



Beyond Enforcement: Prioritizing Safety in Federal Transportation Funding



Center For
POLICING EQUITY



FINES & FEES
JUSTICE
CENTER

Authors

Tim Curry

Fines and Fees Justice Center

Peter Honnef

Center for Policing Equity

Scarlet Neath

Center for Policing Equity

We are grateful to Rachael Eisenberg of the Center for American Progress, Krystan Hitchcock of the Policing Project, Beth Osborne of Transportation for America, and Leah Shahum of the Vision Zero Network for sharing their expertise with us during the development of this report.

Published October 2024

Table of Contents

Introduction	4
A strong hand: How DOT exerts influence on traffic enforcement	6
What DOT requires and recommends	7
How states interpret DOT guidance to fund enforcement	7
Safety or quotas? DOT's mixed messages on police stops, citations, and their impact on safety and equity	9
Incentivizing stops and citations risks financial and racial inequity	11
The effectiveness of overall enforcement on crashes is unproven	12
Enforcement targeted at dangerous driving has inconsistent and limited efficacy	13
A path forward: Alternative approaches to encourage safety and efficacy for all	15
<ol style="list-style-type: none"> 1. Ensure that the Safe System approach is integrated across DOT grants 2. Revise guidance used in Section 402 grants to remove language that incentivizes quota-like practices 3. Clarify and communicate that nontraditional enforcement options are eligible and encouraged for grant funding 4. Review and revise other guidance currently in use or referenced by DOT, such as <i>Countermeasures That Work</i> 5. Expand the focus of the DOT's Advisory Commitment on Transportation Equity to include a mandate on ensuring racial and economic equity in enforcement 6. Require greater data recording, reporting, and analysis on racial and economic metrics related to traffic enforcement activities 	
Appendix	17



Introduction

Traffic stops are the most common way that people interact with police in the United States.¹ These stops of more than 20 million people annually are often for non-safety-related offenses such as minor equipment or administrative infractions and consume an inordinate amount of police resources.² They also lead to a range of unnecessary and harmful outcomes for drivers, including psychological trauma, financial penalties, license suspension, arrests, and physical danger through police use of force, including death.³ This is particularly true for Black and Latine drivers, bikers, and walkers who bear a disproportionate impact of this enforcement: Data from hundreds of millions of police stops consistently show racial disparities in enforcement.⁴

At the same time, automated traffic enforcement (ATE) systems – which law enforcement agencies commonly operate – are seeing greater use around the country, drawing exponentially larger numbers of people into the legal system.⁵ Though ATE may reduce contact between officers and drivers, it does not eliminate such interactions.⁶ What's more, ATE enforcement comes with a host of other long-term harms to people that have disparate effects on low-income communities and communities of color, including financial penalties that can trigger mounting debt and even loss of employment, license suspension, and arrest.⁷

The enormous number of traffic stops made annually and the growing role of ATE without

effective safeguards reflect a long history of prioritizing enforcement as the best approach to dealing with traffic safety and the prevailing assumption that more enforcement is always more effective. Unfortunately, our extensive focus on enforcement as a leading traffic safety strategy is not achieving the stated goal of making our roads safer: Traffic fatalities reached a 16-year high in 2021,⁸ and the United States has the worst traffic death rate among 29 high-income nations.⁹

Recognizing the need to shift the status quo, the U.S. Department of Transportation (DOT) has adopted a Safe System approach as the “guiding paradigm to address roadway safety,”¹⁰ allocating billions of dollars in federal funding to thousands of communities committing to improve roadway safety using an upstream strategy.¹¹ A Safe System approach focuses on accepting and preventing the inherent risks of unsafe driving and crashes through measures like safer speeds, cars, and roads.¹² This is in contrast to the traditional approach in the United States, which overemphasizes the role of enforcement, placing the onus of traffic safety on each road user not to make errors. A Safe System approach, in other words, recognizes that we cannot punish our way out of the growing public health crisis of traffic crashes.

Despite this important and overdue sea change, the DOT and its subagency that has jurisdiction over motor vehicles, the National Highway Traffic Safety Administration (NHTSA), still provide conflicting and confusing guidance to states and law enforcement agencies (LEAs) about the most effective way to engage in

traffic enforcement and support traffic safety. Enforcement measures are still held up as the primary safety intervention, rather than as part of a larger multifaceted systemic approach.

The potential of this new funding for communities to adopt a Safe System approach is undermined by long-standing federal grant programs that support high-volume indiscriminate traffic enforcement with few restrictions. The largest federal grants for traffic safety measures, known as Section 402 grants or “highway safety grants,” are administered through NHTSA. NHTSA then issues hundreds of millions of dollars to states to conduct traffic safety with reporting requirements that continue to emphasize the primacy of enforcement – particularly as measured by the volume of stops and citations – rather than reduction in serious traffic crashes and deaths. And despite encouraging the proliferation of enforcement, the DOT does not collect basic information about the total number of police stops made, which kind of enforcement happened, or where

it took place, making it impossible to assess whether the millions of dollars they provide to law enforcement is effective at reducing serious crashes or contributes to actual road safety.¹³ This focus on the effort of law enforcement *outputs* over safety *outcomes* is entirely misplaced and ultimately contributes to significant inequity in traffic enforcement, as recent announcements from the federal government have acknowledged.¹⁴

This paper examines how the U.S. Department of Transportation has cultivated this focus on enforcement, citation volume, and ultimately revenue generation by local and state LEAs; the mechanisms DOT uses to exercise influence over localities and states; the risks of DOT continuing to prioritize enforcement; and what steps local, state, and federal officials can take to clarify what successful approaches look like and truly improve traffic safety outcomes.

Ultimately, we make six key recommendations to federal officials:

- 1 Ensure that a Safe Systems approach is integrated across DOT grants.
- 2 Revise the “Traffic Safety Performance Measures for States and Federal Agencies” guidance in Section 402 grants to remove language that incentivizes quota-like practices and collect a broader scope of law enforcement metrics.
- 3 Clarify and communicate that nontraditional enforcement options like driver feedback signs and warning notices are eligible and encouraged for grant funding.
- 4 Regularly review, revise, and reconcile all safety guidance DOT currently uses or references to ensure that they are evidence-based and be clear that enforcement activities aimed at improving road safety must be executed as part of a comprehensive Safe System approach.
- 5 Expand the focus of DOT’s Advisory Committee on Transportation Equity to include a mandate of ensuring racial and economic equity in enforcement.
- 6 Require greater data recording, reporting, and analysis on racial and economic metrics related to traffic enforcement activities.

The following sections outline the reasons for these recommendations, and the final section elaborates on the recommendations themselves.

