

Admin
33786

UMTRI-92-39

**Field Test of Automated Speed Enforcement
In Michigan: Effects on Speed and Public Opinion**

**Fredrick M. Streff
Robert H. Schultz**

September 1992

UMTRI The University of Michigan
Transportation Research Institute



Technical Report Documentation Page

1. Report No. UMTRI-92-39	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Field Test of Automated Speed Enforcement in Michigan: Effects on Speed and Public Opinion		5. Report Date September 1992	
		6. Performing Organization Code	
7. Author(s) Fredrick M. Streff and Robert H. Schultz		8. Performing Organization Report No. UMTRI-92-39	
9. Performing Organization Name and Address The University of Michigan Transportation Research Institute 2901 Baxter Road Ann Arbor, MI 48109		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. MPT-92-011	
12. Sponsoring Agency Name and Address Michigan Office of Highway Safety Planning 300 S. Washington Square, Suite 300 Lansing, MI 48913		13. Type of Report and Period Covered Final 10/1/91-9/30/92	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract <p>The National Highway Traffic Safety Administration (NHTSA) selected the states of Michigan, New Jersey, and Washington to field test various automated speed enforcement devices (ASEDs). The purpose of these projects was to determine the deterrent impact on speeding and speed related crashes of the ASEDs. In addition, the evaluation was to determine public opinions that may impact legislation enabling the use of these devices for speed limit enforcement.</p> <p>Analyses of the speed data on the enforcement zone roads show that the ASED field test had no effect on travel speeds. Indeed, the program had no true enforcement teeth (warning letters only). Slightly less than half of the licensed drivers in the two pilot counties reported knowing about the ASED pilot program, and less than one-fifth of the drivers surveyed reported actually having seen an ASED in use.</p> <p>People do favor ASED use to enforce speed limits. However, they are not universal in their support for ASED use across all situations. While some do favor ASED use in all situations and some oppose ASED use in all situations, overall, people appear to be selective about the situations they would favor ASED use. People seem to be most favorable about ASED use in school zones, areas where traffic enforcement is dangerous for police, for heavy trucks, and in construction zones. The greatest opposition was found for ASED use on freeways, bridges, and "all roads."</p> <p>People were reluctant to support either of the meaningful sanctions (i.e., fine-only and fine-and-points sanctions). They were much more willing to support the essentially meaningless warning-only sanction. As seen in the speed data, a warning-only sanction is unlikely to have an effect on speeding behavior. However, as can be seen in the unsolicited write-in responses, people may favorably receive a more complex sanction procedure by which drivers would receive more severe sanctions (moving from warning to fine and finally fine-and-points) as they were caught by the ASED more frequently.</p>			
17. Key Words Speed, Radar, Enforcement, Automated Speed Enforcement, Public Opinion		18. Distribution Statement Unlimited	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 135	22. Price

Reproduction of completed page authorized

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Michigan Office of Highway Safety Planning nor the U.S. Department of Transportation, National Highway Traffic Safety Administration.

Prepared in cooperation with the
Michigan Office of Highway Safety Planning
and
U.S. Department of Transportation,
National Highway Traffic Safety Administration
through Highway Safety Project #MPT-92-011

Contents

Introduction	1
Background of Operational Aspects of Pilot Program	3
Evaluation of the Effects of ASED on Speed and Crashes	5
Pre, Post Evaluation of Travel Speeds in ASED Enforcement Zones	5
Speed Measurements at the ASED Enforcement Site	10
Travel Speeds Upstream and Downstream from the ASED	12
Conclusions on Effects of ASED Field Test on Travel Speeds	15
Effects of ASED Field Test on Crashes	15
Evaluation of Public Opinion Regarding Automated Speed Enforcement Devices	17
Speeder Crash Propensity	18
Do Drivers Obey Posted Speed Limits	19
Are There Enough Police Patrolling Roads	19
Did Respondents Know About the Michigan ASED Field Test	20
Did Respondents Actually See an ASED in Use	20
Did Respondents Favor Using ASEDs to Issue Speeding Tickets	20
On Bridges	21
For Heavy Trucks	24
In Construction Zones	27
Where Traffic Enforcement is Dangerous for Police Officers	30
Where Traffic Enforcement is Difficult for Police Officers	33
On Freeways	36
In School Zones	39
On All Roads	42
General Conclusions on ASED Use to Issue Speeding Ticket Opinions	45
What Type of ASED Photographs Do People Prefer?	46
What Type Sanction Based on ASED Evidence Do People Prefer?	47
Are Rear Plate Photos an Invasion of Privacy?	49
Are Rear Plate and Driver Photos an Invasion of Privacy?	49
Are ASEDs More or Less Fair than Police?	50
Are ASEDs More or Less Accurate than Current Radar?	50
Are ASEDs More or Less Accurate than Police Officers?	51
Would People Slow Down Near ASEDs?	51
Is the Current Crash Death and Injury Count Acceptable?	51
Using Technology to Free Up Police Officers for Other Duty	52
General Conclusions	53
References	57
APPENDIX A Michigan State Police Automated Speed Enforcement Devices Evaluation	59
APPENDIX B Press Materials	83
APPENDIX C Warning Letter	91
APPENDIX D ASED Survey	95
APPENDIX E Survey Respondent Comments	101

List of Tables

Table 1	Speed Bins Used by On-road Monitoring Devices	6
Table 2	Downstream Speed Measurements Route = Duck Lake Rd.	8
Table 3	Downstream Speed Measurements Route = I-696	8
Table 4	Downstream Speed Measurements Route = I-94	8
Table 5	Downstream Speed Measurements Route = North Bound Sprinkle Rd.	9
Table 6	Downstream Speed Measurements Route = North Bound I-75	9
Table 7	Route = I-94	11
Table 8	Route = Sprinkle Road	11
Table 9	Route = I-75	11
Table 10	Route = I-696	11
Table 11	Route = Duck Lake Road	11
Table 12	Summary of ASED and Road Travel Speeds Data Build	12
Table 13	Upstream Speed Measurements (Laser) Route = Duck Lake Road	13
Table 14	Upstream Speed Measurements (Laser) Route = I-696	13
Table 15	Upstream Speed Measurements (Laser) Route = I-94	14
Table 16	Upstream Speed Measurements (Laser) Route = Sprinkle Rd.	14
Table 17	Upstream Speed Measurements (Laser) Route = I-75	14
Table 18	Crash History on ASED Field Test Road Segments by Calendar Year	15
Table 19	Response Rates for ASED Opinion Survey	17
Table 20	Do you favor or oppose the use of ASEDs to issue speeding tickets <i>On Bridges?</i> Results Segregated by Response to Another Item	23
Table 21	Do you favor or oppose the use of ASEDs to issue speeding tickets <i>For Heavy Trucks?</i> Results Segregated by Response to Another Item	26
Table 22	Do you favor or oppose the use of ASEDs to issue speeding tickets <i>In Construction Zones?</i> Results Segregated by Response to Another Item	29
Table 23	Do you favor or oppose the use of ASEDs to issue speeding tickets <i>Where traffic enforcement is Dangerous for Police Officers?</i> Results Segregated by Response to Another Item	32
Table 24	Do you favor or oppose the use of ASEDs to issue speeding tickets <i>Where Traffic Enforcement is Difficult for Police Officers?</i> Results Segregated by Response to Another Item	35
Table 25	Do you favor or oppose the use of ASEDs to issue speeding tickets <i>On Freeways?</i> Results Segregated by Response to Another Item	38
Table 26	Do you favor or oppose the use of ASEDs to issue speeding tickets <i>In School Zones?</i> Results Segregated by Response to Another Item	41
Table 27	Do you favor or oppose the use of ASEDs to issue speeding tickets <i>On All Roads?</i> Results Segregated by Response to Another Item	44
Table 28	Responses to ASED Photograph Views	46
Table 29	Responses to ASED Sanctions	48

Introduction

The National Highway Traffic Safety Administration (NHTSA) selected the states of Michigan, New Jersey, and Washington to field test various automated speed enforcement devices (ASEDs). The purpose of these projects was to determine the deterrent impact on speeding and speed related crashes of the ASEDs. In addition, the evaluation was to determine public opinions that may impact legislation enabling the use of these devices for speed limit enforcement.

Automated speed enforcement devices use a combined equipment package of a narrow-beam, low-power, cross-road Doppler radar speed detector, a motor-driven camera and flash unit, and a computer. As a vehicle crosses through the radar beam, the computer determines if the vehicle is exceeding the threshold speed set by the police officer on the ASED, and a photograph (receding and/or advancing) is taken of the vehicle if the device determines that the vehicle is exceeding the preset threshold. The photographs are then developed, the license plate of the offending vehicle is identified, and the registered owner of the vehicle is notified of the violation via mail. Michigan law does not permit the issuance of speeding tickets using this device, so for this field test, warning letters were sent advising registered vehicle owners that their vehicle was observed at a specific place and time exceeding the speed limit (based on the data recorded on the photo record generated by the ASED).

To date, there is little solid empirical evidence of the success or failure of ASEDs to effectively control vehicle speeds. The evidence that exists suggests that ASEDs can be effective in controlling speeds and reducing crashes in areas where they are in use (this research is briefly surveyed in Blackburn & Glauz, 1984; Freedman, Williams, and Lund, 1990; and several unpublished documents by specific ASED manufacturers). While limited, there has also been some research on public opinions about ASEDs and their use in the U.S. (Freedman et al., 1990). In general, Freedman et al. found majority support for ASED use among residents of communities where ASEDs are being used for speed enforcement and in the areas surrounding these communities. However, this study did not examine public opinions in areas where the majority of survey respondents reported having not seen ASEDs in use. Thus, much remains to be known about the potential for ASEDs to affect speed and about public opinions that are likely to affect the implementation of ASEDs in broad geographic areas in the U.S. (such as entire states).

This report is a companion to a report prepared by the Michigan Department of State Police (MSP, see Appendix A for a full copy of this report). The focus of the MSP report is an examination and evaluation of the operational aspects of the three specific ASED equipment

packages tested (i.e., mobile and stationary versions of the U.S. Public Technologies, Inc. unit trade name "PhotoRadar", and Traffic Monitoring Technologies, Inc. unit trade name "PhotoCop"). The focus of the following report is the effect of these units on speeds and crashes on roads where the units were deployed and public opinions about ASEDs in general.

Background of Operational Aspects of Pilot Program

Two counties in Michigan were identified for the ASED field test (Kalamazoo and Oakland Counties). Within these counties, specific enforcement zones were established based on an examination of four to five years of crash experience in the counties (examined using the MALL crash data system), as well as experience of enforcement and traffic engineering personnel with respect to speeds in identified high crash areas. Multiple years of MALL crash data were not available for I-696 because it was a newly constructed roadway. This roadway was selected based on qualitative information regarding the roadway's general characteristics suggesting the site was amenable to deployment of the stationary ASED unit. The following sites were selected:

Oakland County:

I-75 between Dixie Highway and Grange Hall Road

Speed limit - 65 m.p.h.

3 lanes in each direction

ASED - Mobile "PhotoRadar" unit

Duck Lake Road between M-59 and Jackson Blvd.

Speed limit - 35 m.p.h.

1 lane in each direction

ASED - Mobile "PhotoRadar" unit

I-696 at Lincoln Drive

Speed limit - 55 m.p.h.

4 lanes in each direction, additional westbound entrance ramp

ASED - Stationary "PhotoRadar" unit facing westbound

Kalamazoo County:

I-94 between 4th Street and 6th Street

Speed limit - 65 m.p.h.

2 lanes in each direction

ASED - Mobile "PhotoCop" unit

Sprinkle Road between Michigan Avenue and H Avenue

Speed limit - 55 m.p.h.

2 lanes in each direction

ASED - Mobile "PhotoCop" unit

The Michigan field test began with press conferences in both Oakland and Kalamazoo Counties on July 24, 1992 (although earlier press briefings occurred resulting in some, albeit limited press coverage). See Appendix B for a copy of the press materials distributed at the Oakland County press conference. Similar press materials were also used at the Kalamazoo conference. Officers in each county were requested to work a minimum of two hours within their assigned

enforcement zone on each shift, after which they could work elsewhere in the county. Officers from the Oakland County Sheriff's Department operated the unit on Duck Lake Road, officers from the Kalamazoo County Sheriff's Department operated the unit on Sprinkle Road, and troopers and Motor Carrier officers from the Michigan State Police operated the units on I-75 and I-94 (and MSP troopers maintained the stationary unit on I-696). The enforcement plan called for operation of these units for eight hours a day, five days per week. However, equipment problems and a range of other factors limited officer's ability to achieve the desired use level.

