

Unticketing: An Upside-Down Approach to Speed Compliance

Final Report
April 2024



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TABLE OF CONTENTS

ACKNOWLEDGMENTS	ix
EXECUTIVE SUMMARY	xi
Overview.....	xi
Literature Review.....	xii
Guidebook.....	xiii
Project Evaluation.....	xiii
1. INTRODUCTION	1
1.1. Background.....	1
1.2. Research Objectives and Activities	2
1.3. Literature Review Overview.....	3
1.4. Unticketing Demonstration Project.....	4
1.5. Document Organization.....	5
2. LITERATURE REVIEW	6
2.1. Speed Reduction Strategies.....	6
2.2. Community-Oriented Policing.....	9
2.3. Experimental Speed Camera Lottery	11
2.4. Other Speeding Prevention Incentives.....	13
2.5. Seatbelt Incentive Programs	14
2.6. Positive versus Negative Approaches in Road Safety Public Information Campaigns.....	17
2.7. Structured Literature Searches	20
2.8. Discussion: Literature Review	20
3. UNTICKETING CONTEST DESIGN.....	21
3.1. Overview.....	21
3.2. Law Enforcement Agency Recruitment.....	22
3.3. Contest Opt-In.....	23
4. OUTREACH AND EARNED MEDIA.....	24
4.1. Contest Marketing Plan.....	24
4.2. Press Releases	25
5. SPOT SPEED STUDIES	27
5.1. Description of Spot Speed Data Collection	27
5.2. Data Collection Locations and Results	27
6. SURVEY OF ROAD USER ATTITUDES.....	30
6.1. Survey Questions	30
6.2. Participant Recruitment	30
6.3. Data Cleaning.....	31
6.4. Speed Choice	32
6.5. Seatbelt Use	34

6.6. Driver Incentives.....	35
6.7. Likelihood of Crash Involvement	36
6.8. Perception of Speed Limits and Penalties.....	37
7. SUMMARY AND CONCLUSIONS	38
REFERENCES	40
APPENDIX A: UNTICKETING IMPLEMENTATION GUIDE	43
APPENDIX B: TRAFFIC SAFETY PERCEPTIONS SURVEY	49

LIST OF FIGURES

Figure 1. Traffic stop putting a law enforcement officer in close proximity to live traffic	1
Figure 2. Unticketing flyer.....	4
Figure 3. Traffic calming treatment at the entrance to a residential area	7
Figure 4. Speed feedback sign on a Maryland highway	7
Figure 5. Speed camera on an arterial street	8
Figure 6. “Donut Disrespect,” a joint effort of the City of Ames Police Department and Iowa State University Police Department, using humor to encourage community collaboration on public safety	10
Figure 7. Screen capture from Volkswagen Speed Camera Lottery advertisement	12
Figure 8. Speed Camera Lottery signage in Stockholm	12
Figure 9. Advertisement for discounted insurance tied to in-vehicle “black box” sensors	13
Figure 10. Examples of positive (left) and negative (right) appeals in seatbelt promotion campaigns.....	17
Figure 11. Clear Lake - Mason City Area and speed data collection sites	22
Figure 12. Unticketing Cerro Gordo logo.....	24
Figure 13. Newspaper story about Unticketing in the Mason City <i>Globe Gazette</i> based on an Unticketing press release.....	25
Figure 14. KAAL-TV interview with Sheriff Pals	26
Figure 15. KAAL-TV ride-along with deputy sheriff	26
Figure 16. Driver responses to speed choice in a 25 mph zone.....	32
Figure 17. Driver responses to speed choice in a 35 mph zone.....	33
Figure 18. Driver responses to speed choice in a 55 mph zone.....	33
Figure 19. Driver responses to speed choice in a 70 mph zone.....	34

LIST OF TABLES

Table 1. Examples of positive and negative road safety messages.....	17
Table 2. Meta-analysis results for studies of changes in crashes for various types of road safety campaigns	19
Table 3. Speed results for Federal Avenue between 17th and 16th Streets	28
Table 4. Speed results for 8th Street between 10th Avenue and 12th Avenue.....	28
Table 5. Speed results for South Shore Drive west of Finch Avenue.....	29
Table 6. Speed results for 4th Avenue at 20th Street.....	29
Table 7. Driver responses about seatbelt use	35
Table 8. Driver incentives.....	35
Table 9. Likelihood of crash involvement	36
Table 10. Attitudes towards speed limits and penalties	37

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EXECUTIVE SUMMARY

Overview

Speeding and other routine violations of traffic safety laws have been a persistent problem for nearly the entire history of the automobile. Although research and practical experience show that penalties and incentives are both powerful motivators of human behavior, past approaches for addressing traffic violations have almost always been punitive in nature.

Detecting, intercepting, and issuing citations to traffic violators is labor-intensive, and many agencies find it difficult to sustain high levels of enforcement over the long run. Traffic enforcement can also compromise officer safety, in terms of both the risk of being struck by traffic while conducting a roadside interview and the potential for hostile reactions from drivers who have been pulled over. Additionally, traffic enforcement activities can amplify pre-existing tensions between law enforcement agencies and the communities they serve. While some of these issues can be partially mitigated through the use of automated speed camera systems that issue citations to a vehicle's registered owner by mail, the core issue remains: traffic enforcement is generally a negative experience for both the motorist and those conducting the enforcement actions.

The summer 2023 Unticketing demonstration project explored whether it is possible to improve compliance with traffic laws by incentivizing safe driving behavior (in addition to punishing unsafe behavior). Specifically, the research team collaborated with three law enforcement agencies in Cerro Gordo County, Iowa, to implement a contest in which randomly selected drivers who complied with traffic laws were rewarded with gift cards and other prizes donated by local businesses. The participating agencies were the Clear Lake Police Department, Mason City Police Department, and Cerro Gordo Sheriff's Office.

Every other week from late May through mid-August, the Unticketing contest awarded three prizes (typically valued at \$10 to \$35) to compliant drivers identified through routine traffic patrols. These patrols also ticketed violators, creating a carrot-and-stick situation without adding much extra workload for the front-line officers and deputy sheriffs. To avoid privacy concerns, drivers opted into the Unticketing contest, and to avoid the need to intercept compliant drivers, prizes were distributed by mail. Concurrently, violators were warned or ticketed in accordance with pre-existing agency practices.

A secure online form, made accessible through the county's computer-aided dispatch system, was used to record compliant driver observations directly from law enforcement vehicles in the field. For each of the six contest drawings, a match list was generated by cross-tabulating these records with the license plate numbers of drivers who opted into the contest.

Staffing shortages limited the number of compliant driver observations the agencies were able to obtain. As a result, there were fewer than three new matches in some of the drawings. In these cases, additional winners were selected at random from among the contest entries. Conversely, if

more than three matches were obtained in the same two-week period, three winners were selected at random from among the matches, and the remaining names were held in reserve for future prize awards. Contestants who received a prize were flagged to avoid issuing more than one prize to the same driver.

Contest activities were publicized in local print and broadcast media, the agencies' social media feeds, and the Unticketing website (which included the opt-in form). This generated a steady stream of positive publicity for the agencies and prize donors throughout the summer tourism season. In addition, the contest produced modest (though not statistically significant) or inconsistent reductions in traffic speeds and appeared to increase positive attitudes toward road safety.

Literature Review

Before beginning the contest, the project team conducted a literature review to identify academic studies and grey literature describing previous efforts to incentivize good driving behavior. Most notably, in 2010 auto manufacturer Volkswagen conducted a small-scale "Speed Camera Lottery" in Sweden as part of a global marketing campaign. An automated speed camera collected the license plate numbers of compliant motorists. From this pool, one driver was selected at random to receive a large cash prize funded by the company. Although the contest reduced speeds and generated extensive media coverage for Volkswagen, the demonstration was administratively complicated and required custom-built equipment, which had to be installed at the roadside by skilled technicians. These administrative and logistical challenges were taken into consideration in the design of the Unticketing contest.

Other projects to incentivize safe and legal driving have been described in published research reports. For example, there were many community-based contests promoting seatbelt use in the years before seatbelts became mandatory. Other incentive systems focus on a specific pool of drivers, using global positioning systems (GPS) and other in-vehicle sensors to detect speeding, harsh braking, or tailgating. Examples include car insurance discounts for customers who observe the speed limit and employer-based programs that award prizes or cash bonuses to commercial truck and bus drivers who drive safely.

The literature review highlighted the importance of avoiding psychological reactance when designing and implementing traffic enforcement actions and safety marketing campaigns. Reactance occurs when an individual feels that he or she is being compelled to take an action that restricts personal freedom. Often, this results in the individual doing the opposite of what he or she has been told to do. For example, a person who is ticketed for speeding might drive even faster as soon as the police officer is out of sight. Young men, people with substance use disorders, and people with mental health issues are particularly susceptible to reactance. Actions that incentivize safe driving are less likely to trigger reactance than those that punish or shame people for unsafe driving.

Guidebook

A guidebook (Appendix A) was produced to assist law enforcement agencies and other community leaders who wish to implement similar projects. The guidebook discusses the Cerro Gordo County experience, including aspects such as site selection, compliant driver observation and matching, prize solicitation and distribution, and effectiveness monitoring.

Project Evaluation

Two methods were used to assess the effects of the contest on road user behavior:

- Spot traffic speed studies were conducted at selected sites in Clear Lake and Mason City before, during, and after the intervention to identify impacts on speeds.
- Surveys were conducted before and after the contest to identify potential changes in drivers' attitudes toward road safety based on a convenience sample of individuals who reside, work, or recreate in the contest area.

1. INTRODUCTION

Speed management has been called the most difficult of all roadway safety issues (Johnston et al. 2014), and speeding has been characterized as “an everyday crime of the law-abiding” (Wells 2011). Conventional approaches to achieving compliance with speed limits and other traffic laws are almost always punitive: violators are intercepted and penalized through monetary fines or other sanctions.

In contrast, the Unticketing project described in this report explored the potential to incentivize speed compliance and other good driving behavior by offering compliant drivers a chance to win small prizes.

1.1. Background

Although intensive enforcement of traffic laws can increase compliance at times and places where road users believe law enforcement personnel are likely to be present (WHO 2017), the practicality of heavy enforcement is constrained by agency budgets and the availability of qualified personnel. In addition, drivers often perceive traffic stops as stressful, time-consuming, and inherently punitive, even if no citation is issued. Moreover, traffic stops put law enforcement officers at risk of being struck by traffic (Figure 1) or even being assaulted by an intercepted driver.



NHTSA

Figure 1. Traffic stop putting a law enforcement officer in close proximity to live traffic

Prior research indicates that individual drivers’ speed choices involve complex trade-offs between the perceived benefits of speeding (such as arriving sooner or the excitement of fast driving) and its risks (fines, crash involvement, injury to self or others) (Fleiter 2010). Individual perceptions of these factors are highly variable.

Decades of psychological research and centuries of practical experience have shown that, in most cases, incentives and penalties are comparable in their power to motivate human behavior. Various types of prizes, incentives, and rewards are routinely used as motivational tools by parents, teachers, and coaches. Similarly, business managers widely use monetary bonuses,

prizes, and recognition awards to motivate their employees, suppliers, and customers. Nevertheless, these techniques have seldom been applied to traffic management.

Toward Zero Deaths: A National Strategy on Highway Safety suggests that, where feasible, positive approaches to safety improvement are more likely to be accepted than negative or punitive approaches. Examples cited in the report include rewarding good choices and using humor to demonstrate the value of safety. As stated by the Toward Zero Deaths Steering Committee (2014), “Rather than having agencies dictate appropriate behaviors, the intent is to create the motivation within the driving population to partner with highway safety agencies to achieve mutual goals.”

1.2. Research Objectives and Activities

The objective of this research was to explore whether it is possible to improve compliance with speed limits and other traffic laws by incentivizing good driving behavior through awarding small prizes to compliant drivers while leaving in place all existing sanctions against bad driving behavior. A secondary goal was to strengthen police-community relations. To accomplish these objectives, the following actions were taken:

- A literature review was conducted to identify characteristics of successful traffic safety outreach campaigns.
- A small group of communities in Cerro Gordo County, Iowa, was recruited for a demonstration project supported by local police and other public officials.
- The project was reviewed by Iowa State University’s Institutional Review Board for human subjects research and determined to be exempt from oversight.
- Outreach materials and an Unticketing project website were developed to obtain voluntary participation (opt-ins) from drivers who reside, work, or spend time in the demonstration area.
- Prize donations were solicited from local businesses in the demonstration area.
- An electronic database was created to record the license plate numbers of compliant motorists.
- As part of routine traffic patrols, the license plate numbers of compliant motorists were recorded by participating law enforcement agencies from late May to mid-August 2023.
- The license plate numbers of field-observed compliant drivers were matched with the plate numbers of contest opt-in participants, and prizes were awarded to randomly selected owners of matching vehicles.
- Spot traffic speed studies were conducted at selected locations before, during, and after the contest.
- Road users in the study area were surveyed about speeding and traffic safety attitudes before and after the contest.
- Based on the information learned through the project, an Unticketing implementation guide was produced along with this final report.

1.3. Literature Review Overview

A literature review was conducted to assess current knowledge and good practice for incentivizing positive road user behavior. The results are briefly summarized in this section and discussed in more detail in the next chapter of this report.

