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Speeding in America:  
A Critique of, and Alternatives to, Officer-Initiated Enforcement

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Abstract

The enforcement of speed limits to improve public safety constitutes one of the most common activities that the police undertake. Yet, fundamental questions exist about whether traditional, officer-initiated enforcement actually deters speeding and whether it does so in a cost-efficient manner. Questions exist, too, about unintended harms associated with traditional enforcement practices, such as racial, ethnic, and socioeconomic class disparities, mistrust of the police, and, more generally, delegitimization of the law and institutions that implement it. This draws on prior scholarship to critique traditional speed limit enforcement practices and to argue for approaches that may be more effective, minimize unintended harms, and incur fewer costs.

Key words: speeding; speed limits; officers; safety

## Introduction

Speed limit enforcement—which typically is undertaken to protect the public from death and injury associated with speeding—constitutes one of the central activities undertaken by the police (Hummel, 2015; Ward, Nobles, Lanza-Kaduce, Levett, & Tillyer, 2011). Indeed, one of the primary ways that citizens come into contact with the police is through traffic stops for speeding (Eith & Durose, 2011; Engel, 2005). Evidence, however, that traditional, officer-initiated speed limit enforcement effectively reduces speeding is mixed (Dowling & Holloman, 2008; Elvik, 2012; Lawpoolsri, Li, & Braver, 2007; Luca, 2014; Scott & Maddox, 2010). In addition, relying on law enforcement to issue tickets is expensive and may engender ill-will among the public and create other social harms, such as delegitimization of the law and police and racial and ethnic disparities in ticketing, especially in situations where the public perceives tickets to have been undeserved (Elvik, 2012; Engel, 2005; Hummel, 2015; Leaf & Preusser, 1999). Even so, a pressing need exists to address speeding. According to the National Highway Traffic Safety Administration (NHTSA), for example, the “annual economic cost to society of speeding-related crashes is \$40.4 billion” (NHTSA, 2013b, p. 1), and speeding causes 30 percent of all traffic fatalities (NHTSA, 2012, p. 190-191).

In short, police enforcement of speed limits may effectively promote greater compliance with speed limits, on the one hand, but it also may be ineffective or cost-inefficient, on the other hand. The costs can include racial and ethnic disparities in ticket issuance and related impacts (e.g., fines, increased auto insurance rates), harm to officers, and reduced willingness of the public to contact the police for assistance or to report problems (Federal Bureau of Investigation, 2013; Gibson, Walker, Jennings, & Miller, 2009). Such costs raise questions about the merits of officer-initiated speed limit enforcement. These questions exist, too, because of the questionable effectiveness of officer-initiated enforcement and the possibility that alternative approaches for reducing speeding may be more effective and cost-efficient. For example, they may improve public safety, through reduced speeding, and minimize social harms at less cost.

Against this backdrop, the goal of this paper is to critique traditional, officer-initiated speed limit enforcement practices and to argue for approaches that are potentially less expensive, more effective, and minimize unintended harms. To this end, we first examine the reasons for enforcement of speed limits and concerns about traditional approaches to enforcing these limits. Second, we discuss potential benefits of, and research on, traditional officer-initiated speed limit enforcement. Third, we then turn to identification of potential costs, including unintended harms, that may result from such enforcement. Fourth, we identify alternative approaches to reducing speeding. Finally, we critique officer-based approaches to speed limit enforcement; in so doing, we emphasize the lack of evidence for the effectiveness of officer-based approaches, the considerable risks associated with it, and the availability of a wide range of alternatives that can provide more consistent, effective, and cost-efficient promotion of speed limit compliance. We conclude by discussing implications for research and policy.

## Background

Speed limits are a relatively recent phenomenon in world history, and emerged not with the advent of cars but rather with attempts to regulate horse-based travel. As Forbes, Gardner, McGee, and Srinivasan (2012) have emphasized, “the setting of speed limits predates the automobile by some 200 years, when Newport, Rhode Island, prohibited the horses galloping on major thoroughfares to prevent pedestrian deaths. Similarly, Boston, Massachusetts, limited horse-drawn carriages to ‘foot pace’ on Sundays to protect church-goers” (p. 1). In contemporary times, the focus has turned to vehicles, but the goal of reducing accidents, injuries, and fatalities remains (Elvik, 2012; Forbes et al., 2012; James et al., 2014; Leaf & Preusser, 1999; Luca, 2014). Enforcement of speed limits through ticketing and accompanying penalties (e.g., paying fines, being required to attend driving school, or having points added to one’s driver’s license) is thought to deter the driver (specific deterrence) and others (general deterrence) from speeding.

The salience of promoting speed limit compliance stems not only from the risk of harm to drivers and others when speeding occurs but also from the fact that many people speed. As Elvik (2012) has observed, “it is not uncommon for 30-50% of motorists to be speeding” (p. 236). The potential for harm is not theoretical. In 2012, the latest year for which national data exist, there were 10,219 speeding-related fatalities in America (NHTSA, 2014, p. 4), and approximately one-third of traffic fatalities were speeding-related (NHTSA, 2012, p. 190-191). Estimates costs run to \$40 billion annually (NHTSA, 2013b).

A second goal of speed limits—and by extension speed limit enforcement—exists. They serve to promote quality of life, such as enabling large numbers of individuals to arrive at destinations expeditiously, and to conserve natural resources. Lengthier travel times impose time and economic costs to individuals and businesses. Speed limits that take into account aggregate car flows and road usage can ensure minimal travel times, as long as these limits are followed. Reduced time in transit can result, in turn, in greater preservation of natural resources and in less pollution (Elvik, 2012; Forbes et al., 2012). Not least, adherence to speed limits can contribute to greater quality of life for residents and vulnerable drivers, including, for example, an increased willingness to drive and go to parks or on outings (Forbes et al., 2012; Kaczynski, Koohsari, Stanis, Bergstrom, & Sugiyama, 2014).

Speed limits serve as the logical precursor to speed limit enforcement and vary greatly. In Washington, D.C., for example, the “maximum posted speed limit” is 25 miles per hour (MPH), and in Texas the “maximum posted speed limit” is 85 MPH (NHTSA, 2013a, p. vi-ix). One state, Hawaii, has no statutory provisions for maximum speed, and instead leaves the establishment of speed limits up to each jurisdiction (p. 57). In some states, the maximum speed varies depending on the type of vehicle (NHTSA, 2013a, p. x-xii). In general, states and local jurisdictions vary as well in the procedures that they use to establish specific speed limits (Forbes et al., 2012). Such variation can stem from consideration, and differential weighting, of a wide range of factors, including: assumptions about drivers’ reaction times and abilities, traffic volume, visibility, road surface conditions, extent of residential development, hills, curves, and

more (p. 9-10).