A clerical employee assigned to MSP-Traffic Services Unit examined each negative from the ASEDs to obtain the license plate number, speed, location, and date (details of film type and processing can be found in Appendix A). This information was entered into a personal computer and transferred to a 5.25-inch floppy disk, converted to a magnetic tape and sent to the Michigan Department of State to obtain registered vehicle owner information. The registered owner information was tagged onto the magnetic tape records by the Department of State, returned to MSP-Traffic Services unit, and transferred back onto a 5.25-inch floppy disk to generate warning letters. The license plate number on each warning letter was again compared with the corresponding film negative to reconfirm that the information on the warning letter was accurate before the letters were mailed (a copy of the warning letter form can be found in Appendix C).

Evaluation of the Effects of ASED on Speed and Crashes

We explored the effects of ASEDs on travel speeds on the road segments described in the background section (i.e., I-75, Duck Lake Road, I-696, I-94, and Sprinkle Road). The evaluation of the effects of ASED use on speeds had three basic components. The first component was an analysis of speeds prior to and after implementation of the ASED program on the target roads. Vehicle speeds were measured by speed measuring devices installed on the roads downstream from the planned ASED enforcement zones. The second evaluation component was an examination of travel speeds upstream from the enforcement zones, at the ASEDs themselves, and downstream from the ASED enforcement zones. The third component involved examining speeds measured by the ASEDs indicating travel speeds within the enforcement zone itself.

Pre, Post Evaluation of Travel Speeds in ASED Enforcement Zones

The focus of this evaluation component was to examine travel speeds downstream from the ASED enforcement zones described earlier in the background section. If the ASED program had an effect on travel speeds, we would expect to see a decrease in mean, median, 85th percentile, and/or 95th percentile speeds during the enforcement period compared with speeds during the preprogram period. The wide range of measures examined in this (and subsequent) speed evaluation components reflects our belief that the ASED program may have a wide range of possible effects that we wanted to explore. For example, the ASED program may have an effect on reducing speeds of only the fastest drivers, thus reducing 85th and 95th percentile speeds, but not significantly affecting mean or median speeds. On the other hand, the ASED enforcement program may have been sufficient to affect a wide range of travel speeds that would be indicated by significant differences in mean or median speeds.

Travel speeds in this evaluation component were measured by on-road or in-road speed measurement devices installed and maintained by the Michigan Department of Transportation (MDOT), Data Collection Section, Electronic Services Unit (I-75, I-696, and I-94), the Kalamazoo County Road Commission (Sprinkle Road), and the Oakland County Road Commission (Duck Lake Road). Each of these organizations participated actively in the development of the evaluation plan and provided equipment and personnel to collect these speed measurements. At this point, we would like to note that we received excellent cooperation from each of these agencies for the collection of the speed data using their units. However, speed data were not collected as often and as regularly as would have been optimal due to equipment problems, weather-related difficulties, and significant budget constraints. Despite these problems, each of the agencies

worked well beyond the limits they expressed initially for the collection of these data and their cooperation and effort is greatly appreciated.

Speed loops were set up at fixed locations immediately downstream from the end of the ASED enforcement zone at each interstate location, and data were collected up- and downstream from the enforcement zone at the noninterstate locations (these sites are detailed in tables that follow). Speed data were collected as regularly as devices and personnel resources permitted. Specifically, there were permanent (in-road) speed loops located at the I-696 and Sprinkle Road sites. Temporary (asphalt piezostrip) speed monitoring devices were installed at the I-75 and I-94 sites on a semipermanent basis, but these strips were occasionally disrupted by anticipated wear and tear, and were disrupted permanently by an early snowfall (and subsequent plowing) in October. The speed monitoring on Duck Lake Road occurred on a monthly basis (speeds monitored for about one week, once a month) using temporary pneumatic tube devices. Each of these speed monitoring devices provided hourly speed data collected in speed "bins." That is, the raw speeds were not collected for each vehicle, but instead each vehicle's speed was classified within a speed bin within each hourly group. The speed bins used for this study are described in Table 1.

Bin	Speed Grouping (mph)		
	Interstates	Sprinkle Road	Duck Lake Rd.
1	<21	<36	<16
2	21-25	36-40	16-20
3	26-30	41-45	21-25
4	31-35	46-50	26-30
5	36-40	51-55	31-35
6	41-45	56-60	36-40
7	46-50	61-65	41-45
8	51-55	66-70	46-50
9	56-60	71-75	51-55
10	61-65	76-80	56-60
11	66-70	81-85	>60
12	71-75	>85	
13	76-80		
14	81-85		
15	>85		

Speed data (hard copy and floppy disk) were sent by the county road commissions via mail on a monthly basis. These hard copy data were then manually entered into a data set for analysis using personal computers. MDOT established an electronic bulletin board service (BBS) that stored the data collected by their devices. MDOT data were regularly downloaded electronically from the BBS to a personal computer. The BBS was also used to facilitate regular communications with the MDOT personnel to check on difficulties with the speed data collection devices. As data were received, the first task was to check the data to ensure data format consistency and eliminate spurious or erroneous data (e.g., when a device went off line, messages appeared in the data set rather than data; nonsensical data occasionally were received indicating the device was not measuring or transmitting speed data accurately). Once the data were "cleaned" of errors, the data were written into SAS (Statistical Analysis Software, Cary, NC) internal files for subsequent analyses. Identification variables were included to permit later merging of data collected using different strategies (i.e., speeds measured by the ASEDs themselves and measured using laser speed detection systems; this will be discussed in detail in later sections of the report).

The general analysis strategy was to examine the data by lane or "measurement station" as lane and site identification was made for some locations. For each lane or station (pre- and post-ASED implementation), we calculated travel speed means, medians, 85th and 95th percentile speeds and developed 95% confidence bands for the means. (Unfortunately, preprogram data were not available for Sprinkle Road or I-75 due to equipment problems.) We compared confidence bands pre- versus postimplementation to determine if differences in speed during the time period before the ASEDs were being used differed from those measured after the ASEDs were being used. Tables 2-6 document these data. Note that speeds in these tables are all described in terms of the speed bin, not speeds measured in miles per hour (mph). This strategy introduces a certain amount of undesirable (and unmeasurable) variability into the analyses (since each bin includes a range of absolute speeds), and use of these bins provides a less sensitive analysis to detect differences between experimental conditions. However, we determined this would be the most straightforward analysis procedure, requiring fewest assumptions and explanations.

Table 2 Downstream Speed Measurements Route = Duck Lake Rd. ¹							
Period	Station	Vehicles Observed	Mean	± 95% C.I.	Median	85th Percentile	95th Percentile
Pre	71	25,345	6.596	8.8	6.6230	6.818	6.928
	932	19,101	5.191	6.1	5.2334	5.463	5.630
Post	71	83,274	6.126	18.2	6.2615	6.831	7.000
	932	73,606	5.825	10.1	5.7328	6.384	6.750

¹Station 71 was downstream from the enforcement zone (near White Oak Lane prior to a curve and new speed zone. Station 932 was upstream from the enforcement zone between Buena Vista Road and Davista Road.

Table 3 Downstream Speed Measurements Route = I-696							
Period	Lane	Vehicles Observed	Mean	± 95% C.I.	Median	85th Percentile	95th Percentile
Pre	1	252,480	8.995	56.6	9.723	10.361	10.572
	2	148,125	8.268	26.5	8.354	8.584	8.684
	3	152,410	9.329	39.0	9.420	9.664	9.771
	4	103,869	9.522	39.6	9.733	10.025	10.205
Post	1	587,444	7.909	22.2	8.034	8.309	8.463
	2	668,572	8.239	29.8	8.390	8.664	8.784
	3	658,536	9.215	25.9	9.283	9.526	9.700
	4	400,980	9.393	23.0	9.527	9.861	10.069

Table 4 Downstream Speed Measurements Route = I-94							
Period	Lane	Vehicles Observed	Mean	± 95% C.I.	Median	85th Percentile	95th Percentile
Pre	1	269,660	9.170	9.0	9.214	9.376	9.499
	2	108,741	10.258	6.1	10.250	10.442	10.572
Post	1	785,130	9.122	12.0	9.109	9.335	9.466
	2	384,613	10.203	7.6	10.160	10.415	10.550

Period	Station	Vehicles Observed	Mean	± 95% C.I.	Median	85th Percentile	95th Percentile
Post	1	326,243	4.372	23.4	4.332	5.051	5.205
	2	384,670	6.081	23.5	6.078	6.664	6.890
	3	282,961	4.526	23.7	4.345	5.137	5.347
	4	225,722	4.691	28.2	4.957	5.419	5.627
	5	323,981	5.217	29.8	4.896	6.106	6.294

²Station 1 was upstream from the enforcement zone, 500 feet north of Market Street, Station 2 was just inside the enforcement zone, 1/4 mile north of Michigan Ave., Station 3 was at the approximate midpoint of the enforcement zone, 1/4 mile south of Main Street, Station 4 was at the approximate midpoint of the enforcement zone, 1/4 mile north of Main Street, Station 5 was at the end of the enforcement zone, 1/4 mile south of H Avenue.

Period	Lane	Vehicles Observed	Mean	± 95% C.I.	Median	85th Percentile	95th Percentile
Post	1	1,018,992	9.452	17.8	9.478	9.715	9.834
	2	1,371,204	10.160	20.4	10.167	10.395	10.516
	3	493,039	11.118	21.2	11.135	11.457	11.623

The 95% confidence bands describe the range within which we can be 95% sure the true mean lies (given the sample variance). When 95% confidence bands overlap (calculated by adding and subtracting the 95% confidence interval ("95% C.I.") value from the tables to the value of the "Mean" from the tables), we say that there is no statistically significant difference between the two means. That is, given the sample data, the means are not truly different from one another (and any apparent difference is the result of chance variation observed in our sample). Unfortunately, operational difficulties delayed the installation of speed monitoring devices on Sprinkle Road and I-75, precluding the collection of speed data for the preimplementation period.

These tables show that there were very small differences in speeds (pre- versus postimplementation) and that these differences did not even approach statistical significance. Extremely high variances in mean speeds contributed to the lack of statistical significance. Further investigation of the data revealed that there were instances in which the lowest speed bins included valid cases. These cases in the lowest speed bins affected the analyses by greatly increasing the variance around the mean (thus creating quite large 95% C.I.s). Rather than delete these cases as "outliers" without significant rationale to do so, these cases were retained in the analyses shown in Tables 2-6. Further analyses excluding these outliers did not result in a significant

change in the results, and differences in the means still did not approach statistical significance (therefore these tables are excluded from the report).

In order to examine if the lack of significant differences was due to the inclusion of all speed data regardless of the time of day or day of week examined (note that enforcement occurred mainly on weekdays in daylight hours), we further segregated the speed data including only daylight hours (7 a.m. to 7 p.m.) and conducted separate analyses by weekdays and weekends. These analyses showed results nearly identical to those presented earlier. In fact, the results from these analyses showed less pre and post program differences than did the data when examined across all days and times. These results further support the conclusion that the program did not have an effect on travel speeds.

Speed Measurements at the ASED Enforcement Site

The focus of this evaluation component was to examine travel speeds taken at the ASED enforcement site as measured by the ASED device. If the ASED had an effect on controlling travel speeds, we would expect that speeds measured by the ASED would be at or near to the posted speed limit at the site. Both the "PhotoCop" and "PhotoRadar" devices are designed to collect data on the speeds of the traffic the device monitors as the traffic passes by the device. However, the two devices employ different data management strategies.

The "PhotoCop" device collected raw speeds of every vehicle as it passed together with the time the vehicle passed, a site identification code, the posted speed limit, the "target" speed (i.e., the speed necessary for a photograph to be taken), and a code to identify those vehicles for which a photograph was taken. In addition, the device recorded the date of the observations as part of the data set name when the file was stored at the end of an enforcement session. The data collected by the "PhotoCop" device treated each vehicle as a case, that is, data for each vehicle were recorded on a separate data line. The data were downloaded to a 3.5-inch floppy disk from which the data used in the analyses were transferred to a data format we requested. This transfer was accomplished using a program developed by the Traffic Monitoring Technologies, Inc. programming staff following data specifications we requested.

The "PhotoRadar" device also gathered data on the speed of each vehicle. Unfortunately, the data from the "PhotoRadar" device could not be manipulated as easily as those from the "PhotoCop" device. Data collected from the "PhotoRadar" device could only be retrieved using the analysis package supplied with the device. Therefore, we determined the number of vehicles that were traveling at a given speed during the entire period of time the device was being used by transcribing the analysis package's results screen by screen.