A strong hand:

How DOT exerts influence on traffic enforcement

DOT's influence on the ways state and municipal agencies view traffic enforcement activities comes primarily through hundreds of millions of dollars of grant funds and their associated reporting requirements. The largest federal grants for traffic safety measures, known as Section 402 grants or "highway safety grants," are not issued directly to LEAs. Instead DOT provides funding through the National Highway Traffic Safety Administration to state highway safety offices (SHSOs).¹⁵ The SHSOs in turn provide funding to state and local law enforcement agencies, though the exact amounts are unclear. Although NHTSA was established in 1970 with the mandate of creating vehicle safety standards, the issuance of state highway safety funds now accounts for more than 80% of its budget.¹⁶

Just as money flows from NHTSA to state agencies and then to LEAs, so too do the reporting requirements for these grants. Through these requirements, grant recipients show that the money they receive is doing the intended work of producing safety benefits. NHTSA does not directly require anything of LEAs that use these funds to make stops, but instead has requirements for the SHSOs that receive and disburse the grant money. For example, Section 402 requires a SHSO to have a Highway Safety Plan, which must include certain performance measures outlined in NHTSA's report *Traffic Safety Performance Measures for States and Federal Agencies*.¹⁷ **That document, which defines success in highway safety grants, focuses exclusively on citations and arrests as the sole metrics by which law enforcement activities will be measured.**¹⁸ To fulfill their data and information obligation to the federal government, SHSOs require LEAs to track nothing but citation and arrest metrics, which not only are insufficient to understand the efficacy of enforcement on crashes but incentivize frequent and

indiscriminate enforcement above all other countermeasures. Consequently, it is no surprise that agencies receiving pass-through federal dollars – and which are asked to report only on enforcement metrics – will see high levels of enforcement as necessary to justify continued funding, whether or not these actions have any effect on safety. In other words, even if the need for enforcement goes down because safety improves, these grants are set up to reward continued citations and arrests, even if those actions aren't responsible for safety gains.

Although DOT does not have the authority to change the requirements of the statute governing Section 402, which lies with Congress, the statute has no restrictions prohibiting DOT from adjusting the criteria in its guidance for performance measures. This guidance has not been updated since 2008, despite all that the federal government has learned about traffic safety measures in the intervening 17 years.¹⁹ Promisingly, in May 2024, President Biden announced that "DOT is reviewing and updating performance metrics to improve states' abilities to measure performance of their overall highway safety programs, with performance focused on road safety."²⁰ Understanding the status quo with regard to performance metrics – and how they fail to align with the evidence on traffic safety – is imperative to ensuring that DOT reduces disparities in enforcement. The following documentation about DOT's current practices and the research on the efficacy of enforcement to achieve safety goals inform the recommendations to revise these performance structures we present on pages 15 and 16.

Even if the need for enforcement goes down because safety improves, these grants are set up to reward continued citations and arrests, even if those actions aren't responsible for safety gains.

What DOT requires and recommends

In its report *Traffic Safety Performance Measures for States and Federal Agencies*, NHTSA provides a list of performance measures for SHSOs to report on as a recipient of grant funds. These metrics fall into three categories: (1) “Core Outcome Measures,” including number of crashes and fatalities; (2) “Core Behavior Measures,” such as seatbelt usage; and (3) “Activity Measures,” which aim to track the actions LEAs are taking to influence the other categories.²¹ Outcome and behavior measures are important data points that provide valuable information to track the overall effectiveness of various strategies. On the other hand, **the activity measures that grant recipients must report are limited solely to metrics of enforcement resulting in arrests or citations**, and this encourages law enforcement to have a myopic focus on those activities at the expense of other approaches.

DOT is effectively incentivizing grantees to draw more people into the criminal and traffic legal systems, without any regard to whether this ultimately results in greater roadway or public safety.

The activity measures NHTSA identifies include only citations issued for seat-belt violations, citations issued for speeding, and arrests for driving under the influence. Even though these measures focus on safety-related behavior (seat belts, speeding, and driving while intoxicated) they are assessed only through the use of punitive enforcement actions. They do not include the use of hours deployed, visibility measures, or alternative options like warnings or driver feedback signs – nor do they report

on officer responses to crashes and injuries or other back-end metrics that are essential to a comprehensive traffic safety plan. By limiting the metrics by which an LEA’s success is measured to merely the level of effort officers put into enforcement, DOT is effectively incentivizing grantees to draw more people into the criminal and traffic legal systems, without any regard to whether this ultimately results in greater roadway or public safety. This de facto system encourages LEAs to impose formal or informal quota systems that drive officers to focus solely on the number of stops rather than more nuanced application of enforcement efforts related to safety.²² It also takes officer time and police resources away from other community safety priorities.²³

Creating safety on the roads requires much more than simply arresting and citing people, a disproportionate number of whom are Black, Latine, and Indigenous people. A singular focus on citations and arrests effectively excludes other interventions police might employ, and creates an emphasis on individualized punishment that is directly at odds with a Safe System philosophy.

How states interpret DOT guidance to fund enforcement

It is clear that states are responding to this focus on stops, citations, and arrests – whether it is proven to improve road safety or not. In their latest annual reports summarizing their use of Section 402 funds, several SHSOs tout their higher number of these enforcement activities as a desirable outcome in and of itself – and encourage LEA subgrantees to issue more citations.²⁴ For example, according to Arkansas’s 2023 report, grantees’ “efforts continue to educate law enforcement and the judiciary on the importance of issuing citations and obtaining convictions.”²⁵ Illinois’s approach established quota-like parameters for law enforcement, recommending that “agencies should be able

to issue one traffic citation for every 60 minutes of patrol and 30 percent should be for occupant protection violations.”²⁶ And Utah boasted a 40% increase in its two-year citation average for the years 2021–2022, which they attribute to the use of police motorcycles, “allowing officers to be less noticeable than [in] police cars.”²⁷ This demonstrates a preference for “gotcha”-style enforcement to increase required metrics, rather than for changing undesirable driving behavior in the moment through more visible police activities.

The use of quotas drives officers to focus on enforcement that can be completed quickly and easily rather than that which is actually tied to public safety, harming both safety outcomes and public trust in law enforcement.

LEAs have little incentive to discontinue their reliance on stops and citations. Some jurisdictions fund a significant portion of their

revenue through fines: A 2019 report estimated that 600 towns, cities, and counties nationwide generate at least 10% of their revenue through fines and forfeitures.²⁸ Others benefit from the federal Equitable Sharing Program, which allows local, state, and tribal police to enter a profit-sharing arrangement with the federal government that ties traffic enforcement to the prospect of revenue for the law enforcement agency.²⁹ Through this program, whenever officers confiscate money, vehicles, or other assets seized as part of a traffic stop, they are allowed to keep part of the proceeds if the federal government ultimately takes that property through civil asset forfeiture – even if the jurisdiction’s laws do not permit the practice. More broadly, agencies frequently use total stop volume as a performance metric tied to individual officer productivity and career development, creating a multilayered system in which expectations around traffic stops function as informal quotas that many officers see as a requirement for ascending the career ladder. The use of quotas drives officers to focus on enforcement that can be completed quickly and easily rather than that which is actually tied to public safety, harming both safety outcomes and public trust in law enforcement.³⁰ These local incentives to issue citations make it even more important for the federal government to provide guidance that does not reinforce a message encouraging indiscriminate high-volume enforcement, but instead guides these agencies to focus on effective tailored strategies.