Once states or local jurisdictions establish speed limits, their next task consists of ensuring compliance with the limits. One of the central approaches undertaken to promote speed limit adherence involves officer-initiated ticketing. However, many other options exist, including the use of traffic-calming measures (e.g., speed bumps, roundabouts), warning signs, educational campaigns aimed at raising public awareness about speed limits and the dangers of speeding, providing information to drivers about their actual speeds through electronic speed displays, and driver training (Foundation for Traffic Safety, 2007; Scott & Maddox, 2010). Automated ticketing, including the use of speed cameras, has become more common in the past decade, although to date “fourteen States explicitly prohibit the use of automated speed enforcement, while 18 States do not address this issue legislatively” (NHTSA, 2013a, p. v). Even so, the traditional strategy of relying on officers to issue tickets remains central to enforcement efforts. In Engel’s (2005) national study of citizen contacts with the police, for example, the authors found that almost half of such contacts (49 percent) were for speeding (p. 457).

A critical question, then, is whether, given the range of alternatives that exist to promoting speed limit compliance, substantial investment in officer-initiated speed limit enforcement is warranted. As Leaf and Preusser (1999) have emphasized, “enforcement is often an expensive, manpower-intensive operation, and the effects diminish rapidly away from the site and time of visible enforcement” (Leaf & Preusser, 1999, p. 35; see also Foundation for Traffic Safety, 2007; LaFountain, Schauffler, Strickland, & Holt, 2012). Any balanced assessment of the issue, however, requires weighing the full range of potential benefits against the full range of potential costs. It requires, too, consideration of alternative approaches that may more cost-efficiently increase speed limit compliance while minimizing potential unintended harms. Traditional, officer-initiated speed limit enforcement typically is assumed to be effective. However, as we discuss below, substantial questions exist about the empirical warrant and the theoretical logic of this assumption. We begin first, however, with a discussion of potential benefits of officer-initiated speed limit enforcement. We then identify potential costs of such enforcement and



discuss alternative approaches that may more cost-efficiently promote speed limit compliance.

### Potential Benefits of Officer-Initiated Speed Limit Enforcement

Here, we identify potential benefits of officer-initiated speed limit enforcement and in the next section we identify potential costs. As we discuss, evidence of large and consistent benefits is scant; at the same time, evidence for costs exists but is not systematic. Accordingly, we characterize the benefits and costs, respectively, as “potential” to emphasize the inconsistent or incomplete research findings to date.

#### 1. Enforcement Reduces Speeding and Thus Accidents, Injuries, and Fatalities

A primary goal of ticketing speeders is to promote speed limit compliance by that person and others and in turn reduce accidents, injuries, and fatalities. Tickets are supposed to achieve this outcome through specific deterrence (for the ticketed individual) and general deterrence (for non-ticketed drivers who witness someone else being ticketed). Implicitly, this theoretical explanation anticipates that ticketing occurs in a way that activates deterrence processes (Elvik, 2012; Lawpoolsri et al., 2007). For example, if officer-initiated ticketing reduces speeding, it presumptively does so because of a sufficient level of celerity, certainty, and severity of punishment, or through some combination of these deterrence dimensions. Ticketing also may promote compliance through other theoretical mechanisms. If, for example, the ticketing experience educates recipients about limits or leads them to respect the “rule of law” more, it may reduce speeding (Engel, 2005; Foundation for Traffic Safety, 2007; Scott & Maddox, 2010).

Evidence that officer-initiated enforcement reduces speeding is mixed. Some studies have found that officer-initiated warnings and tickets reduce speeding and others have identified no lasting effect on speeding (see, generally, Elvik, 2012; Hummel, 2015; Leaf & Preusser, 1999; Luca, 2014; Makowsky & Stratmann, 2011; Tay, 2009). Overall, it appears that officer-initiated speed limit enforcement holds the potential to reduce speeding, but that a wide range of factors

influence whether any such effect occurs. Leaf and Preusser (1999) have noted, for example, that “most actual enforcement patterns seem transient and localized, and drivers respond by slowing at the point of enforcement during times of enforcement” (p. 6). The intensity and duration of enforcement efforts, as well as the specific penalties associated with tickets, also may influence enforcement effectiveness (Bhalla et al., 2015; Lawpoolsri et al., 2007).

## 2. Enforcement Improves Transportation Efficiency and Quality of Life

A central benefit of speed limits, and adherence to them, is not only safety but also transportation efficiency and citizen quality of life (Elvik, 2012; Forbes et al., 2012). In a Hobbesian, everyone-for-themselves world, individuals might drive at whatever speeds suit their needs. Doing so would be efficient for them, but the concern is that in aggregate such actions produce large inefficiencies, such as fewer people arriving at intended destinations safely and in a timely manner (Burrington, 1996; H. Miller, 2013).

States and jurisdiction typically identify optimal speed limits through complicated algorithms that consider many factors. These include anticipated or known traffic volume, concerns about traffic noise and air pollution, road conditions, and more (Forbes et al., 2012, p. 10). Adherence to speed limits in theory enables transportation efficiency and other competing goals to be achieved. For example, when local speed limits are followed, residents may feel safer and be more likely to walk or drive to nearby parks (Kaczynski et al., 2014). Any such effect depends on adherence to speed limits, and so, in turn, any beneficial effect of officer-initiated enforcement requires that it appreciably reduce speeding.

## 3. Enforcement Increases Perceived Government Legitimacy

Officer-initiated speed limit enforcement offers the opportunity for citizens to come into contact with officers and to appeal the facts of their case directly and immediately. Citizens can and do weigh procedural justice in arriving at their views about the legitimacy of the police and,

by extension, government (Skogan & Frydl, 2004; Skolnick, 1999; Ward et al., 2011). To the extent that speeding-related police-citizen encounters lead drivers to feel listened to, respected, and treated fairly, then enforcement may increase perceived police and government legitimacy. This increased legitimacy can be viewed as a critical outcome in and of itself. In addition, however, it may make it more likely that citizens will contact the police for help in the future.

#### 4. Enforcement Provides Income for Government

“There is,” as Garrett and Wagner (2009) have argued, “considerable anecdotal evidence that government officials consider traffic tickets to be an important source of revenue” (p. 72). Their study, which found that traffic tickets in North Carolina increased in the year after a decline in government revenue, supported this assessment (see also Hummel, 2015; Ward et al., 2011). Assessments of public opinion indicate that citizens view speeding tickets as being issued for this purpose. For example, in the 2011 National Survey of Speeding Attitudes and Behavior, “one-half of drivers agreed that speeding tickets have more to do with raising money than they do with reducing speed” (Schroeder, Kostyniuk, & Mack, 2013, p. 2; see also Corbett & Grayson, 2010).