Speeds for the various enforcement zones as measured by the ASEDs are detailed in Tables 7-11. With the exception of the Duck Lake Road and I-696 sites, mean and median speeds were below the posted speed. However, 85th percentile speeds were above the posted speed limit at all the enforcement sites. While 85th percentile speeds were only 3-5 m.p.h. higher than the posted speed on I-94 and Sprinkle Road (monitored by the "PhotoCop" device), 85th percentile speeds were much higher on I-75 (13 m.p.h. above the posted limit), I-696 stationary site (23 m.p.h. above the posted limit), and Duck Lake Road (12 m.p.h. above the posted limit). Note that the I-696 site was monitored by a stationary unit that was out of sight to drivers; this may explain in part why speeds were so much more above the posted limit on I-696.

Table 7 Route = I-94					
Direction	Vehicles Observed	Mean	Median	85th Percentile	95th Percentile
EB-I94	49,546	61.231	61	68	71
WB-I94	27,396	63.163	63	70	73

Table 8 Route = Sprinkle Road					
Direction	Vehicles Observed	Mean	Median	85th Percentile	95th Percentile
NB-Spr	3,826	51.733	52	57	60
SB-Spr	25,342	53.413	54	58	61

Table 9 Route = I-75				
Vehicles Observed	Mean	Median	85th Percentile	95th Percentile
52,505	64.24	64	78	85

Table 10 Route = I-696				
Vehicles Observed	Mean	Median	85th Percentile	95th Percentile
4,841	65.125	71	78	82

Table 11 Route = Duck Lake Road				
Vehicles Observed	Mean	Median	85th Percentile	95th Percentile
11,271	36.481	36	47	51

We also attempted to determine if speeds tended to decline with time after the ASED enforcement site was established. These analyses were only possible using the data from the "PhotoCop" device because data from this device had specific times coded for each vehicle. Mean speeds were calculated for each 10-minute interval after the device was deployed. A linear regression was fit to the data to determine if a linear trend existed in the data, and a quadratic term was included in a separate analysis to determine if speeds declined exponentially with time. Although the results of both models were found to have sufficient explanatory power (i.e., R^2 for each was statistically significant), the slope of the regression line was nearly zero, indicating there was little relationship between the amount of time the ASED was in the field and vehicle travel speeds around the ASED.

Travel Speeds Upstream and Downstream from the ASED

The final analytic strategy was to examine travel speeds prior to, within, and following the enforcement zones to determine if vehicles slowed within the enforcement zones and perhaps sped back up once they had passed the ASED. Because the ASED enforcement at times occurred in the travel direction opposite to the MDOT and road commission speed monitoring device installations, many data were lost from this analysis. Table 12 details the number of cases available for the analyses. The column headed "# DOT Obs." describes the number of hourly data points available for analysis (multiple lanes were each included as separate hourly observations in this count). The column headed "# ASE Observations" refers to the number of ASED-based speed data points available. Note that some are measured in hours (from the "PhotoCop" device) and some are measured in days (from the "PhotoRadar" device). As described earlier, these two devices aggregated data differently. The column headed "# Merge" details the number of hours of observation that overlapped between the DOT and ASED speed data collection periods.

Site	# DOT Obs. (Hours & Lanes)	# ASE Observations	# Merge (Total N - hours)
I-696	4,669	12 days	16
I-94	3,943	95 hours	84
I-75	10,536	37 days	428
Duck Lake Road	1,529	18 days	46
Sprinkle Road	2,524	10 hours	6

Graphic analysis of the data showed that there was very little difference between the speeds as measured by the ASEDs and the on-road speed monitoring devices. Further analysis

showed that the 95% confidence bands around the mean speeds overlapped considerably, indicating that speeds at the ASED and downstream from the ASED were not significantly different.

In addition to the on-road speed measurements taken by MDOT and the road commissions, we also gathered speed data using laser speed detection systems upstream from the ASED enforcement zones. Because of the difficult logistics involved in coordinating the timing of enforcement personnel and observers, these upstream speed observations were not necessarily made at the same time as an ASED enforcement period. Analysis of these data show the same general pattern as the other speed measurements. That is, there was no effect of decreased speed found during the ASED enforcement period (see Tables 13-17 for the detailed data).

Table 13 Upstream Speed Measurements (Laser) Route = Duck Lake Road								
Period	Traffic	Lane	Mean	± 95% C.I.	Median	N	85th Percentile	95th Percentile
Program	S-bound	1	39.736	8.3	40	330	44	47
Post	S-bound	1	38.375	9.4	38	120	43	46.5

Table 14 Upstream Speed Measurements (Laser) Route = I-696								
Period	Traffic	Lane	Mean	± 95% C.I.	Median	N	85th Percentile	95th Percentile
Program	W-bound	1	58.933	9.1	59	210	64	67
		2	60.557	8.6	60	210	65	68
		3	63.024	8.5	63	210	67	70
		4	67.767	8.5	68	210	72	76
Post	W-bound	1	58.925	10.7	58	120	65.5	68
		2	60.150	8.0	60	120	65	67
		3	63.292	8.1	63	120	68	70
		4	67.267	8.2	67	120	71	74

Table 15 Upstream Speed Measurements (Laser) Route = I-94								
Period	Traffic	Lane	Mean	± 95% C.I.	Median	N	85th Percentile	95th Percentile
Program	E-bound (near 4th)	1	64.967	9.3	65	90	69	73
		2	68.222	9.6	69	90	72	75
	E-bound (near 6th)	1	65.922	7.5	66	90	70	72
		2	66.267	8.4	67	90	70	73
Post	E-bound (near 4th)	1	66.417	10.2	67	60	71	74
		2	61.700	11.9	62.5	60	68	71
	W-bound (near 4th)	1	60.683	12.7	60	60	67	72.5
		2	66.867	8.3	67	60	71	74
	E-bound (near 6th)	1	66.967	11.4	67	60	72.5	76
		2	62.833	11.2	63.5	60	68	71
	W-bound (near 6th)	1	60.833	11.5	60.5	60	67	70.5
		2	67.417	10.1	68.5	60	72.5	74

Table 16 Upstream Speed Measurements (Laser) Route = Sprinkle Rd.								
Period	Traffic	Lane	Mean	± 95% C.I.	Median	N	85th Percentile	95th Percentile
Program	N-bound	1	53.461	10.8	53	180	59	62
		2	52.294	9.9	52	180	58	61
	S-bound	1	52.483	10.6	53	180	58	62
		2	52.872	10.0	53	180	58	61
Post	N-bound	1	51.867	12.7	51	30	59	62
		2	56.900	8.6	56.5	30	63	64
	S-bound	1	58.733	7.3	59	30	63	64
		2	53.167	11.6	54	30	59	60

Table 17 Upstream Speed Measurements (Laser) Route = I-75								
Period	Traffic	Lane	Mean	± 95% C.I.	Median	N	85th Percentile	95th Percentile
Program	N-bound	1	63.391	11.1	63	330	69	73
		2	67.121	8.4	67	330	71	75
		3	70.127	9.6	70	330	75	78
Post	N-bound	1	63.600	12.4	63.5	120	70	74
		2	66.733	8.2	67	120	71	74
		3	70.433	8.9	70	120	74	80

Conclusions on Effects of ASED Field Test on Travel Speeds

The previous analyses show that the ASED field test had no effect on travel speeds. As stated earlier, we should not be surprised at the lack of effect the ASED program had on travel speeds. Indeed, the program had no true enforcement teeth (warning letters only), and as will be documented later in the public opinion section of this report, slightly less than half of the licensed drivers in the two pilot counties reported knowing about the ASED pilot program, and less than one-fifth (20%) of the drivers surveyed reported actually having seen an ASED in use. It has been repeatedly documented that for an enforcement program to be effective it has to be well publicized, enforcement needs to be high, and punishments need to be swift and sure. This program was not well publicized (as shown in the survey results), very few warning letters were distributed (less than one-third of all possible violators were identified accurately enough for a warning letter to be sent, a total of 3,206 letters were sent, see Appendix A for further details), and there was no punishment applied to violators. At this point we should note that there were significant obstacles to successful PI&E that could not be overcome during the project period. Specifically, although PI&E monies were included in the MSP report, state purchasing restrictions prior to and during program implementation did not permit PI&E materials to be provided in a timely manner. In addition, PI&E materials that were to be produced and provided by NHTSA were not developed as originally planned.

Effects of ASED Field Test on Crashes

Baseline data on crash experience on the identified road segments showed that while these segments had a greater crash experience than otherwise similar segments, the total number of crashes for any given year were still quite low and variable (as would be expected for roads of these types and segments of this length). Table 18 describes five years of crash experience on the road segments selected for the ASED field test.

Road Segment	1986	1987	1988	1989	1990
I-75	46	47	38	37	41
I-696	N/A	N/A	N/A	N/A	N/A
Duck Lake Rd.	62	59	61	47	41
I-94	24	12	23	12	11
Sprinkle Rd.	57	47	60	50	42

Given the relatively small number of crashes that occurred on the identified road segments each calendar year, and the variability observed between years, it was determined that analyses

of these data to try to determine if the field test had an effect on crashes would prove fruitless or worse, misleading. A statistically significant effect was unlikely to be found due to the variability of the pretest data and small number of data points on which to base any statistical test. Perhaps more important is the fact that the data in Table 18 reflect entire calendar years, and just the months the field test was conducted. Examination of the crash data in the months the field test was conducted obviously resulted in significantly smaller crash counts, further hampering any attempt at analysis.

Another important point to consider for these analyses was the finding that travel speeds on these road segments remained unchanged. The potential mechanisms by which ASED units may affect crash and injury rates is through changes in absolute speed and/or speed variance. Because no such changes were observed, we would postulate there should be no change in crash experience. Indeed, if we were to find an effect on crash experience in these data, we would be hard pressed to determine how such a change occurred given the target behavior (speed) remained unaffected. Rational expectations of such a finding could be developed (e.g., speeds in fact changed but the change was too subtle to detect empirically or ASED use affected some other unmeasured behaviors); however, given the preceding discussion, we believe such an exercise was unwarranted.

Evaluation of Public Opinion Regarding Automated Speed Enforcement Devices

In this component of the evaluation, we investigated public opinions regarding ASEDs using a mail-out survey. The focus of the survey was to provide information to better inform decision makers about public information needs and current opinions that may support or oppose efforts to enact enabling legislation necessary to fully implement ASEDs in Michigan. The survey was distributed by mail in the Spring of 1992, after the ASED enforcement period had been completed. Surveys were sent to 4,288 licensed drivers in Michigan. This sample consisted of three parts:

- (1) 2,000 randomly selected licensed drivers from each test county (i.e., 2,000 from Kalamazoo County and 2,000 from Oakland County). Respondents were selected using random lists developed by the Michigan Department of State, the agency responsible for licensing drivers in Michigan.
- (2) 141 drivers to whom a warning letter was sent because they were identified as speeders by an ASED. This group was used to determine if opinions of persons observed speeding by an ASED and told they would have received a ticket if enabling legislation were in place differed from the general public.
- (3) 147 drivers who were identified as speeding by the ASED (and thus were eligible to receive a warning letter), but to whom no letter was sent. This group was a "control" to determine if persons who were observed speeding would respond to items in the survey differently than speeders who received a letter informing them they were actually observed speeding and could have been ticketed.

Name lists were searched to ensure that persons who may have been included in multiple lists (e.g., included in the general public list and the ticket list) were deleted from one of the multiple lists. No such duplications were found. Table 19 presents data on response rates for each of the respondent groups.

Table 19				
Response Rates for ASED Opinion Survey				
Respondent Group	County	Number of Surveys Mailed	Number of Surveys Returned	Proportion of Surveys Returned
Licensed Drivers	Kalamazoo	2,000	568	28.4%
	Oakland	2,000	556	27.8%
Speeders (Warning Letter)	N/A	141	42	29.8%
Speeders (No Letter)	N/A	147	43	29.2%

Table 19 shows that response rates for each of the respondent groups were quite similar. The response rates are well within the expected response levels for a mail-out survey. When the demographic characteristics of the two random samples of licensed drivers (age and gender) were compared with those of the respondents, we found the respondent demographics to be nearly identical to those of the mailing list.