Safety or quotas?

DOT's mixed messages on police stops, citations, and their impact on safety and equity

DOT's insistence that Section 402 grants are measured and assessed based on the number of stops or citations is in direct conflict with best practices and guidance in the broader field of traffic safety, including many of DOT's own publications and broader federal policy statements. For example, DOT provides guidance through educational materials that advise LEAs on best practices for increasing safety. NHTSA's *Countermeasures that Work* guidance, which reviews the costs and efficacy of a wide array of traffic safety interventions, explains in its introduction that "SHSOs are encouraged to consider both the Safe System Approach and equity when selecting countermeasures to influence behavior."³¹ Although the publication rates some citation-heavy programs as effective in certain circumstances, it also warns against the dangers of an exclusive focus on stops and searches, noting that "there are persistent racial and ethnic disparities in the frequency of traffic stops, searches and citations among people of color." In the same publication, NHTSA also warns that excessive reliance on citations "may result in inequitable outcomes and undermine the effectiveness and perceived legitimacy of speed enforcement as a safety issue." Similarly, the NHTSA High Visibility Enforcement Toolkit (HVE) notes that "HVE is designed to change unlawful traffic behaviors and reduce crashes, injuries and fatalities. It is **not** a strategy designed to increase arrests; in fact, it may yield decreased citation counts over time," and reminds practitioners that "the ultimate goal is not to increase the number of arrests or citations, but to change unsafe driving behaviors."³² Despite the recognized challenges enforcement-heavy approaches create, none

of these cautions are reflected in Section 402 grant guidance – and enforcement action remains the sole measure of LEA activities.

DOT's insistence that Section 402 grants are measured and assessed based on the number of stops or citations is in direct conflict with best practices and guidance in the broader field of traffic safety.

Recently, federal guidance has encouraged shifting away from enforcement-focused programs and stressed the need for integrated and Safe System approaches to traffic safety. For example, the 2022 Safe Streets for All (SS4A) grants, which were created by the 2021 Bipartisan Infrastructure Law, require grantees to develop a "Comprehensive Safety Action Plan" to be "shaped by data, the best available evidence and noteworthy practices, and stakeholder input and equity considerations."³³ Although communities that receive SS4A funds can use them for certain enforcement activities, DOT's grant application materials provide that it will evaluate applicants based on whether they use "evidence-based Countermeasures that Work with four or five stars to address persistent behavioral safety issues and consider equity in their implementation."³⁴ In the guide, the only enforcement strategies listed that address speeding, for example, are speed safety cameras and high-visibility enforcement – strategies which, though they can be effective, have noted limitations and should be funded and implemented only as a discrete, smaller component of a full Safe System approach.³⁵ Other SS4A-eligible strategies, such as driver feedback signs,³⁶ lowering speed limits,³⁷ and "quick-builds"³⁸ are likely to be more cost-efficient and more equitable in their application. Additionally, SS4A grants can be leveraged in a

number of ways to take a new, more effective, and more equitable approach to enforcement, such as piloting civilian alternatives, initiatives to de-prioritize non-safety stops, or new Intelligent Speed Assistance technology.³⁹

Humans are fallible and the way to safer streets is through a systemic strategy, not one focused on individualized blame.

The SS4A grants are in line with the DOT's operating paradigm of a "Safe Systems Approach," which is guided by principles recognizing that humans are fallible and the way to safer streets is through a systemic strategy, not one focused on individualized blame.⁴⁰ This welcome shift comes from nearly two decades of evidence-based research and evaluation that show we cannot enforce our way out of the nation's traffic safety problems. Reviewing and changing outdated guidance is essential to help ensure that this paradigm shift encompasses all of the DOT's work. Otherwise, contradictory

messages will continue within the Department, with grantees, and with the broader public, resulting in preventable traffic injuries and deaths, as well as racialized and other unjust traffic stops.

In addition to DOT's own guidance, leading traffic safety researchers and practitioners have documented the risk of using stops and citations as a measure of roadway safety. Researchers note, for example, that a historical reliance on enforcement has had diminishing effectiveness on safety and a disproportionately negative impact on low-income people and communities of color.⁴¹ These strategies assume that enforcement can correct behavior without any change to the systemic structures that facilitate the undesirable behavior, including vehicle and road design. Research shows that structural concerns (such as wider high-volume roads, uninterrupted stretches of straight roadway, unsegregated bike and pedestrian spaces, lack of access to other forms of transportation, and lack of posted speed limits) make it significantly more difficult for drivers to correct behavior.⁴² Therefore, approaches that either favor or exclusively rely on enforcement are considered less effective and pose a higher risk for inequitable outcomes.



Incentivizing stops and citations risks financial and racial inequity

Whether through officer-initiated stops or traffic cameras, enforcement of traffic offenses has come under increasing scrutiny because of its role in perpetuating racial disparities and financial harms across communities.

In the context of police stops, this type of enforcement can fuel distrust in law enforcement, debilitating financial penalties, and police violence. Evidence shows that officers pull over Black drivers at higher rates than White drivers, even though there is no evidence to show that Black drivers more frequently commit driving violations.⁴³ Black drivers are also twice as likely to be searched once stopped – a common feature of a pretextual stop – despite research showing that they are less likely to be found in possession of contraband (such as illegal drugs or weapons).⁴⁴ Research also shows that police use of force is higher for Black drivers in general, but particularly at non-safety stops and stops that involve a search.⁴⁵ Of 400 deaths at traffic stops analyzed by *The New York Times*, the majority involved a Black driver.⁴⁶ Data from California show that in 2022, Black and Latine drivers experienced police traffic stops at disproportionately higher rates and that Indigenous, Black, and Latine drivers were searched during traffic stops at rates significantly higher than White drivers were.⁴⁷

Regardless of race and ethnicity, traffic enforcement also has a disproportionate impact on lower-income people and working families living paycheck to paycheck. Most traffic citations result in fines. When a person is unable to pay the fine quickly enough, many jurisdictions add penalties and fees that can make the financial sanction balloon, often to

more than twice the original fine. In that way, those who are not wealthy enough to pay the initial citation immediately have a significantly higher penalty than those who have the financial resources to pay quickly.

Drivers in predominantly Black areas of Washington, DC were over 17 times more likely to receive a traffic camera violation.