This potential benefit is notable because it requires no effect of enforcement on speeding. Even if enforcement of speed limits through ticketing exerts no effect on speeding, a benefit accrues to governments in the form of increased revenue. The revenue in turn can be used to support a range of government initiatives. Anecdotal accounts exist in which officials have stated that increased revenue in fact was a goal of ticketing. For example, in Waldo, Florida, officials “never hid the fact that citations paid for the small police force” (Dearen, 2014). However, no national estimates exist that quantify the extent to which increased revenue is a goal that guides speed enforcement or whether it simply constitutes a byproduct of enforcement.

#### 5. Enforcement Aids in the Apprehension of Criminals

Finally, officer-initiated speed limit enforcement may lead to identification and apprehension of criminals. The potential benefit of apprehending criminals is not necessarily a goal associated with speed limit enforcement. It nonetheless may occur. For example, the Oklahoma City bomber was apprehended during a routine traffic stop (Henneberger, 1995). Occurrences involving such extreme cases likely are rare. Occurrences involving less serious issues, such as failure to wear a seat belt or to provide proof of insurance, or criminal activity (e.g., driving with a revoked driver's license, possession of narcotics) likely are more common. For example, Eith and Durose (2011) have estimated that, in 2008, "about 1 out of 10 searches conducted during traffic stops uncovered illegal items" (p. 10). The prevalence of such events for speeding citations is undocumented; even so, officer-initiated speed limit enforcement holds the potential for identifying offenders and for discovering or preventing criminal acts.

#### Potential Costs of Officer-Initiated Speed Limit Enforcement

Juxtaposed against the possibility that officer-initiated speed limit enforcement produces multiple benefits is the possibility that it produces costs. Here, then, we identify potential costs.

##### 1. Enforcement Has No Effect on Speeding and Thus Accidents, Injuries, and Fatalities

Officer-initiated speed limit enforcement may not be effective in reducing speeding or, in turn, traffic-related accidents, injuries, or fatalities. Reviews suggest that, as a general matter, such enforcement can be effective (see, e.g., Elvik, 2012; Leaf & Preusser, 1999). However, studies suggest that the effects may be overstated and may not occur at all unless specific conditions, such as a sufficient dose of enforcement and extended rather than time-delimited enforcement, are met (see, e.g., Lawpoolsri et al., 2007; NHTSA, 2008; Scott & Maddox, 2010).

Several reasons exist to be skeptical that officer-initiated enforcement appreciably reduces speeding in aggregate for a given locality. First, this approach does not directly target a wide range of factors that may contribute to speeding, such as the social and demographic

characteristics of the driving population, the driving culture, educational awareness about the harms of speeding, the quality of driver's education classes, appropriateness of specified limits for certain roadways, the amount and quality of roadway design features that directly or indirectly affect driving speeds, and so on (Forbes et al., 2012; Foundation for Traffic Safety, 2007; Richard et al., 2012; Schroeder et al., 2013; Scott & Maddox, 2010).

Second, specific deterrence effects are unlikely to result in large aggregate safety improvements unless substantially higher doses of officer-initiated enforcement occur than typically is in most jurisdictions. For example, in a national study, only one-fifth of "high-level speeders" reported being stopped for speeding (Schroeder et al., 2013, p. 88). Notably, as a group, "speeders"—who constitute 30 percent of the driving population (p. 1)—appear to be the least likely to respond to enforcement efforts (p. 64), suggesting that large-scale reductions in speeding through officer-initiated enforcement may be limited. Some studies suggest, in fact, that receiving tickets or citations does not affect future speeding (Lawpoolsri et al., 2007; cf. Elvik, 2012). The effectiveness of officer-initiated ticketing on different types of speeders—such as incidental speeders, situational speeders, casual or intermittent speeders, and habitual speeders (Richards et al., 2012, p. 28) remains unknown.

Third, appreciable deterrence effects appear to be unlikely unless certain conditions are met. For example, the severity of punishment must create costs sufficient to offset benefits (Leaf & Preusser, 1999). For many individuals, the threat of paying several hundred dollars in fines and the attendant risk of higher insurance rates may deter. However, such costs must be juxtaposed against the accumulated perceived benefits of speeding day after day.

Perhaps more relevant is the certainty of punishment. Deterrence research suggests that the certainty of apprehension and punishment, more so than the severity of punishment, is critical for producing a deterrent effect (Akers & Sellers, 2012; Nagin, 2013; Pogarksy, 2009). Given that up to 30-50 percent of the population speeds (Elvik, 2012) and that many drivers believe that they have to greatly exceed the speed limit before they would need to be concerned about receiving a ticket (Richard et al., 2012), there appears to be a need for considerably more

certainty in the likelihood of apprehension for deterrent effects among drivers to occur.

Other lines of deterrence research reinforce this argument. For example, Sherman (1990) has argued that deterrence decay, due to aversion ambiguity, may undermine the effectiveness of punishment policies. For example, individuals who are uncertain about the likelihood of apprehension and sanctioning may be more likely to be deterred; the logic is that individuals are averse to ambiguity and seek to minimize it. As they become familiar with the likelihood of apprehension and sanctioning, the intervention effects decay. This situation characterizes officer-initiated speed limit enforcement. Most drivers know that the risk of apprehension is low, which in turn may account for the high estimated rates of speeding (Elvik, 2012). Based on deterrence studies to date, more certain apprehension, coupled with frequent changes in the location where ticketing occurs, likely would provide a greater deterrent effect than infrequent enforcement, which provides little basis to activate aversion ambiguity. For example, deterrent effects might occur for a given stretch of road or highway for the days and weeks after a period of enforcement. However, without sustained enforcement, or frequent random enforcement, drivers may resume speeding (Dowling & Holloman, 2008; Scott & Maddox, 2010).

Not least, even if the risk of apprehension is high, drivers must perceive that they will be ticketed (Nagin, 2013). Enforcement alone may be less likely to produce deterrent effects as compared to efforts that are coupled with media coverage or other accounts of enforcement activities (Makowsky & Stratmann, 2011). Notably, however, enforcement patterns typically are not widely advertised. Drivers, especially those not familiar with local roads or highways, in turn have little understanding of their likelihood of apprehension.

Deterrence scholarship points to other factors that undermine the likelihood that low-dose enforcement through officer-initiated ticketing can appreciably reduce speeding. For example, criminogenic, rather than deterrent, effects may arise when experiences with punishment avoidance increase drivers' sense that they can speed and get away with it (Nagin, 2013; Stafford & Warr, 1993). This "experiential effect" has been described at length in deterrence studies (e.g., Paternoster, Saltzman, Waldo, & Chiricos, 1983; Saltzman, Paternoster, Waldo, &

Chiricos, 1982) and reviews (e.g., Nagin, 2013; Pogarsky, 2009). As noted above, research on drivers' perceptions indicates that many drivers view their probability of being ticketed as low unless they greatly exceed the speed limit (Richard et al., 2012). Experiences with successful punishment avoidance thus may contribute to more speeding rather than less, and may offset any short-term deterrent effects associated with specific instances in which speeders have been ticketed. In addition, drivers who receive a ticket may view their likelihood of receiving another ticket as low, resulting in little to no deterrent effect.