The actual survey mailed to each respondent can be found in Appendix D. The survey queried issues necessary to understand not only whether respondents favored or opposed the use of ASEDs for speed limit enforcement, but also issues underlying respondents' support or lack of support for the use of ASEDs to issue speeding tickets. Items querying whether respondents favored or opposed certain issues were treated in two different ways. First, the entire 7-point scale was treated as an interval scale. That is, each response code 1-7 was handled as an integer, and mean (or average) responses (sum of response codes divided by the number of responses) were examined. For these analyses, the lower the mean, the more favorable the response. Second, we divided the responses into three categories (i.e., persons who responded "1" were considered to have favored the proposal, those who responded "7" were considered to have opposed the proposal, and those who responded "2-6" were considered to have no opinion. This analytic strategy was selected because an examination of the data showed that most of the favor/oppose items were bipolar. That is, there were large numbers of persons selecting the ends of the scale and relatively few persons selecting response codes near to the scale ends. These analyses were used to identify the proportions of persons who hold strong opinions about the proposals. In addition to the responses checked in the boxes provided on the survey instrument, many respondents took the time to handwrite their views. These unsolicited responses are included in Appendix E, and these responses are grouped according to the survey item they seemed to be responding to. The results in the following subsections will be described in the order the items appeared on the survey instrument.

Speeder Crash Propensity

Respondents were asked, *"Some people think that drivers that exceed posted speed limits greatly increase their risk of getting into crashes. Others think that speeders are no more likely to get into crashes than non-speeders. In general, do you think that a driver that exceeds posted speed limits is **much more likely** or **no more likely** to get into a crash than a non-speeder?"* Respondents were given a 7-point scale to select a response. On this scale "1" was anchored by the statement, *"Much more likely to get into a crash"* and "7" was anchored by the statement, *"No more likely to get into a crash."*

The mean (average) response to this item was 3.3 (with a standard deviation (SD) of 1.8).³ Nearly one-quarter (21.3 percent) of respondents selected the value "1" ("Much more likely to get into a crash"), and 6 percent of respondents selected "7" ("No more likely to get into a crash"). The mean of 3.3 indicates respondents view speeders as slightly more likely to get into a crash than non-speeders (as shown by the mean being closer to the anchor "Much more likely..." than the center point of "4"). However, the SD indicates that this view is nearly centered around the midpoint of the scale. When the mean is interpreted with the SD, the result suggests that the "average" respondent believes there is no difference between the likelihood of a crash for speeders and nonspeeders. Interpreted in this way, this result suggests there is a need to further educate the driving public about the safety threat posed to speeders and by speeders.

Do Drivers Obey Posted Speed Limits

Respondents were asked, "*In general, do you think that most drivers obey or drive faster than posted speed limits on the following roads in Michigan?*" Road types queried (in separate items) were: "*Freeways,*" "*Local Streets,*" and "*Construction Zones.*" Respondents were given a 7-point scale to select a response. On this scale "1" was anchored by the statement, "*Obey speed limits*" and "7" was anchored by the statement, "*Drive faster than speed limits.*"

The mean response for the item for "Freeways" was 6.0 (SD=1.2). The mean response for "Local Streets" was 4.3 (SD=1.7), and the mean response for "Construction Zones" was 4.4 (SD=1.9). These results suggest that people think that most drivers speed on freeways, but have mixed views on this issue when considering local streets and construction zones. Another interpretation of these results is that people think that drivers are more likely to speed on freeways than on local streets or construction zones. When the anchor responses are considered, 45.6 percent of respondents reported they think drivers "Drive faster than speed limits" on freeways, while only 13.7 percent selected this response category for local streets, and 19.7 percent selected this response category for construction zones. Considering the opposite pole of the scale, only 0.7 percent of respondents reported they think drivers "Obey speed limits" on freeways, while 5.2 percent selected this category for local streets, and 8.9 percent selected this category for construction zones.

Are There Enough Police Patrolling Roads

Respondents were asked, "*Do you think there are enough or not enough police patrolling the roads to enforce speed limits?*" Respondents were given a 7-point scale to select a response.

³For those readers unfamiliar with the meaning of the standard deviation (SD), this value represents the amount of variation that exists between respondents. The more similar people's responses are, the lower the SD; conversely, the more variation there is between responses, the larger the SD is. Standard deviations are included for each mean to help readers further interpret the "meaning of the mean."

On this scale "1" was anchored by the statement, "Enough" and "7" was anchored by the statement, "Not enough."

The mean response for this item was 4.0 (SD=2.2). When the anchor and center values are examined we find that 19.6 percent reported "Enough," 15.1 percent selected the center value "4," and 20.0 percent selected "Not enough." These results show that respondents were divided on this issue. However, because a response of "Enough" would suggest that the status quo was acceptable, the response seen in this survey suggests that, in general, respondents would like to see more police patrolling the roads to enforce speed limits, but maybe not too many more police doing so.

Did Respondents Know About the Michigan ASED Field Test

Respondents were asked, "Do you know about a pilot program in Michigan designed to test the use of ASEDs?" Respondents were asked to select either "Yes" or "No." Less than one-half of respondents reported knowing about the ASED pilot program in Michigan (47.6%). This result suggests that the public information and education (PI&E) component of the program was not as successful as it should have been to maximize program effectiveness. It also suggests that more effort is required to inform the public about issues surrounding ASEDs.

Did Respondents Actually See an ASED in Use

Respondents were asked, "Have you seen any ASED unit in use in Michigan?" Respondents were asked to select either "Yes" or "No." Those who responded "Yes" were asked to write in where they saw the unit. These responses are included in Appendix E. Only 16.7 percent of respondents reported they saw an ASED unit in use in Michigan. This result wasn't unexpected given the limited enforcement zones used and the lack of education and understanding of ASED enforcement. In addition, ASED enforcement zones were not identified by any signing. Thus, some respondents may have actually seen an ASED unit in operation, but not known they had seen it.

Did Respondents Favor Using ASEDs to Issue Speeding Tickets

Respondents were asked, "Do you favor or oppose the use of ASEDs to issue speeding tickets in the following situations:..." The situations (described in separate items were): "On bridges," "For heavy trucks," "In Construction Zones," "Where traffic enforcement is dangerous for police officers," "Where traffic enforcement is difficult for police officers," "On freeways," "In school zones," and "All roads in the state." Respondents were given a 7-point scale to select a response. On this scale "1" was anchored by the statement, "Favor," "4" was anchored by the statement, "Neither favor or oppose," and "7" was anchored by the statement, "Oppose." Each of these issues will be discussed in separate subsections.

On Bridges. The mean response for this item was 4.4 (SD=2.2). Responses for this item analyzed by responses to selected second items are detailed in Table 20. The first entry in this table is the response to the item without considering any second item. In this table, only respondents who replied "1" were included in the "Favor" category, and only respondents who replied "7" were included in the "Oppose" category. All other responses (2-6) were included in the "No Opinion" category. The final column of the table indicates whether there was a statistically significant relationship (assessed with chi-square tests) between the response to the favor/oppose ASED item and the other item. Only relationships at or below the $p < .05$ level are indicated with a "Yes." The $p < .05$ level indicates there is a 95 percent probability that the relationship between items is "true" and not due to chance variation. Note that percentages may not add up to 100 percent due to rounding error.

The results presented in Table 20 show a plurality of respondents had no strong opinion on the use of ASEDs on bridges to issue speeding tickets. However, 10 percent more respondents reported they oppose ASED use on bridges than reported favoring their use. There were no statistically significant differences in opinions on using ASEDs on bridges based on whether respondents knew about the ASED pilot program, had seen the ASED unit, or whether the respondents were from the general population or were observed speeding or had received a warning letter. This last relationship was also examined comparing responses from only the group observed speeding but not receiving a warning letter to responses from those who received a warning letter. This analysis also found no statistically significant relationship.

Bivariate analyses showed a significant relationship between opinions about using ASEDs to issue speeding tickets on bridges and opinions about issuing a fine-only sanction on offenders. Examination of these data shows that opinions about the use of ASEDs on bridges closely followed opinions on the fine-only sanction. That is, respondents who favored the fine-only sanction were the most likely to favor the use of ASEDs on bridges; persons who had no opinion on the sanction issue tended to have no opinion on the use of ASEDs, and persons who opposed the sanction tended not to favor the use of ASEDs to issue speeding tickets. This pattern also held true for the fine-and-points sanction. However, the pattern changed slightly for the warning-only sanction. Both respondents who favored or had no opinion on the warning-only sanction were more likely to have no opinion on the use of ASEDs on bridges, but those who opposed the warning-only sanction were also more likely than the others to also oppose using ASEDs on bridges (as was the case for the other sanction items).

Women were more likely to favor or have no opinion about the use of ASEDs on bridges than men, who were more likely to oppose their use. Respondents who reported owning a radar

detector were more likely to oppose ASED use on bridges than those who reported not owning a radar detector (nonowners were more likely to favor or have no opinion than radar detector owners).

Respondents who reported having received one or more tickets in the past two years were more likely to report that they oppose using ASEDs on bridges than those who reported receiving no tickets. In addition, persons who reported receiving no tickets were more likely to favor the use of ASEDs on bridges than those who reported receiving one or more tickets.

We also examined point-biserial correlations between favor/oppose responses to this item and other items with traditional metric responses. The point-biserial correlation determines the amount of relationship between dichotomous (i.e., two-response) variables and variables with a full scale (1-7 in this case). We found that respondents who favored ASED use on bridges believed speeders were more likely to be involved in crashes ($r=.38$), believed there were not enough police patrolling the roads to enforce speed limits ($r=-.40$), believed the number of deaths and injuries that result from traffic crashes each year is unacceptable ($r=-.26$), received fewer tickets in the prior two years ($r=.12$), and were generally older ($r=-.27$) than respondents who opposed ASED use on bridges (all correlations had a $p<.01$). While statistically significant, most of these correlations are small; however, they do show important relationships that exist between attitudes toward ASED implementation and general traffic safety attitudes.

Table 20 Do you favor or oppose the use of ASEDs to issue speeding tickets <i>On Bridges?</i> Results Segregated by Response to Another Item					
Other Item	Response on Other Item	Favor (%) (N)	No Opinion (%) (N)	Oppose (%) (N)	Statistically Significant
		24.0 (291)	41.4 (501)	34.5 (418)	N/A
Knew about pilot program	Yes	23.0 (132)	41.9 (240)	35.1 (201)	No
	No	25.2 (159)	41.0 (259)	33.9 (214)	
Had seen ASED unit	Yes	23.9 (48)	39.8 (80)	36.3 (73)	No
	No	24.0 (241)	41.6 (418)	34.4 (345)	
Favor or oppose fine only	Favor	32.8 (162)	45.7 (226)	21.5 (106)	Yes
	No Opinion	22.3 (63)	60.4 (171)	17.3 (49)	
	Oppose	15.2 (66)	24.0 (104)	60.7 (263)	
Favor or oppose fine and points	Favor	48.7 (153)	39.8 (125)	11.5 (36)	Yes
	No Opinion	23.2 (66)	65.3 (186)	11.6 (33)	
	Oppose	11.8 (72)	31.1 (190)	57.1 (349)	
Favor or oppose warning only	Favor	23.4 (129)	44.0 (243)	32.6 (180)	Yes
	No Opinion	23.2 (63)	53.9 (146)	22.9 (62)	
	Oppose	25.6 (99)	28.9 (112)	45.5 (176)	
Gender	Male	22.5 (122)	38.9 (211)	38.6 (209)	Yes
	Female	25.7 (168)	43.9 (287)	30.4 (199)	
Own radar detector	Yes	14.5 (24)	36.7 (61)	48.8 (81)	Yes
	No	25.5 (262)	42.4 (435)	32.1 (330)	
Received warning letter	Observed, no letter	25.6 (11)	34.9 (15)	39.5 (17)	No
	Received letter	14.3 (6)	30.9 (13)	54.8 (23)	
	General Population	24.4 (274)	42.0 (473)	33.6 (378)	
Self-reported number of tickets in past 2 years	One	19.3 (39)	37.1 (75)	43.6 (88)	Yes
	More than one	13.8 (9)	44.6 (29)	41.5 (27)	
	None	25.6 (239)	42.3 (395)	32.0 (299)	

For Heavy Trucks. The mean response for this item was 3.4 (SD=2.4). Responses for this item analyzed by responses to selected second items are detailed in Table 21. The first entry in this table is the response to the item without considering any second item.

The results presented in Table 21 show that nearly one-half (49.5 percent) of respondents strongly favored the use of ASEDs to issue speeding tickets to heavy trucks. There were no statistically significant differences in opinions on using ASEDs for heavy trucks based on whether respondents knew about the ASED pilot program, had seen the ASED unit, or whether the respondents were from the general population or were observed speeding or had received a warning letter. This last relationship was also examined by comparing responses from only the group observed speeding but not receiving a warning letter with responses from those who received a warning letter. This analysis also found no statistically significant relationship.