The U.S. Supreme Court has held that pretextual traffic stops are entirely constitutional, as long as local laws do not prohibit such stops.⁴⁸ That means that no matter how many cameras a community has, officers still have the discretion to stop any car they can claim made a traffic violation, whether or not their goal is truly traffic safety. But the explosion in ATE has created an exponentially more efficient mechanism for drawing larger numbers of people into the legal system by issuing citations and burdening them with high fines and fees that raise billions of dollars annually for local governments. And despite being proposed as an alternative to biased enforcement, research shows that ATE programs are not race-neutral in their effects. One study in Washington, DC, found that drivers in predominantly Black areas of the city were over 17 times more likely to receive a traffic camera violation than those in predominantly White neighborhoods, despite crash rates being similar in both areas; what's more, the cost to drivers from Black neighborhoods was 16 times higher than for drivers from White areas.⁴⁹ Similarly, an examination of Chicago's traffic camera system revealed that households in the city's predominantly Black zip codes received traffic citations at rates twice that of households in predominantly White zip codes.⁵⁰

Of **400** police-involved deaths at traffic stops analyzed by *The New York Times*, the majority involved a Black driver.



The effectiveness of overall enforcement on crashes is unproven

Some advocates argue that even non-safety stops have an impact on traffic crashes because police presence has a deterrent effect on driving behavior. As a result, leaders and personnel of police departments and state agencies may be under the impression that the sheer number of stops and citations, regardless of whether they are for safety reasons, will lead to positive safety outcomes. But research shows that any impact of the number of stops and citations on traffic safety is more complex than just more enforcement yielding fewer crashes.⁵¹ For example, an analysis of 161 million traffic stops from 33 states over 12 years examined the relationship between the number of stops, total miles driven, and deaths from motor vehicle crashes. The researchers note that “after accounting for year and state-level variability, no association was found” between police traffic stops and motor vehicle crash death rates.⁵²

Evidence suggests that to be effective, enforcement must at minimum be tied to

problematic behaviors, such as speeding and dangerous driving, and should be informed by where crashes occur. One study on proactive policing concluded that “routine patrol levels and activities produce short-term reductions in crashes at the most serious crash hot spots but have less impact elsewhere,”⁵³ and another study showed that all crashes in Utah occurred on just 6% of street segments and intersections.⁵⁴ Indeed, research on the DOT’s Data-Driven Approaches to Crime and Safety (DDACTS) program – which trained officers in increasing traffic enforcement to detect crime and was ended in early 2024 – shows mixed effects or a failure to account for the potential effects of other interventions.⁵⁵

Even when enforcement actions are targeted based on place, time, or behavior, concerns remain about whether punitive enforcement would have the desired effect. An analysis of officer-initiated speed enforcement in the United States reviewed multiple studies and found that speed enforcement as currently practiced likely fails to deter speeding.⁵⁶ This is because enforcement activities require highly specific levels of focus, intensity, and duration that cannot realistically be met by most LEAs, creating a “whack-a-mole” effect

that is exacerbated by perverse incentives. As summarized by a U.S. Department of Justice Community Oriented Policing Services guide in 2009, “Police enforcement is expensive to maintain consistently, and it quickly loses its effect where the enforcement effort is not visible to drivers. Intensive speed enforcement also loses its effectiveness because of the typical incentive system for traffic officers – they are rewarded for issuing citations rather than for maintaining reduced average speeds. Consequently, as soon as the enforcement effort has the positive effect of reducing speeds, there are fewer violations and traffic officers move on to other locations, after which speeds quickly resume their pre-enforcement levels.”⁵⁷

Researchers have noted that enforcement through fines is a poor deterrent.

Researchers have also noted that enforcement through fines is a poor deterrent: A study of 3.7 million drivers showed that those who received an initial speeding ticket were *more likely* to receive a subsequent one within the course of a year.⁵⁸ Even when current punitive approaches to speed enforcement may provide some positive safety results, in specific places and for a certain amount of time, it is essential to examine whether alternative strategies could have a greater impact on deterring speeding and reducing crashes, and do so with a lower cost to taxpayers and communities affected by inequitable enforcement. These upstream solutions include lowering speed limits,⁵⁹ redesigning streets to be self-enforcing by adding traffic calming measures,⁶⁰ requiring safety technology in vehicles such as Intelligent Speed Assistance and alcohol interlock systems,⁶¹ and facilitating safer transportation options like public transit, walking, and biking.

Enforcement targeted at dangerous driving has inconsistent and limited efficacy

NHTSA acknowledges that even those enforcement strategies focused on the most dangerous driving behaviors (such as speeding) that are rated as most “effective” by *Countermeasures that Work* (such as high-visibility enforcement),⁶² have mixed evidence to support them because they depend on careful implementation and have time-limited effects. For example, *Countermeasures that Work* cites an evaluation of an HVE campaign in San Francisco that found reductions in driver speed dissipated as soon as one week after the campaign ended.⁶³ In 2022, NHTSA commissioned a study to synthesize existing literature on the association between enforcement and safety outcomes.⁶⁴ Of 90 study locations that examined the effectiveness of HVE on drunk driving, 58% saw a decrease in crashes or prohibited behavior, while 40% saw an *increase* in either crashes or drunk driving.⁶⁵ More broadly, the authors found that “for enforcement campaigns related to distracted driving, alcohol-impaired driving, speeding, and aggressive driving,” increases in both enforcement and safety outcomes were observed across the studies, but it was hard to establish the extent to which they were related.⁶⁶ A lack of comparable data on “measures such as number of enforcement hours, number of checkpoints, number of patrols, dollar amount of paid media, etc.” made it impossible to determine direct connections between the level of enforcement and the level of increased safety.⁶⁷ In other words, the current lack of uniform data metrics may allow us to see that some police activities happened close in time to some safety improvements, but this does not indicate that one caused – or even had any effect on – the other. Too many other variables could have had an impact. Without requiring grantees to report on LEA activities beyond arrests and citations, the DOT is relying on guesswork to fund safety.

Although many policymakers have been tempted to turn to traffic camera enforcement as a solution to racial disparities and the resource demands of enforcement, implementation of these cameras has raised serious concerns about racial and economic equity, as well as long-term effectiveness. When implemented carefully and as part of a full Safe System strategy, speed cameras have been shown to be effective at reducing crashes and injuries by between 20% and 37%.⁶⁸ But speed cameras – like any enforcement strategy – cannot replace needed infrastructure changes to prevent dangerous driving and must be considered in terms of their potential inequitable and harmful outcomes.

As NHTSA points out in *Countermeasures that Work*, several studies show that speeding is often not a result of a conscious decision to break the law, but rather as a natural reaction to road conditions and past experience.⁶⁹ This is echoed in DOT's Safe System approach, prioritizing interventions that correct systemic problems over those focused on drivers themselves. Safety depends on changing behavior in the moment, and this is best done through infrastructure and design changes to roads that are facilitating unsafe speeds. For example, studies have found installing a speed hump that forces drivers to break reduces speeding to just 1% of vehicles in areas where the humps are installed⁷⁰ and reduces pedestrian-involved collisions by as much as 50%.⁷¹ Other design and infrastructure projects have similarly strong results, and simple fixes such as increasing the number of speed limit signs and driver feedback signs can also play a deterrence role similar to that of cameras – without punishing drivers or creating perverse revenue incentives for localities.⁷²

If safety improves at a particular location because of a camera, the technology can become an expensive redundancy that needs new revenue from fines to maintain itself. This can prompt local leaders who rely on that revenue to create new infractions unrelated to true safety concerns – such as bus lane cameras or license plate readers to detect

insurance violations – just to generate income. And if the cameras do not have a substantial effect on safety at a given location, they are simply drawing significantly more people into the legal system, imposing the burden of unnecessary debt, and creating a backdoor tax system to fund something that has little local safety impact.

