

**Investigate the Use and Feasibility of Speed Warning Systems
Supporting Statement for Information Collection Request**

Approval is requested to conduct the study entitled: Investigate the Use and Feasibility of Speed Warning Systems.

A. JUSTIFICATION

In this pilot study, the National Highway Traffic Safety Administration (NHTSA) will be conducting on-road instrumented vehicle data collection in the Rockville, MD area with a total of 80 participants who have a history of speeding violations to examine the impact of in-vehicle speed warning devices on their driving speed patterns and speeding behavior. Participants will be asked to install a speed warning device for eight weeks. The device will provide data on travel speeds of participants' vehicle coupled with GPS information that is linked to a database with speed limits for various sections of roads in the study area. This data will be automatically transmitted from the vehicle to the research office for data analyses. After completing their on-road phase of the data collection, participating drivers will be asked to participate in a short debriefing interview while the in-vehicle warning device is removed from their vehicle. The debriefing sessions will focus on the drivers' subjective experience regarding the speed warning device – how it affected their driving behavior, any problems experienced with the device, how they interacted with the device, and their opinion of the device, as well as feedback on their experience as a participant in the research study. This subjective data will be coupled with the data from their actual driving behavior to help NHTSA develop a better understanding of speeding and speeders and the potential acceptance and effectiveness of using speed warning devices as a countermeasure to alter the speeding behavior of habitual speeders. The debriefing sessions are expected to provide data relevant to implementation issues and concerns associated with the device, as well as the key advantages and disadvantages associated with the use of this device as a countermeasure.

A.1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.

a. Circumstances necessitating the data collection.

1. National Highway Traffic Safety Administration (NHTSA) mission

The NHTSA was established by the Highway Safety Act of 1970 (23 U.S.C. 101). Its Congressional mandate is to reduce the number of deaths, injuries, and economic losses resulting from motor vehicle crashes on our nation's highways. To accomplish this mission, NHTSA sets and enforces safety performance standards for motor vehicle equipment and provides funding to State and local governments for their use in supporting highway safety activities, including demonstration and evaluation programs. NHTSA also conducts research on driver behavior and traffic safety to develop efficient and effective means of bringing about safety improvements.

2. Severity of Speeding Problem

Traffic crashes are complex; often, they have multiple contributing factors, in which speeding is one of the primary factors leading to a crash.¹ Over thirty percent of all fatal crashes are estimated to be speeding-related crashes, defined as racing, exceeding the speed limit, or driving too fast for conditions. Speeding-related crashes resulted in 11,674 lives lost in 2008 and an estimated cost of \$40.4 billion in 2000.² Speeding is especially dangerous because it reduces the driver's ability to maneuver around obstacles in a timely manner, increases the distances a vehicle requires to stop, and increases the severity of injuries.

Drivers' speed choices impose risks that affect severity of crashes. Speeding is directly related to injury severity in a crash. The relationship between speeding and crash severity is indisputable. Reflecting the laws of physics, injury severity increases as the speed of the vehicle increases. However, this is not a linear relationship; rather, the energy release is proportional to the square of the impact speed. Therefore, decrease in driving speed can decrease the severity of injury.

Speeding is a pervasive behavior with about three-quarters of drivers reporting in the 2002 Speeding and Unsafe Driving Survey that they drove over the speed limit on all types of roads within the past month, and one-quarter reported speeding over the limit on the day of interview.³ Controlling speed is difficult to address because most drivers do not see speeding as a risky or dangerous behavior. Despite decades of efforts in enforcement, traffic engineering, driver training, and public education, speeding is a behavior that remains resistant to change.

Although traditional approaches and more recent innovations (e.g., automated enforcement) certainly help mitigate the problem, much remains to be done. These approaches have limits in terms of both effectiveness and practicality of coverage. One new avenue for approaching the problem is through the use of vehicle-based monitoring and feedback. A variety of commercial and experimental systems now exist that monitor various aspects of driver behavior and vehicle control. These frequently include speed and indices of severe maneuvers (e.g., hard deceleration), and may include a wide variety of other measures (e.g., lateral accelerations, video and audio records, seat belt status, GPS tracking, geo-fencing, fuel economy, hazard proximity, indices of attention or drowsiness). Such technologies could be deployed in personal vehicles to provide drivers with feedback when they exceed absolute or posted speed limits by a criterion amount. The proposed project investigates the feasibility of such a system for use in a voluntary program, with particular emphasis on at-risk drivers (chronic speeders). The objective of the study is to determine if driving behavior changes when a monitoring and feedback device is installed in the vehicle of chronic speeders, to determine if feedback is necessary or improves driving behavior, and to determine acceptability, use, and perceived effectiveness of the device in affecting driving behavior.