Bivariate analyses showed a significant relationship between opinions about using ASEDs to issue speeding tickets for heavy trucks and opinions about issuing a fine-only sanction on offenders. Examination of these data shows that opinions about the use of ASEDs for heavy trucks generally followed opinions on the fine-only sanction. That is, 61.1 percent of respondents who favored the fine-only sanction favored the use of ASEDs for heavy trucks; a majority of persons who had no opinion on the sanction issue also favored the use of ASEDs (52.3 percent); but only 34.4 percent of persons who opposed the sanction tended not to favor the use of ASEDs to issue speeding tickets for heavy trucks. This general pattern also held true for the fine-and-points sanction. However, the relationship changed slightly for the warning-only sanction. Nearly one-half of all respondents favored ASED use for heavy trucks regardless of their opinion of the use of warning-only sanctions.

Women were more likely to favor the use of ASEDs for heavy trucks than men, but just slightly. Respondents who reported owning a radar detector were more likely to oppose ASED use for heavy trucks than those who reported not owning a radar detector (nonowners were more likely to favor ASED use than radar detector owners).

Respondents who reported having received one or more tickets in the past two years were more likely to report that they oppose using ASEDs for heavy trucks than those who reported receiving no tickets. In addition, persons reporting receiving no tickets were more likely to favor the use of ASEDs for heavy trucks than those who reported receiving one or more tickets.

We also examined point-biserial correlations between favor/oppose responses to this item and other items with traditional metric responses. We found that respondents who favored ASED use for heavy trucks believed speeders were more likely to be involved in crashes ($r=.32$), believed there were not enough police patrolling the roads to enforce speed limits ($r=-.35$), believed the number of deaths and injuries that result from traffic crashes each year is unacceptable ($r=-.23$), received fewer tickets in the prior two years ($r=.10$), and were generally older ($r=-.23$) than respondents who opposed ASED use for heavy trucks (all correlations had a $p<.01$). While statistically significant, most of these correlations are small; however, they do show important relationships that exist between attitudes toward ASED implementation and general traffic safety attitudes.

Table 21 Do you favor or oppose the use of ASEDs to issue speeding tickets <i>For Heavy Trucks?</i> Results Segregated by Response to Another Item					
Other Item	Response on Other Item	Favor (%) (N)	No Opinion (%) (N)	Oppose (%) (N)	Statistically Significant
		49.5 (599)	25.9 (313)	24.6 (298)	N/A
Knew about pilot program	Yes	50.1 (287)	25.1 (144)	24.8 (142)	No
	No	49.0 (310)	26.7 (169)	24.2 (153)	
Had seen ASED unit	Yes	49.7 (100)	23.9 (48)	26.4 (53)	No
	No	49.4 (496)	26.3 (264)	24.3 (244)	
Favor or oppose fine only	Favor	61.1 (302)	27.9 (138)	10.9 (54)	Yes
	No Opinion	52.3 (148)	38.2 (108)	9.5 (27)	
	Oppose	34.4 (149)	15.5 (67)	50.1 (217)	
Favor or oppose fine and points	Favor	75.2 (236)	19.4 (61)	5.4 (17)	Yes
	No Opinion	52.3 (149)	42.1 (120)	5.6 (16)	
	Oppose	35.0 (214)	21.6 (132)	43.4 (265)	
Favor or oppose warning only	Favor	52.5 (290)	27.0 (149)	20.5 (113)	Yes
	No Opinion	48.7 (132)	37.3 (101)	14.0 (38)	
	Oppose	45.7 (177)	16.3 (63)	38.0 (147)	
Gender	Male	47.2 (256)	24.3 (132)	28.4 (154)	Yes
	Female	51.8 (339)	27.4 (179)	20.8 (136)	
Own radar detector	Yes	36.1 (60)	29.5 (49)	34.3 (57)	Yes
	No	51.6 (530)	25.4 (261)	23.0 (236)	
Received warning letter	Observed, no letter	41.9 (18)	27.9 (12)	30.2 (13)	No
	Received letter	28.6 (12)	33.3 (14)	38.1 (16)	
	General Population	50.6 (569)	25.5 (287)	23.9 (269)	
Self-reported number of tickets in past 2 years	One	43.1 (87)	40.0 (50)	51.7 (65)	Yes
	More than one	40.0 (26)	27.7 (18)	32.3 (21)	
	None	51.7 (482)	26.0 (243)	22.3 (208)	

In Construction Zones. The mean response for this item was 3.4 (SD=2.4). Responses for this item analyzed by responses to selected second items are detailed in Table 22. The first entry in this table is the response to the item without considering any second item.

The results presented in Table 22 show that nearly one-half (49.3 percent) of respondents strongly favored the use of ASEDs to issue speeding tickets in construction zones. There were no statistically significant differences in opinions on using ASEDs in construction zones based on whether respondents knew about the ASED pilot program, had seen the ASED unit, or whether the respondents were from the general population or were observed speeding or had received a warning letter. This last relationship was also examined by comparing responses from only the group observed speeding but not receiving a warning letter with responses from those who received a warning letter. This analysis also found no statistically significant relationship.

Bivariate analyses showed a significant relationship between opinions about using ASEDs to issue speeding tickets in construction zones and opinions about issuing a fine-only sanction on offenders. Examination of these data shows that opinions about the use of ASEDs in construction zones generally followed opinions on the fine-only sanction. That is, 62.3 percent of respondents who favored the fine-only sanction favor the use of ASEDs in construction zones; a majority of persons who had no opinion on the sanction issue also favored the use of ASEDs (53.7 percent), but only 34.5 percent of persons who opposed the sanction tended not to favor the use of ASEDs to issue speeding tickets in construction zones. This general pattern also held true for the fine-and-points sanction. However, the relationship changed slightly for the warning-only sanction. Nearly one-half of all respondents favored ASED use in construction zones regardless of their opinion of the use of warning-only sanctions.

Women were more likely to favor the use of ASEDs in construction zones than men, but just slightly. Respondents who reported owning a radar detector were more likely to oppose ASED use in construction zones than those who reported not owning a radar detector (nonowners were more likely to favor ASED use than radar detector owners).

Respondents who reported having received one or more tickets in the past two years were more likely to report that they oppose using ASEDs in construction zones than those who reported receiving no tickets. In addition, persons reporting receiving no tickets were more likely to favor the use of ASEDs in construction zones than those who reported receiving one or more tickets.

We also examined point-biserial correlations between favor/oppose responses to this item and other items with traditional metric responses. We found that respondents who favored ASED use in construction zones believed speeders were more likely to be involved in crashes ($r=.28$), believed there were not enough police patrolling the roads to enforce speed limits ($r=-.35$), believed the number of deaths and injuries that result from traffic crashes each year is unacceptable ($r=-.25$), received fewer tickets in the prior two years ($r=.09$), and were generally older ($r=-.19$) than respondents who opposed ASED use in construction zones (all correlations had a $p<.01$). While statistically significant, most of these correlations are small; however, they do show important relationships that exist between attitudes toward ASED implementation and general traffic safety attitudes.

Table 22 Do you favor or oppose the use of ASEDs to issue speeding tickets <i>In Construction Zones?</i> Results Segregated by Response to Another Item					
Other Item	Response on Other Item	Favor (%) (N)	No Opinion (%) (N)	Oppose (%) (N)	Statistically Significant
		49.3 (597)	25.7 (311)	25.0 (302)	N/A
Knew about pilot program	Yes	51.1 (293)	25.0 (143)	23.9 (131)	No
	No	48.1 (304)	26.4 (167)	25.5 (161)	
Had seen ASED unit	Yes	54.2 (109)	21.4 (43)	24.4 (49)	No
	No	48.2 (484)	26.7 (268)	25.1 (252)	
Favor or oppose fine only	Favor	62.3 (308)	25.5 (126)	12.1 (60)	Yes
	No Opinion	53.7 (152)	36.8 (104)	9.5 (27)	
	Oppose	31.6 (137)	18.7 (81)	49.6 (215)	
Favor or oppose fine and points	Favor	71.3 (224)	21.3 (67)	7.3 (23)	Yes
	No Opinion	56.8 (162)	37.5 (107)	5.6 (16)	
	Oppose	34.5 (211)	22.4 (137)	43.0 (263)	
Favor or oppose warning only	Favor	50.2 (277)	29.7 (164)	20.1 (111)	Yes
	No Opinion	54.6 (148)	30.3 (82)	15.1 (41)	
	Oppose	44.4 (172)	16.8 (65)	38.8 (150)	
Gender	Male	48.1 (261)	23.4 (127)	28.4 (154)	Yes
	Female	50.8 (332)	27.5 (180)	21.7 (142)	
Own radar detector	Yes	39.2 (65)	27.1 (45)	33.7 (56)	Yes
	No	50.8 (522)	25.8 (265)	23.4 (240)	
Received warning letter	Observed, no letter	41.9 (18)	30.2 (13)	27.9 (12)	No
	Received letter	40.5 (17)	26.2 (11)	33.3 (14)	
	General Population	50.0 (562)	25.5 (287)	24.5 (276)	
Self-reported number of tickets in past 2 years	One	42.6 (86)	26.2 (53)	31.2 (63)	Yes
	More than one	44.6 (29)	20.0 (13)	35.4 (23)	
	None	51.1 (477)	26.1 (244)	22.7 (212)	

Where Traffic Enforcement is Dangerous for Police Officers. The mean response for this item was 3.2 (SD=2.3). Responses for this item analyzed by responses to selected second items are detailed in Table 23. The first entry in this table is the response to the item without considering any second item.

The results presented in Table 23 show that over one-half (52.2 percent) of respondents strongly favored the use of ASEDs to issue speeding tickets where traffic enforcement is dangerous for police. There were no statistically significant differences in opinions on using ASEDs where traffic enforcement is dangerous for police based on whether respondents knew about the ASED pilot program or had seen the ASED unit.

Bivariate analyses showed a significant relationship between opinions about using ASEDs to issue speeding tickets where traffic enforcement is dangerous for police and opinions about issuing a fine-only sanction on offenders. Examination of these data shows that opinions about the use of ASEDs where traffic enforcement is dangerous for police generally followed opinions on the fine-only sanction. That is, 65.6 percent of respondents who favored the fine-only sanction favor the use of ASEDs where traffic enforcement is dangerous for police; a majority of persons who had no opinion on the sanction issue also favored the use of ASEDs (56.2 percent); but only 34.4 percent of persons who opposed the sanction tended not to favor the use of ASEDs to issue speeding tickets where traffic enforcement is dangerous for police. This pattern also held true for the fine-and-points sanction. However, the relationship changed slightly for the warning-only sanction. Nearly one-half of all respondents favored ASED use where traffic enforcement is dangerous for police regardless of their opinion of the use of warning-only sanctions.

Women were more likely to favor the use of ASEDs where traffic enforcement is dangerous for police than men. Respondents who reported owning a radar detector were more likely to oppose ASED use where traffic enforcement is dangerous for police than those who reported not owning a radar detector (nonowners were more likely to favor ASED use than radar detector owners).

Over one-half of respondents from the general population and those who were observed to be speeding, but received no warning letter favored the use of ASEDs where enforcement is dangerous for police. However, only one-third of respondents who received a warning letter favored ASED use in this situation. When examined without the general population group, we found no statistically significant relationship between responses of speeders who did and did not

receive a warning letter. Respondents who reported having received one or more tickets in the past two years were more likely to report that they oppose using ASEDs where traffic enforcement is dangerous for police than those who reported receiving no tickets. In addition, persons reporting receiving no tickets were more likely to favor the use of ASEDs where traffic enforcement is dangerous for police than those who reported receiving one or more tickets.

We also examined point-biserial correlations between favor/oppose responses to this item and other items with traditional metric responses. We found that respondents who favored ASED use where traffic enforcement is dangerous for police believed speeders were more likely to be involved in crashes ($r=.36$), believed there were not enough police patrolling the roads to enforce speed limits ($r=-.37$), believed the number of deaths and injuries that result from traffic crashes each year is unacceptable ($r=-.22$), received fewer tickets in the prior two years ($r=.12$), and were generally older ($r=-.16$) than respondents who opposed ASED use where traffic enforcement is dangerous for police (all correlations had a $p<.01$). While statistically significant, most of these correlations are small. However, they do show important relationships that exist between attitudes toward ASED implementation and general traffic safety attitudes.