Safety depends on changing behavior in the moment, and this is best done through infrastructure and design changes to roads that are facilitating unsafe speeds.

Beyond speed camera enforcement, other forms of traffic camera technology widely used in some states have not proven to be effective. Studies on the effectiveness of red-light cameras are mixed, with many finding no net safety benefit.⁷³ In fact, *Countermeasures that Work* points out this lack of uniform efficacy findings on technologies other than speed cameras and driver feedback signs.⁷⁴ Moreover, no significant independent research suggests that the great diversity of other traffic camera systems – such as automatic license plate readers, bus lane monitors, and intersection blocking cameras – have any safety impact; they are simply revenue generators.

A path forward:

Alternative approaches to encourage safety and efficacy for all

An effective approach to traffic safety would result in reduced numbers of injuries and crashes, and decreases in citations as dangerous driving behaviors changed. Instead, traffic deaths are at a 16-year high,⁷⁵ while enforcement activities continue to increase.⁷⁶ As part of a true Safe System approach, enforcement should focus on catching the outliers in a system that is predominantly producing safe driving and behavior. If the tool of repeated enforcement—either at the individual level or more systemically—is not working, that is a sign that more preventive approaches are needed. The need for enforcement is the first sign that larger systemic problems are at play.

In the words of the psychologist Abraham Maslow, “It is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail.” By measuring only punishment activities in grant performance metrics, DOT is all but ensuring that individualized punishment is the sole objective of any grants to LEAs. Fortunately, the federal government is taking steps to course-correct,⁷⁷ as advocates have called for,⁷⁸ including ending the widely criticized DDACTS program and collecting public feedback on opportunities to improve performance metrics in federal grants. To build on this much-needed progress, DOT should, at minimum, take the following steps:

- 1 **Ensure that a Safe System approach is integrated across DOT grants.** Language in all grant solicitations, awards, and reporting requirements should promote a systemic approach to traffic safety rather than focusing on individual behavior—and should highlight every grantee and subgrantee’s responsibilities in advancing such an approach. Any use of highway safety grants should be contingent on adequate demonstration of how planned enforcement is part of a clearly articulated, evidence-based, and equity-centered component of a broader Safe System strategy. SHSOs and LEAs need to be explicit about how any grant-funded enforcement activities will be limited in scope or targeted to complement a wider Safe System strategy,—and what safeguards are in place to avoid indiscriminate ticketing or enforcement unrelated to the broader strategy.
- 2 **Revise the *Traffic Safety Performance Measures for States and Federal Agencies* guidance used in Section 402 grants to remove language that incentivizes quota-like practices and collect a broader scope of law enforcement metrics.** Promisingly, in May 2024, President Biden announced that the DOT would review and update performance metrics to focus on road safety⁷⁹ and a public meeting to request related comments was held shortly after.⁸⁰ At a minimum, the DOT’s revision of this guidance should clarify that the effectiveness of interventions should be measured by their impact on driving behaviors, traffic deaths, and serious injuries. It should also be clear that total enforcement or citation volume alone are inadequate metrics and the guidance should explicitly list performance metrics *that don’t involve citations or arrests* for measuring enforcement activities, such as hours used for HVE campaigns and locations where they are conducted. States receiving funding for enforcement should also report on reengineering projects implemented in places that would affect grant recipients, so that the effects of enforcement and other countermeasures are not conflated and to support an integrated Safe System approach.

- 3 Clarify and communicate that nontraditional enforcement options like driver feedback signs and warning notices are eligible and encouraged for grant funding.** States could use their 402 grant money in many ways other than stops and citations with fees to enforce laws against problematic driving behavior in alignment with the grant language. *Countermeasures that Work* has given driver feedback signs its highest possible efficacy rating—five stars—for reducing speeds, even without accompanying enforcement activities. Grant funding can also be used to support statewide data collection systems that would foster more efficient and equitable enforcement.
- 4 Regularly review, revise, and reconcile all safety guidance DOT uses or references, to ensure that they are evidence-based—and be clear that enforcement activities aimed at improving road safety must be done as part of a comprehensive Safe System approach.** Enforcement for enforcement’s sake is counterproductive for road safety. Enforcement should be done in conjunction with traffic calming design and infrastructure, education campaigns, and comprehensive post-crash systems evaluation.
- 5 Expand the focus of DOT’s Advisory Committee on Transportation Equity to include a mandate of ensuring racial and economic equity in enforcement.** Although enforcement is a component of a Safe System approach, there is far too little consideration of how to equitably balance the impacts of enforcement on low-income communities and communities of color. Tapping into a wider cross-section of traffic, safety, and justice system expertise through this committee will be a good first step at using existing DOT administrative infrastructure in new ways to address enforcement-related concerns.
- 6 Require greater data recording, reporting, and analysis on racial and economic metrics related to traffic enforcement activities.** As a condition of grant funding, DOT should require that agencies record and report key metrics on their enforcement activities—and DOT should analyze and publish reports about the data. Metrics that DOT should consider include the perceived racial background of the driver, the location where the enforcement activity occurred, the reason for the stop, whether and which non-traffic arrests or citations resulted from a stop initiated due to a traffic violation, and the total amount of any financial sanction assessed in the citation. Individual stop and/or automated traffic enforcement data should be reportable in monthly and yearly aggregate totals so that they can be more easily compared to local, state, and national statistics on road safety.

Appendix

On its website, NHTSA maintains a database of grantee annual reporting. Many of these reports overtly say or imply that **making more traffic stops and issuing citations** reflects favorably on grantees' highway safety plans. Here are some examples worth nothing:

- According to **Arkansas's** report, "Efforts continue to educate law enforcement and the judiciary on the importance of issuing citations and obtaining convictions."
- **Hawaii** implies that the more citations, the better, adding the caveat that "enforcement efforts and the number of citations/arrests were impacted by unforeseen challenges during COVID-19, staff shortages and reassignments to assist with large-scale protests."
- **Illinois** reports, "It is recommended that the agencies should be able to issue one traffic citation for every 60 minutes of patrol and 30 percent should be for occupant protection violations."
- **Indiana's** program managers will work to "increase the number of occupant protection related citations through grant funding" and ... grant funds "will assist in increasing the number of citations and arrests."
- **Kentucky** states that the number of citations issued per hour for various offenses, like speeding, child restraint, and distracted driving "is information critical in determining what projects are recommended for future funding."
- **Mississippi** promised, "The state will continue to work on maintaining the increase of grant funded citations, along with working with all agencies across the state to work on increasing state-wide seatbelt citations."
- **North Dakota** targeted an increase in the number of distracted driving citations throughout the grant period.
- **Ohio's** federally funded Law Enforcement Liaison (LEL) program encouraged field LEL's to "visit law enforcement agencies to encourage the agencies to issue citations for distracted driving, seat belt and child passenger restraint violations."
- **Pennsylvania's** Department of Transportation reports that it requests all departments, "meet a performance measure of an annual average of two contacts for every enforcement hour." If they don't meet the minimum enforcement standards, regional law enforcement liaisons will contact the department.
- **Texas** will continue to "support law enforcement with the goal to increase the number of seat belt citations issued during grant funded activities."
- **Utah** boasted a 40% increase in their two-year citation average for the years 2021–2022, which they attribute to the use of police motorcycles, "allowing officers to be less noticeable than [in] police cars."
- In **Wisconsin**, funding for high-visibility and saturation patrols/enforcement will "encourage law enforcement agencies to make occupant protection a priority [in part as] demonstrated by writing citations."