¹ The National Highway Traffic Safety Administration determines it to be speeding-related crashes, if the driver was charged with or if an officer indicated that racing, driving too fast for conditions, or exceeding the posted speed limit was a contributing factor in the crash.

² NHTSA (2009). Traffic Safety Facts-2008: Speeding. DOT HS 810 814

³ National Survey of Speeding and Other Unsafe Driving Actions (2002).
<http://www.nhtsa.gov/staticfiles/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/HS809730.pdf>

b. Legal basis for collecting data

NHTSA has statutory authority to conduct crash injury research and collect relevant data in the interest of public health (see Attachment A). Specifically, NHTSA is authorized to: (1) engage in research on all phases of highway safety and traffic conditions; (2) undertake collaborative research and development projects with non-federal entities for the purposes of crash data collection and analysis; and (3) conduct research and collect information to determine the relationship between motor vehicles and accidents, and personal injury or deaths resulting from such accidents (See 23 U.S.C. 403(a)(1), 23 U.S.C. 403(f) and 49 U.S.C. 30168(a)). The term “safety” is defined as “highway safety and highway safety-related research and development, including research and development relating to highway and driver characteristics, crash investigations, communications, emergency medical care, and transportation of the injured” (23 U.S.C. 403(a)(3)).

A.2. Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.

NHTSA will use this new collection to supplement the information that is available in existing databases related to speeding. This study will evaluate the effectiveness of a monitoring device used among individuals who volunteer to participate.

More specifically, the study will address the following objectives.

1. Identify an in-vehicle speed monitoring device that can be used as a preventative measure.
2. Determine how often targeted events may occur during the pre-treatment, treatment and post-treatment conditions and whether these identified events are justifiable (e.g., speeding to escape or merge with traffic, or system errors).
3. Determine the time course of behavioral changes (Is the 8-week study period long enough to observe changes? Is the baseline period too long?)
4. Identify behavior aimed to defeat or minimize the impact of the system.
5. Identify any problems associated with the study methods and/or study instruments

The data collected in the survey will be used to assist NHTSA in its ongoing responsibilities for: (a) planning and designing program activities which reduce speeding on our nation’s roadways; (b) providing support to groups involved in carrying out speed management programs and public safety; and (c) identifying countermeasure strategies that are most acceptable and effective in deterring speeding.

The results will assist governmental agencies and private organizations in directing the implementation of strategies and action plans that will reduce the incidence of speeding-related crashes.

NHTSA will use the data to help State Highway Safety Offices, law enforcement agencies, and other organizations with establishing and sustaining programs aimed at speed regulation and to reduce the number of speeding-related crashes. The data will be used for planning and policy-related issues as they arise.

A.3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology. Also describe any consideration of using information technology to reduce burden.

The contractor conducting the data collection will fit the driver's car with a tiwiPRO monitoring device. Installation and removal of the device takes approximately 30 minutes. The device provides a record every 15 seconds of the driving behavior, and records exceptional events (such as speeding, hard braking, fast acceleration). The monitoring device is equipped with a global positioning system which enables it to record the location where each event occurs. Location and current time information is recorded every 15 seconds or whenever there is an exceptional event detected.

The tiwiPRO device that will be used for this study is a self-contained GPS-tracking and feedback device for vehicles that uses a limited amount of on-board storage and a cell phone-based connection to a secure web portal on which data will be aggregated and stored for the purposes of the study. Data collection is planned to proceed with minimal requirements on the part of the participant. Once the device is installed in their vehicle participants are instructed to drive safely as they normally would and to always use their own good driving judgment rather than relying too much on the system to alert them about speeding. The use of a system with GPS tracking and a cell phone based connection to a secure website reduces the burden on participants as well as researchers. Participants will not have to keep travel logs, log incidences when they traveled over the posted speed limit, and track system failure. In addition, there is no need for participants to periodically meet with researchers in order for the data to be downloaded from the device. The data will be transmitted in real time to the web portal for review by the research team on a daily basis.

The web portal provides password-protected access to authorized individuals. Currently, the data only remains on the server for one month before expiration and removal. The tiwi units will be used to provide immediate feedback to drivers. The portal is a tool for researchers to investigate any anomalous data flagged by daily quality control (QC) analyses. Essentially, it will provide a way for them to visualize the mapping of trips to investigate unusual data, should that be necessary. In addition to the portal (for interactive data review), an FTP (file transfer protocol) site will be used for getting daily data reports for all the subjects. This, like the portal, is password protected, on the manufacturer's server, and would allow the contractor's daemon processors to pull the necessary files for the daily QC checking.

Once data has been downloaded from the FTP server, the data will be treated with sensitivity and security considerations commensurate with its level of confidential content.

A.4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in Item 2 above.

