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GEORGE MASON UNIVERSITY

The Iowa State Patrol Fatality Reduction Enforcement Effort (FREE)

Summary Evaluation Report

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The Iowa State Patrol Fatality Reduction Enforcement Report (FREE)

Introduction

This summary highlights key results from George Mason University's (GMU) evaluation of the Fatality Reduction Enforcement Effort (FREE), an innovative, evidence-based program implemented by the Iowa State Patrol (ISP) to reduce vehicular crashes in a rural section of Iowa encompassing 28 counties, 16,000 square miles, and a population of roughly 650,000. The FREE program was designed specifically for use in rural areas, which have higher risks for serious crashes and account for 80% of vehicle fatalities in Iowa.[1] Based on a problem-solving framework, the program concentrates on changing driving behaviors and routines at hot spot road segments for crashes and activity hot spots that serve as likely origin points for drivers involved in crashes. Officers conduct intermittent, high-visibility patrols in these locations, complemented with preventive community contacts stressing safety messages at locations such as bars, gas stations, and convenience stores. These activities are intended to promote deterrence, community engagement, and police legitimacy while also addressing the broader opportunity structures that contribute to vehicle crashes. FREE was implemented as a pilot program in 2018 and expanded to an entire ISP command in 2019.[2] This overview report describes the implementation of the program and presents summary results from a quasi-experimental evaluation suggesting that the program has promise as a strategy for reducing vehicle crashes in rural areas.

Program Description

Grounded in research on crime prevention at high-risk places, the FREE program targets police visibility and preventive activity on high-risk roadways as well as towns and small cities (collectively referred to as "towns" in this report) in close proximity to the locations where many serious vehicle crashes occur. These efforts are intended to reduce problem driving behaviors that contribute greatly to serious crashes, including driving under the influence of alcohol and/or drugs, speeding, distracted driving, and failure to wear a seatbelt.

[1] National Highway Traffic Safety Administration. (2020). *Rural/urban comparison of traffic fatalities*. Washington, DC: U.S. Department of Transportation.

[2] The FREE program was developed by Ken Clary, who is a former captain of the ISP and currently the Chief of Police of the Bellevue (Nebraska) Police Department.

The primary emphasis of the FREE program is on patrol visits to high-risk towns, as these represent likely origin points for many drivers involved in vehicle crashes (particularly the relatively high number that occur just outside such towns). Further, as primary activity nodes in heavily rural areas, these towns are locations where troopers can influence the perceptions of a greater number of people through visibility and direct or vicarious contacts. Based on studies of optimal methods for patrolling crime hot spots, troopers make visits of approximately 20 minutes to designated towns on a periodic and random (i.e., unpredictable) basis. While visiting the towns, troopers are encouraged to engage in highly visible but non-punitive interactions with citizens at specific locations such as bars, restaurants, gas stations, and convenience stores. The interactions at bars and restaurants emphasize the importance of serving patrons responsibly, ensuring patrons arrange to get home safely, and providing patrons with safety messages, including the importance of wearing seatbelts. Troopers also leave behind literature in convenience stores and other high-volume citizen areas (specifically, literature regarding the leading causes of fatal crashes, which include distracted driving, operating under the influence of alcohol and/or drugs, seatbelt usage, and speeding). At other times, troopers position themselves along highly traveled roadways in the towns to increase their visibility. All of these approaches are intended to create a "media" presence, so that word of increased police presence and interest in reducing vehicle crashes spreads in these communities. Further, the emphasis on non-punitive interactions is meant to promote prevention and improve perceptions of the ISP in the community. This preventative approach represents a change in operation for the ISP, whose troopers previously focused on state highways and had little interaction with community members in nearby towns.

In addition to visiting designated towns, troopers also focus on selected high-risk roadways in rural areas between towns. Troopers make regular but intermittent visits to these roadways, which are generally 3-5 miles in length, conducting stationary and roving patrols and engaging in enforcement actions (i.e., traffic stops and citations) as appropriate. Patrols at these locations are somewhat longer, typically lasting 30-45 minutes.