Endnotes

- ¹ Harrell, E., & Davis, E. (2020). *Contacts between police and the public 2018 – Statistical tables*. U.S. Department of Justice, Bureau of Justice Statistics. bjs.ojp.gov/content/pub/pdf/cbcp18st.pdf
- ² Davis, E., Whyde, A., & Langton, L. (2018). *Contacts between police and the public*. 2015. U.S. Department of Justice, Bureau of Justice Statistics. p. 8. bjs.ojp.gov/content/pub/pdf/cpp15.pdf; Baumgartner, F. R., Epp, D. A., & Shoub, K. (2018). *Suspect citizens: What 20 million traffic stops tell us about policing and race*. Cambridge University Press. p. 54.
- ³ Menendez, M., Crowley, M. F., Eisen, L.-B., & Atchison, N. (2019). *The steep cost of criminal justice fines and fees: A fiscal analysis of three states and ten counties*. Brennan Center for Justice. pp. 6–7. brennancenter.org/our-work/research-reports/steep-costs-criminal-justice-fees-and-fines; Peralta, E., & Corley, C. (2016, July 15). *The driving life and death of Philando Castile*. National Public Radio. npr.org/sections/thetwo-way/2016/07/15/485835272/the-driving-life-and-death-of-philando-castile
- ⁴ Pierson, E., Simoiu, C., Overgoor, J., Corbett-Davies, S., Jenson, D., Shoemaker, A., Ramachandran, V., Barghouty, P., Phillips, C., Shroff, R., & Goel, S. (2020). A large-scale analysis of racial disparities in police stops across the United States. *Nature Human Behaviour*, 4(7), pp. 736–745. doi.org/10.1038/s41562-020-0858-1
- ⁵ National Conference of State Legislatures. (Updated 2022, September 26). *Traffic Safety Review: State Speed and Red-Light Camera Laws and Programs*. ncsl.org/transportation/traffic-safety-review-state-speed-and-red-light-camera-laws-and-programs
- ⁶ Fines and Fees Justice Center. (2024). *Caution: We're driving the wrong way on automated traffic enforcement*. p. 10. finesandfeesjusticecenter.org/content/uploads/2023/12/Driving-the-Wrong-Way-5.pdf
- ⁷ Fines and Fees Justice Center, 2024, pp. 7–9.
- ⁸ Although the DOT reports a slight decrease in traffic fatalities in the past two years, the number of traffic-related deaths remains nearly 25% higher than 10 years ago. U.S. Department of Transportation. (2024). *Early estimate of motor vehicle traffic fatalities for the first quarter of 2024*. crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813598
- ⁹ Yellman, M. A. & Sauber-Schatz, E. K. (2022, July 1). *Motor vehicle crash deaths — United States and 28 other high-income countries, 2015 and 2019*. Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report. cdc.gov/mmwr/volumes/71/wr/mm7126a1.htm
- ¹⁰ U.S. Department of Transportation. (Updated 2022, October 13). *What Is a safe system approach?* transportation.gov/NRSS/SafeSystem
- ¹¹ U.S. Department of Transportation. (Updated 2024, September 5). *Safe Streets and Roads for All (SS4A) grant program*. transportation.gov/grants/SS4A
- ¹² Smith, T. (2023, March 27). *Fundamentals of the safe system approach*. Vision Zero Network. visionzeronetwork.org/fundamentals-of-the-safe-system-approach/
- ¹³ Eisenberg, R., Bodah, D., & Tucker, B. (2024, March 22). *4 ways the Department of Transportation can combat racially biased police traffic enforcement*. Center for American Progress. americanprogress.org/article/4-ways-the-department-of-transportation-can-combat-racially-biased-police-traffic-enforcement/
- ¹⁴ The White House. (2024, May 24). *Fact sheet: Biden-Harris administration highlights accomplishments on the second anniversary of historic executive order to advance effective, accountable policing and strengthen public safety*. whitehouse.gov/briefing-room/statements-releases/2024/05/24/fact-sheet-biden-%E2%81%A0harris-administration-highlights-accomplishments-on-the-second-anniversary-of-historic-executive-order-to-advance-effective-accountable-policing-and-strengthen-public/
- ¹⁵ Governors Highway Safety Association. *Section 402 State and Community Highway Safety Grant Program*. ghsa.org/about/federal-grant-programs/402; 23 U.S. Code § 402 - Highway safety programs. law.cornell.edu/uscode/text/23/402
- ¹⁶ Heydari, F. (2024). The invisible driver of policing. *Stanford Law Review*, 76(1), p. 26. review.law.stanford.edu/wp-content/uploads/sites/3/2024/01/Heydari-76-Stan.-L.-Rev.-1.pdf
- ¹⁷ Hedlund, J. H. (2008, August). *Traffic safety performance measures for states and federal agencies (DOT HS 811 025)*. National Highway Traffic Safety Administration. rosap.nhtl.bts.gov/view/dot/1856
- ¹⁸ For officers' activities to measure in response to grant funding, NHTSA identifies only the following metrics: The number "of seat belt citations ... of impaired driving arrests made ... [and] ... of speeding citations issued during grant-funded enforcement activities." Hedlund, 2008, p. ii.
- ¹⁹ 23 U.S. Code § 402 - Highway safety programs.
- ²⁰ The White House, 2024.
- ²¹ Hedlund, 2008.
- ²² Hedlund, 2008; Heydari, F. (2024). Rethinking federal inducement of pretext stops. *Wisconsin Law Review*, 2024(1). doi.org/10.59015/wlr.GIGO5473
- ²³ Goldstein, R., Sances, M. W., & You, H. Y. (2020). Exploitative revenues, law enforcement, and the quality of government service. *Urban Affairs Review*, 56(1), 5–31. doi.org/10.1177/1078087418791775
- ²⁴ See a comprehensive list of examples in the appendix.
- ²⁵ Arkansas Highway Safety Office. (2022). *FY 2023 highway safety plan Arkansas*. p. 7. nhtsa.gov/sites/nhtsa.gov/files/2022-11/AR_FY23_HSP.pdf