Broadly speaking, incentivizing good driver behavior falls within the definition of community policing, a toolbox of strategies that, “rather than responding to crime after it occurs...proactively develop[s] solutions to the immediate underlying conditions contributing to public safety problems” (DOJ 2014).

Incentivizing drivers to comply with speed limits overlaps several professional domains, including psychology, sociology, criminology, game theory, transportation economics, traffic engineering, and safety science. In spite of these multiple potential points of entry, no previous examples of programs to incentivize speed compliance for general traffic were found in the academic literature. Nevertheless, formal research was found on a few related topics:

- Considerable academic literature was found discussing programs to incentivize good driving through insurance discounts or bonus payments to professional drivers. These studies indicate that relatively modest economic incentives can motivate these drivers to pay more attention to safe driving habits, including speed moderation.
- From the late 1970s to early 1990s, numerous studies evaluated the effectiveness of contests designed to incentivize seatbelt use. Most of the research on this topic predates the adoption of state laws mandating seatbelt use. A 1997 meta-analysis found that the campaigns typically increased voluntary seatbelt use by about 10% against a baseline of very low use rates (Hagenzieker et al. 1997).

The project most directly comparable to Unticketing was conducted in 2010 and 2011. Sponsored by automobile manufacturer Volkswagen, the “Speed Camera Lottery” provided large monetary prizes to randomly selected drivers who complied with the speed limit at selected locations in Sweden (Volkswagen 2010, 2011). Although no academic publications evaluating the Speed Camera Lottery were found, the demonstration attracted considerable attention in the popular media and automotive press and is occasionally mentioned in the academic literature as a textbook example of gamification (the use of playful elements to foster behavioral change). A television advertisement was produced describing the demonstration in Stockholm; as of the date of this report, the advertisement was available for viewing on YouTube. Contests were also held in few smaller Swedish cities (publicity materials mention Gävle, Helsingborg, Kalmar, Karlstad, and Umeå, but only four of the smaller cities appear to have awarded prizes). A single large prize was awarded in each city.

The original concept of Volkswagen’s Speed Camera Lottery was to fine speeders and reward compliant drivers with a portion of the revenue from the fines. This was not possible in practice because Sweden had no legal framework for a pari-mutuel redistribution of speeding citation revenue. In actuality, the speed cameras were not set up to issue citations. Instead, the prizes were funded from Volkswagen’s marketing budget. Only drivers who opted into the contest were

eligible for prizes. Although the project appears to have resulted in speed reduction in a school zone on an arterial street in Stockholm, the device was deployed for only three days, so novelty effects are likely. No information about speed outcomes from the smaller cities was found, nor was any formal evaluation of the Volkswagen project's effectiveness found beyond the claims made in the television ad.

1.4. Unticketing Demonstration Project

Conducted in summer 2023 in collaboration with three law enforcement agencies, the Unticketing contest described in this report rewarded compliant drivers in Cerro Gordo County, Iowa, with opportunities to win small prizes donated by local merchants (Figure 2). The value of these prizes ranged from \$10 to \$35. Prize items included gift cards donated by two local coffee shops, a bakery, and two convenience stores; roadside troubleshooting kits donated by a statewide motor club; and a kit of car washing supplies donated by a local auto parts store.



Figure 2. Unticketing flyer

Drivers were required to opt into the contest. This was accomplished through project outreach materials and a website (<http://www.unticketing.org/>) that included an online opt-in form where

interested drivers could provide their license plate number, vehicle description, and contact details.

As part of their routine traffic patrols, the participating law enforcement agencies gathered the license plate numbers of vehicles observed to be in good compliance with traffic safety laws. Every two weeks, the plate numbers identified by law enforcement were cross-tabulated with the opt-ins and three prizes were awarded. If more than three matches were identified, three winners were selected at random from among the matches. If fewer than three matches were identified, the remaining prizes were awarded to randomly selected participants who had opted into the contest. All prizes were sent by mail or picked up at the Mason City police station, which avoided the need for officers to intercept compliant drivers.

1.5. Document Organization

The remainder of this document is organized as follows:

1. **Literature Review.** This chapter discusses key findings from a review of relevant research.
2. **Unticketing Contest Design.** This chapter describes the implementation of the 2023 Unticketing demonstration project in Cerro Gordo County, Iowa
3. **Project Outreach and Earned Media.** This chapter discusses the public outreach strategy adopted for the project.
4. **Spot Speed Studies.** This chapter describes the before/during/after spot speed studies conducted in conjunction with the project.
5. **Survey of Road User Attitudes.** This chapter describes the before/after surveys of public attitudes about roadway safety in Cerro Gordo County.
6. **Summary and Conclusions.** This chapter summarizes the project findings and provides suggestions for future research.
7. **Appendix A: Unticketing Implementation Guide.** This document provides advice for Iowa communities that are considering implementing their own versions of the Unticketing contest.
8. **Appendix B: Safety Attitudes Questionnaire.** This appendix provides the full text of the safety attitudes survey administered in Cerro Gordo County, Iowa.

2. LITERATURE REVIEW

A literature review was conducted to identify factors that might contribute to a successful non-punitive, community-based approach to speeding prevention and compliance.

Extensive psychological and sociological research suggests that incentives and penalties have roughly equal power as motivators of human behavior, as long as the measures are perceived as serving the greater good of the group and are implemented fairly and without favoritism (Balliet et al. 2011). Nevertheless, the relationship between gains and losses is not symmetrical for all individuals: punitive measures sometimes backfire due to a phenomenon known as psychological reactance (Brehm 1966, Steindl et al. 2015). This occurs when a message or action is perceived as a threat to personal freedom, and the individual becomes angry or pushes back by doing the opposite of what he or she is being directed to do. For example, when a driver who is pulled over for speeding becomes hostile with a law enforcement officer, or silently vows to speed even more severely as soon as the officer is out of sight, psychological reactance is likely to be a major factor in the behavior. Therefore, a key issue in the design of the Unticketing contest was to promote compliance without triggering reactance.

2.1. Speed Reduction Strategies

Speed moderation has been called the most difficult of all roadway safety issues (Johnston et al. 2014). As a criminologist put it, “Speeding is an everyday crime of the law-abiding” (Wells 2011). A similar perspective was offered by a behavioral psychologist: “When the majority of the population breaks a law, the legitimacy of enforcement is readily challenged” (McKenna 2004). Johnston et al. (2014) suggest that this is mainly due to misperception of the associated risks: drivers tend to focus on the odds of being cited for a speed violation while largely ignoring the consequences of involvement in a speed-related crash.

To help close this gap, numerous approaches for limiting traffic speeds and deterring speed violations have been suggested. Broadly, these can be grouped into five categories.

2.1.1. Traffic Calming

Various types of physical modifications to the driving environment have been developed to manage the speed of motorized traffic (NACTO 2013). For example, speed humps introduce vertical deflection in the vehicle’s travel path, forcing the driver to slow down to avoid discomfort. Chicanes (reverse curves or S- curves) serve a similar function by deflecting the vehicle horizontally. Some traffic calming treatments create the illusion of a more difficult driving environment; for example, lanes are narrowed by restriping the pavement, or the actual width is narrowed using traffic islands, chokers, curb extensions (also called bulb-outs or bump-outs), or the like. Another category, known as gateway treatments, uses various combinations of signage, pavement markings, plantings, arches, columns, or statuary to frame the entrance to an area and set driver expectations about the appropriate travel speed within that area. Many traffic calming projects use combinations of these techniques (Figure 3).



Steven Sweeney/Geograph (CC 2.0)

Figure 3. Traffic calming treatment at the entrance to a residential area

Research shows that most traffic calming treatments are effective at reducing speeds and crashes (Bellefleur and Gagnon 2011, Bunn et al. 2009, Chen et al. 2013, Cleland et al. 2020; Elvik 2001, Elvik 2016, Hallmark et al. 2008, Hallmark et al. 2007, Shaw et al. 2021, Zein et al. 1997). Nevertheless, the installation and maintenance costs for traffic calming treatments can be substantial, and the treatments often require long lead times for design and construction.

2.1.2. *Electronic Signage*

Traffic signs with electronic displays are frequently used to give drivers selective feedback based on their speed (Shaw et al. 2015a). The most widely used devices combine a radar speed sensor with a two-digit light-emitting diode (LED) panel that displays the driver's actual speed alongside a standard speed limit sign. A variation of this idea uses a larger LED panel to display an anti-speeding message.



Famartin/Wikimedia Commons (CC 4.0)

Figure 4. Speed feedback sign on a Maryland highway

2.1.3. Traffic Enforcement

Traditional traffic speed enforcement requires positioning one or more law enforcement officers at the roadside to monitor the speeds of passing vehicles with a radar or lidar device, intercept violators, and issue warnings or citations. These operations can be stealthy or overt, officers can be mobile or operate from a fixed position, and efforts can involve a single officer or a team coordinating their efforts by radio (Shaw et al. 2015a). Typically, the goal is to give drivers the impression that enforcement could be present anytime, anywhere (WHO 2017). Speeds ordinarily decline while officers are present, and there can be temporal and spatial halo effects, particularly if enforcement officers are believed to be nearby. Nevertheless, all forms of human speed enforcement are labor-intensive and potentially conflict with officers' other work duties.

In recent years, some jurisdictions have implemented automated speed enforcement systems, often referred to as speed cameras or safety cameras (IIHS 2023). Each unit combines a radar or lidar speed detection module with a set of film or video cameras to record and document potential violations. Similar to manual enforcement, these devices can be implemented stealthily or overtly, and the equipment can be permanently mounted or mobile. Although the automation reduces the amount of labor required to issue a citation, the process is not robotic; in most jurisdictions, an officer or clerk must review each potential violation, verify license plate numbers (for example, to make sure that the software has correctly distinguished between the letter D, the letter O, the letter Q, and the digit 0), and confirm that a citation should be issued. Citations are usually sent by mail, avoiding the need to intercept the violator and the associated risk of an officer being struck by traffic.



Peteraa/Wikimedia Commons (CC 3.0)

Figure 5. Speed camera on an arterial street

2.1.4. In-Vehicle Devices

Current automotive technologies allow individuals and fleet operators to put an upper limit on the speed of the vehicles they own. For example, many trucking companies install electromechanical speed governors that restrict the top speed of their trucks. In recent years, a suite of automotive technologies called intelligent speed assistance or intelligent speed

adaptation (ISA) has become available. These devices use onboard global positioning systems (GPS) and other electronics to determine the vehicle's location and compare it to the speed limit encoded in a digital map or scanned from a traffic sign using optical character recognition. The products use various combinations of audible speed alerts, visual speed alerts, or accelerator pedal vibration to alert the driver, or the products may automatically reduce the throttle setting. A related set of technologies can report the vehicle speed to fleet dispatchers or other interested parties by transmitting data over commercial mobile phone networks, allowing companies or other parties to reward speed-compliant drivers or penalize those who speed.

2.1.5. Public Information Campaigns

Numerous national, state, and local agencies have developed anti-speeding public information campaigns using a variety of media such as television, radio, online advertising and social media, print media, billboards, lectures, and demonstrations. Many of these groups also conduct public information campaigns addressing impaired driving, work zone safety, winter driving, or other safety themes (Shaw et al. 2015b). Extensive research has been conducted to assess the outcomes of these public information campaigns and the factors of success, as discussed in a separate section of this chapter.

2.2. Community-Oriented Policing

From the law enforcement perspective, incentivizing good driving behavior falls within the broader framework of community policing. Although “community policing” has no precise definition, a frequently mentioned element of the philosophy is its promotion of partnerships and problem-solving to address underlying conditions that contribute to crime, social disorder, and fear of crime (DOJ 2014).

In shifting from traditional policing to community policing, law enforcement leaders and political leaders often hope to accomplish one or more the following objectives (Segrave and Ratcliffe 2004):

- Recognizing public support as critical to law enforcement effectiveness
- Increasing public accountability of law enforcement agencies
- Addressing critiques of previous policing practices, such as perceptions that law enforcement officers were spending too much time patrolling from vehicles and not enough time interacting with the public
- Encouraging the community to take a strong role in their own safety (Figure 6)
- Reconfiguring staff deployments to align with changes in land use
- Expanding the functions performed by law enforcement officers



City of Ames and Iowa State University

Figure 6. “Donut Disrespect,” a joint effort of the City of Ames Police Department and Iowa State University Police Department, using humor to encourage community collaboration on public safety

Community policing advocates encourage law enforcement agencies to collaborate with other government agencies and community groups to solve problems and build trust and rapport with the public (DOJ 2014). The scope of these collaborations is issue-specific and could include prosecutors and the courts, public health departments, public works departments, schools, service clubs, religious institutions, community advocacy groups, chambers of commerce, individual businesses, and so forth. In this way, law enforcement agencies seek to position themselves more as facilitators of positive social change and less as behavior monitors or disciplinarians. Cordner (2014) asserts the following:

Community policing tries to implement a prevention emphasis, based on the commonsense idea that although citizens appreciate and value rapid response, reactive investigations, and apprehension of wrongdoers, they would always prefer that their victimizations be prevented in the first place. Most modern police departments devote some resources to crime prevention, in the form of a specialist officer or unit. Community policing attempts to go farther by emphasizing that prevention is a big part of every officer’s job. A few of the approaches to focusing on prevention that departments have adopted are situational crime prevention, crime prevention through environmental design (CPTED), youth-oriented prevention, and a variety of programs involving schools, communities, landlords, and businesses. In regard to homeland security, community policing emphasizes that police officers are not just first responders but also first preventers.