Program Implementation

The FREE program began in January 2018 as a pilot program involving 16 troopers in the ISP's Command Area C, one of four major ISP command areas. Command Area C accounts for roughly one fifth of the state's population and traffic crashes.[3] Two towns and one additional high-risk roadway were identified as priority locations within each of the 28 counties comprising Area C, resulting in 84 hot spot locations. The year 1 locations were selected based on an ISP analysis of fatal crashes during the preceding 10 years, which showed that most of these crashes occurred within a few miles of the selected towns. Troopers concentrated their town visits during late afternoon and evening hours (3:00 pm to 1:00 am) and their visits to

[3] Iowa's overall rate of serious crashes in rural areas is fairly typical in comparison to other states. NHTSA figures show that its fatal crash rate per mile travelled in rural areas ranks 27th out of the 50 states.

high-risk rural roadways during daytime hours (6:00 am to 4:00 pm). The participating troopers were each assigned to several locations and instructed to visit these locations periodically during their discretionary time (i.e., when not responding to calls for service). The program did not require overtime funding, nor did it require the participating troopers to be diverted from other duties. Five local police agencies also took part in the program during 2018, complementing troopers' efforts in some of the larger hot spot towns.

In 2018 (year 1), troopers and other participating officers conducted 9,684 FREE patrols, with troopers accounting for roughly three-quarters of this activity. FREE patrols averaged one per county per day and roughly one per hot spot every three days. Seventy percent of the patrols were conducted in the priority towns. The troopers and other officers most frequently conducted patrols and roadside surveillance during the FREE patrols, but they also made over 2,000 visits to bars or restaurants and approximately 500 visits to convenience stores and gas stations. During these patrols, they also recorded more than 2,400 informal discussions with citizens and administration of roughly 2,000 memos (warnings that did not result in citations), and 1,700 traffic citations.

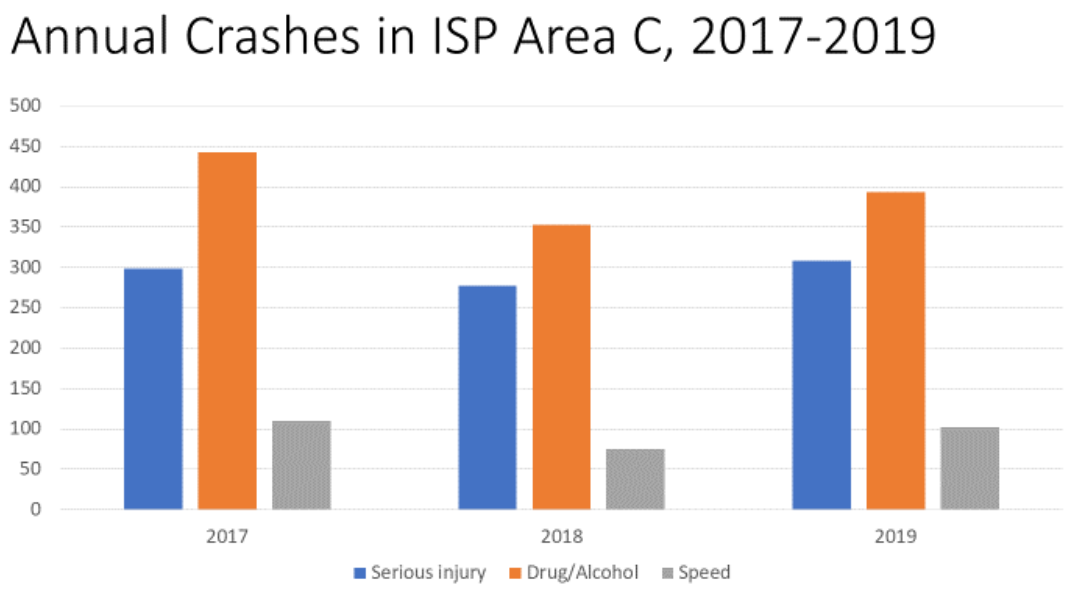
In 2019 (year 2), the FREE program was expanded to involve all troopers in Command Area C (approximately 78), although patrols by other local agencies were discontinued. Target areas were also doubled to include four towns and two rural roadway segments in each Area C county (for a total of 168 priority locations). As in year 1, troopers were assigned to particular locations and instructed to visit these locations periodically when not answering calls. Area C troopers conducted 30,394 FREE patrols during 2019, more than tripling the total from year 1. FREE patrols averaged three per county per day and one per hot spot every two days. As in year 1, approximately two-thirds of the patrols were conducted in the hot spot towns.