There is, too, the possibility that the precise amounts of fines or penalties must be precisely tailored to reflect citizens' views of what is procedurally just (Tyler, 2006). In studies of speed limit enforcement, for example, fines and penalties that exceed what "offenders consider meaningful" do not appear to reduce speeding (Scott & Maddox, 2010, p. 22). Viewed in this light, deterrence effects require a careful calibration of enforcement efforts that depend heavily on frequent enforcement and enforcement and sanctions that the public views as fair.

Collectively, such considerations should not be taken to suggest that officer-initiated enforcement can have no deterrent effects (Elvik, 2012). Rather, what emerges from scholarship on deterrence and speeding is that the conditions required to create sustained, appreciable reductions in speeding are not likely met in most jurisdictions. This situation exists in part because of the costs required to support consistently high doses of enforcement for lengthy periods of time and in many areas (Forbes et al., 2012; Leaf & Preusser, 1999).

## 2. Enforcement Reduces Transportation Efficiency and Quality of Life

Considerable complexity attends to efforts to set speed limits that effectively balance an array of concerns (Forbes et al., 2012). Speed limits can be used to promote safety, but they also can be used to increase transportation efficiency and quality of life. By extension, officer-initiated enforcement can improve these outcomes to the extent that they promote compliance with speed limits. Here, as with safety outcomes, the necessary condition for an improvement

rests with increased compliance with speed limits. Evidence of the effectiveness of officer-initiated speed limit enforcement, however, is mixed. At best, then, such enforcement may have no effect on transportation efficiency or citizens' quality of life. At worst, it may worsen transportation efficiency, if only through missed opportunities to invest in effective approaches to promoting speed limit compliance. And it may worsen citizens' quality of life both through reduced transportation efficiency and, as we discuss next, through citizen mistrust in the police.

### 3. Enforcement Reduces Perceived Government Legitimacy

One of the arguments for officer-initiated speed limit enforcement is that it allows officers to exercise discretion in handling specific cases. Drivers, for example, can explain why they were speeding and, at least in some instances, may provide compelling reasons or identify extenuating circumstances that may convince the officer that a ticket is undeserved (Wells, 2008). However, to the extent that drivers feel that officer-initiated ticketing is arbitrary, capricious, or unfair, then trust in, support for, and belief in the legitimacy of law enforcement may decline. That constitutes a social harm in and of itself and it may contribute to further harm (Skogan & Frydl, 2004; Skolnick, 1999). For example, it may reduce the likelihood that the public will call the police for services or assistance or to report problems (Gibson et al., 2009, p. 139). National estimates indicate that approximately 10 percent of drivers stopped for speeding perceive the stop as illegitimate (Langton & Durose, 2013, p. 5). In addition, and as we discuss below, racial and ethnic differences exist in the perception of ticket legitimacy.

Public perceptions of the legitimacy of police actions may depend not only on actual enforcement patterns but also on views about the appropriateness of speed limits. In a study of drivers' perceptions, for example, Richards et al. (2012) found that "drivers in all groups believed that there was often a disconnect between the posted speed/ticket speed, and how fast they thought they could safely travel" (p. 21). Corbett and Grayson (2010) found a similar pattern, one expressed by one respondent who commented: "What annoys me most is the



continual changing of speed limits over a short distance—60, 40, 30, 50, 30, and so on. In the end you don't know what you are meant to be doing" (p. 366).

Public perceptions of enforcement legitimacy may be affected, too, by consideration of police motivations or the context in which enforcement occurs. In Waldo, Florida, for example, researchers examined the effect of a newly installed billboard outside of town that signaled explicitly to drivers that a speed trap lay ahead. The billboard and enforcement of the speed trap led to increased ticket contestations. The authors concluded that "the speed trap label led to changes in the way in which motorists viewed the legitimacy of the Waldo police which, in turn, influenced [ticketing] decision acceptance rates" (Ward et al., 2011, p. 265).

#### 4. Enforcement Places Officers and Citizens in Dangerous or Difficult Situations

For officers, pulling people over can be dangerous (Federal Bureau of Investigation, 2013). Nationally, from 2003-2012, 18 percent of 535 "feloniously killed" officers died during a "traffic pursuit/stop" (Federal Bureau of Investigation, 2013; see also Edwards, 1995). During this same period, 10 percent of 581,239 assaulted officers were assaulted during such stops (Federal Bureau of Investigation, 2013). These stops can include more than just instances of speeding. However, the risk clearly remains. Potential harms extend to drivers as well. The experience of being pulled over, for example, can be stressful. In addition, it can engender shame, fear, and anger at what drivers may view as unfair or discourteous treatment (Corbett & Grayson, 2010; Gibson et al., 2009; Goldenbeld, Mesken, & Van Schagen, 2013). Any such effect in turn risks reducing citizen perceptions of government legitimacy. As we discuss below, to the extent that such perceptions are racially patterned, the effects may be greater for some groups, such as minorities.

#### 5. Enforcement Provides No Clear or Coherent Check Against Misuse of Discretion

A central benefit, but also risk, of officer-initiated speed limit enforcement is the ability of

officers to exercise discretion. Studies suggest that approximately 69 percent of drivers stopped for speeding receive a ticket (Eith & Durose, 2011, p. 8), indicating that discretion in fact is central to officer-initiated speed limit enforcement. In certain cases, speeding may be justifiable or, at the least, appear defensible. Officers may take heed of such possibilities and issue no warnings, citations, or tickets. At the same time, this discretion carries with it certain risks. For example, officers may fail to enforce speed limits consistently for all drivers. They may consciously or unconsciously use race, ethnicity, gender, age, type of car, or other observable characteristics as the basis for pulling a driver over for speeding and issuing a warning, citation, or ticket. They may enforce the speed limit only for select cars at certain times of the day. These and other possibilities exist and highlight that officers may abuse their discretionary authority. The fact that drivers typically have little recourse for challenging a warning, citation, or ticket provides greater leeway for misuse or abuse of discretion to occur.

## 6. Enforcement Creates the Potential for Racial and Ethnic Targeting

Concerns about racial profiling have drawn considerable attention in recent decades (Tillyer & Engel, 2012; Ward et al., 2011). Research presents a complicated portrait of the problem. On the one hand, studies find that minorities, blacks in particular, are more likely to be stopped by the police. As Warren, Tomaskovic-Devey, Smith, Zingraff, and Mason (2006) reported, “young African-American male drivers report an average of 1.25 stops in the past year, almost twice as many as their white counterparts (.68)” (p. 720). Blacks also are more likely to be searched during traffic stops. For example, in 2008, “black drivers were about three times as likely as white drivers and about two times as likely as Hispanic drivers to be searched” (Eith & Durose, 2011, p. 1). Blacks also were more likely than whites to be arrested during such stops (4.7 percent vs. 2.4 percent, respectively) and were more likely to be ticketed (58.3 percent vs. 53.1 percent, respectively) (p. 9). On the other hand, research on profiling is complicated by the fact that estimating the relevant denominators for different racial and ethnic groups is difficult

(Novak, 2004). For example, minorities may be pulled over for speeding more often than whites relative to their presence in the population at large, but this difference may be attributable to racial or ethnic differences in driving behavior, including speeding (Tillyer & Engel, 2012, p. 285; see, generally, Tillyer, Engel, & Wooldredge, 2008).