The United States Department of Justice recommends a four-step problem solving process to support community policing (DOJ 2014):

- Scans to identify and prioritize problems
- Analysis to determine what is known about the problem
- Response to develop solutions that achieve lasting reductions in the number and extent of problems
- Assessment to evaluate the success of the responses.

Many factors affect crime rates, and it has been difficult to establish definitively the effectiveness of various elements of the community policing approach.

2.3. Experimental Speed Camera Lottery

In the late 2000s, automaker Volkswagen developed a marketing campaign titled *The Fun Theory*, which held a contest soliciting suggestions for ways to make cities more livable. Among the winners was Kevin Richardson, an American game developer then affiliated with Nickelodeon, who proposed a “Speed Camera Lottery” (Volkswagen 2010). Richardson’s concept was that a portion of the fines collected from speed violators would be pooled and awarded to a randomly selected driver who was observed while complying with the speed limit. The strategy is a form of gamification—introducing playful elements to make behavioral changes more acceptable.

In 2010 and 2011, short-term demonstrations of the Speed Camera Lottery were conducted in Stockholm and a few smaller Swedish cities. Gävle, Helsingborg, Kalmar, Karlstad, and Umeå are mentioned in a pre-implementation press release, but only four of the five appear to have awarded prizes (Volkswagen 2011, AAP FactCheck 2021). Stockholm, the national capital, has a population of just under 1 million; the other cities range from populations of 36,000 to 112,000.

According to an advertisement produced by Volkswagen (Figure 7), during the initial three-day trial in Stockholm the average speed of cars passing the camera dropped from 32 km/h (20 mph) before the experiment to 25 km/h (15.5 mph) during the trial. Images in the advertisement indicate that the Stockholm speed camera was installed at 33 Karlbergsvägen (Karlberg Street) in a school zone adjacent to Gustav Vasa primary school and Vasa Real middle school. The site is a multilane arterial with mid-rise apartments and ground-floor retail businesses (Figure 8). Google Earth images from 2022 indicate that the speed limit in the school zone is 30 km/h (19 mph) while adjoining segments of the street have a 40 km/h (25 mph) speed limit.



Volkswagen 2010; Volkswagen/YouTube

Figure 7. Screen capture from Volkswagen Speed Camera Lottery advertisement



Volkswagen/YouTube

Figure 8. Speed Camera Lottery signage in Stockholm

Some details of the implementation varied from Richardson's original concept. Most notably, the concept of a pari-mutuel redistribution of the fine revenue to compliant drivers was not administratively feasible. Moreover, the device was not actually configured to issue penalties (Schultz 2010). Instead, all prizes were funded by Volkswagen. These reportedly included a prize of SEK 20,000 (approximately USD \$2,000) in Stockholm and four prizes of SEK 10,000 (approximately \$1,000) in the smaller cities. Sweden's strict privacy laws required drivers to opt into the contest, limiting the pool of potential prize winners and requiring an outreach effort to recruit participants.

No academic publications evaluating the demonstration were found, and no project reports were found on the Swedish Road Administration website. Given the limited duration of the demonstration, a rigorous evaluation might not have been feasible. Novelty effects cannot be ruled out, and it would be difficult to separate the effects of the compliance incentive from those related to the introduction of a speed camera. In addition, the stylized polychromatic sign (Figure 8) was advertising-type signage that did not conform to European road sign standards.

2.4. Other Speeding Prevention Incentives

Some insurance companies and commercial fleet operators have established incentive systems to discourage speeding and encourage other safe driving behavior. Most of these systems are extensions of ISA technologies that combine data from an in-vehicle GPS with information from speed sensors and accelerometers to detect speeding and harsh braking and possibly data from other in-vehicle sensors such as radar units that detect the distance to the vehicle ahead (Figure 9).



Aioi Nissay Dowa Insurance UK Ltd

Figure 9. Advertisement for discounted insurance tied to in-vehicle “black box” sensors

2.4.1. Commercial Fleets

In commercial fleet settings, drivers who comply with speed laws and engage in other safe driving behaviors can be rewarded through payroll incentives or random drawings for prizes. For example, Elias (2021) describes an experiment conducted in collaboration with one of Israel’s largest public bus companies where data from onboard driver assistance systems was used to identify each bus’s location, speed, and following distance and how often the driver changed lanes without signaling. These data were combined in a “safe driving index” with weighted deductions for each type of undesirable driving event. Over a period of 86 workdays, the driver with the best daily score was awarded ILS ₪500 (approximately USD \$140), and the remaining drivers scoring in the top 50% split a pool of another ILS ₪500. For example, if 40 drivers were on duty, the top 20 each received ILS ₪25 (about USD \$7.00). Daily feedback was provided on the driver’s score and any prizes awarded. The system significantly reduced speeding and resulted in a modest improvement in tailgating.

2.4.2. Automobile Insurance Companies

Where permitted by regulators, some insurance companies offer discounts to drivers who avoid undesirable behavior based on data from in-vehicle sensors. This is sometimes referred to as pay-as-you-speed (PAYS) insurance. Several papers on this topic have been published since the 1980s. For example, Stigson et al. (2014) describe a one-year PAYS trial in Sweden that offered drivers an insurance discount of up to 30% for compliance with speed limits. Drivers in the test group were informed and visually warned in real time when they exceeded the speed limit and could follow their driving performance on a website; drivers in the control group were not given any feedback. The proportion of driving completed at a speed exceeding 5 km/h (3 mph) over the speed limit was 6% for the test group and 14% for the control group, and more severe speed limit exceedances were also reduced for the test group. Similar results were observed for a PAYS program targeting young drivers in the Netherlands (Bolderdijk et al. 2011).

Elvik (2014) analyzed the results of several studies of this type and developed a benefit/cost analysis of programs rewarding drivers for not speeding. Three levels of the reward were defined: €20 per year, €300 per year, and €1,200 per year (these corresponded to USD \$26, \$396, and \$1,586 at the June 2013 exchange rate). Elvik (2014) estimated that these rewards would reduce the rate of speeding by 20%, 70%, and 95%, respectively.

Currently, a key limitation of both types of anti-speeding programs is that they are captive to specific groups of company employees or customers and require the vehicle owner to consent to monitoring. While they could be implemented by state and local government agencies in the context of employee travel using fleet vehicles, they do not address speeding by the driving public. A more technical concern is that if drivers divert excessive attention to monitoring their speed, they may become less attentive to other road hazards.

2.5. Seatbelt Incentive Programs

Although manufacturers have been required to equip US motor vehicles with seatbelts since 1968, it was not until 1984 that New York passed the first state law mandating their use. Over the next 10 years most states followed suit, though as of 2023 New Hampshire still has no such law.

2.5.1. Overview

A number of research reports describing programs to incentivize the use of seatbelts were published between 1978 and 1992, most predating the adoption of mandatory seatbelt legislation. Hagenzieker et al. (1997) prepared a meta-analysis summarizing the results from 34 publications that described 61 seatbelt incentive programs, of which 94% were implemented in the United States.

The design of these programs varied widely: some targeted specific groups such as company employees or students/parents at a specific school, while others endeavored to engage the public

within a particular catchment area. The incentives varied widely, with some programs offering low-value awards such as stickers, meal tokens, or T-shirts, and others offering the opportunity to be entered in a drawing for a cash prize of up to several thousand dollars. Many programs combined low-value promotional items with the chance to win more valuable prizes. Some programs offered an immediate payout based on signing a pledge to use seatbelts, while others featured delayed payouts based on observations of seatbelt use.

The studies typically compared seatbelt use rates before, during, and after the incentive program. A few included comparisons to control sites. Individual studies found short-term changes in seatbelt use ranging from -4% to $+68\%$. When studies were weighted by the estimated number of observations, the mean short-term effect was a 12% increase in seatbelt use ($\pm 1.9\%$) and the long-term effect size was a 9.6% increase in seatbelt use ($\pm 1.2\%$). Over time, the effect of the incentives appeared to be declining due to an increasing baseline rate of seatbelt use.

The incentive programs were found to be the most effective under the following circumstances:

- The initial rate of seatbelt use was low.
- A small homogeneous group such as an elementary school, company, or university (rather than the community more broadly) was targeted.
- A combination of immediate and delayed rewards was provided. (For example, everyone who signed the seatbelt use pledge received a promotional item on the spot, and compliant participants were entered into a drawing for a larger cash prize at the end.) The second-best option was to provide an immediate non-contingent reward without a downstream prize.

The duration of the incentive program and the value of the awards did not appear to have a strong influence on the changes in seatbelt use rates.

The meta-analysis found that programs targeting a specific group (such as students at an elementary school and their parents) tended to produce larger increases in seatbelt use than those with a community-wide focus. It is possible that this was due to dilution effects. Another possibility is that road safety was more salient to members of the target groups (e.g., parents with school-age children) than to the general population.

2.5.2. Case Example

Hunter et al. (1986) explored the effectiveness of a 1983 community-wide seatbelt incentive program conducted in Chapel Hill/Carrboro, North Carolina, which had a population of 50,000 at the time. Over a six-month period, the “Seat Belts Pay Off” campaign combined a substantial public information campaign with modest economic incentives to belted occupants of vehicles passing checkpoints.

The public information component of the campaign included news conferences, news coverage in various media outlets, daily updates with the host of a morning radio program, television interviews, editorials, signage on trucks operated by the local Coca-Cola distributor, brochures,

bumper stickers, and presentations at community events. A conspicuously marked van traveled around the city distributing the incentives.

During routine traffic stops, a prize and drawing card were awarded to each belted occupant, including children in child safety seats or belts. The driver, and others if interested, then received a bumper sticker. Unrestrained occupants were given a campaign brochure and a friendly reminder to “buckle up.” They were encouraged to use seatbelts in the future and told that they would have other chances to win prizes.

From April to October 1983 (26 weeks), about 300 incentives were awarded each week, with some front-loading of the awards to stimulate interest. Most of the incentives were valued at \$3 to \$5, which is equivalent to \$9 to \$15 in 2022 dollars. A total of almost 7,500 incentive items were donated by businesses, including 3,600 McDonald’s meals, 1,200 six-packs of Coca-Cola products, and a variety of gift certificates and free admission tickets donated by local businesses and organizations. Note that this was sufficient to award prizes to 15% of the area’s population.

To stimulate additional public interest, six monthly \$500 drawings were held (about \$1,500 in 2022 dollars), along with a \$1,000 grand prize drawing (about \$3,000 in 2022 dollars). Eligible participants were those who had been stopped and rewarded for seatbelt use and who then mailed in a preaddressed, postage-paid entry card.

The effectiveness of the combined outreach campaign and incentive program was measured by monitoring driver shoulder-belt use in passenger cars equipped with shoulder belts before, during, and after the education and incentive phases. A systematic, stratified sample was used to obtain weekly seatbelt use data from seven data collection sites located around the community.

Overall driver seatbelt use was found to increase from 24% in the baseline phase to a peak value of 41% in the last week of the incentive phase. During the initial six months of the follow-up phase, weekly seatbelt use remained at about 36%. Over the next year, use rates increased slightly, although a small-scale two-month follow-up intervention in the fall of 1984 had no significant impact.

2.5.3. Newer Research

With the passage of mandatory seatbelt legislation in nearly all US states by the early 1990s, the focus of seatbelt research rapidly shifted toward the effects of seatbelt legislation and enforcement. A review for the Centers for Disease Control and Prevention (CDC) identified two studies that combined seatbelt incentive programs with enhanced seatbelt enforcement (Dinh-Zarr et al. 2001). It was not possible to separate the effects of the incentives from those attributable to enforcement. The increases in seatbelt use associated with these programs (9% and 20%) were similar to the overall effect of enhanced enforcement on seatbelt use, suggesting that the contribution of the incentive element was marginal.

2.6. Positive versus Negative Approaches in Road Safety Public Information Campaigns

Broadly speaking, public information messages for road safety can be classified as either positive (focusing on the benefits of driving safely) or negative (focusing on the consequences of crashing or the penalties for non-compliance with laws). Examples of positive and negative messages are shown in Figure 10.



Figure 10. Examples of positive (left) and negative (right) appeals in seatbelt promotion campaigns

As part of focus group research to compare the effects of positive and negative road safety messages, Lewis et al. (2007) summarized the plots of several television advertisements developed for TAC, the statewide motor vehicle liability insurance pool for Victoria, Australia. Four examples are shown in Table 1.