- ²⁶ Illinois Department of Transportation. (2022). *2023 Illinois highway safety plan*. p. 94. nhtsa.gov/sites/nhtsa.gov/files/2022-11/IL_FY23_HSP.pdf
- ²⁷ Utah Department of Public Safety. (2022). *Utah highway safety plan 2023*. p. 85. nhtsa.gov/sites/nhtsa.gov/files/2022-11/UT_FY23_HSP.pdf
- ²⁸ Maciag, M. (2019, August 16). Addicted to fines. *Governing*. governing.com/archive/gov-addicted-to-fines.html
- ²⁹ U.S. Department of Justice & U.S. Department of the Treasury. (2024, March). *Guide to equitable sharing for state, local, and tribal law enforcement agencies*. justice.gov/criminal/media/1044326/dl?inline=
- ³⁰ Fielding, J. (2022, July 13). *Outlawing police quotas*. Brennan Center for Justice. brennancenter.org/our-work/analysis-opinion/outlawing-police-quotas
- ³¹ Kirley, B. B., Robison, K. L., Goodwin, A. H., Harmon, K. J. O'Brien, N. P., West, A., Harrell, S. S., Thomas, L., & Brookshire, K. (2023). *Countermeasures that work: A highway safety countermeasure guide for State Highway Safety Offices, 11th edition, 2023*. National Highway Traffic Safety Administration. p. 3. nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag_0.pdf
- ³² National Highway Traffic Safety Administration. *High visibility enforcement toolkit*. nhtsa.gov/enforcement-justice-services/high-visibility-enforcement-hve-toolkit#measuring-effectiveness-32171
- ³³ U.S. Department of Transportation. (Updated 2024, February 20). *Comprehensive safety action plans*. transportation.gov/grants/ss4a/comprehensive-safety-action-plans
- ³⁴ U.S. Department of Transportation. (2022, May 24). *U.S. DOT FY22 Safe Streets and Roads for All funding*. federalregister.gov/documents/2022/05/24/2022-11113/us-dot-fy22-safe-streets-and-roads-for-all-funding#citation-26-p31619
- ³⁵ Kirley et al., 2023, p. 4-5.
- ³⁶ Hallmark, S., & Hawkins, N. (2014). *Tech brief: Dynamic speed feedback signs*. Center for Transportation Research and Education, Iowa State University. cdn-wordpress.webspec.cloud/intrans.iastate.edu/uploads/2018/03/DSFS_tech_brief1.pdf
- ³⁷ Hu, W., & Cicchino, J. B. (2024). Effects of lowering speed limits on crash severity in Seattle. *Journal of Safety Research*, 88, 174–178. doi.org/10.1016/j.jsr.2023.11.004
- ³⁸ Smart Growth America. *Quick-build demonstration projects*. smartgrowthamerica.org/program/national-complete-streets-coalition/quick-build-demonstration-projects/
- ³⁹ Smith, T. (2024, July 2). *Leveraging SS4A funding to right-size enforcement*. Vision Zero Network. visionzeronetwork.org/leveraging-ss4a-funding-to-right-size-enforcement/
- ⁴⁰ U.S. Department of Transportation. (2022, October 13). *What Is a safe system approach?* transportation.gov/NRSS/SafeSystem
- ⁴¹ Michael, J. P., Wells, N. M., Shahum, L., Bidigare-Curtis, H. N., Greenberg, S. F., & Xu, T. (2021). Roadway safety, design & equity: A paradigm shift. *Journal of Transport & Health*, 23, 101260. doi.org/10.1016/j.jth.2021.101260
- ⁴² Kirley et al., 2023, pp. 4-4 to 4-5.
- ⁴³ Pierson et al., 2020.
- ⁴⁴ Pierson et al., 2020, p. 739.
- ⁴⁵ Graham, M. A., Neath, S., Buchanan, K. S., Mulligan, K., Lloyd, T., & Solomon, P. A. (2024). *Racial disparities in use of force at traffic stops*. Center for Policing Equity. policingequity.org/traffic-safety/83-data-brief-use-of-force-at-traffic-stops/file
- ⁴⁶ Kirkpatrick, D. D., Eder, S., Barker, K., & Tate, J. (Updated 2021, November 30). Why many police traffic stops turn deadly. *The New York Times*. nytimes.com/2021/10/31/us/police-traffic-stops-killings.html
- ⁴⁷ Racial Identity and Profiling Act Board. (2024). *Annual report 2024*. oag.ca.gov/system/files/media/ripa-board-report-2024.pdf
- ⁴⁸ *Whren v. United States*, 517 U.S. 806 (1996). oyez.org/cases/1995/95-5841
- ⁴⁹ Farrell, W. (2018). *Predominately black neighborhoods in D.C. bear the brunt of automated traffic enforcement*. D.C. Policy Center. dcpolicycenter.org/publications/predominately-black-neighborhoods-in-d-c-bear-the-brunt-of-automated-traffic-enforcement/
- ⁵⁰ Hopkins, E. & Sanchez, M. (2022, January 11). Chicago's "race-neutral" traffic cameras ticket Black and Latino drivers the most. *ProPublica*. propublica.org/article/chicagos-race-neutral-traffic-cameras-ticket-black-and-latino-drivers-the-most
- ⁵¹ Mears, D. P., & Lindsey, A. M. (2016). Speeding in America: A critique of, and alternatives to, officer-initiated enforcement. *Criminal Justice Review*, 41(1), 55–74. doi.org/10.1177/0734016815614057; Lawpoolsri, S., Li, J., & Braver, E. R. (2007). Do speeding tickets reduce the likelihood of receiving subsequent speeding tickets? A longitudinal study of speeding violators in Maryland. *Traffic Injury Prevention*, 8(1), 26–34. doi.org/10.1080/15389580601009764
- ⁵² Sarode, A. L., Ho, V. P., Chen, L., Bachman, K. C., Linden, P. A., Lasinski, A. M., Moorman, M. L., & Towe, C. W. (2021). Traffic stops do not prevent traffic deaths. *Journal of Trauma and Acute Care Surgery*, 91(1), 141–147. doi.org/10.1097/TA.00000000000003163
- ⁵³ Wu, X., Lum, C., & Koper, C. (2021). Do everyday proactive policing activities reduce vehicle crashes? Examining a commonly held law enforcement belief using a novel method. *Journal of Criminal Justice*, 76, 101846. doi.org/10.1016/j.jcrimjus.2021.101846
- ⁵⁴ Park, S., & Lum, C. (2023). Does Weisburd's law of crime concentration apply to traffic crashes? Implications for policing and traffic law enforcement. *Policing: An International Journal*, 46(5/6), 922–940. doi.org/10.1108/PIJPSM-05-2023-0062