Table 23					
Do you favor or oppose the use of ASEDs to issue speeding tickets <i>Where traffic enforcement is Dangerous for Police Officers?</i> Results Segregated by Response to Another Item					
Other Item	Response on Other Item	Favor (%) (N)	No Opinion (%) (N)	Oppose (%) (N)	Statistically Significant
		52.2 (632)	24.3 (294)	23.5 (284)	N/A
Knew about pilot program	Yes	51.3 (294)	25.1 (144)	23.6 (135)	No
	No	53.3 (337)	23.6 (149)	23.1 (146)	
Had seen ASED unit	Yes	49.7 (100)	27.9 (56)	22.4 (45)	No
	No	52.7 (529)	23.5 (236)	23.8 (239)	
Favor or oppose fine only	Favor	65.6 (324)	25.7 (127)	8.7 (43)	Yes
	No Opinion	56.2 (159)	35.0 (99)	8.8 (25)	
	Oppose	34.4 (149)	15.7 (68)	50.0 (216)	
Favor or oppose fine and points	Favor	79.3 (249)	15.0 (47)	5.7 (18)	Yes
	No Opinion	62.8 (179)	32.3 (92)	4.9 (14)	
	Oppose	33.4 (204)	25.4 (155)	41.2 (252)	
Favor or oppose warning only	Favor	52.5 (290)	29.0 (160)	18.5 (102)	Yes
	No Opinion	55.0 (149)	32.8 (89)	12.2 (33)	
	Oppose	49.9 (193)	11.6 (45)	38.5 (149)	
Gender	Male	46.1 (250)	25.6 (139)	28.2 (153)	Yes
	Female	57.6 (377)	23.5 (154)	18.8 (123)	
Own radar detector	Yes	34.3 (57)	28.3 (47)	37.3 (62)	Yes
	No	55.3 (568)	23.6 (242)	21.1 (217)	
Received warning letter	Observed, no letter	55.8 (24)	13.9 (6)	30.2 (13)	Yes
	Received letter	33.3 (14)	28.6 (12)	38.1 (16)	
	General Population	52.8 (594)	24.5 (276)	22.7 (255)	
Self-reported number of tickets in past 2 years	One	47.0 (95)	23.8 (48)	29.2 (59)	Yes
	More than one	40.0 (26)	24.6 (16)	35.4 (23)	
	None	54.2 (506)	24.5 (229)	21.2 (198)	

Where Traffic Enforcement is Difficult for Police Officers. The mean response for this item was 3.6 (SD=2.3). Responses for this item analyzed by responses to selected second items are detailed in Table 24. The first entry in this table is the response to the item without considering any second item.

The results presented in Table 24 show that a plurality (43.1 percent) of respondents strongly favored the use of ASEDs to issue speeding tickets where traffic enforcement is difficult for police. This is nearly 10 percentage points fewer than reported that they favored ASED use where enforcement is dangerous for police. It would appear that people are more concerned for officer safety than the ease with which an officer can do traffic enforcement. There were no statistically significant differences in opinions on using ASEDs where traffic enforcement is difficult for police based on whether respondents knew about the ASED pilot program or had seen the ASED unit.

Bivariate analyses showed a significant relationship between opinions about using ASEDs to issue speeding tickets where traffic enforcement is difficult for police and opinions about issuing a fine-only sanction on offenders. Examination of these data shows that opinions about the use of ASEDs where traffic enforcement is difficult for police generally followed opinions on the fine-only sanction. That is, 54.9 percent of respondents who favored the fine-only sanction favored the use of ASEDs where traffic enforcement is difficult for police; a slight plurality of persons who had no opinion on the sanction issue also favored the use of ASEDs (45.2 percent); but only 28.4 percent of persons who opposed the sanction tended not to favor the use of ASEDs to issue speeding tickets where traffic enforcement is difficult for police. This pattern also held true for the fine-and-points sanction. However, the pattern changed slightly for the warning-only sanction. A plurality (slightly more than 40 percent) of all respondents favored ASED use where traffic enforcement is difficult for police regardless of their opinion of the use of warning-only sanctions.

Women were more likely to favor the use of ASEDs where traffic enforcement is difficult for police than men. Respondents who reported owning a radar detector were more likely to oppose ASED use where traffic enforcement is difficult for police than those who reported not owning a radar detector (nonowners were more likely to favor ASED use than radar detector owners).

Favorable opinions about ASED use where traffic enforcement is difficult for police gradually declined from 44.0 percent for the general population to 39.5 percent for persons observed speeding but not notified with a warning letter to 23.8 percent for speeders who received a warning letter. When examined without the general population group, we found no

statistically significant relationship between responses of speeders who did and did not receive a warning letter. Respondents who reported having received one or more tickets in the past two years were more likely to report that they oppose using ASEDs where traffic enforcement is difficult for police than those who reported receiving no tickets. In addition, persons reporting receiving no tickets were more likely to favor the use of ASEDs where traffic enforcement is difficult for police than those who reported receiving one or more tickets.

We also examined point-biserial correlations between favor/oppose responses to this item and other items with traditional metric responses. We found that respondents who favored ASED use where traffic enforcement is difficult for police believed speeders were more likely to be involved in crashes ($r=.41$), believed there were not enough police patrolling the roads to enforce speed limits ($r=-.42$), believed the number of deaths and injuries that result from traffic crashes each year is unacceptable ($r=-.27$), received fewer tickets in the prior two years ($r=.13$), and were generally older ($r=-.22$) than respondents who opposed ASED use where traffic enforcement is difficult for police (all correlations had a $p<.01$). While statistically significant, most of these correlations are small; however, they do show important relationships that exist between attitudes toward ASED implementation and general traffic safety attitudes.

Table 24					
Do you favor or oppose the use of ASEDs to issue speeding tickets Where Traffic Enforcement is Difficult for Police Officers? Results Segregated by Response to Another Item					
Other Item	Response on Other Item	Favor (%) (N)	No Opinion (%) (N)	Oppose (%) (N)	Statistically Significant
		43.1 (522)	29.9 (362)	26.9 (326)	N/A
Knew about pilot program	Yes	42.6 (244)	30.9 (177)	26.5 (152)	No
	No	43.8 (277)	29.1 (184)	27.1 (171)	
Had seen ASED unit	Yes	42.8 (86)	31.3 (63)	25.9 (52)	No
	No	43.2 (434)	29.6 (297)	27.2 (273)	
Favor or oppose fine only	Favor	54.9 (271)	33.2 (164)	11.9 (59)	Yes
	No Opinion	45.2 (128)	41.7 (118)	13.1 (37)	
	Oppose	28.4 (123)	18.5 (80)	53.1 (230)	
Favor or oppose fine and points	Favor	74.8 (235)	19.7 (62)	5.4 (17)	Yes
	No Opinion	51.2 (146)	42.1 (120)	6.7 (19)	
	Oppose	23.1 (141)	29.5 (180)	47.5 (290)	
Favor or oppose warning only	Favor	41.7 (230)	34.2 (189)	24.1 (133)	Yes
	No Opinion	43.9 (119)	41.3 (112)	14.8 (40)	
	Oppose	44.7 (173)	15.8 (61)	39.5 (153)	
Gender	Male	37.1 (201)	29.5 (160)	33.4 (181)	Yes
	Female	48.5 (317)	30.6 (200)	20.9 (137)	
Own radar detector	Yes	25.3 (42)	31.3 (52)	43.4 (72)	Yes
	No	46.1 (473)	29.7 (305)	24.2 (249)	
Received warning letter	Observed, no letter	39.5 (17)	23.3 (10)	37.2 (16)	Yes
	Received letter	23.8 (10)	33.3 (14)	42.9 (18)	
	General Population	44.0 (495)	30.0 (338)	26.0 (292)	
Self-reported number of tickets in past 2 years	One	36.1 (73)	31.2 (63)	32.7 (66)	Yes
	More than one	27.7 (18)	33.8 (22)	38.5 (25)	
	None	45.5 (425)	29.7 (277)	24.8 (231)	

On Freeways. The mean response for this item was 4.4 (SD=2.4). Responses for this item analyzed by responses to selected second items are detailed in Table 25. The first entry in this table is the response to the item without considering any second item.

The results presented in Table 25 show that a plurality (41.5 percent) of respondents strongly oppose the use of ASEDs to issue speeding tickets on freeways. There were no statistically significant differences in opinions on using ASEDs on freeways based on whether respondents knew about the ASED pilot program or had seen the ASED unit.

Bivariate analyses showed a significant relationship between opinions about using ASEDs to issue speeding tickets on freeways and opinions about issuing a fine-only sanction on offenders. Examination of these data shows that opinions about the use of ASEDs on freeways generally followed opinions on the fine-only sanction. That is, 38.1 percent of respondents who favored the fine-only sanction favored the use of ASEDs on freeways; a slight plurality of persons who had no opinion on the sanction issue also had no opinion on the use of ASEDs (39.6 percent); but 65.9 percent of persons who opposed the sanction opposed the use of ASEDs to issue speeding tickets on freeways. This general pattern also held true for the fine-and-points sanction; but in this case a majority of respondents who favored the fine-and-points sanction also favored ASED use on freeways (63.7 percent). However, the pattern changed for the warning-only sanction. While neither a plurality nor a majority of respondents in the subgroups favored ASED use on freeways, more respondents who opposed the warning-only sanction favored ASED use on freeways (36.4 percent) than those who favored or had no opinion about the warning-only sanction. A plurality of both respondents who favored or opposed the warning-only sanction opposed ASED use on freeways (43.3 percent and 47.3 percent respectively).

Women were more likely to favor the use of ASEDs on freeways than men, but only slightly, and less than one-third of either group favored ASED use on freeways. Respondents who reported owning a radar detector were more likely to oppose ASED use on freeways (59.0 percent) than those who reported not owning a radar detector (38.7 percent). Nonowners were more likely to favor ASED use (31.7 percent) than radar detector owners (19.9 percent).

Favorable opinions about ASED use on freeways declined from 31.4 percent for the general population to 16.3 percent for persons observed speeding but not notified with a warning letter to 11.9 percent for speeders who received a warning letter. When examined without the general population group, we found no statistically significant relationship between responses of speeders

who did and did not receive a warning letter. Respondents who reported having received one or more tickets in the past two years were more likely to report that they oppose using ASEDs on freeways than those who reported receiving no tickets. In addition, persons reporting receiving no tickets were more likely to favor the use of ASEDs on freeways than those who reported receiving one or more tickets.

We also examined point-biserial correlations between favor/oppose responses to this item and other items with traditional metric responses. We found that respondents who favored ASED use on freeways believed speeders were more likely to be involved in crashes ($r=.44$), believed there were not enough police patrolling the roads to enforce speed limits ($r=-.47$), believed the number of deaths and injuries that result from traffic crashes each year is unacceptable ($r=-.25$), received fewer tickets in the prior two years ($r=.16$), and were generally older ($r=-.29$) than respondents who opposed ASED use on freeways (all correlations had a $p<.01$). While statistically significant, most of these correlations are small; however, they do show important relationships that exist between attitudes toward ASED implementation and general traffic safety attitudes.

Table 25 Do you favor or oppose the use of ASEDs to issue speeding tickets <i>On Freeways?</i> Results Segregated by Response to Another Item					
Other Item	Response on Other Item	Favor (%) (N)	No Opinion (%) (N)	Oppose (%) (N)	Statistically Significant
		30.2 (365)	28.3 (343)	41.5 (502)	N/A
Knew about pilot program	Yes	30.2 (173)	27.2 (156)	42.6 (244)	No
	No	30.4 (192)	29.3 (185)	40.3 (255)	
Had seen ASED unit	Yes	32.3 (65)	27.9 (56)	39.8 (80)	No
	No	29.8 (299)	28.3 (284)	41.9 (421)	
Favor or oppose fine only	Favor	38.1 (188)	34.0 (168)	27.9 (138)	Yes
	No Opinion	32.2 (91)	39.6 (112)	28.3 (80)	
	Oppose	19.9 (86)	14.5 (63)	65.6 (284)	
Favor or oppose fine and points	Favor	63.7 (200)	25.5 (80)	10.8 (34)	Yes
	No Opinion	33.0 (94)	50.5 (144)	16.5 (47)	
	Oppose	11.6 (71)	19.5 (119)	68.9 (421)	
Favor or oppose warning only	Favor	25.7 (142)	31.0 (171)	43.3 (239)	Yes
	No Opinion	30.3 (82)	40.2 (109)	29.5 (80)	
	Oppose	36.4 (141)	16.3 (63)	47.3 (183)	
Gender	Male	28.8 (156)	22.8 (124)	48.3 (262)	Yes
	Female	31.6 (207)	33.2 (217)	35.2 (230)	
Own radar detector	Yes	19.9 (33)	21.1 (35)	59.0 (98)	Yes
	No	31.7 (326)	29.6 (304)	38.7 (397)	
Received warning letter	Observed, no letter	16.3 (7)	32.6 (14)	51.2 (22)	Yes
	Received letter	11.9 (5)	21.4 (9)	66.7 (28)	
	General Population	31.4 (353)	28.4 (320)	40.2 (452)	
Self-reported number of tickets in past 2 years	One	20.3 (41)	30.2 (61)	49.5 (100)	Yes
	More than one	12.3 (8)	32.3 (21)	55.4 (36)	
	None	33.4 (312)	27.8 (259)	38.8 (362)	

In School Zones. The mean response for this item was 2.9 (SD=2.4). Responses for this item analyzed by responses to selected second items are detailed in Table 26. The first entry in this table is the response to the item without considering any second item.