Table 1. Examples of positive and negative road safety messages

Positive Messages	Negative Messages
<p><i>Karaoke</i> (intoxicated driving prevention): Set in a bar with a karaoke machine. Shows that the more people drink, the more confident and loud they become. A voiceover explains that the more we drink, the more we get false confidence and do things we normally would not do. The ad concludes that unlike drinking and driving, singing after drinking will never kill anyone.</p>	<p><i>Don</i> (speeding prevention): A father is shown driving with his family along an open road. His speed is increasing beyond 100 km/h [62 mph]. The scene freezes and a voiceover explains how “Don is about to kill his wife.” The scene continues, showing the complete crash and a scene of Don’s wife with blood all over her face and lifeless.</p>
<p><i>Taxi</i> (intoxicated driving prevention): Shows the comical conversations a taxi driver experiences with intoxicated passengers. The ad concludes with, “If you drink then take a taxi, you’re a bloody genius.”</p>	<p><i>Glasses</i> (intoxicated driving prevention): Empty beer glasses appear in front of the windshield one by one, causing increasingly blurred vision. The car collides into the rear of a stationary truck. The driver’s wife at home is then told by police that her husband has been killed.</p>

Source: Lewis et al. 2007

A considerable amount of research has been conducted to assess the outcomes of road safety public information campaigns. Phillips et al. (2011) prepared a meta-analysis that mathematically reconciled results from 67 primary studies of the effects of road safety campaigns on traffic crashes. Campaign effectiveness was found to vary considerably by theme.

The combined results from 41 campaigns targeting impaired driving showed an 18% reduction in crashes (95% confidence interval -23% to -12%). In contrast, the combined results from 26 anti-speeding campaigns yielded only a 4% reduction in crashes (95% confidence interval -10% to +1%).

Phillips et al. (2011) further considered whether each campaign's messaging was based on emotional persuasion, rational persuasion, or persuasion by incentive. Attempts at rational persuasion were characterized by the dominant use of facts, statistics, and information, while emotional persuasion was characterized by the use of messages likely to arouse a sense of guilt, sympathy, fear, or fun in the target audience. When emotional persuasion was used, the researchers distinguished between shock and humor; for negative messaging, the researchers distinguished between campaigns focusing on detection by the police and those focusing on risk of self-harm or harm to other road users. As shown in Table 2, the following results were observed:

- Campaigns that included both rational and emotional messages were more effective than those using only rational messages. The combined rational+emotional approach yielded a 17% reduction in crashes (95% confidence interval -21% to -7%), while rational-only messaging yielded a 10% reduction in crashes (95% confidence interval -14% to -5%). Only four emotion-only campaigns and three incentive-only campaigns were included in the meta-analysis, which was not enough to provide conclusive results.
- Campaigns that highlighted the risk of harm (to self or others) were substantially less effective than those that avoided the subject. Campaigns highlighting the risk of harm yielded an 8% reduction in crashes (95% confidence interval -14% to -2%), while campaigns that did not highlight harm yielded a 13% reduction in crashes (95% confidence interval -16% to -9%).
- Campaigns that highlighted the risk of being detected breaking the law were only slightly more effective than those that did not mention risk of detection. When the risk of detection was highlighted, a 13% reduction in crashes was observed (95% confidence interval -17% to -8%). Campaigns that did not mention this topic yielded an 11% reduction in crashes (95% confidence interval -16% to -6%).

Table 2. Meta-analysis results for studies of changes in crashes for various types of road safety campaigns

Content Variable	Variable Level	Number of Effects	P	Percent Change in Crashes		
				Lower 95%	Estimate	Upper 95%
Stated basis*	Yes	50	<0.001	-14	-9	-4
	No	66	<0.001	-18	-14	-9
Theme	General-mixed	9	<0.001	-25	-14	-1
	Speeding	26	<0.001	-10	-4	+1
	Drunk driving	41	<0.001	-23	-18	-12
	Other	35	<0.001	-12	-7	-1
General content	Emotional	4	-	-	-	-
	Rational	52		-14	-10	-5
	Emotional+rational	29	<0.001	-21	-17	-7
	Incentive	3	-	-	-	-
Risk of harm highlighted	Yes	22	<0.001	-14	-8	-2
	No	92	<0.001	-16	-13	-9
Risk of detection highlighted	Yes	52	<0.001	-17	-13	-8
	No	62	<0.001	-16	-11	-6

Overall effect summaries for individual effects are grouped according to content variables. Unless indicated otherwise, the summaries are estimated using a random effects model. Publication bias is not adjusted for.

* Campaigns were deemed to have a *stated basis* if they were based on a consultation with a sample of the target group, results from previous campaigns, or constructs drawn from psychological or social marketing theories.

Source: Phillips et al. 2011

Lewis et al. (2007) conducted focus groups to explore reactions to positive and negative road safety television advertisements. The participants encouraged agencies to pursue positive messaging that shows “what’s required of people to keep themselves out of trouble” and demonstrates how to avoid getting into unsafe situations. Participants wanted the messages to offer proactive strategies for addressing troublesome situations, especially if the materials were youth-oriented. In general, the use of humor was supported, with the caveat that jokes should not trivialize road safety issues.

Negative messages tend to be controversial among focus group participants. For example, while many of the participants in the Lewis et al. (2007) study found the negative ads memorable, several felt the overuse of shock in advertising (and media generally) has made them weary or wary of or numb to shocking messages. Third-person effects were also observed, with participants suggesting that the situations depicted in the advertisements applied to someone other than themselves and that “it won’t happen to me.” These comments are consistent with psychological reactance to the negative messaging.

Concerns about stereotyping were also noted in Lewis et al. (2007). For example, many of the ads were seen as blaming young drivers for road crashes or promoting the idea that young drivers are irresponsible. Positive advertisements that provide role models for responsible driving were suggested as an antidote for this concern.

2.7. Structured Literature Searches

In an attempt to locate any previous studies of speeding prevention incentive programs directed toward the general public, a total of 40 structured literature searches were conducted across five scholarly databases: EbscoHost Academic Search Ultimate, Google Scholar, PubMed, SafetyLit, and Transportation Research International Database (TRID). The main objective of the searches was to determine whether any quantitative information could be found on the safety effects of speeding prevention incentives or the factors of success for such programs. Very little relevant information was found.

2.8. Discussion: Literature Review

The characteristics of successful road safety public outreach campaigns have been researched extensively. The research suggests that positive messages (focusing on the benefits of safe driving) resonate well with audiences. Negative messages (focusing on the risks of unsafe driving) appear to come with a high risk of triggering psychological reactance, a condition that occurs when individuals feel a message or action threatens their freedom. Reactance can trigger hostility toward authority figures or deliberate attempts to thwart the requested action.

Taken as a whole, the literature results offer the following insights for the Unticketing project:

- With the exception of a brief demonstration program sponsored by Volkswagen, there do not appear to have been any previous anti-speeding incentive programs targeting the general public. Nevertheless, previous research has shown that safe-driving bonuses have been effective in deterring speeding by commercial bus/truck drivers, and safe-driving discounts tied to the use of in-vehicle speeding notification devices have been successful in deterring speeding by insurance company customers.
- Contests helped raise seatbelt use rates from the 1970s to the 1990s, perhaps contributing to willingness to pass mandatory seatbelt laws. Research conducted during this period found that incentive programs were fairly effective in increasing voluntary seatbelt use, and most of the increase in seatbelt use continued after the incentives were withdrawn.
- Seatbelt outreach programs that combined an immediate low-value prize with the opportunity for seatbelt users to be entered into a drawing for a larger prize were more effective than those that offered only an immediate incentive or only a delayed incentive. Contrary to the design of the Volkswagen Speed Camera Lottery, experience from the seatbelt initiatives suggests that receiving *any* prize seems to be more important than receiving a *big* prize.
- Participants will likely need to opt into the Unticketing contest; recruiting participants is an important challenge.
- Messaging for Unticketing should take a positive tone, focusing on the benefits of safe driving and the idea that participating is a fun way to make roads safer in the host communities.
- Unnecessary administrative complexity should be avoided.
- Providing quantitative results from the Unticketing project will contribute to scientific and technical knowledge for a concept that has received little research attention in recent years.

3. UNTICKETING CONTEST DESIGN

3.1. Overview

Four competing factors were important in the design of the Unticketing contest:

- Maximizing the anticipated effectiveness of the project in reducing speeding and other undesirable driver behaviors
- Minimizing the anticipated administrative and implementation burdens for the partner law enforcement agencies
- Supporting positive relationships between law enforcement and the community
- Accomplishing the demonstration project within the constraints of the available funding

Lessons learned from the literature review were taken into consideration in the design of the contest. These notably included the strengths and weaknesses of the Volkswagen Speed Camera Lottery and the seatbelt promotion projects conducted from the 1970s to the 1990s. The resulting Unticketing contest involved 10 main activities:

1. Preparation
 - a. Recruiting a group of law enforcement agencies for the demonstration project
 - b. Site selection
 - c. Preparing the project website and other outreach materials to promote the contest and recruit participants
 - d. Soliciting prize donations from local businesses
2. Contest implementation
 - a. Creating an electronic database to record the license plate numbers of compliant motorists
 - b. Collecting plate numbers for compliant motorists as part of traffic enforcement operations
 - c. Matching the license plate numbers of field-observed compliant drivers with the plate numbers of contest opt-in participants
 - d. Awarding prizes to randomly selected owners of matching vehicles
3. Effectiveness measurement and monitoring
 - a. Surveying road users in the study area about speeding and traffic safety attitudes before and after the contest
 - b. Conducting spot traffic speed studies to monitor traffic speeds before, during, and after the contest

The subsequent sections of this chapter summarize the actions taken for the preparation and implementation activities. The surveys and spot speed studies are discussed in subsequent chapters of this report.

Although summer tourist/recreational traffic in Cerro Gordo County is significant, the area rarely experiences the severe traffic congestion characteristic of some resort areas. Therefore, a key objective from the local agencies' perspective was to reduce speeding and other driving-related misbehavior during the tourism season and to strengthen the relationships between the police and the community. Although Interstate 35 bisects Cerro Gordo County, pass-through freeway traffic was not a target of the Unticketing campaign.

3.3. Contest Opt-In

Although Iowa law enforcement agencies can look up the registered owner of any licensed vehicle by querying the state motor vehicle registration database, to avoid privacy concerns prizes were awarded only to drivers who opted into the Unticketing contest. A sign-up page was created using a Qualtrics survey form (Qualtrics 2023), which was linked to the Unticketing website discussed in the next chapter.

4. OUTREACH AND EARNED MEDIA

An Unticketing website (<http://www.unticketing.org>) was created to provide contest information, encourage sign-ups, and assure drivers that they would not be pulled over for the purposes of awarding a prize. The home page provided an overview of the contest and included links to web pages for each of the following functions:

- Join the contest (link to the Qualtrics sign-up form)
- Frequently asked questions (eligibility information)
- Contest details, organizers, and sponsors (acknowledgements of the sponsoring agencies and prize donors)
- See who has won so far (anonymized information about contest winners, derived from the press releases issued after each prize drawing)
- Did you know... Iowa traffic safety trivia (fun facts about road safety in Iowa)
- Printable Unticketing flyer (PDF of the advertisement, shown in Figure 2)

The opt-in form included screener questions where each respondent was asked to affirm a nexus to Cerro Gordo County (resident, person working there, or visitor), affirm licensed driver status, and confirm that they were not an employee of one of the sponsoring agencies. The participant was then asked to provide details for up to three vehicles (license plate number, state where registered, vehicle type [e.g., sedan, pickup, SUV, van], and vehicle color) and to provide contact information (name, address, phone number, and email address).

4.1. Contest Marketing Plan

Since the summer tourism season was chosen as the focus of the Unticketing contest for Cerro Gordo County, a summer-at-the-lake theme was used for the project outreach materials. These included a flyer, website, press releases, and social media posts. All materials included the Unticketing Cerro Gordo (Figure 12). The logo consisted of a stylized map of Clear Lake surrounded by icons representing local points of interest such as cities and state parks.



Figure 12. Unticketing Cerro Gordo logo

A postcard-sized (4x6 inch) flyer was prepared for use as a handout (Figure 2). It was distributed at pre-contest meetings and events and through government offices and local businesses. The flyer included a brief description of the Unticketing contest, an invitation to enter the contest, a QR code and URL linking to the project website and sign-up form, and acknowledgements of the project sponsors.

4.2. Press Releases

A series of press releases was prepared to announce the Unticketing contest and sustain interest by providing the results of the drawings every two weeks. The press releases were carried (often verbatim) in the *Clear Lake Mirror Reporter* (Clear Lake's weekly newspaper) and *Globe Gazette* (Mason City's daily newspaper) (Figure 13). The releases also resulted in radio and television coverage, including stories on KAAL (Albert Lea, Minnesota) and KIMT (Mason City, Iowa/Rochester, Minnesota) (Figure 14 and Figure 15). Shorter versions of the press releases were posted on the three agencies' social media pages at the start of the contest and after each drawing.

'Unticketing' program unveils some winners

ROBIN MCCLELLAND
Globe Gazette

Law enforcement agencies in Cerro Gordo County are continuing their collaboration to increase traffic safety through Unticketing, a contest that lets people who drive safely and legally win prizes donated by area businesses.

Since Memorial Day, officers and deputies at the Clear Lake Police Department, Mason City Police Department, and Cerro Gordo County Sheriff's Office have been on the lookout for safe drivers. When a license plate number they record matches someone who has signed up for the Unticketing contest, that vehicle is entered in the

prize drawing.