- ⁵⁵ Heydari, *The invisible driver of policing*, 2024, p. 45.
- ⁵⁶ Mears & Lindsey, 2016.
- ⁵⁷ Scott, M. S. & Maddox, D. K. (2010, January). *Speeding in residential areas, 2nd edition*. Community Oriented Policing Services. p. 18. popcenter.asu.edu/sites/default/files/speeding_in_residential_areas_2nd_ed.pdf
- ⁵⁸ Lawpoolsri et al., 2007.
- ⁵⁹ National Association of City Transportation Officials. (2020). *City limits: Setting safe speed limits on urban streets*. nacto.org/wp-content/uploads/2020/07/NACTO_CityLimits_Spreads.pdf
- ⁶⁰ Donnell, E., Kersavage, K., & Tierney, L. F. (2018). *Self-enforcing roadways: A guidance report*. Federal Highway Administration [fhwa.dot.gov/publications/research/safety/17098/17098.pdf?_gl=1*1hoizlx*_ga*NzU5NTAxMDk3LjE3MTAzMDUyMTA.*_ga_VW1SFwjKBB*MTcyMDExOTg1MS4zNC4xLjE3MjAxMjA0NDYuMC4wLjA](https://www.fhwa.dot.gov/publications/research/safety/17098/17098.pdf?_gl=1*1hoizlx*_ga*NzU5NTAxMDk3LjE3MTAzMDUyMTA.*_ga_VW1SFwjKBB*MTcyMDExOTg1MS4zNC4xLjE3MjAxMjA0NDYuMC4wLjA;); Federal Highway Administration. *Traffic calming e-primer*. [highways.dot.gov/safety/speed-management/traffic-calming-eprimer](https://www.highways.dot.gov/safety/speed-management/traffic-calming-eprimer)
- ⁶¹ Fefelova, K. (2024, July 2). *Safe speeds ahead: The promise of Intelligent Speed Assistance*. Vision Zero Network. visionzeronetwork.org/the-promise-of-intelligent-speed-assistance; Centers for Disease Control and Prevention (2024, April 24). *Increasing alcohol ignition interlock use*. [cdc.gov/impaired-driving/ignition-interlock/?CDC_AAref_Val=https://www.cdc.gov/transportationsafety/impaired_driving/ignition_interlock_states.html](https://www.cdc.gov/transportationsafety/impaired_driving/ignition_interlock_states.html)
- ⁶² Kirley et al., 2023, p. 4-31.
- ⁶³ Kirley et al., 2023, pp. 4-31 to 4-32; Vision Zero SF. *Executive summary: Safe Speeds SF High Visibility Enforcement Campaign findings*. [sfmta.com/sites/default/files/reports-and-documents/2020/02/safespeedssfhvecampaignfindingswithappendices_2020.01.pdf](https://www.sfmta.com/sites/default/files/reports-and-documents/2020/02/safespeedssfhvecampaignfindingswithappendices_2020.01.pdf)
- ⁶⁴ Taylor, C. L., Byrne, A., Coppinger, K., Fisher, D., Foreman, C., & Mahavier, K. (2022). *Synthesis of studies that relate amount of enforcement to magnitude of safety outcomes*. National Highway Traffic Safety Administration. [nhtsa.gov/sites/nhtsa.gov/files/2022-06/NPD-210715-001-15489_NCREPSynthesis%20_main%20report-042922-v4-tag.pdf](https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-06/NPD-210715-001-15489_NCREPSynthesis%20_main%20report-042922-v4-tag.pdf)
- ⁶⁵ Taylor et al., 2022, p. 11.
- ⁶⁶ Taylor et al., 2022, p. 14.
- ⁶⁷ Taylor et al., 2022, p. 14.
- ⁶⁸ 174 Graham, D. J., Naik, C., McCoy, E. J., & Li, H. (2019, September 16). Do speed cameras reduce road traffic collisions? *PLOS ONE*, 14(9), e0221267. doi.org/10.1371/journal.pone.0221267; Hu, W., & McCart, A. T. (2016). Effects of automated speed enforcement in Montgomery County, Maryland, on vehicle speeds, public opinion, and crashes. *Traffic Injury Prevention*, 17(sup1), 53–58. doi.org/10.1080/15389588.2016.1189076; Pilkington, P., & Kinra, S. (2005). Effectiveness of speed cameras in preventing road traffic collisions and related casualties: Systematic review. *BMJ*, 330, 331–334. [bmj.com/content/330/7487/331](https://www.bmj.com/content/330/7487/331); Wilson, C., Willis, C., Hendrikz, J. K., Le Brocq, R., & Bellamy, N. (Updated 2010, November 10). *Speed cameras for the prevention of road traffic injuries and deaths*. Cochrane Database of Systematic Reviews, 11. Article No. CD004607. [cochranelibrary.com/cdsr/doi/10.1002/14651858.CD004607.pub3/full](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD004607.pub3/full)
- ⁶⁹ Kirley et al., 2023, p. 4-3.
- ⁷⁰ U.S. Department of Transportation. (2017, February 13). *Traffic calming e-primer: Module 4*. Section 4.1. [safety.fhwa.dot.gov/speedmgt/ePrimer_modules/module4.cfm#note18](https://www.safety.fhwa.dot.gov/speedmgt/ePrimer_modules/module4.cfm#note18)
- ⁷¹ Arbogast, H., Patao, M., Demeter, N., Bachman, S., Devietti, E., Upperman, J. S., & Burke, R. V. (2018). The effectiveness of installing a speed hump in reducing motor vehicle accidents involving pedestrians under the age of 21. *Journal of Transport & Health*, 8, 30–34. doi.org/10.1016/j.jth.2017.11.004
- ⁷² Fines and Fees Justice Center, 2024, p. 4.
- ⁷³ Cohn, E. G., Kakar, S., Perkins, C., Steinbach, R., & Edwards, P. (2020). Red light camera interventions for reducing traffic violations and traffic crashes: A systematic review. *Campbell Systematic Reviews*, 16(2), e1091. doi.org/10.1002/cl2.1091
- ⁷⁴ Kirley et al., 2023.
- ⁷⁵ U.S. Department of Transportation. *Motor vehicle safety data*. [bts.gov/content/motor-vehicle-safety-data](https://www.bts.gov/content/motor-vehicle-safety-data)
- ⁷⁶ Federal Motor Carrier Safety Administration. *Traffic enforcement activity*. [ai.fmcsa.dot.gov/EnforcementPrograms/TrafficEnforcements](https://www.fmcsa.dot.gov/EnforcementPrograms/TrafficEnforcements)
- ⁷⁷ The White House, 2024.
- ⁷⁸ Eisenberg et al., 2024
- ⁷⁹ The White House, 2024.
- ⁸⁰ National Highway Traffic Safety Administration. (2024, July 19). *Minimum performance measures for the State Highway Safety Grant Program*. [federalregister.gov/documents/2024/07/19/2024-15963/minimum-performance-measures-for-the-state-highway-safety-grant-program](https://www.federalregister.gov/documents/2024/07/19/2024-15963/minimum-performance-measures-for-the-state-highway-safety-grant-program)