However, other aspects of the program changed considerably during year 2. Troopers conducted both town and roadway visits throughout the day and evening hours rather than focusing on particular timeframes. Further, troopers placed a much greater emphasis on visibility and enforcement and relatively less emphasis on community engagement and prevention. Most notably, preventive visits to bars and restaurants declined by half in 2019 despite the threefold increase in FREE patrols. Informal discussions with citizens rose by only 8.5% in 2019. In contrast, citations and memos increased by 288% and 171%, respectively. These programmatic changes were not intentional policy shifts; rather, they developed informally as program implementation expanded from a hand-picked group of troopers in year 1 to a much larger group of troopers and supervisors in year 2. The year 1 activities were also heavily impacted by the cooperation of local police agencies whose officers conducted many of the community policing activities and nearly all restaurant and bar visits recorded in year 1.

Program Impacts on Crashes

The GMU team evaluated the impacts of the FREE program on three primary categories of vehicle crashes: crashes resulting in death or serious injury, crashes involving drug or alcohol use, and crashes in which speeding was listed as a primary cause. These categories were selected based on the ISP's project goal of reducing serious crashes and the research team's hypotheses about the types of crashes that might be most impacted by the initiative.

Serious injury crashes declined by 7% across Area C in year 1 of the program (from 299 in 2017 to 277 in 2018), while drug and alcohol-related crashes declined by 20% (from 443 to 353) and speed-related crashes declined by 32% (from 110 to 75) (see figure). Reductions in drug and alcohol-related crashes were most widespread, as they occurred in 79% of Area C's counties. Serious injury and speed-related crashes each declined in 54% to 57% of Area C's counties. However, serious injury and drug and alcohol-related crashes subsequently increased by 11% in Area C during 2019 (up by 31 and 40, respectively), as speed-related crashes increased by 36% (up by 27). Similar trends also occurred during 2018 and 2019 in other parts of the state that were not subject to the FREE program.



To more formally assess the impacts of the FREE program on vehicle crashes while accounting for pre-program and statewide trends, the GMU team estimated time series models of bi-weekly vehicle crash counts from 2013 through 2019. These models tested for changes in Area C crashes during 2018 and 2019 while controlling for pre-intervention trends, seasonality, and other predictable variation over time. Time series models were also estimated for other parts of the state as comparisons to determine whether any post-program changes in Area C were unique to that part of the state (and thus more likely to be attributable to the FREE

program). For this purpose, models were estimated for one selected quadrant of the state that most closely matched Area C with respect to crash levels. As an additional comparison, a synthetic control series was also created using data from all three other ISP quadrants, weighted for their similarity to Area C with respect to pre-intervention crash levels and trends.

In summary, time series results suggest that the FREE program caused an 18% drop in drug and alcohol-related crashes in Area C during 2018, which translates to a reduction of 5-6 such crashes per month. Other portions of the state had smaller reductions in these crashes that were not statistically significant. The program may have also contributed to a reduction in speed-related crashes during 2018, which declined by 46% in Area C (about 3 per month) after adjusting for long-term trends. However, this finding was not conclusive, as some of the comparison areas also experienced significant reductions in these crashes, albeit smaller in magnitude. The FREE program did not have clear effects on serious injury crashes in 2018 or on any category of crashes in 2019. The rebound in vehicle crashes that occurred in Area C in 2019 was part of a statewide trend and did not appear to reflect a backfire effect from the expanded FREE program.