This week's winners include a Clear Lake resident who drives a white van, observed wearing her seatbelt and obeying the speed limit on South Shore Drive. The driver won a roadside troubleshooting kit donated by AAA Iowa.

A Clear Lake resident who drives a brown SUV was awarded a \$30 Cabin Coffee gift card for making full and complete stop at a stop sign on Fourth Avenue South. In addition, a Manly resident who drives a black sedan won a \$25 Casey's gift card.

So far, more than 300 drivers have entered over 400 vehicles in the Unticketing contest. For your chance win, visit [\[unticketing.org\]\(http://www.unticketing.org\) to enter your license plate numbers.](http://www.un-</p></div><div data-bbox=)

The next Unticketing drawing will take place Monday, July 3rd. As the holiday weekend approaches, officers and deputies will be watching for safe drivers all across Cerro Gordo County. It's a good time to remember that drinking and driving can cause serious problems, even for people who are below the legal intoxication limit.

If it's time to make alcohol or drugs a smaller part of your life, yourlifeiowa.org and recovery-iowa.org offer many useful resources.

Because the fact is: everyone who drives safely and legally is a winner.

Figure 13. Newspaper story about Unticketing in the Mason City *Globe Gazette* based on an Unticketing press release



KAAL-TV

Figure 14. KAAL-TV interview with Sheriff Pals



KAAL-TV

Figure 15. KAAL-TV ride-along with deputy sheriff

5. SPOT SPEED STUDIES

5.1. Description of Spot Speed Data Collection

To determine whether the Unticketing contest had any effect on traffic speeds, a series of spot speed studies were conducted at five locations in Clear Lake and Mason City. All data were collected using a handheld radar gun (Bushnell Speedster III), with 20 to 30 minutes of speed observations manually recorded at each location on each day of data collection. Traffic was freely flowing on all of the days when data were collected, with no congestion, traffic incidents, or special enforcement suppressing speeds.

The data collected before the contest from May 26, 2023, are believed to be representative of the early-season conditions prior to the announcement of the contest during the week of May 29. Although the selected date was close to the Memorial Day holiday, the data collection had to be squeezed into a narrow window between the time when visitors typically start coming to Clear Lake and the start of the contest. Collecting data on a Friday before a holiday weekend is not ideal and may have impacted the ultimate outcome.

Data collected during the contest were collected during several time periods. However, data were not collected consistently. As a result, data from the August collection period, when available, were used as the “after” period. When such data were not available, data from the collection period closest to August were used in this capacity.

5.2. Data Collection Locations and Results

5.2.1. Federal Avenue (US 65) between 16th and 17th Streets, Mason City

Located in a residential district that abuts an industrial area, the Federal Avenue data collection site in Mason City was recommended by Chief Brinkley as a location with a known speeding problem. Data collection was focused on southbound traffic.

During the early summer, construction was occurring at the Calmus Creek bridge, 0.3 miles upstream of the data collection site. Although the data collection site’s proximity to the work zone was not ideal, in this 30 mph zone drivers had sufficient distance to select their preferred speed between the end of the work zone and the data collection site. Most vehicles accelerated out of the work zone and then slowed by the time they reached the residential area where the data collection site was located.

Speed results are shown in Table 3. As the table shows, the average speed was 36.2 mph before the campaign and 36.1 mph after the campaign (a decrease of 0.2 mph), and the 85th percentile speed was 40 mph both before and after the campaign (a 0 mph increase). Although increases were noted, they were not statistically significant.

Table 3. Speed results for Federal Avenue between 17th and 16th Streets

Metric	Before (May 2023)	After (Aug 2023)	Change
Average speed (mph)	36.2	36.1	-0.2^
Standard deviation	3.4	3.9	
85th percentile speed (mph)	40	40	0.0
Count	75	96	

^not statistically significant

5.2.2. Eighth Street between 12th Avenue S and 10th Avenue S, Clear Lake

This data collection site was located in a residential district in the heart of Clear Lake’s tourism/recreational area. The speed limit at this location is 25 mph but transitions to 35 mph downstream. Data collection focused on southbound traffic, which had the opportunity to accelerate due to the downhill grade and higher speed limit south of 12th Avenue S.

Speed metrics are shown in Table 4. As the table shows, a minor decrease of 1 mph in mean speed was noted (31.1 mph before the campaign to 30.1 mph after the campaign), but the difference is not statistically significant, and only a decrease of 1 mph in 85th percentile speed was noted (34 mph before the campaign to 33 mph after the campaign).

Table 4. Speed results for 8th Street between 10th Avenue and 12th Avenue

Metric	Before (May 2023)	After (Aug 2023)	Change
Average speed (mph)	31.1	30.1	-1.0^
Standard deviation	4.4	3.2	
85th percentile speed (mph)	34	33	-1.0
Count	28	83	

^not statistically significant

5.2.3. S. Shore Drive West of Finch Avenue, Clear Lake

This data collection site was located near the entrance to the Clear Lake State Park campground in the heart of Clear Lake’s tourism/recreational area. In May 2023, just as the Unticketing project began, the speed limit was lowered to 45 mph. However, the data before the contest were collected in June. Data collection focused on westbound traffic.

Speed metrics are shown in Table 5. The mean speed decreased from 45.3 mph before the campaign to 41.6 mph after the campaign (a 3.7 mph decrease). The 85th percentile speed increased from 50 mph before the campaign to 46 mph after the campaign (a 4 mph decrease). However, the sample sizes were small, which makes it difficult to determine statistical significance.

Table 5. Speed results for South Shore Drive west of Finch Avenue

Metric	Before (May 2023)	After (Aug 2023)	Change
Average speed (mph)	45.3	41.6	-3.7*
Standard deviation	4.9	4.2	
85th percentile speed (mph)	50	46	-4
Count	80	64	

*statistically significant

5.2.4. Fourth Avenue at 20th Street, Clear Lake

This data collection site was located in an industrial/warehousing zone about 1/4 mile west of the Interstate 35 freeway entrance. The speed limit at this location is 45 mph.

Speed results are shown in Table 6. The mean speed before the campaign was 46.6 mph and decreased 1.7 mph to 44.9 mph after the campaign, but the change was not statistically significant. The 85th percentile speeds decreased by 2 mph (50 mph before the campaign to 48 mph after the campaign).

Table 6. Speed results for 4th Avenue at 20th Street

Metric	Before (May 2023)	After (Aug 2023)	Change
Average speed (mph)	46.6	44.9	-1.7
Standard deviation	3.4	3.8	
85th percentile speed (mph)	50	48	-2.0
Count	62	61	

6. SURVEY OF ROAD USER ATTITUDES

Evaluation of the Unticketing campaign included online pre- and post-contest surveys inquiring about road users' attitudes toward speeding and roadway safety. The surveys were intended to explore the effects of the Unticketing campaign on public attitudes toward road safety.

Both surveys were directed toward people who live, work, or spend some of their leisure time in Cerro Gordo County. Additionally, participants were required to be licensed drivers or learner's permit holders and were required to be 18 years old or older. Eligibility was determined through a series of three screening questions. If any response indicated that the participant did not meet the eligibility criteria, the participant was thanked for his or her interest and the survey was terminated.

6.1. Survey Questions

The survey questionnaire is presented in Appendix B. All surveys were conducted online using the Qualtrics (Qualtrics 2023) platform. To facilitate comparison, the pre- and post-intervention survey questions were identical. Some example questions are as follows:

- When traffic is flowing freely, how fast do you usually drive in a 55 mph zone? (slider from 10 to 90 mph)
- Ticketing speeders is an effective way to prevent crashes. (Likert scale from strongly agree to strongly disagree)
- The chance of being in a crash when driving 75 mph in a 65 mph zone is high. (Likert scale from strongly agree to strongly disagree)
- The speed limits in most business districts... (are too high / are about right / are too low).

No personally identifiable information was requested. The surveys included three demographic questions: the jurisdiction where the person's driver's license was issued (Iowa / each of the six neighboring states / other US state / Canada / Mexico / other country), age range (three categories for teens and then 10-year blocks up to age 80+), and gender.

6.2. Participant Recruitment

Participants were recruited for the surveys through social media sites maintained by the three participating law enforcement agencies as well as through an Iowa State University student, staff, and faculty email list. As an incentive for participation, a chance to win one of two \$25 coffee shop gift cards was offered for each of the two surveys (pre- and post-contest). In each instance, one gift card was for Starbucks and one was for Cabin Coffee, a local chain based in Clear Lake. These survey completion incentives were purchased using project funds and were completely separate from the prizes donated for the Unticketing contest. For each survey, two winners were selected at random from among those who completed the survey.

At the request of the Iowa State University Institutional Review Board, the contact details for gift card drawing entrants were separated from their responses to the main survey questions. This was accomplished through a separate Qualtrics form that launched automatically when a participant completed the attitudinal survey. Through this separate form, survey participants who wanted a chance to win the incentive provided their contact details (name, address, phone number, and email) and indicated a preference for either Starbucks or Cabin Coffee.

Three separate survey forms with identical questions and instructions were distributed to specific audiences. These samples were as follows:

- A. Pre-contest (spring) survey announced on Cerro Gordo County law enforcement agencies' social media sites
- B. Post-contest (fall) survey announced on Cerro Gordo County law enforcement agencies' social media sites
- C. Post-contest (fall) survey announced to participants in the spring survey who consented to be contacted again

The participant recruitment strategy for the pre-contest survey included announcements posted on the participating law enforcement agencies' social media channels as well as a broadcast email to Iowa State University students, staff, and faculty. A similar strategy was used for the post-contest survey, along with recruitment among participants from the first survey who consented to being contacted again.

6.3. Data Cleaning

A problem was identified with Sample B, the post-contest survey announced through social media. Specifically, a substantial number of fake or auto-generated responses were detected among the gift card incentive entries. These were evident based on the mailing addresses provided, which were very distant from Cerro Gordo County, mentioned streets names that do not exist in Cerro Gordo County, or included zip codes that did not correspond to the city names. Evidently, the spammers assumed the gift cards would be sent by email, whereas in actuality they were sent by postal mail following address validation and completion of a mandatory acknowledgement form. Samples A and C were not affected by this issue.

Since the incentive participation data was de-linked from the survey responses as requested by the Iowa State University Institutional Review Board, the address validation errors could not be used to clean the attitudinal survey data. Instead, the following data cleaning steps were applied to all three samples:

- Responses with illogical preferred-speed selections were removed. This occurred when, for example, the participant indicated that their preferred speed in a 25 mph zone was higher than their preferred speed in a 35 mph zone.
- Responses in which less than 70% of the questions had been answered were removed.

- Responses with completion times of less than 110 seconds were removed. Since the typical survey completion time was about 145 seconds, these unusually short completion times were likely indicative of machine-generated or hastily completed responses, probably spam.

About 38% of the Sample B responses reported being licensed outside the state of Iowa. These responses were removed from Sample B. This step did not appear to be necessary for Samples A and C, which all had very low rates of out-of-state licensure. Similarly, more than 50 duplicate or nearly-duplicate responses were removed from Sample B, whereas this did not appear to be an issue with the other samples.

Although these data cleaning steps had minimal effect on the sizes of Samples A and C, the size of Sample B was reduced from 649 raw responses to 232 after cleaning.

6.4. Speed Choice

The first set of questions focused on drivers' stated speed choice. The sample size for the before period was 553, and the sample size for the after period was 231.

The first question was stated as follows: *When traffic is flowing freely, I usually drive... (speeds in miles per hour) ...in a 25 mph zone.* Responses before the campaign compared to those after the campaign are shown in Figure 16. Around 32% of drivers in the before period stated that they drive at or below the speed limit, compared to 45% of drivers in the after period. The majority of drivers in the before period (35%) indicated that they usually drive 5 to 9 mph over the speed limit in a 25 mph zone, while only 29% provided this response in the after period. Drivers were thus much more likely to say that they would drive the speed limit in a 25 mph zone.

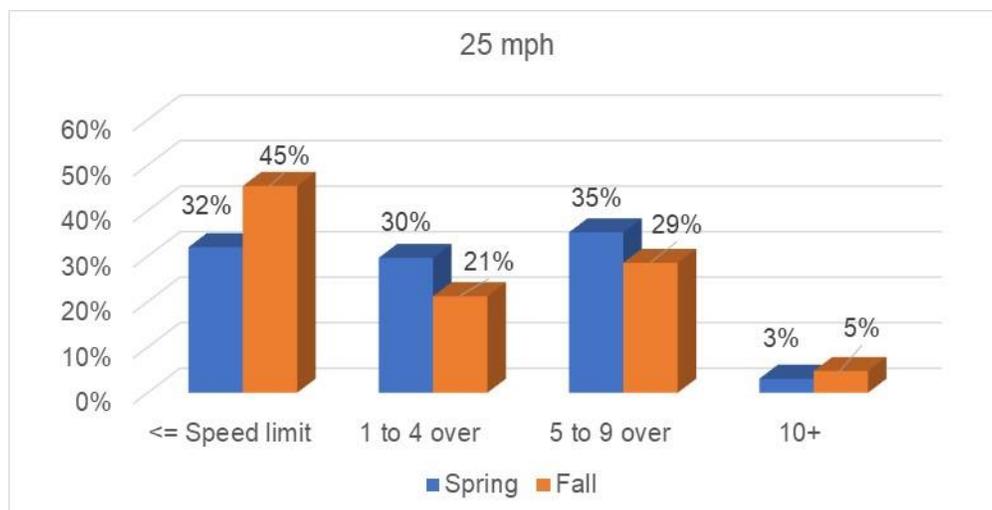


Figure 16. Driver responses to speed choice in a 25 mph zone

The second question was stated as follows: *When traffic is flowing freely, I usually drive... (speeds in miles per hour) ...in a 35 mph zone.* Responses are shown in Figure 17. Around 34%

of drivers before the campaign stated that they drive at or below the speed limit in a 35 mph zone, while in the after period 50% of drivers provided this response. Around one-third (34%) of drivers before the campaign said they drive 5 to 9 mph over the speed limit in a 35 mph zone compared to 24% of drivers after the campaign.