Recent evaluations of driver monitoring programs offer promise, often reporting substantial decreases in risky behaviors, including speeding. However, when interpreting this data there are reasons for caution. Previous studies have included cases where: 1) driver participation is not fully voluntary, with the driver under the influence of a third party (who often shares in the feedback), such as a parent (for teens), or an employer (for fleets); 2) the tested systems often include more extensive feedback than just speed warnings, and it is not known what aspects are contributing to effectiveness; 3) a number of the evaluations have been informal, small, poorly controlled, or conducted by parties with inherent self-interest in the outcomes; and 4) the findings of benefits are not uniformly substantial or sustained.

This pilot study is unique in that it is specifically targeting chronic speeders who are voluntarily participating in a study designed to determine if feedback about speeding improves driving behavior. Secondly it will explore the acceptability, use, and perceived effectiveness of the device in affecting the decision to speed.

A.5. If the collection of information impacts small businesses or other small entities, describe methods used to minimize burden.

There will be no impact on small businesses or other small entities. Westat will work with the Maryland Division of Motor Vehicles (MVA) to identify and recruit participants. The MVA will identify the target population of drivers who have recently engaged in excessive speed-related driving using their own data files. Once they have identified a list of potential participants, the MVA will contact them via letter and invite them to participate in the study. If the participant is interested in participating in the study the letter will have an 800-number that can be used to contact the Contractor (research team). The MVA will be reimbursed for the time spent extracting the data and postage needed for mailing the recruitment letters.

A.6. Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.

The speed management program at NHTSA plays a crucial role in providing guidance for State and local governments in designing and applying a balanced and effective speed management program to reduce speeding-related crashes. Speeding is a complex problem, involving the interaction of many factors including public attitudes, road user behavior, vehicle performance, roadway design and characteristics, posted speed limits and enforcement strategies. In order to reduce speeding-related crashes, fatalities and injuries, an interdisciplinary approach involving engineering, enforcement, and education is needed. This study will use a more recent innovation (vehicle-based monitoring and feedback). This study is a well-designed and objective evaluation

of a viable commercial system that provides speed warnings under a voluntary program. The voluntary aspect is a key factor to consider when reviewing this study. The results of the data collection findings will provide crucial information on applying enforcement efforts and appropriate technology that effectively target speeders. This information is necessary to support safety programs both at the local and national levels. Without such results, programs for addressing the speeding problem cannot be addressed and designed optimally and dedicating additional resources to the problem will be difficult to justify.

A.7. Explain any special circumstances that would cause the information collection to be conducted in a manner inconsistent with the guidelines set forth in 5 CFR 1320.6.

No special circumstances require the collection to be conducted in a manner inconsistent with the guidelines in 5 CFR 1320.6.

A.8. Provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8 (d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to these comments. Describe efforts to consult with persons outside the agency to obtain their views.

a. Federal Register Notice

NHTSA published a notice in the *Federal Register* with a 60-day public comment period to announce this proposed information collection on May 12, 2010, Volume 75, Number 91, pages 26837-26838. A copy of the Federal Register Notice is provided in Attachment B.

NHTSA published a notice in the *Federal Register* on May 12, 2010 (Volume 75, Number 91, pages 26837-26838) with a 30-day public comment period to announce that this information would be sent to OMB for approval.

b. Responses to the Federal Register Notice

No comments were received for the 60-day notice.

c. Consultation with outside experts

National experts at NHTSA and Westat have collaborated on the data collection methodology.

A.9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.

Participants will be compensated \$150 for any inconvenience the participant might experience when participating in the study. That is, time spent during the installation and removal of the device, or any unanticipated problems that might arise from having the device in their vehicle.

A.10. Describe any assurance of confidentiality provided to respondents.

Participants are informed that their answers will be kept confidential and used only for research purposes. Participation in the data collection is completely voluntary. There will not be any identifying information such as names, addresses, telephone numbers, or social security numbers, Vehicle Identification Numbers (VIN) in the database delivered to NHTSA. The contractor will destroy confidential identifiers at the end of the study.

Once they agree to each participate will be required to read and sign an informed consent which will explicitly state the measures taken in order to protect their identity. Each consent form will read as follows:

“The fact that you are participating in this study will remain confidential. All data collected will be kept in confidence by Westat and NHTSA. That is, we will not provide your data in any manner that can identify you to anyone including government agencies, insurers, or anyone else. To protect your confidentiality, each vehicle in the study will be assigned a unique ID number and all the data collected will be kept in a file identified by that number, without any personal identifiers. Only Westat will have access to the list that links your identity to your vehicle ID number. Your personal information will be removed from this list when your participation in the study is complete and the monitoring device has been returned. The final report of the research will contain aggregated data without any personal identifiers or information that would lead to the identification of a participant.

To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you, even by a court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. The researchers will use the Certificate to resist any demands for information that would identify you, except as explained below.