Disparity in speed limit enforcement for minorities can be viewed as problematic in and of itself. It can create additional problems, however, such as increased minority dissatisfaction with the police. For example, in studies of traffic stops, minorities are substantially less likely to view the reason for the stops as legitimate or to view the police as behaving appropriately (Engel, 2005; Eith & Durose, 2011; Langton & Durose, 2013). This issue extends to speeding. In one national study, 92 percent of white drivers stopped for speeding felt the stop was legitimate, compared to 79 percent of black drivers and 89 percent of Latino drivers (Eith & Durose, 2011, p. 8). In short, to the extent that experiences with law enforcement are, or are experienced to be, biased against minorities, they create concerns about fairness and about citizen willingness to contact or work with the police (Gibson et al., 2009; Skogan & Frydl, 2004).

## 7. Enforcement Is Potentially More Costly than Other Approaches

Law enforcement time is costly. Time spent enforcing speed limits is, by extension, costly, and it may not effectively or appreciably reduce speeding (Foundation for Traffic Safety, 2007; LaFountain et al., 2012; Leaf & Preusser, 1999). In addition, there are opportunity costs. When officers enforce speed limits, they do not undertake other activities that might result in greater benefits to society, such as reductions in serious crime. At the same time, as discussed below, there may be alternatives that more cost-efficiently promote speed limit compliance.

### Reducing Speeding Through Alternative Approaches

Many approaches exist to reduce speeding (see, generally, Forbes et al., 2012; Foundation for Traffic Safety, 2007; Scott & Maddox, 2010). Attempting to curb speed limit violations by

relying on officers to issue warnings, citations, and tickets constitutes but one strategy. As the discussion above highlights, it is a strategy that under certain conditions may result in greater compliance with speed limits. At the same time, these conditions are difficult and costly to meet, and there exist a number of risks that may offset the putative benefits.

Juxtaposed against such considerations lies the fact that other strategies exist that may cost less and incur fewer social harms, such as racial disparities in enforcement and increased perception of police or government as unfair. The potential for lower financial costs is critical. For example, constructing a speed bump entails an initial one-time cost that may result in a speed-reducing benefit indefinitely. By contrast, paying officers to enforce speed limits results in ongoing costs that do not necessarily, or typically, lead to consistent enforcement. The avoidance of social harms also is critical. Promoting public safety clearly constitutes a central goal of government. However, doing so in a manner that avoids perceived or actual unfairness is essential to democratic governance, citizen compliance with government, and effective policing (Langton & Durose, 2013; Skogan & Frydl, 2004; Skolnick, 1999). For example, research indicates that when citizens perceive police or government authority to be used unfairly, compliance with the law declines (see, e.g., Engel, 2005; Mazerolle, Bennett, Davis, Sargeant, & Manning, 2013; Tyler, 2006).

Here, then, we identify several approaches that can be pursued independently or in conjunction with one another to promote compliance with speed limits. Officer-initiated speed limit enforcement might reasonably be viewed as a part of a general set of efforts to reduce speeding (Elvik, 2012; Leaf & Preusser, 1999; Scott & Maddox, 2010). However, the existence of potentially cheaper approaches that carry fewer risks and that may be more effective raises the question of whether relying primarily on officer-initiated enforcement is warranted.

## 1. Set Appropriate Speed Limits

A logical starting point for promoting speed limit compliance begins with setting limits that

are appropriate to road conditions, traffic volume, pedestrian proximity, and other conditions. Limits set too high create the risk of accidents, while limits set too low create the risk of significant driver non-compliance and traffic congestion. In addition, when citizens fail to abide by laws, it erodes government authority. Lowering speed limits alone can reduce the average speed of drivers; however, drivers can and do still exceed the new lower limit (Leaf & Preusser, 1999). That situation reflects in part the goal of drivers to reach their destinations in a timely manner. Optimal speeds are those that best balance competing societal goals, including safety and transportation efficiency (Forbes et al., 2012, p. 21). They also take into account what drivers view as acceptable as well as typical driver behavior.

Given the range of considerations that go into setting speed limits, it rarely is the case that an objectively “best,” or optimal, limit can be identified (NHTSA, 2008, p. 14). However, application of different methodologies can aid in the identification of an approximation to such a limit (Forbes et al., 2012, p. 75). In turn, this limit provides a foundation for reducing the likelihood of speeding infractions that result simply from unnecessarily low (or high) limits. Importantly, the development of this limit includes assessment of different approaches to promoting speed limit compliance that might be possible (NHTSA, 2008; Scott & Maddox, 2010). For example, in school zones, lowering the speed limit for a limited section may be necessary, but in other sections of roadway the use of ecological designs, such as road bumps or roundabouts in areas where past traffic patterns indicate a high risk of accidents, may be more effective. On state highways, the use of signage that educates the public about speed limits may be more effective than certain physical changes, such as introducing road bumps.

## 2. Use Automated Speed Enforcement

The use of automated speed enforcement (ASE) has increased in recent decades (Forbes et al., 2012; NHTSA, 2008) but its penetrance remains low in part because of debates about whether it serves to promote public safety or to increase government revenue. The latter concern

surfaces especially in contexts where speed limits may be viewed as unnecessarily low. Regardless, ASE holds considerable potential for cost-efficiently increasing the “dose”—and, in particular, the certainty—of speed limit enforcement and, in turn, achieving appreciable levels of general and specific deterrence. Reliance on ASE also holds the potential for reducing concerns about unfair citation and ticketing practices because no discretion is involved; speeding in excess of set amounts automatically results in a ticket.

The effectiveness of ASE hinges on implementation. For example, one benefit of officer-initiated speed limit enforcement is that citizens have an opportunity to interact with officers and explain exigencies that may have given rise to the speeding (Wells, 2008; see, generally, Elvik, 2012; Engel, 2005). ASE can be viewed as unfair because it provides no immediate opportunity for such interactions. However, ASE can be applied using relatively relaxed “triggering” thresholds and so reduce the number of instances where legitimate exigencies exist. In addition, appeals are possible, just as they are with traditional enforcement ticketing. Still other avenues exist to reduce citizen dissatisfaction with ASE. For example, average speed enforcement, which entails measurement of an average speed across multiple points along a stretch of road or highway, can be used. This approach has been shown to reduce speeding and to be perceived as more fair than single-video camera enforcement (Soole, Watson, & Fleiter, 2013). In part, citizens perceive the approach as more fair because it adjusts for the possibility that, while driving, there may be brief periods where a driver may speed without meaning to do so or to pass another driver. Drivers also typically will see multiple signs notifying them of the automated enforcement, which can reduce the sense of unfairness and frustration that they otherwise might experience.