Figure 17. Driver responses to speed choice in a 35 mph zone

The third question was stated as follows: *When traffic is flowing freely, I usually drive... (speeds in miles per hour) ...in a 55 mph zone.* Responses are shown in Figure 18. Only 18% of drivers before the campaign said that they drive at or below the speed limit in a 55 mph zone, while 39% provided that response after the campaign. More than half of drivers before the campaign said that they usually drive 5 to 9 mph over the speed limit in a 55 mph zone, compared to only 35% after the campaign.

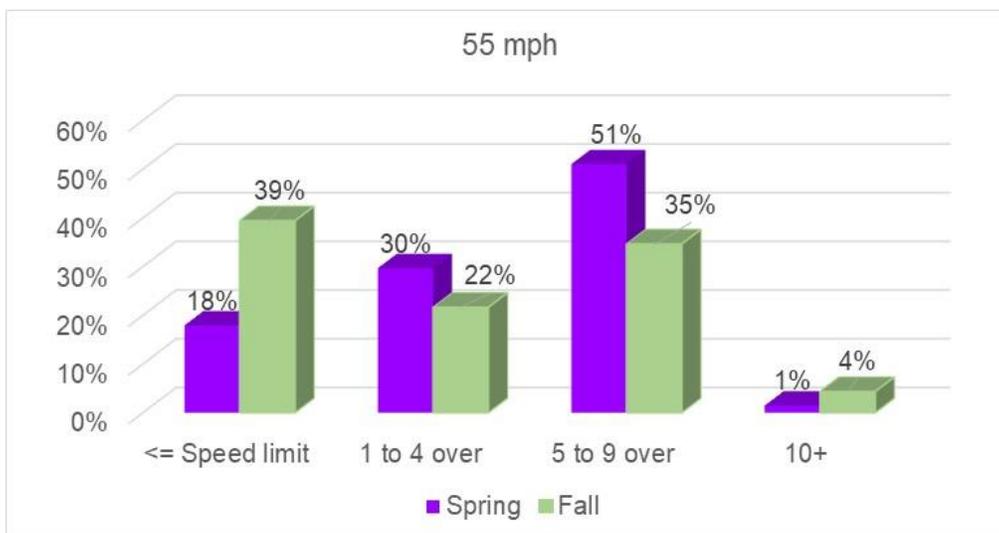


Figure 18. Driver responses to speed choice in a 55 mph zone

The fourth question was stated as follows: *When traffic is flowing freely, I usually drive... (speeds in miles per hour) ...in a 70 mph zone.* Responses are shown in Figure 19. Drivers who indicated that they drive at or below the speed limit in a 70 mph zone increased from 23% before the campaign to 45% after. Drivers who indicated that they drive 5 to 9 mph over the speed limit in a 70 mph zone decreased from 45% before the campaign to 33% after.

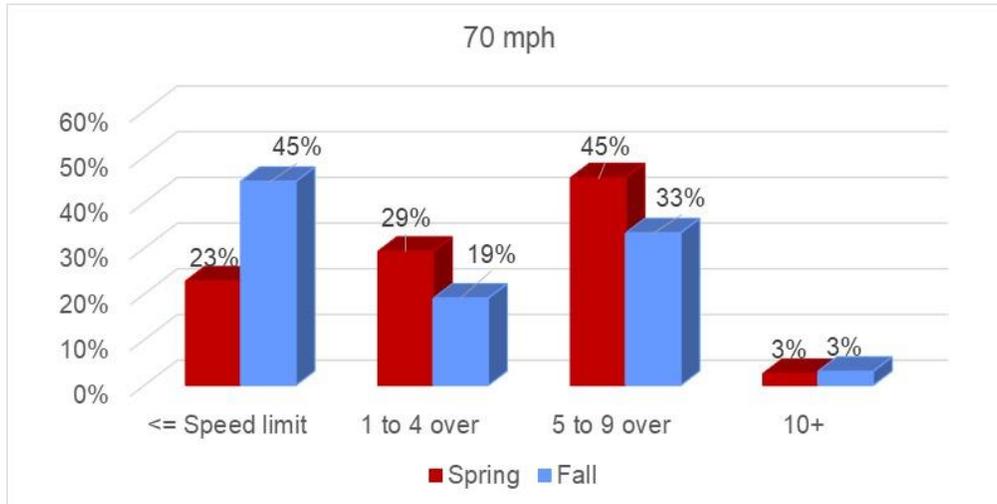


Figure 19. Driver responses to speed choice in a 70 mph zone

6.5. Seatbelt Use

The next set of questions focused on seatbelt use. The sample size for the before period was 553, and the sample size for the after period was 232.

The first question asked about driver seatbelt use: *I always wear my seatbelt.* The second question focused on passenger seatbelt use: *I always make sure my passengers wear seatbelts.* The third focused on child restraint: *If I had a younger child in the car, I would make sure the child is buckled in a car seat.* Possible responses included “Strongly Agree,” “Somewhat Agree,” “Neutral,” “Somewhat Disagree,” or “Strongly Disagree.” Sample sizes were small for some responses, so the responses were combined into categories for “Agree,” “Neutral,” or “Disagree.”

Responses for all three questions are provided in Table 7. As the table shows, most drivers responded that they use seatbelts or child restraints (>95% in all cases). A small difference between the before and after periods was noted in the number of drivers who disagreed about using their own seatbelt or ensuring that passengers used seatbelts. However, the difference was only around 1%. As a result, even though the changes were statistically significant, there was no practical change in responses.

Table 7. Driver responses about seatbelt use

Question	Response	Spring	Fall	Change
Driver Seatbelt use	Neutral	0.7%	2.2%	1.4%
	Agree	98.4%	97.8%	-0.5%
	Disagree	0.9%	0.0%	-0.9%*
Passenger Seatbelt Use	Neutral	3.8%	3.9%	0.1%
	Agree	95.1%	96.1%	1.0%*
	Disagree	1.1%	0.0%	-1.1%*
Child Restraint Use	Neutral	0.4%	0.4%	0.1%
	Agree	99.6%	99.1%	-0.5%
	Disagree	0.0%	0.0%	0.0%

*statistically significant

6.6. Driver Incentives

The next set of questions focused on strategies that would induce drivers to change their behavior. Possible responses included “Strongly Agree,” “Somewhat Agree,” “Neutral,” “Somewhat Disagree,” or “Strongly Disagree.” Sample sizes were small for some responses, so the responses were combined into categories for “Agree,” “Neutral,” or “Disagree.” Results are provided in Table 8.

Table 8. Driver incentives

Question	Response	Spring	Fall	Change
Observe Speed Limit for Incentive	Neutral	16.8%	9.5%	-7.3%*
	Agree	72.3%	85.8%	13.4%*
	Disagree	10.8%	4.7%	-6.1%*
Effectiveness of Ticketing	Neutral	18.6%	20.3%	1.6%
	Agree	66.4%	72.4%	6.0%*
	Disagree	15.0%	7.3%	-7.7%*
Effectiveness of Verbal Warning	Neutral	22.6%	16.4%	-6.2%*
	Agree	61.1%	69.8%	8.7%*
	Disagree	16.3%	13.8%	-2.5%
Effectiveness of Electronic Signs	Neutral	21.2%	11.6%	-9.5%*
	Agree	59.5%	78.4%	19.0%*
	Disagree	19.3%	9.9%	-9.4%*
Effectiveness of Prizes	Neutral	30.0%	22.0%	-8.0%
	Agree	42.1%	65.1%	23.0%
	Disagree	27.8%	12.9%	-14.9%

*statistically significant

The first question asked whether drivers would better observe the speed limit if offered an incentive: *If my car insurance company offered a discount for consistently observing the speed limit, I would sign up for it.* The number of drivers who agreed increased by 13.4% between the before and after periods. The numbers of drivers who were neutral or disagreed both decreased. All differences were statistically significant.

The second question asked whether drivers thought ticketing speeders was effective: *Ticketing speeders is an effective way to prevent crashes*. Drivers were slightly more likely to agree after the campaign (an increase of 6%), with a corresponding decrease in drivers who disagreed (7.7%). Both responses were statistically significant.

The third question asked about the effectiveness of warnings: *Having police officers give verbal warnings to speeders is an effective way to prevent crashes*. The percentage of drivers who agreed that verbal warnings were effective increased between the before and after periods (8.7%), with modest decreases in drivers who disagreed (2.5%).

The fourth question asked about electronic speed feedback signs: *The electronic signs that show how fast you are driving are an effective way to prevent crashes*. Drivers were more likely to agree that electronic signs were effective in the period after the campaign (a 19% increase).

The fifth question asked about the effectiveness of prizes in managing speed: *Giving people prizes for observing the speed limit could be an effective way to prevent crashes*. The percentage of drivers who agreed that giving prizes would be effective in preventing crashes increased by 23% after the campaign.

6.7. Likelihood of Crash Involvement

The next set of questions asked whether drivers feel that crash risk increases when they speed in a particular zone. Results are shown in Table 9.

Table 9. Likelihood of crash involvement

Question	Response	Spring	Fall	Change
45 in a 35 mph zone	Neutral	14.5%	16.9%	2.3%
	Agree	72.6%	73.2%	0.6%
	Disagree	12.9%	10.0%	-2.9%
65 in a 75 mph zone	Neutral	13.4%	11.7%	-1.8%
	Agree	72.2%	74.9%	2.7%
	Disagree	14.4%	13.4%	-0.9%

The first question was stated as follows: *The chance of being in a crash when driving 45 mph in a 35 mph zone is high*. Around 73% of drivers before the campaign agreed that the chance of being in a crash was high if driving 45 mph in a 35 mph zone and only slightly more agreed after the campaign (73.2%). None of the differences were statistically significant.

The second question was stated as follows: *The chance of being in a crash when driving 75 mph in a 65 mph zone is high*. Around 72% of drivers agreed the chance of being in a crash going 75 mph in a 65 mph zone before the campaign and almost 75% stated the same after the campaign took place (an approximately 3% increase). However, the differences were not statistically significant.

6.8. Perception of Speed Limits and Penalties

The final set of questions focused on how drivers perceived speed limits and penalties for speeding, with possible responses being “Are about right,” “Are too high,” “Are too low,” or, for the fourth question, “Not sure.” Responses are shown in Table 10.

Table 10. Attitudes towards speed limits and penalties

Question	Response	Spring	Fall	Change
Speed Limits in Residential	Are about right	88.8%	86.6%	-2.1%
	Are too high	3.3%	3.0%	-0.3%
	Are too low	7.9%	10.3%	2.4%
Speed Limits in Business Districts	Are about right	84.0%	84.9%	0.9%
	Are too high	2.9%	1.7%	-1.2%
	Are too low	13.1%	13.4%	0.3%
Speed Limits on Freeways	Are about right	65.4%	68.1%	2.7%
	Are too high	2.0%	9.5%	7.5%
	Are too low	33.0%	22.4%	-10.6%
Penalties for Speeding	Are about right	38.0%	52.2%	14.2%
	Are too high	22.0%	12.9%	-9.1%
	Are too low	9.4%	12.5%	3.1%
	Not sure	30.6%	22.4%	-8.2%

The first question asked about residential areas: *The speed limits in most residential areas...* Drivers who thought that speed limits are too low in residential areas increased from 7.9% before the campaign to 10.3% after (an increase of 2.4%). Drivers were thus more likely to think that speed limits were too low after the campaign concluded.

The second question asked about business districts: *The speed limits in most business districts...* Drivers who thought that speed limits are too low in business districts increased from 13.1% before the campaign to 13.4% after (an increase of 0.3%).

The third question asked about freeways: *The speed limits on most freeways...* Drivers who thought that speed limits are too low on freeways decreased from around 33% before the campaign to 22.4% after (a decrease of 10.6%). Taken together with the responses to the previous two questions, driver attitudes did not change towards speed limits on lower functional classes but did change regarding speed limits on higher functional classes.

The fourth question asked about penalties for speeding: *The penalties for speeding violations...* Drivers who thought that penalties were too low increased from 9.4% before the campaign to 12.5% after (an increase of 3.1%). Drivers were thus slightly more likely to think that penalties for speeding were too low after the campaign concluded.

7. SUMMARY AND CONCLUSIONS

Speeding and other routine violations of traffic safety laws have been a persistent problem for nearly the entire history of the automobile. Detecting, intercepting, and issuing citations to traffic violators is labor-intensive for law enforcement agencies. Contested citations affect not only law enforcement but also the courts. As a result, many agencies find it difficult to sustain high levels of enforcement over the long run.

