the department to understand and appropriately address their behavior as necessary.

Discussion

Based on an extensive analysis of the MNPD’s 2017 traffic stop data, we find that black drivers were stopped substantially more often than white drivers; these disparities were particularly pronounced among stops for non-moving violations, such as broken tail lights and expired registration tags. The racial disparities in these non-moving violation stops are in part attributable to the concentration of stops in high-crime areas, which in Nashville often coincide with predominantly black neighborhoods. The defensibility of such a policing strategy, however, rests on its effectiveness in ensuring public safety. In this case, we found that traffic stops—including stops for non-moving violations—had no discernible effect on serious crime rates, and only infrequently resulted in the recovery of contraband or a custodial arrest.

These results suggest that the MNPD could safely reduce overall stop rates. In particular, curtailing stops for non-moving violations could reduce racial disparities, partially addressing community concerns about its policing practices. However, in order to bring Nashville’s stop rates to the level of similar American cities, the MNPD would have to significantly reduce the number of such stops it carries out (Figure 1). A reduction of even 50% in non-

moving violation stops would still leave the city's overall stop rate twice as high (or higher) than other peer cities. A more substantial 90% reduction in such stops would put Nashville on par with peer cities with the highest stop rates. These reductions would have significant impact on the day-to-day lives of Nashville residents. Assuming the MNPD reduced non-moving violation stops by 90%, and changed nothing else, roughly 100,000 stops—52,000 stops of white drivers, 40,000 stops of black drivers, 6,000 stops of Hispanic drivers, and 2,000 stops of drivers of other races—would be avoided each year. The disparity between overall black and white stop rates would also drop substantially, from 44% to 28%.

The remaining disparities largely result from differences in stop rates for moving violations. In particular, black drivers were stopped for moving violations (which comprised half of all traffic stops) 24% more often than white drivers last year. We expect that reducing such stops will not adversely impact crime levels, though they could have other unintended consequences. For example, one concern is the possible effect of traffic stop reductions on traffic safety. This may be an issue in Nashville, where traffic accidents per capita increased by roughly 60% between 2011 and 2017. As such, reductions in moving violations require balancing the potential impacts on traffic safety with broader community concerns. In contrast, most non-moving violation stops are for minor traffic infractions, like a broken tail light, a broken license plate light, or an expired registration. We thus expect one could safely reduce non-moving violation stops by continuing to enforce the most serious such offenses (e.g., broken headlights) while eliminating stops with a less immediate connection to traffic safety. Finally, we note that reductions in traffic stops may also reduce opportunities for officers to engage the public, although there are arguably other more appropriate channels for community contact.

Our analysis illustrates the power of a data-driven approach to public policy. Looking forward, more extensive data could yield further insights. For example, we found inconsistencies in how police searches were classified in the data we analyzed, making it difficult to carry out statistical tests for racial bias in search decisions [12, 13, 19]. Additionally, inconsistent incident identification numbers made it difficult to fully link traffic stops to arrest records. Finally, many of the categories that the MNPD uses for traffic stops are relatively coarse. For instance, equipment violations can include both plate light violations and headlight violations, despite their potentially different impacts on traffic safety. Finer classification would improve the department's capacity to monitor changes in enforcement over time, and would be useful information to help the MNPD safely curtail traffic stops. We hope our analysis, and these suggestions for future data collection, help both the MNPD and the broader Nashville community design more effective and equitable policing strategies.

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