### 3. Use Situational Speed Limit Adherence Strategies

A wide range of “situational” strategies exist to promote adherence to speed limits. Many require minimal costs compared to the fixed costs associated with relying on officer-initiated

enforcement. These include speed humps, raised crosswalks, better posting of speed limits, textured pavement, traffic circles, chicanes (artificial barriers, such as those used in motor racing circuits, that deflect traffic), islands, and more (Scott & Maddox, 2010). They also include posting warning signs and signals. They include, too, the removal of standard barriers and replacing them with signs and features (e.g., street lamps, waste bins, water fountains). Such approaches have been shown to reduce speeding “because motorists recognize that they are sharing the space with non-motorized users and therefore must be cautious” (p. 14). Educational and public awareness campaigns can be undertaken to promote safe driving; this approach is most effective when it targets groups who may speed or areas where speeding occurs more frequently (p. 15). Notably, efforts that encourage obeying speed limits and that entail thanking the public for compliance have been found to reduce speeding (p. 15). Realistic driver training, too, can promote speed limit compliance. This training entails showing drivers how speeding affects their ability to control a car in different conditions, and in turn educates them about the benefits of speed limit compliance. Speed display boards, which highlight prominently drivers’ actual speeds, are still another option that can promote compliance. Not least, involving the public in developing approaches to reducing speeding can be effective and may simultaneously improve citizen perceptions of government and police legitimacy (NHTSA, 2008).

#### 4. Use Technology to Increase Speed Limit Compliance

An increasingly broad array of technologies exist that promote speed limit compliance. For example, vehicles can be equipped with “speed limiters”; a limit can be set that prevents the vehicle from exceeding a certain speed (Scott & Maddox, 2010, p. 23). The limit can change based on feedback the car receives from roadway transmitters. Other equipment can be used. For example, devices that drivers carry with them (e.g., “smart” phones, tablets) or that are installed in vehicles can be used to trigger electronic signs that flash warnings to drivers when they speed. A more radical approach entails the use of vehicles that drive themselves. Google,

which has pioneered the approach, is equipping vehicles with “electronic sensors that can see about 600 feet in all directions” (Markoff, 2014, p. B1). The safety record of this approach is, to date, reportedly excellent. For example, as of 2014, Google reports “that its driverless cars have logged more than 700,000 miles without an accident caused by the car . . .” (C. Miller, 2014, p. A3).

An indication of the potential effectiveness of technological approaches to safe driving can be found in new insurance industry efforts. For example, State Farm Insurance has a program called “Drive Safe and Save” that allows enrollees to reduce their insurance costs by allowing their driving habits, including compliance with speed limits, to be monitored. Safer drivers, based on analysis of their actual driving habits, receive larger discounts (<https://www.statefarm.com/insurance/auto/discounts/drive-safe-save>). Other automobile insurance companies, such as Allstate and Progressive, have pursued similar efforts.

Still another example is illustrated in what has been termed “virtual traffic lights” (Cohen, 2015). The lights can replace traditional traffic lights and automatically turn red or green in a given direction depending on the timing of cars approaching from different directions. Similarly, speed limits can be adjusted to vary depending on overall traffic flows. Adjustment would be guided by the principle of promoting maximum travel efficiency and the most public safety.

Yet another approach to promoting speed limit compliance is to adjust speed limits on a daily or hourly basis depending on such dimensions as traffic flow and weather, much as speed limits are adjusted by schools during pick-up and release times. The use of such adjustments alongside of signage that explained the reasoning may increase compliance with speed limits. With the advent of “smart phones” and “smart cars,” this approach can be expanded to include automatic notifications to drivers that apprise them of changes in these limits.

## 5. Create a Culture of Speed Limit Compliance

One of the most effective ways to promote speed limit compliance may be through a culture



of safe driving (Foundation for Traffic Safety, 2007; J. Miller, 2013). In the United States, speeding is conveyed in many car advertisements as a positive and, indeed, desirable endeavor (Scott & Maddox, 2010, p. 3). That situation—along with the fact that drivers typically consider speeding to be a minor offense, underestimate their speeding, and overestimate their ability to control their vehicle (Elvik, 2012; Leaf & Preusser, 1999; Richard et al., 2012; Schroeder et al., 2013; Scott & Maddox, 2010)—likely contributes to widespread speeding. Accordingly, efforts directed at changing this culture and improving driver understanding and awareness of speeding consequences may contribute to sustained and large-scale speed limit adherence (McNeely & Gifford, 2007). Almost one-half of drivers “think that the speed limit should be enforced all of the time” (Schroeder et al., 2013, p. 51). That view suggests that comprehensive efforts to promote speed limit compliance would find support among large swaths of the general public.

### Critique

Public safety and efficient transportation constitute critical goals for society. Speed limits serve to achieve both of these goals. When set correctly and followed, they minimize accidents, injuries, and deaths, and they simultaneously facilitate efficient transportation so that citizens can arrive at destinations as quickly as possible. Balanced against these goals is the necessity of setting limits that accommodate other goals, such as limiting speeding near parks, playgrounds, and other pedestrian dense areas. Identifying the precise speed limit that simultaneously achieves all of these goals is complicated (Forbes et al., 2012). However, a critical underlying assumption to any speed limit’s effectiveness is that drivers adhere to the limits. The question then becomes one of implementing strategies or interventions that can best promote speed limit adherence. To date, officer-based enforcement has been the “go to” approach for promoting adherence, or, more precisely, for deterring violations. Other approaches exist, but typically are presented as complements to it. This situation is problematic for many reasons and can be critiqued on several grounds. Here, drawing on the above discussion, we identify several of the

most prominent grounds on which to critique officer-initiated speed limit enforcement.

First, research has provided little empirical basis to ground the assumption that officer-based enforcement appreciably reduces speeding or that it does so for sustained periods of time across many areas. Although some enforcement studies have reported deterrent effects, the duration of these effects have been largely unexamined. The ticketed individuals, for example, may resume speeding within days, weeks, months, or years after, and other drivers who observe the ticketing may do the same. Indeed, studies indicate that the effects of officer-based enforcement are localized and of short duration. To the extent that increased compliance with speed limits results from such enforcement, the change appears to be temporary and restricted to the area where the enforcement occurred (Leaf & Preusser, 1999). Accordingly, putative benefits of officer-based enforcement—such as greater public safety, enhanced transportation efficiency, and improved quality of life—are unlikely to arise. In addition, experiential effects (Nagin, 2013; Paternoster et al., 1983), including experience with successful punishment avoidance, may create the risk that low levels of enforcement increase rather than decrease speeding.