Traffic enforcement can also compromise officer safety, both in terms of the risk of being struck by traffic while conducting roadside interviews and the risk of hostility from the intercepted driver. Speeding enforcement can also amplify pre-existing tensions between law enforcement agencies and the communities they serve.

While some of these challenges can be partially mitigated through the use of automated speed camera systems that issue citations to a vehicle's registered owner by mail, the core issue remains: traffic enforcement is generally a negative experience for both the motorist and those conducting the enforcement actions.

Previous social science research demonstrates that penalties and incentives are both powerful motivators of human behavior, but past approaches to addressing traffic violations have almost always been punitive in nature. A few exceptions were found in the literature review:

- In 2010, auto manufacturer Volkswagen conducted a small-scale Speed Camera Lottery in Sweden as part of a global marketing campaign. An automated speed camera collected the license plate numbers of compliant motorists. From this pool, one driver was selected at random to receive a large cash prize funded by the company. Although the contest reduced speeds and generated extensive media coverage for Volkswagen, the demonstration was administratively complicated and required custom-built equipment, which had to be installed at the roadside by skilled technicians.
- In the years before seatbelts became mandatory, many community-based contests promoted their use. Focusing on well-defined groups (such as employees of a specific company or students and parents at a specific school) supported the success of these contests.
- In captive fleets such as the customers of a specific insurance company or the drivers for a specific trucking company or bus line, financial incentives have been used successfully to motivate safer driving behavior. These incentive plans require the use of sensors that monitor vehicle location, speed, and deceleration rate to identify speeding, harsh braking, and tailgating.

The literature review highlighted the importance of avoiding psychological reactance when designing and implementing traffic enforcement actions and safety marketing campaigns. Reactance occurs when an individual feels that he or she is being coerced to take an action that conflicts with his or her sense of personal freedom. Often, this results in the individual doing the opposite of what he or she has been told to do. For example, a person who is ticketed for speeding might drive even faster as soon as the police officer is out of sight. Young men, people

with substance use disorders, and people with mental health issues are particularly susceptible to reactions of this type. Actions that incentivize safe driving are less likely to trigger reactance than those that punish or shame people for unsafe driving.

The summer 2023 Unticketing demonstration project in Cerro Gordo County explored one method for incentivizing safe driving behavior (while continuing to punish unsafe behavior). A successful collaboration was established between the project team and three law enforcement agencies in Cerro Gordo County, Iowa. With generous donations from local businesses, randomly selected drivers who opted into the contest and complied with traffic laws were rewarded with gift cards and other prizes valued at \$10 to \$35.

Compliant drivers were identified through routine traffic patrols. These patrols also ticketed violators, creating a carrot-and-stick situation without adding much extra workload for front-line officers and deputy sheriffs. Prizes were distributed by mail to avoid the need to intercept compliant drivers, while violators were warned or ticketed in accordance with pre-existing agency practices.

The six drawings (one every two weeks) generated a steady stream of positive publicity for the law enforcement agencies and prize donors throughout the summer tourism season. The contest produced inconclusive changes in traffic speeds but appeared to increase positive attitudes toward road safety.

Some logistical difficulties were encountered during the contest. Two of the three law enforcement agencies were experiencing staffing shortages and were not able to collect as many compliant driver observations as originally anticipated. In addition, there was a delay in the deployment of an automatic license plate reader system that was initially expected to come online in Mason City by late May. Consequently, automated observations of compliant drivers and traffic speeds were not available. The law enforcement agencies and project team substituted manual compliant driver and speed observations but gathered far fewer samples than would have been obtained with automatic license plate readers. This, in turn, may have affected the extent of the observed speed reductions and attitudinal changes.

A guidebook (Appendix A) was produced to assist law enforcement agencies and other community leaders with implementing similar projects. The guidebook discusses the Cerro Gordo County experience, including topics such as site selection, compliant driver observation and matching, prize solicitation and distribution, and effectiveness monitoring.

Within individual communities, the contest could potentially be made an annual event, allowing the implementing agencies to build up community awareness of the contest over a period of several years along with a stable base of contestants, prize donors, and media contacts.

REFERENCES

- AAP FactCheck. 2021. Sweden’s “speed camera lottery” hit a red light years ago. <https://www.aap.com.au/factcheck/swedens-speed-camera-lottery-hit-a-red-light-years-ago/>.
- Balliet, D., L. B. Mulder, and P. A. M. Van Lange. 2011. Reward, punishment, and cooperation: A meta-analysis. *Psychological Bulletin* 137 (4): 594–615. <http://psycnet.apa.org/journals/bul/137/4/594/>.
- Bellefleur, O., and F. Gagnon. 2011. *Urban Traffic Calming and Health*. Government of Québec, National Collaborating Centre for Healthy Public Policy, Quebec City, Canada.
- Bolderdijk, J. W., J. Knockaert, E. M. Steg, and E. T. Verhoef. 2011. Effects of pay-as-you-drive vehicle insurance on young drivers’ speed choice: Results of a Dutch field experiment. *Accident Analysis & Prevention* 43 (3): 1181–1186. <https://doi.org/https://doi.org/10.1016/j.aap.2010.12.032>.
- Brehm, J. W. 1966. *A Theory of Psychological Reactance*. Academic Press, New York, NY
- Bunn, F., T. Collier, C. Frost, K. Ker, I. Roberts, and R. Wentz. 2009. *Area-Wide Traffic Calming for Preventing Traffic Related Injuries*. Cochrane Collaboration.
- Chen, L., C. Chen, R. Ewing, C. E. McKnight, R. Srinivasan, and M. Roe. 2013. Safety countermeasures and crash reduction in New York City—Experience and lessons learned. *Accident Analysis & Prevention* 50: 312–322. <https://doi.org/https://doi.org/10.1016/j.aap.2012.05.009>.
- Cleland, C. L., K. McComb, F. Kee, R. Jepson, M. P. Kelly, K. Milton, G. Nightingale, P. Kelly, G. Baker, N. Craig, A. J. Williams, and R. F. Hunter. 2020. Effects of 20 mph interventions on a range of public health outcomes: A meta-narrative evidence synthesis. *Journal of Transport & Health* 17: 100633. <https://doi.org/https://doi.org/10.1016/j.jth.2019.100633>.
- Cordner, G. 2014. Chapter 7: Community Policing. *The Oxford Handbook of Police and Policing*. Edited by M. D. Reisig and R. J. Kane. Oxford Handbooks. Oxford University Press, New York, NY.
- Dinh-Zarr, T. B., D. A. Sleet, R. A. Shults, S. Zaza, R. W. Elder, J. L. Nichols, R. S. Thompson, D. M. Sosin, and Task Force on Community Preventive Services. 2001. Reviews of evidence regarding interventions to increase the use of safety belts. *American Journal of Preventive Medicine* 21 (4): 48–65.
- DOJ. 2014. Community Policing Defined. United States Department of Justice, Community Oriented Policing Services, Washington, DC. <https://cops.usdoj.gov/RIC/Publications/cops-p157-pub.pdf>.
- Elias, W. 2021. The effectiveness of different incentive programs to encourage safe driving. *Sustainability* 13(6). <https://doi.org/10.3390/su13063398>.
- Elvik, R. 2001. Area-wide urban traffic calming schemes: A meta-analysis of safety effects. *Accident Analysis & Prevention* 33 (3): 327–336.
- Elvik, R. 2014. Cost-benefit analysis of incentive systems rewarding compliance with speed limits. *Transportation Research Record* 2465 (1): 8–15. <https://doi.org/10.3141/2465-02>.
- Elvik, R. 2016. Trafikksanering (Traffic Calming). *Trafikkerhets-Håndboken - 3.1* Transportøkonomisk Institutt (TØI) (Norwegian Institute of Transport Economics). <https://www.tshandbok.no/del-2/3-trafikkregulering/doc650/>.

- Fleiter, J. J. 2010. *Examining Psychosocial Influences on Speeding in Australian and Chinese Contexts: A Social Learning Approach*. MS thesis. Queensland University of Technology. https://eprints.qut.edu.au/35662/1/Judy_Fleiter_Thesis.pdf.
- Hagenzieker, M. P., F. D. Bijleveld, and R. J. Davidse. 1997. Effects of incentive programs to stimulate safety belt use: A meta-analysis. *Accident Analysis & Prevention* 29 (6): 759–777. [https://doi.org/https://doi.org/10.1016/S0001-4575\(97\)00045-6](https://doi.org/https://doi.org/10.1016/S0001-4575(97)00045-6).
- Hallmark, S. L., E. Peterson, E. Fitzsimmons, N. R. Hawkins, J. Resler, and T. M. Welch. 2007. *Evaluation of Gateway and Low-Cost Traffic Calming Treatments for Major Routes in Small Rural Communities*. Center for Transportation Research and Education, Iowa State University, Ames, Iowa.
- Hallmark, S. L., N. R. Hawkins, E. Fitzsimmons, D. J. Plazak, T. M. Welch, and E. Petersen. 2008. Use of physical devices for traffic calming along major roads through small rural communities in Iowa. *Transportation Research Record* (2078): pp 100–107. <https://trid.trb.org/view/848636>.
- Hunter, W. W., B. J. Campbell, and J. Richard Stewart. 1986. Seat belts pay off: The evaluation of a community-wide incentive program. *Journal of Safety Research* 17 (1): 23–31. [https://doi.org/https://doi.org/10.1016/0022-4375\(86\)90004-6](https://doi.org/https://doi.org/10.1016/0022-4375(86)90004-6).
- IIHS. 2014. U.S. Speed Camera Communities. Insurance Institute for Highway Safety. <https://www.iihs.org/topics/speed/speed-camera-communities>.
- Johnston, I. R., C. Muir, and E. W. Howard. 2014. *Eliminating Serious Injury and Death from Road Transport*. CRC Press, Boca Raton, FL.
- Lewis, I. M., B. Watson, K. M. White, and R. Tay. 2007. Promoting public health messages: Should we move beyond fear-evoking appeals in road safety? *Qualitative Health Research* 17 (1): 61–74. <https://doi.org/10.1177/1049732306296395>.
- McKenna, F. P. 2004. The Thames Valley Speeding Awareness Scheme: A comparison of high and low speed courses. Behavioural Research in Road Safety 2004: Fourteenth Seminar, London, UK.
- NACTO. 2013. *Urban Street Design Guide*. Island Press. Washington, DC.
- Phillips, R. O., P. Ulleberg, and T. Vaa. 2011. Meta-analysis of the effect of road safety campaigns on accidents. *Accident Analysis & Prevention* 43 (3): 1204–1218. <https://doi.org/https://doi.org/10.1016/j.aap.2011.01.002>.
- Qualtrics. 2023. Qualtrics, Provo, UT.
- Schultz, J. 2010. Speed camera lottery wins VW fun theory contest. *New York Times*, November 30, 2010. <https://archive.nytimes.com/wheels.blogs.nytimes.com/2010/11/30/speed-camera-lottery-wins-vw-fun-theory-contest/>.
- Segrave, M., and J. Ratcliffe. 2004. *Community Policing: A Descriptive Overview*. Australian Institute of Criminology, Canberra, Australia. <https://www.aic.gov.au/publications/archive/archive-168>.
- Shaw, J., M. Chitturi, W. Bremer, and D. A. Noyce. 2015a. *NCHRP Synthesis 482: Work Zone Speed Management*. National Cooperative Highway Research Program, Washington, DC.
- Shaw, J., T. Klockzeim, and D. A. Noyce. 2015b. Overview of state DOT online work zone safety public service announcements. 94th Annual Meeting of the Transportation Research Board, Washington, DC.
- Shaw, J., D. Okaidjah, G. Basulto-Elias, A. Bilek, and S. L. Hallmark. 2021. (Unpublished). Washington, DC.

- Steindl, C., E. Jonas, S. Sittenthaler, E. Traut-Mattausch, and J. Greenberg. 2015. Understanding psychological reactance. *Zeitschrift für Psychologie* 223 (4): 205–214. <https://doi.org/10.1027/2151-2604/a000222>.
- Stigson, H., J. Hagberg, A. Kullgren, and M. Krafft. 2014. A one-year pay-as-you-speed trial with economic incentives for not speeding. *Traffic Injury Prevention* 15 (6): 612–618. <https://doi.org/10.1080/15389588.2013.850678>.
- Toward Zero Deaths Steering Committee. 2014. *Toward Zero Deaths: A National Strategy on Highway Safety*. Toward Zero Deaths Steering Committee, Washington, DC. https://www.towardzerodeaths.org/wp-content/uploads/2019/12/TZD_National_Strategy.pdf.
- United States Census Bureau. 2023a. City and Town Population Totals: 2020–2022. United States Census Bureau. <https://www.census.gov/data/datasets/time-series/demo/popest/2020s-total-cities-and-towns.html>.
- United States Census Bureau. 2023b. County Population Totals and Components of Change: 2020–2022. United States Census Bureau. <https://www.census.gov/data/datasets/time-series/demo/popest/2020s-counties-total.html>.
- Volkswagen. 2010. The Speed Camera Lottery - The Fun Theory. YouTube. <http://www.youtube.com/watch?v=iynzHWwJXaA>.
- Volkswagen. 2011. Unikt trafiksäkerhetsinitiativ belönar positivt beteende (Unique road safety initiative rewards positive behavior). Volkswagen Cars Sweden AB. <https://www.mynewsdesk.com/se/volkswagen/pressreleases/unikt-trafiksaekerhetsinitiativ-beloenar-positivt-beteende-636028>.
- Wells, H.. 2011. *The Fast and the Furious: Drivers, Speed Cameras, and Control in a Risk Society*. CR Press, Boca Raton, FL.
- WHO. 2017. Managing Speed. World Health Organization, Geneva, Switzerland. <https://www.who.int/publications/i/item/managing-speed>.
- Zein, S. R., E. Geddes, S. Hemsing, and M. Johnson. 1997. Safety Benefits of Traffic Calming. *Transportation Research Record*, Vol. 1578, pp. 3–10. <https://doi.org/10.3141/1578-01>.