The results presented in Table 26 show that a majority (59.4 percent) of respondents strongly favor the use of ASEDs to issue speeding tickets in school zones. There were no statistically significant differences in opinions on using ASEDs in school zones based on whether respondents knew about the ASED pilot program, had seen the ASED unit, or whether the respondents were from the general population or were observed speeding or had received a warning letter. This last relationship was also examined by comparing responses from only the group observed speeding but not receiving a warning letter to responses from those who received a warning letter. This analysis also found no statistically significant relationship.

Bivariate analyses showed a significant relationship between opinions about using ASEDs to issue speeding tickets in school zones and opinions about issuing a fine-only sanction on offenders. Examination of these data shows that 74.3 percent of respondents who favored the fine-only sanction favored the use of ASEDs in school zones, nearly two-thirds of persons who had no opinion on the sanction issue also favored this use of ASEDs (64.7 percent), but only 39.0 percent of persons who opposed the sanction favored the use of ASEDs to issue speeding tickets in school zones. This pattern also held true for the fine-and-points sanction. However, the pattern changed for the warning-only sanction. A majority of each of the warning-only sanction subgroups favored ASED use in school zones.

Women were more likely to favor the use of ASEDs in school zones than men. More than one-half of both gender groups favored ASED use in school zones. Half of the respondents who reported owning a radar detector and over 60 percent of those who reported not owning a radar detector reported they favor ASED use in school zones.

Respondents who reported having received one or more tickets in the past two years were more likely to report that they oppose using ASEDs in school zones than those who reported receiving no tickets (but less than one-third of any of these subgroups reported strong opposition). In addition, persons reporting receiving no tickets were more likely to favor the use of ASEDs in school zones than those who reported receiving one or more tickets (but about one-half of each of the subgroups reported strongly favoring the use of ASEDs in this situation).

We also examined point-biserial correlations between favor/oppose responses to this item and other items with traditional metric responses. We found that respondents who favored ASED use in school zones believed speeders were more likely to be involved in crashes ($r=.27$), believed there were not enough police patrolling the roads to enforce speed limits ($r=-.30$), believed the number of deaths and injuries that result from traffic crashes each year is unacceptable ($r=-.20$), received fewer tickets in the prior two years ($r=.09$), and were generally older ($r=-.16$) than respondents who opposed ASED use in school zones (all correlations had a $p<.01$). While statistically significant, most of these correlations are small; however, they do show important relationships that exist between attitudes toward ASED implementation and general traffic safety attitudes.

<p align="center">Table 26 Do you favor or oppose the use of ASEDs to issue speeding tickets <i>In School Zones?</i> Results Segregated by Response to Another Item</p>					
Other Item	Response on Other Item	Favor (%) (N)	No Opinion (%) (N)	Oppose (%) (N)	Statistically Significant
		59.4 (719)	18.3 (222)	22.2 (269)	N/A
Knew about pilot program	Yes	59.9 (343)	18.7 (107)	21.5 (123)	No
	No	59.3 (375)	17.9 (113)	22.8 (144)	
Had seen ASED unit	Yes	60.7 (122)	17.9 (36)	21.4 (43)	No
	No	59.3 (595)	18.3 (184)	22.4 (225)	
Favor or oppose fine only	Favor	74.3 (367)	17.2 (85)	8.5 (42)	Yes
	No Opinion	64.7 (183)	29.0 (82)	6.4 (18)	
	Oppose	39.0 (169)	12.7 (55)	48.3 (209)	
Favor or oppose fine and points	Favor	80.9 (254)	13.4 (42)	5.7 (18)	Yes
	No Opinion	68.1 (194)	26.0 (74)	6.0 (17)	
	Oppose	44.3 (271)	17.3 (106)	38.3 (234)	
Favor or oppose warning only	Favor	62.9 (347)	19.4 (107)	17.7 (98)	Yes
	No Opinion	63.8 (173)	24.7 (67)	11.4 (31)	
	Oppose	51.4 (199)	12.4 (48)	36.2 (140)	
Gender	Male	57.0 (309)	18.4 (100)	24.5 (133)	No
	Female	61.9 (405)	18.5 (121)	19.6 (128)	
Own radar detector	Yes	50.0 (83)	21.1 (35)	28.9 (48)	Yes
	No	60.9 (626)	18.0 (185)	21.0 (216)	
Received warning letter	Observed, no letter	51.2 (22)	16.3 (7)	32.6 (14)	No
	Received letter	50.0 (21)	16.7 (7)	33.3 (14)	
	General Population	60.1 (676)	18.5 (208)	21.4 (241)	
Self-reported number of tickets in past 2 years	One	52.5 (106)	20.8 (42)	26.7 (54)	Yes
	More than one	46.1 (30)	23.1 (15)	30.8 (20)	
	None	61.9 (578)	17.6 (164)	20.5 (191)	

On All Roads. The mean response for this item was 4.9 (SD=2.1). Responses for this item analyzed by responses to selected second items are detailed in Table 27. The first entry in this table is the response to the item without considering any second item.

The results presented in Table 27 show that a plurality (46.8 percent) of respondents strongly oppose the use of ASEDs to issue speeding tickets on all roads. There were no statistically significant differences in opinions on using ASEDs on all roads based on whether respondents knew about the ASED pilot program or had seen the ASED unit.

Bivariate analyses showed a significant relationship between opinions about using ASEDs to issue speeding tickets on all roads and opinions about issuing a fine-only sanction on offenders. Specifically, a plurality of respondents who favored the fine-only sanction and those who had no opinion on the sanction issue also had no opinion on the use of ASEDs (43.1 percent and 45.6 percent, respectively), and 68.4 percent of persons who opposed the sanction opposed the use of ASEDs to issue speeding tickets on all roads. This general pattern also held true for the fine-and-points sanction, but a plurality of respondents who favored the fine-and-points sanction also favored ASED use on all roads (44.3 percent). However, the pattern changed for the warning-only sanction. While neither a plurality nor a majority of respondents in the subgroups favored ASED use on all roads, more respondents who opposed the warning-only sanction favored ASED use on all roads (20.2 percent) than those who favored or had no opinion about the warning-only sanction. A near majority or small majority of both respondents who favored or opposed the warning-only sanction opposed ASED use on all roads (49.1 percent and 51.4 percent, respectively).

Women were more likely to favor the use of ASEDs on all roads than men, but only slightly, and less than 20 percent of either group favored ASED use on all roads. Respondents who reported owning a radar detector were more likely to oppose ASED use on all roads (61.4 percent) than those who reported not owning a radar detector (44.6 percent). Nonowners were more likely to favor ASED use (19.3 percent) than radar detector owners (9.0 percent).

Favorable opinions about ASED use on all roads declined from 18.6 percent for the general population to 9.3 percent for persons observed speeding but not notified with a warning letter and 9.5 percent for speeders who received a warning letter. When examined without the general population group, we found no statistically significant relationship between responses of speeders who did and did not receive a warning letter. Respondents who reported having received more

than one ticket in the past two years were more likely to report that they oppose using ASEDs on all roads than those who reported receiving only one or no tickets. In addition, persons reporting that they received only one or no tickets were more likely to favor the use of ASEDs on all roads than those who reported receiving more than one ticket.

We also examined point-biserial correlations between favor/oppose responses to this item and other items with traditional metric responses. We found that respondents who favored ASED use on all roads believed speeders were more likely to be involved in crashes ($r=.37$), believed there were not enough police patrolling the roads to enforce speed limits ($r=-.40$), believed the number of deaths and injuries that result from traffic crashes each year is unacceptable ($r=-.24$), received fewer tickets in the prior two years ($r=.14$), and were generally older ($r=-.27$) than respondents who opposed ASED use on all roads (all correlations had a $p<.01$). While statistically significant, most of these correlations are small. However, they do show important relationships that exist between attitudes toward ASED implementation and general traffic safety attitudes.

Table 27 Do you favor or oppose the use of ASEDs to issue speeding tickets <i>On All Roads?</i> Results Segregated by Response to Another Item					
Other Item	Response on Other Item	Favor (%) (N)	No Opinion (%) (N)	Oppose (%) (N)	Statistically Significant
		17.9 (217)	35.3 (427)	46.8 (566)	N/A
Knew about pilot program	Yes	17.4 (100)	33.5 (192)	49.0 (281)	No
	No	18.5 (117)	37.0 (234)	44.5 (281)	
Had seen ASED unit	Yes	19.9 (40)	30.8 (62)	49.2 (99)	No
	No	17.6 (177)	36.2 (363)	46.2 (464)	
Favor or oppose fine only	Favor	22.1 (109)	43.1 (213)	34.8 (172)	Yes
	No Opinion	19.8 (56)	45.6 (129)	34.6 (98)	
	Oppose	12.0 (52)	19.6 (85)	68.4 (296)	
Favor or oppose fine and points	Favor	44.3 (139)	37.6 (118)	18.1 (57)	Yes
	No Opinion	15.4 (44)	59.3 (169)	25.3 (72)	
	Oppose	5.6 (34)	22.9 (140)	71.5 (437)	
Favor or oppose warning only	Favor	17.4 (96)	33.5 (185)	49.1 (271)	Yes
	No Opinion	15.9 (43)	48.7 (132)	35.4 (96)	
	Oppose	20.2 (78)	28.4 (110)	51.4 (199)	
Gender	Male	16.2 (88)	31.7 (172)	52.0 (282)	Yes
	Female	19.6 (128)	38.5 (252)	41.9 (274)	
Own radar detector	Yes	9.0 (15)	29.5 (49)	61.4 (102)	Yes
	No	19.3 (198)	36.1 (371)	44.6 (458)	
Received warning letter	Observed, no letter	9.3 (4)	30.2 (13)	60.5 (26)	Yes
	Received letter	9.5 (4)	19.0 (8)	71.4 (30)	
	General Population	18.6 (209)	36.1 (406)	45.3 (510)	
Self-reported number of tickets in past 2 years	One	13.4 (27)	30.2 (61)	56.4 (114)	Yes
	More than one	6.1 (4)	29.2 (19)	64.6 (42)	
	None	19.6 (183)	37.0 (345)	43.4 (405)	

General Conclusions on ASED Use to Issue Speeding Ticket Opinions. We found that opinions about ASED use to issue speeding tickets varied considerably by the situation in which the ASED was proposed to be used. While mean responses between items are not statistically significant, we found considerable important variability when responses were divided into the "Favor," "No Opinion," and "Oppose" subgroups. Recall that these subgroups were created to reflect strong favor/oppose opinions with a broad "No Opinion" group. Based on the "Favor" response the situations were ranked as follows (highest favorable rating to lowest favorable rating):

1.	In School Zones	59.4% favor
2.	Where Traffic Enforcement is Dangerous for Police Officers	52.2% favor
3.	For Heavy Trucks	49.5% favor
4.	In Construction Zones	49.3% favor
5.	Where Traffic Enforcement is Difficult for Police Officers	43.1% favor
6.	On Freeways	30.2% favor
7.	On Bridges	24.0% favor
8.	On All Roads	17.9% favor

Based on the "Oppose" response the situations were ranked as follows (highest opposition rating to lowest opposition rating):

1.	On All Roads	46.8% oppose
2.	On Freeways	41.5% oppose
3.	On Bridges	34.5% oppose
4.	Where Traffic Enforcement is Difficult for Police Officers	26.9% oppose
5.	In Construction Zones	25.0% oppose
6.	For Heavy Trucks	24.6% oppose
7.	Where Traffic Enforcement is Dangerous for Police Officers	23.5% oppose
8.	In School Zones	22.2% oppose

Although there were some differences between ASED use items, analyses of these items by relevant second items revealed a good deal of consistency. There were no differences in responses by whether respondents knew about the ASED pilot program or had seen an ASED unit. Much of this may be explained by the relative lack of awareness that existed about the ASED program and the unit placements.