Second, the theoretical basis on which to anticipate large or sustained benefits of officer-based enforcement also is limited. A theoretically informed approach to promoting speed limit compliance would focus efforts on the factors that research has found contribute to speeding. Notably, however, officer-based enforcement does little to address the diverse factors that contribute to speeding, such as social and demographic characteristics of drivers in particular areas, local driving culture, and roadway design (Forbes et al., 2012; Foundation for Traffic Safety, 2007; Scott & Maddox, 2010). In addition, deterrence research does not clearly support officer-based enforcement over other approaches. At most, it identifies conditions that likely need to be met for large or sustained effects to exist. There are many such conditions, such as consistent and certain punishment. However, even the largest police forces do not typically have the resources to assign officers to enforce speed limits in many of the areas where speeding most frequently occurs and where it poses the greatest risk. Put differently, the conditions necessary for deterrence to occur, to be appreciable, and to be sustained over time and across many

places—not just those where the enforcement occurs—appear unlikely to be met by most law enforcement agencies (Lawpoolsri et al., 2007; Richards et al., 2012; Schroeder et al., 2013). This observation holds for state highway patrols as well. For holidays and other times of the year where police presence manifestly increases, there can be temporary increases in speed limit compliance. Such increases in police presence, however, are financially costly and typically cannot be sustained throughout the rest of the year.

Third, harms can and do arise from officer-based enforcement. For example, officers can be injured during enforcement encounters (Federal Bureau of Investigation, 2013) and citizens' respect for the rule of law may diminish, especially when they perceive laws to be unfairly or capriciously applied. The potential for these harms has been highlighted by recent high-profile incidents nationally, such as in Ferguson, Missouri, Baltimore, Maryland, and New York City, where racially charged events have highlighted longstanding concerns about mistreatment of and a lack of responsiveness to minority citizens' concerns (see, e.g., Bosman & Fitzsimmons, 2014; Goldstein & Schweber, 2014). These concerns extend to police-citizen encounters in general. Given that officer-based speeding tickets serve as one of the primary conduits for citizens to obtain impressions of police fairness and that minorities are substantially less likely to view speed stops as fair, the risk of decreased citizen compliance with the police arises. In officer-citizen encounters, then, the attendant risk of violence arises, even in cases where the police comport themselves professionally and where the stakes, a ticket, seemingly are low. The risk arises, too, that citizens' views of police legitimacy decline and that, in turn, citizens' willingness to contact the police for assistance declines (Gibson et al., 2009; Ward et al., 2011).

Fourth, officer-based enforcement of speeding requires the exercise of discretion and so creates substantial room for bias and abuse. The issue here is not that officers in general seek to discriminate or to abuse. Rather, it is that racial and ethnic discrimination and abuse likely feature in many officer-citizen encounters and that enforcement of speed limits provides a conduit for discriminatory or abusive behavior or both (Eith & Durose, 2011). Errors of justice pervade the criminal justice system, and their occurrence can be greater precisely in those areas

where the least amount of oversight exists (Forst, 2004). Speed limit enforcement by officers creates a venue through which discretion can operate largely unchecked, save through significant expenditures of time and money by citizens who challenge their tickets. One of the clear advantages of officer discretion consists of the opportunity for individuals to explain their behavior and for context-specific judgement calls to be made that accord with citizens' views of what is procedurally just (Wells, 2008). That benefit should not be ignored. However, little evidence exists that, with officer-initiated speed limit enforcement, the benefits outweigh the harms. At the same time, research on minorities' views about police discretion provides ample grounds for anticipating the risk of discrimination and abuse and the need for careful monitoring of officer discretion (Novak, 2004; Tillyer et al., 2008; Warren et al., 2006). Officer body cameras offer one strategy for monitoring officers during speed enforcement actions. However, it remains a largely unevaluated strategy and applies only to instances in which the police choose to issue a ticket. It does not, for example, assist with reducing instances of racial profiling.

Fifth, opportunity costs—whose significance stems from the availability of alternative approaches to reducing speeding—underscore the inefficiency of relying on officer-based enforcement. To the extent that society wants citizens to adhere to speed limits, then the challenge lies in identifying and investing in those strategies most likely to achieve this goal at the least cost. As many reviews attest and as discussed above, numerous strategies exist to promote greater speed limit compliance. These include: setting more appropriate speed limits; using automated speed limit enforcement (e.g., speed cameras), which can be implemented relatively inexpensively and can allow for higher and more certain levels of enforcement; adopting situational speed limit approaches (e.g., speed bumps, traffic circles, textured pavement); implementing signage that educates the public about speed limits and the importance of speed limit compliance; relying on diverse technologies to impede the possibility of speeding or to remind drivers when they are speeding; and so on (Foundation for Traffic Safety, 2007; McNeely & Gifford, 2007; Scott & Maddox, 2010). The existence of such alternatives highlights the salience of viewing officer-based enforcement through the prism of opportunity

costs. For society, the question is, How might the funds expended on officer-based enforcement be better invested? The lack of a strong empirical foundation to support officer-initiated enforcement, when coupled both with evidence of grounds to anticipate harms and with evidence that effective alternatives exist, highlights that the opportunity costs likely are considerable. Put differently, investing in ineffective and costly strategies not only results in expenditures and harms, it also results in missed opportunities to invest in approaches that could effectively promote speed limit compliance with fewer unintended consequences and harms.

Sixth, substantial investment in officer-initiated speeding contradicts calls for government accountability and evidence-based practice. The latter approach requires first identifying empirically the causes of speeding and the relative effectiveness and cost-efficiency of diverse strategies, or combinations of them, for promoting compliance. Not only is research on officer-initiated speed limit enforcement a nascent science, it also typically lacks any systematic comparison to alternatives. Of course, for law enforcement agencies, it may be consistent with their public safety mandate to allocate officers to speed limit enforcement and not to pursue research on the relative cost-efficiency of a broad array of approaches. However, the latter constitutes the primary basis on which to justify any substantial expenditure of taxpayer funds.

### Conclusion

Under certain conditions, officer-initiated speed limit enforcement may reduce speeding for large periods of time for many drivers. For example, when it is undertaken frequently, and perhaps unpredictably, and is highly visible, the amount or rate of speeding may decrease (Elvik, 2012; Leaf & Preusser, 1999; Luca, 2014; Scott & Maddox, 2010; Tay, 2009). In so doing, such enforcement may contribute to greater safety, transportation efficiency, and citizens' quality of life. It also may improve citizens' perceptions of government legitimacy, provide income to jurisdictions that have limited resources, and aid in the apprehension of criminals.