You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research.”

A.11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private.

The data collection does not contain any questions related to matters that are commonly considered sensitive or private. Following the on-road driving study period, drivers will be debriefed in-person during device removal in regard to the following study objectives:

1. Perceived effectiveness of the device in changing driving behavior
2. Effects on relationship with other passengers in the vehicle
3. Acceptability of the device (including any undesirable effects)
4. Effect of the device on broader driver monitoring and control behavior. Is the device perceived as useful?
5. Satisfaction of drivers with unit performance, ease of use
6. Incidence and type of device tampering

A.12. Provide estimates of the hour burden of the collection of information on the respondents.

Once the driver is enrolled in the study, the speed warning system will be installed in the participant’s vehicle. The actual installation of the device takes approximately 10-15 minutes during which the participant will be describing their driving habits to a trained researcher. We estimate that it will take a total of 30 minutes to install the device.

Following the installation of the device, the participants will be instructed to drive safely as they normally would and to always use their own good driving judgment rather than relying too much on the system to alert them about speeding, etc. We believe that during the actual study, the amount of burden on the participants will be nominal, as their only instruction is to drive as they normally would.

After 12 week study period, the device will be removed from the participant’s car. During the removal of the instrumentation, participants will be asked to summarize their experience with the speed warning device through a debriefing session (Debriefing Session Guidelines included in Appendix C). The researchers believe this will take approximately 30 minutes to complete. The total estimated burden is shown in Table 1.

**TABLE 1
ESTIMATED BURDEN HOURS**

	TOTAL
Respondents	80
Hours	1
Burden Hours	80

While the participants will be remunerated, the time they spend in the debriefing sessions can still be looked at in terms of what it would have cost if the respondents had spent that amount of time on a task while on the job. The total number of estimated reporting burden hours on the general public would be 80 for the proposed debriefing sessions. At \$20.90* per hour, the total annual estimated cost associated with the burden hours is: \$20.90 x 80 hours for a total of \$1,672.00. Respondents would not incur any other reporting cost from the information collection.

**TABLE 2.
COST BURDEN ON RESPONDENTS**

Population	N	Cost per Hour	Focus Group Length (hr)	Total Cost
Focus group participants	80	\$20.90	1.0	\$1,672.00
TOTAL	80	\$20.90	1.0	\$1,672.00

*From http://www.bls.gov/oes/current/oes_nat.htm#b00-0000, All occupations, Mean Hourly Wage Estimate; viewed June 24, 2010.

A.13. Provide an estimate of the total annual cost burden to respondents or record keepers resulting from the collection of information.

There are no recordkeeping or other costs to the respondents. The use of a speed warning system with GPS tracking and a cell phone based connection to a secure site reduces the burden on participants. Participants will not have to keep travel logs, log incidences when they traveled over the posted speed limit, and track system failure. In addition, there is no need for participants to periodically meet with researchers in order for the data to be downloaded from the device. The data will be transmitted in real time to the web portal for review by the research on a daily basis.

There is no preparation of data required or expected of respondents. Respondents do not incur: (a) capital and start up costs, or (b) operation, maintenance, and purchase costs as a result of participating in the survey.

A.14. Provide estimates of annualized cost to the Federal government.

Total estimated cost to the government for conducting the data collection is as follows:

Number of Participants	80
Total estimated cost of conducting study	\$581,957
Cost per completed Participant	\$7,274

This estimate is based on the total cost of the awarded research contract divided by the specified number of completed Participants. This cost includes a preliminary review and testing of available devices by the research team to select an appropriate device, a report on available devices, preliminary work to set up the pilot study, purchase and testing of the devices needed for the on-road study, the actual pilot study road test of the device chosen, the debriefing sessions, and the analysis of data and final report. There will be no recurring costs.

A.15. Explain the reasons for any program changes or adjustments reported in Items 13 or 14 of the OMB Form 83-1.

This is a new information collection which will be considered a program change within NHTSA's overall PRA program. This program change will increase NHTSA's overall burden hour total by 4800 burden hours.

A.16. For collections of information whose results will be published, outline plans for tabulation, and publication.

NHTSA will develop a Final Report that will include an Executive Summary, Background, Introduction, Methodology, Results, and Conclusions sections. In this manner, all of the detail is available to those readers who desire it,

The findings of the research will also be developed into a journal article. The article will be developed in full collaboration and authorship with the TOM.

Reports and summary sheets will be published in 2011.

A.17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

No such approval is sought. The OMB survey number and expiration date are displayed on the initial recruitment letter and informed consent to be used as a reference if needed.

A.18. Explain each exception to the certification statement identified in Item 19, Certification for Paperwork Reduction Act Submissions,” of OMB Form 83-1.

No exceptions to the certification statement are made.