APPENDIX A: UNTICKETING IMPLEMENTATION GUIDE

Objective of the Guide

This brief guide offers advice for Iowa communities seeking to implement an “unticketing” program similar to Unticketing Cerro Gordo, a traffic safety campaign conducted in summer 2023 in Cerro Gordo County, Iowa. The campaign centered on a contest that incentivized safe driving behavior by awarding small prizes to drivers who opted into the contest and complied with local speed limits.

Drawing from the Cerro Gordo County experience, the guide outlines unticketing campaign design, site selection and characteristics, outreach and marketing, identification of compliant drivers, solicitation and distribution of prizes, and effectiveness monitoring methods.

Background

Conventional approaches to achieving compliance with speed limits and other traffic laws have almost always been punitive: violators are intercepted and penalized through fines or other sanctions.

While intensive traffic enforcement can increase compliance if drivers perceive law enforcement to be present, agencies cannot sustain high levels of enforcement over time. Moreover, enforcement can heighten tensions between agencies and communities, while traffic stops expose officers to passing traffic or potentially hostile reactions from drivers. Drivers, meanwhile, often perceive traffic stops as stressful, time-consuming, and inherently punitive.



Neal Hawkins, Institute for Transportation at Iowa State University

Traffic stop

Research and practical experience have shown that incentives can motivate human behavior as much as penalties. The 2014 report *Toward Zero Deaths: A National Strategy on Highway Safety* suggests that, where feasible, positive approaches to safety improvement are more likely to be accepted than negative or punitive approaches.

Apart from campaigns to increase seatbelt use in the 1980s and 1990s and a small-scale promotional event in Sweden sponsored by Volkswagen in 2010, the use of incentives has seldom been applied to traffic management.

The Cerro Gordo County Experience

The following summary of tasks involved in the Unticketing Cerro Gordo demonstration project can provide guidance for Iowa communities seeking to implement their own unticketing programs.

Conducted in collaboration with three local law enforcement agencies, Unticketing Cerro Gordo sought to incentivize speed limit compliance in Cerro Gordo County, Iowa, through a contest that rewarded compliant drivers with the opportunity to win small prizes donated by local merchants. The contest was held from late May through mid-August 2023.

The primary goal of the demonstration project was to explore whether compliance with traffic laws can be improved by incentivizing safe driving behavior while leaving in place all existing sanctions against unsafe driving behavior.

Unticketing Campaign Design

Four factors were important in the design of Unticketing Cerro Gordo:

- Maximize the effectiveness of the project in improving compliance with traffic laws
- Minimize the implementation burdens for the partner law enforcement agencies
- Support positive relationships between law enforcement and the community
- Execute the project within funding constraints

Ten main activities were undertaken to implement Unticketing Cerro Gordo:

Preparation

1. Recruit partner law enforcement agencies
2. Select a site
3. Develop outreach materials to promote the contest and recruit contestants
4. Solicit prize donations from local businesses

Implementation

5. Create an electronic database to record the license plate numbers of compliant drivers
6. Collect plate numbers for compliant drivers as part of routine traffic enforcement
7. Match the license plate numbers of compliant drivers with those of contestants
8. Award prizes to contestants based on compliance with traffic laws

Effectiveness Measurement and Monitoring

9. Survey road users in the area about traffic safety attitudes before and after the contest
10. Conduct spot traffic speed studies before, during, and after the contest

Site Selection and Characteristics

The demonstration project's technical advisory committee recommended Cerro Gordo County, Iowa, as the demonstration site. The county's population in July 2022 was 42,409, of which 7,529 reside in Clear Lake and 26,924 reside in Mason City. The area also attracts a substantial number of summer visitors drawn by local attractions such as Clear Lake State Park.

All three law enforcement agencies in the county—the Clear Lake Police Department, Mason City Police Department, and Cerro Gordo Sheriff's Office—agreed to participate in the project. A key objective for these agencies was to reduce speeding and other traffic violations during the tourism season and to strengthen relationships with the community.

Outreach and Marketing

Contest activities were publicized through press releases sent to and used by local print and broadcast media, the social media feeds of the three participating law enforcement agencies, and the Unticketing Cerro Gordo website (<http://www.unticketing.org/>). A postcard-sized flyer was also prepared and distributed at pre-contest meetings and events and through government offices and local businesses.



Unticketing Cerro Gordo flyer

Identification of Compliant Drivers

To avoid privacy concerns, drivers were required to opt into the contest. Opt-ins were solicited through project outreach materials and the campaign website, which included an online opt-in form where interested drivers could provide their license plate number, vehicle description, and contact details.

As part of their routine traffic patrols, the three participating law enforcement agencies gathered the license plate numbers of vehicles observed to be in good compliance with traffic safety laws. A secure online form, accessible through the county's computer-aided dispatch system, was used to record observations of compliant drivers directly from law enforcement vehicles in the field.

Concurrently, these patrols also warned or ticketed violators in accordance with pre-existing agency practices. The combination of incentives and penalties created a carrot-and-stick situation without adding much extra workload for the front-line officers and deputy sheriffs.

To avoid the need to intercept compliant drivers, the plate numbers identified by law enforcement were cross-tabulated with the plate numbers of drivers who had opted into the contest. Prizes were later distributed by mail or picked up at the Mason City police station.

Solicitation and Distribution of Prizes

Local merchants were solicited to donate the prizes awarded to contestants. Prizes ranged in value from \$10 to \$35 and included gift cards donated by local shops, roadside troubleshooting kits donated by a statewide motor club, and a kit of car washing supplies donated by a local auto parts store.

Prize drawings were held every two weeks from late May through mid-August, for a total of six drawings. For each drawing, three prizes were awarded to contestants whose plate numbers matched those of compliant drivers observed by law enforcement over the preceding two weeks. Prize recipients were flagged to avoid issuing more than one prize to the same driver.

If fewer than three matches were identified for the drawing, additional winners were selected at random from among the contestants. If more than three matches were identified in the same two-week period, three winners were selected at random from among the matches, and the remaining names were held in reserve for future drawings.

All prizes were sent by mail to the addresses provided by the contestants or were picked up at the Mason City police station.

Effectiveness Monitoring Methods and Results

Two methods—spot traffic speed studies and surveys of area residents or visitors—were used to assess the effects of the contest on road user behavior.

Speed studies were conducted at five sites in Clear Lake and Mason City before, during, and after the contest. Speed data were collected using a handheld radar gun, with 20 to 30 minutes of data manually recorded at each location on each data collection day.

Online surveys were conducted before and after the contest to identify changes in drivers' attitudes toward road safety. Participants were recruited through social media sites maintained by participating law enforcement agencies and through Iowa State University email lists and were required to be over 18 years old, hold a learner's permit or driver's license, and reside or spend time in the area.

Based on these evaluation methods, the contest produced modest (though not statistically significant) or inconsistent reductions in traffic speeds and appeared to increase positive attitudes toward road safety.

Implementation Challenges and Benefits

Iowa communities seeking to implement their own unticketing program should note some issues encountered during the Unticketing Cerro Gordo demonstration project:

1. The deployment of an automatic license plate reader system in Mason City that was initially expected to come online by late May was delayed. This system would have automated the collection of compliant driver observations and traffic speeds and greatly increased the number of observations available for the contest.
2. While law enforcement agencies substituted manual observations, two of the three participating law enforcement agencies were experiencing staffing shortages and were not able to collect as many compliant driver observations as originally anticipated. The lack of observations may have affected the extent of the observed speed reductions and attitudinal changes.

Despite these challenges, Unticketing Cerro Gordo was executed successfully. In addition to the modest speed reductions and increased positive attitudes toward road safety, the marketing and outreach efforts for the contest generated a steady stream of positive publicity for the participating law enforcement agencies and prize donors throughout the summer tourism season.

Within individual communities, the contest could potentially be made an annual event, allowing the implementing agencies to build up community awareness of the contest over a period of several years along with a stable base of contestants, prize donors, and media contacts.

APPENDIX B: TRAFFIC SAFETY PERCEPTIONS SURVEY



Cerro Gordo County Traffic Safety Perceptions Survey - Fall 2023

Cerro Gordo County in north-central Iowa includes the cities of Clear Lake and Mason City, along with vacation areas like Clear Lake State Park and McIntosh Woods State Park. As part of our traffic safety research, we like to know more about how adult drivers who live, work, or spend their leisure time in Cerro Gordo County feel about roadway safety issues. This is an opinion survey - you will not be asked to buy any products or services.

Please take a few moments to share your thoughts and opinions! Most people complete the survey in less than 5 minutes.

About the Survey

This survey is being conducted by the Iowa State University Institute for Transportation and is funded by the Iowa Highway Research Board.

To be eligible to participate in the survey you must:

- Live, work, or spend some of your time in Cerro Gordo County
- Be at least 18 years old
- Be a licensed driver or permit holder

Participation is voluntary. You may stop the survey at any time or skip any question you do not want to answer. Your responses will be kept confidential, and you are not required to disclose your name or any personally identifiable information.

As an incentive for participating, we are offering eligible participants who complete this survey before September 30, 2023, the chance to win one of two \$25 coffee shop gift cards (Cabin Coffee or Starbucks). If you choose to participate in the gift card drawing, you will be asked to provide your name and mailing address, which will be used only to contact the winners.

*** Let's get started! ***

Screener Questions

Do you live, work, or spend some of your time in Cerro Gordo County?

- Yes, I live/work in Cerro Gordo County
- Yes, I vacation in Cerro Gordo County or have a second home there
- Yes, I travel to Cerro Gordo County to visit friends, family, businesses, entertainment, etc.
- No

Are you age 18 or older?

- Yes
- No

Are you a licensed driver or learner's permit holder?

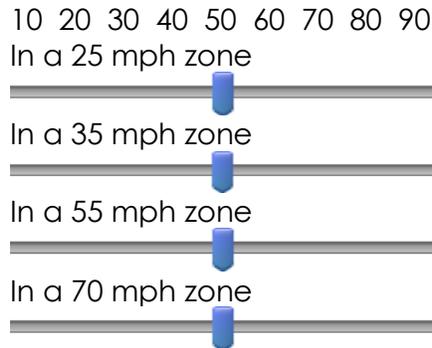
- Yes, I have a regular license
- Yes, I have a CDL to drive a heavy truck or bus
- Yes, I have a learner's permit
- No

If the response to any of the screening questions above is "no," display the following text and terminate the survey:

At this time we are only surveying licensed drivers and learner's permit holders. Thank you for your time.

Main Survey Questions

When traffic is flowing freely, I usually drive... (speeds in miles per hour)



Please indicate your level of agreement with the following statements...

I always wear my seatbelt.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

I always make sure my passengers wear seatbelts.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

If I had a younger child in the car, I would make sure the child is buckled in a car seat.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

I pay close attention to how fast I am driving.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

If my car insurance company offered a discount for consistently observing the speed limit, I would sign up for it.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Ticketing speeders is an effective way to prevent crashes.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Having police officers give verbal warnings to speeders is an effective way to prevent crashes.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

The electronic signs that show how fast you are driving are an effective way to prevent crashes.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Giving people prizes for observing the speed limit could be an effective way to prevent crashes.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

To me, shoplifting a candy bar is a more serious offence than driving 8 mph over the speed limit.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

The chance of being in a crash when driving 45 mph in a 35 mph zone is high.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

The chance of being in a crash when driving 75 mph in a 65 mph zone is high.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

The speed limits in most residential areas...

- Are too low
- Are about right
- Are too high

The speed limits in most business districts...

- Are too low
- Are about right
- Are too high

The speed limits on most freeways...

- Are too low
- Are about right
- Are too high

The penalties for speeding violations...

- Are too low
- Are about right
- Are too high
- Not sure / don't know

Participant Demographics

In which jurisdiction are you licensed?

- Iowa
- Illinois
- Minnesota
- Missouri
- Nebraska
- South Dakota
- Wisconsin
- Another US state
- Canada
- Mexico
- A country not listed above

What is your age range?

- 13 or younger
- 14 to 16
- 17 to 19
- 20 to 29
- 30 to 39
- 40 to 49
- 50 to 59
- 60 to 69
- 70 to 79
- 80 or older

Which best describes your gender?

- Man
- Woman
- Non-binary / third gender
- Prefer not to say

//End of main survey - forward to incentive data collection form

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