To better understand the types of program activities that were most effective, the GMU team also conducted correlational analyses of crash patterns and FREE activities (which were recorded in project logs) across the 28 counties in Area C during 2018 and 2019. These analyses examined the types of hot spots visited (towns versus roadways), the types of activities conducted (visibility patrols, traffic enforcement actions, and positive community engagement including informal conversations and distribution of safety literature), and the specific types of places where activities were conducted (along roadsides or at establishments including bars, restaurants, gas stations, and convenience stores).

During year 1 of the FREE program, troopers and other participating officers were most effective in preventing crashes in counties where they conducted more total and town patrols, did more traffic enforcement, made more bar and restaurant visits, and did more community engagement. Although the FREE program did not have strong effects on crashes overall in year 2, trends were better in places where troopers did more community engagement, particularly in the form of visiting bars and restaurants. To varying degrees across the program years, bar and restaurant visits and other forms of community engagement were associated with fewer crashes of all types examined.

Conclusions

The GMU evaluation suggests that the FREE program has promise as a strategy for reducing vehicle crashes, particularly those stemming from dangerous driving behaviors like speeding and driving under the influence of drugs or alcohol. Increasing police visibility and preventive contacts with citizens in towns that are activity and driver origin hot spots may help police to maximize the impact of their traffic safety efforts in rural areas. Proactive and informal

contacts to encourage safe driving behaviors appear effective, particularly when conducted in settings like bars and restaurants where citizens may be especially receptive and susceptible to these messages. This strategy may be a useful complement to others (like sobriety checkpoints and roadside surveillance) that police commonly employ to reduce driving under the influence and other unsafe driving behaviors.

However, the expansion of the FREE program in year 2 did not bring additional gains in crash prevention. This may be attributable to multiple factors. One is that the locations added in year 2 may have been less productive targets for the intervention. As noted, the priority towns in year 1 were selected based on their proximity to crashes over a long period. The original project towns also appear to be more central activity nodes, as they are larger overall (average population = 5,521) than the towns added in year 2 (average population = 940). Consequently, police activities in the original project towns seem likely to have affected the perceptions and behaviors of larger numbers of drivers, including those at higher risk of crashes.

In addition, the troopers and other participating officers may have emphasized more important locations and more effective activities in year 1. Although the FREE patrols greatly increased in year 2, one-third of the year 1 towns got fewer patrols in year 2, and more than two-thirds got fewer evening patrols. Notably, four large towns (all of which are small cities ranging in size from approximately 24,000 people to more than 67,000) received about one-fifth of all FREE patrols, most of the community policing contacts, and virtually all of the bar and restaurant visits in year 1. The activities in these towns were conducted primarily by local police agencies that participated in year 1 of the FREE program. Three of these towns had a large decrease in their FREE patrols in year 2. All four had dramatic reductions in their restaurant and bar visits and other community policing contacts. The observed trends in crashes from year 1 to year 2 suggest that these four towns may have been particularly effective locations for the program.[4]

Further, while troopers did continue or increase community contacts and restaurant and bar visits in other towns during year 2, these activities were infrequent in most places. On average, project towns received roughly one community contact every two weeks and a restaurant or bar visit about once every five weeks. In most towns, they were even less frequent.

A final consideration is that the program may have had greater impacts on citizens' perceptions in year 1 because it was a new approach to policing. Over time, it is conceivable that the program experienced deterrence decay (a phenomenon also sometimes documented in connection with police crime prevention efforts) as citizens became habituated to the greater level of troopers' presence in their towns.

[4] Although crashes did not decline uniformly in the counties where these towns are located, they accounted for one quarter of the decline in drug and alcohol-related crashes that occurred in Area C in 2018 and nearly three quarters of the reduction in speed-related crashes.

Further testing of the FREE strategy seems warranted in rural areas and perhaps in suburban and urban locations as well. The ISP experience suggests that this strategy may be most effective when targeted at the most strategically important locations and conducted by carefully selected and trained personnel skilled at the types of preventive community contacts that appear most effective. Additional testing will be necessary to determine the optimal dosages of this program, calibrated for different types of locations. Additional analysis is also needed to determine whether this type of activity should be routinized into regular patrol or conducted as a special program that is repeated periodically to reinforce its message and impacts while minimizing deterrence decay.