Juxtaposed against such possibilities is limited evidence of effectiveness. Officer-initiated

speed limit enforcement may exert little to no appreciable effect on aggregate amounts or rates of speeding, and thus may have little aggregate effect on accidents, injuries, and fatalities. As Scott and Maddox (2010) found in their review, “law enforcement responses alone are seldom effective in reducing or solving the [speeding] problem” (p. 9). In turn, such responses may have little to no effect on transportation efficiency or citizens’ quality of life.

Little compelling empirical research exists to claim confidently that the benefits of officer-initiated speed limit enforcement outweigh the social and economic costs. This situation is problematic because of policymaker calls for government accountability and evidence-based policy (Mears, 2010). Large-scale investment in a strategy that entails considerable expense and questionable benefits does not accord with such calls. It also is problematic because of the many potential social costs. Racial and ethnic disparities in enforcement, and the sequelae of attendant adverse consequences, constitute a notable example. Such issues are problematic, not least, when cost-efficient alternatives exist (Elvik, 2012; Scott & Maddox, 2010).

In short, substantial grounds exist to critique the policy of relying on officer-initiated warnings, citations, and ticketing to reduce speeding. The critique is reinforced by the presence of cost-efficient alternatives to promote speed limit compliance that do not simultaneously carry a comparable risk of unintended harms. In all likelihood, a balanced approach to speed limit compliance, one that draws on a diverse portfolio of approaches, likely would be most effective (Scott & Maddox, 2010). Reliance on officers to issue warnings, citations, and tickets might well be warranted in limited instances. On the whole, however, such instances arguably should be restricted to situations where other, cheaper approaches cannot be used and where monitoring effects can ensure consistency and fairness in the use of discretion. When used, officer-initiated enforcement should be tied to monitoring efforts to assess citizen satisfaction with and perceptions of the police. The risk otherwise is that racial, ethnic, and other disparities may go undetected and that overall trust in and compliance with the police may decline (see, generally, Gill, Weisburd, Telep, Vitter, & Bennett, 2014; Skogan & Frydl, 2004; Skolnick, 1999; Tyler, 2006).

A balanced approach to promoting speed limit enforcement ideally should rest on empirically-based assessments of the relative cost-efficiency of different strategies or combinations of them. One approach is automated ticketing, which allows for more frequent and consistent speed limit enforcement. However, such an approach may not be appreciably more effective than reliance on road design or educational or electronic signs that signal to drivers how fast they are going. It would be short-sighted, then, to focus solely on automated ticketing. In addition, ticketing carries with it potential harms that may offset putative benefits. For example, fines may have disproportionate effects both on lower income individuals and on upper income individuals. Across states, maximum speeding ticket fines range from \$50 in Tennessee to \$2,500 in Georgia and Virginia (NHTSA, 2013a, p. vi-ix). Fines, as a percentage of income, will be higher for lower-income individuals, and may be especially burdensome for those who reside in or close to poverty. They also may not be able to afford to challenge their ticket. Transportation costs and missing part of a workday to attend a court proceeding, for example, would be cost-prohibitive or simply not feasible for many lower-income individuals. Conversely, for wealthy individuals, the income that would be lost by going to court to challenge a ticket may outweigh the cost of the ticket. Accordingly, wealthy individuals may be more likely to pay a ticket even if they feel it was undeserved. Such problems can be reduced in part by relying on progressive penalty systems, with fees adjusted to reflect the ability to pay. They also might be alleviated by relying on non-financial penalties, such as undertaking community service hours and losing points on driver's licenses, which affects individuals of all income levels.

Ultimately, a rational, empirically-based approach would entail systematic assessment of the causes of speeding in a given area and then implementing those approaches that hold the most promise for consistently promoting speed limit compliance at the least cost. It would include, too, careful research on the strategies that would result in the largest long-term reduction in speeding and could most feasibly be implemented in specific locales. Fortunately, as the above discussion highlighted, a large number of approaches exist for reducing speeding, improving

public safety, and potentially improving citizens' views of government and law enforcement. In the end, a single approach likely will not work equally under all contexts. For example, speed bumps may be effective in residential areas but would be dangerous on major highways. Also, some jurisdictions may invest relatively little in officer-initiated speed limit enforcement; accordingly, the concerns highlighted here would be diminished or irrelevant. There would remain, however, the importance of undertaking empirical assessments of speeding, including its prevalence, causes, and the most effective and cost-efficient strategies for reducing it.

Juxtaposed against the above observations and critique is the fact that there remains a need for research on a wide range of questions that are critical for understanding speeding and placing policy on an evidence-based foundation. These include but are not limited to the following: What precisely contributes to speeding among the general population and different segments of it? What contributes to chronic or high-speed speeding? What precise levels of certainty and severity in punishment create appreciable reductions in speeding? What is the relative effectiveness and cost-efficiency of officer-initiated ticketing versus automated ticketing? How great are the harms that stem from officer-initiated ticketing and how do they differ from the harms of automated ticketing? What speed limit threshold is optimal for maximizing transportation efficiency and public safety (Forbes et al., 2012)? What is the relative effectiveness and efficiency of the broad spectrum of approaches that exist to promote speed limit compliance? What approaches best complement each other to reduce speeding in particular locales? Here, what we would highlight is that large-scale investment in officer-initiated speed limit enforcement without strong empirical studies to back this approach—and without answers to these questions—runs counter to calls for evidence-based practice.

Finally, to the extent that officer-initiated speed limit enforcement remains a pillar in promoting speed limit adherence, policies and practices should be implemented, monitored, and evaluated that increase the safety of officers and citizens and that improve citizens' perceptions of law enforcement legitimacy. How police officers interact with the public can greatly affect citizen responses (Wells, 2008). The interactions can contribute to compliance and to citizens'



perceptions of fairness, and may be especially salient in affecting perceptions of “racial profiling.” As Engel (2005) has emphasized, “one of the most important policy issues currently facing police administrators involves the actual and perceived differential patterns of police-citizen contacts and outcomes based on citizens’ race and ethnicity” (p. 472).

Perceptions of unfair policing erode public confidence in the police and undermine effective policing. It is notable, then, that citizens’ perceptions of injustice may be driven more by views about *how* they are treated by the police than by actual outcomes, such as receipt of a ticket (Engel, 2005, p. 473). Police administrators thus should emphasize training officers in how to reduce citizens’ negative perceptions of police-citizen interactions. Better monitoring of these interactions may provide administrators with insights into the challenges and contexts that officers confront. Training then can be adjusted to prepare officers for the specific types of situations that they will encounter during speed limit enforcement. Improved monitoring also may improve police-citizen encounters by promoting officer accountability. Ultimately, such steps, and the more general emphasis on procedurally just interactions (Tyler, 2006), can contribute to safer interactions, greater compliance, more positive perceptions of the police, and increased respect for the rule of law.

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