In general, opinions about ASED use followed opinions about sanctions (perhaps indicating some response bias). Opinions about ASED use were less strongly held (i.e., more "no Opinion" responses) for the warning-only sanction than for sanctions with more "teeth" (i.e., fine-only and

fine-and-points). Women held more favorable opinions about ASED use than men. Radar detector owners were in greater opposition to ASED use than nonowners. Speeders (who received or did not receive a warning letter) were in greater opposition than the general population sample, and respondents who reported having no tickets were generally more favorable than those reporting getting one or more tickets in the past two years. These results show that, in general, people who oppose ASED use are those who may be at greater risk for speeding and subsequently getting a ticket. In addition, respondents who think that speeders are at greater crash risk were more favorable about ASED use. It may be valuable as part of an ASED PI&E program to publicize crash data that clearly show the crash risk associated with speeding. It may also be valuable to increase the public's understanding of the societal costs of crashes and to increase the public's view that traffic crash injuries and death are an unacceptable cost of doing business. Greater knowledge of the enormous toll exacted by traffic crashes (especially those involving excessive speed) may be a useful component to an ASED PI&E program.

What Type of ASED Photographs Do People Prefer?

Respondents were asked, "Do you favor or oppose the following types of photographs that might be taken by ASEDs?" The photograph types they were asked about (using a 7-point scale, 1="Favor," 4="Neither favor nor oppose," and 7="Oppose") were "Rear license plate only," "Both rear license plate and front of vehicle showing only the driver," and "Both rear license plate and front of vehicle showing all vehicle occupants." Responses to each of these items can be found in Table 28.

Item	Mean	Standard Deviation	Favor % (N)	No Opinion % (N)	Oppose % (N)
Rear license plate only	4.7	2.3	16.6 (193)	43.1 (501)	40.3 (468)
Both rear license plate and front of vehicle showing only the driver	4.2	2.4	23.4 (273)	42.6 (499)	34.0 (397)
Both rear license plate and front of vehicle showing all vehicle occupants	4.8	2.2	15.7 (184)	41.5 (488)	42.8 (502)

As can be seen in Table 28, there is little favorable opinion and considerable negative opinion about ASED photographs. On the other hand, when the mean responses (centered

around the center anchor, "*Neither favor no oppose*") and the categorical responses are examined, we see that there are a lot of "No Opinion" responses. While people seem to be generally against the photographs, the majority do not seem to hold these views strongly. We should note, however, that there is a rather large group of people who strongly oppose ASED photographs.

To learn why people hold their opinions about ASED photographs, we asked two additional questions to determine respondent opinions about whether they think ASED photographs are an invasion of privacy. The first queried about a photograph of the rear plate only, the second queried about photographs of both the rear plate and driver (see items in actual survey in Appendix D). Each of these items had three anchors: 1="A *much greater invasion of privacy*," 4="No different than being pulled over at roadside," 7="A *much lower invasion of privacy*." Over two-thirds of respondents who believe that rear plate photos are a greater invasion of privacy opposed rear plate photos (68.5 percent); conversely, over four-fifths of respondents who believe rear plate photos were a lower invasion of privacy favored rear plate photos (82.1 percent). When examining front and rear photograph opinions, we found greater opposition among persons who view these two photographs as an invasion of privacy (93.1 percent who view the front and rear photos as a greater invasion of privacy oppose the photos). We also found increased opposition to front and rear photos from those who reported the front and rear photos are a lower invasion of privacy (only 55.1 percent of this group favor front and rear photos). These results suggest that much of the opposition to the photographs revolves around the issue of privacy. The privacy issue will be examined in greater detail later in the report.

Interestingly, there was no difference in opinions about photographs when we examined the two groups who were observed speeding (i.e., those who received the warning letter vs. those who did not). However, both of the speeding groups were more opposed to the photographs than the general population sample. We should note that a majority of all these groups opposed each of the photograph types proposed.

What Type Sanction Based on ASED Evidence Do People Prefer?

Respondents were asked, "*Do you favor or oppose the following types of enforcement actions that might be taken based on evidence of speed limit violation provided by ASEDs:*" The sanction types they were asked about (using a 7-point scale, 1="Favor," 4="Neither favor nor oppose," and 7="Oppose") were "*Fine only -- no points*," "*Both fine and points like with other traffic*

violations," and *"Warning letter only – no fine or points."* Responses to each of these items can be found in Table 29.

Item	Mean	Standard Deviation	Favor % (N)	No Opinion % (N)	Oppose % (N)
Fine only – no points	4.0	2.5	28.5 (326)	38.0 (435)	33.5 (384)
Both fine and points like with other traffic violations	4.9	2.3	16.6 (192)	36.6 (422)	46.8 (541)
Warning letter only -- no fine or points	3.8	2.5	35.4 (404)	34.1 (384)	30.9 (352)

As can be seen in Table 29, there is mixed opinion about ASED sanctions. The fine-only and warning-only sanctions were perceived most positively, the fine-and-points sanction was perceived most negatively. When we examined how responses to the sanction items covaried, we found the following results. The majority of respondents who opposed one sanction opposed them all with one exception. A majority of respondents who favored the warning-only sanction opposed the fine-and-points sanction. Those respondents who opposed the fine-and-points sanction may view the warning-only sanction as a reasonable alternative. Respondents with no opinion on one sanction were more likely to have no opinion or favor another sanction than oppose it. It seems clear that, in general, people were more likely to favor weaker ASED violation sanctions and oppose stronger sanctions.

Many people added modifications to the response possibilities for these items in unsolicited written comments that are included in Appendix E. Most of the comments suggested a sliding sanction scale. The sanction would become more severe as the number of violations increased. One common example is that a driver would receive a warning letter only for the first offense, a fine only for the second offense, and a fine-and-points sanction for the third offense. These various alternatives (suggested by respondents) may be part of the reason that the responses itemized above are so evenly split. The issue of public opinions related to ASED sanctions is probably more complex than the items were able to account for.

Not surprisingly, respondents who favored ASED use (in general) also favored the proposed sanctions, while those who opposed ASED use opposed the sanctions. A majority of respondents

who reported that they think ASEDs are less fair than police officers opposed the fine-only and fine-and-point sanctions, but favored the warning-only sanction. The majority of respondents who reported they believe ASEDs are more fair than police officers favored each of the proposed sanctions at about the same level. A similar set of findings was found when responses were examined by (1) whether respondents reported they think ASEDs measure speeds more or less accurately than current speed radar technologies and (2) whether respondents reported they think ASEDs identify the speeding vehicle more or less accurately than a police officer. That is, a majority of respondents who reported that they think ASEDs are less accurate than radar and police officers opposed the fine-and-point sanction, but favored the fine-only and warning-only sanctions. The majority of respondents who reported that they believe ASEDs are more accurate than radar and police officers favored each of the proposed sanctions at about the same level.

Are Rear Plate Photos an Invasion of Privacy?

Respondents were asked, "*Some have suggested that the use of ASEDs are an invasion of privacy since photographs of offenders' vehicles are taken. Others believe that use of ASEDs is no more an invasion of privacy than being pulled over by an officer at the roadside. Compared to being pulled over by an officer at the roadside, would you say that having an ASED take a picture of **only** a vehicle's rear license plate was:*" The anchors for the responses were as follows: 1="A much greater invasion of privacy," 4="No different than being pulled over at roadside," 7="A much lower invasion of privacy." The mean response for this item was 4.2 (SD=2.1). This suggests that (on average) people think rear plate photographs are no different than being pulled over by a police officer. When specific response categories are examined we find that 18.8 percent of the respondents selected response category 1; 38.9 percent selected response category 4; 23.1 selected response category 7.

Are Rear Plate and Driver Photos an Invasion of Privacy?

Respondents were asked, "*Compared to being pulled over by an officer at the roadside, would you say that having an ASED take a picture of **both** a vehicle's rear license plate and of the driver was:*" The anchors for the responses were as follows: 1="A much greater invasion of privacy," 4="No different than being pulled over at roadside," 7="A much lower invasion of privacy." The mean response for this item was 3.3 (SD=1.7). This suggests that (on average) people think rear plate and driver photographs are a slightly greater invasion of privacy than being pulled over by a police officer. Notably, 86.2 percent of respondents selected responses between 1 and 4 (27.0 percent selected response category 1; 45.6 percent selected response category 4).

Are ASEDs More or Less Fair than Police?

Respondents were asked, *"Some have suggested that the use of ASEDs is not fair because use of these devices does not allow drivers to explain to an officer why they believe they were not speeding or should not receive a speeding ticket at the time of the alleged offense. Others believe that ASEDs are more fair because the device cannot be talked out of issuing a ticket to all vehicles observed travelling in excess of the preset speed for issuing a ticket. How would you rate the fairness of ASEDs with respect to how they handle who receives a speeding ticket?"* The anchors for the responses were as follows: 1=*"ASEDs are much less fair than officers,"* 4=*"ASEDs and officers are equally fair,"* 7=*"ASEDs are much more fair than officers."* The mean response for this item was 3.4 (SD=2.1). Many subjects expressed uncertainty about this item (as reported in the unsolicited notes provided with the surveys, Appendix E). In general, these "uncertain" respondents stated that they had an insufficient amount of information to base an opinion. When specific response categories are examined we find that 29.8 percent of the respondents selected response category 1; 24.3 percent selected response category 4; and only 12.9 selected response category 7. Taken as a whole, the data suggest that respondents think ASEDs are a bit less fair than officers.

Are ASEDs More or Less Accurate than Current Radar?

Respondents were asked, *"Compared to current speed radar technologies, rate how well you believe ASEDs are in accurately measuring vehicle speeds."* The anchors for the responses were as follows: 1=*"ASEDs are much less accurate,"* 4=*"ASEDs and current radar are equally accurate,"* 7=*"ASEDs are much more accurate."* The mean response for this item was 3.8 (SD=1.4). Many subjects expressed uncertainty about this item (as reported in the unsolicited notes provided with the surveys, Appendix E), and a large proportion did not respond to the item (over 20 percent (N=247) failed to respond to the item). Many people were unwilling to estimate which system was more or less accurate, and many stated that they had no factual information on which to base an opinion in their handwritten notes. When specific response categories are examined we find that 51.8 percent of the respondents selected response category 4, "equally accurate." We think the best we can state is that people are quite unsure about the way the systems being compared in this item operate. Much more PI&E is needed to inform the public about ASED operations before they are going to be able to make a rational decision about their accuracy. Without this information, they will be unable to make rational choices about ASED implementation and use.

Are ASEDs More or Less Accurate than Police Officers?

Respondents were asked, *"Compared to current manual operation of speed radar by officers, rate how well you believe ASEDs are in accurately identifying the vehicle identified by radar as the speeder."* The anchors for the responses were as follows: 1=*"ASEDs are much less accurate,"* 4=*"ASEDs and officer's judgement are equally accurate,"* 7=*"ASEDs are much more accurate."* The mean response for this item was 4.1 (SD=1.8). Many subjects expressed uncertainty about this item (as reported in the unsolicited notes provided with the surveys, Appendix E), and a large proportion did not respond to the item (nearly 20 percent (N=218) failed to respond to the item). Many people were unwilling to estimate which was more or less accurate. As was the case in the previous item, many respondents stated they had no basis on which to make an informed opinion. When specific response categories are examined we find that 12.3 of respondents selected response category 1, "ASEDs less accurate," 32.0 percent of the respondents selected response category 4, "equally accurate," and 12.8 percent selected response category 7 "ASED more accurate." We think the best we can state is that people are quite unsure about the way ASEDs operate and how police identify speeders using radar. Much more PI&E is needed to inform the public about ASED operations before they are going to be able to make a rational decision about their accuracy in identifying speeding vehicles. Without this information, they will be unable to make rational choices about ASED implementation and use.

Would People Slow Down Near ASEDs?

While the actual speed data suggest the ASED test had no effect on driver speeds near the ASEDs themselves, self-report data suggest that people may actually slow down if ASEDs are put in place and enforcement zones are clearly identified. Respondents were asked, *"Do you believe you would drive more slowly in areas where ASEDs might be in use?"* Response options were "Yes" and "No." Over two-thirds of respondents selected "Yes" (68.4 percent, N=787), and 31.6 percent selected "No" (N=364). While self-report data are suspect and not always indicative of actual behavior (and predictive self-report information is even more suspect), these results suggest that ASEDs may have a powerful influence on speeding behavior if implemented correctly and enforcement zones are clearly identified.

Is the Current Crash Death and Injury Count Acceptable?

Respondents were asked, *"How would you describe the current number of deaths and injuries that result each year from traffic crashes?"* Response anchors provided were: 1=*"Acceptable"* and 7=*"Unacceptable."* Mean response for this item was 5.8 (SD=1.6). When specific response categories are examined we find that 8.6 percent of respondents selected

response categories 1-3; 11.2 percent of respondents selected response category 4 (the unanchored center of the scale); 50.7 percent selected response category 7 "Unacceptable." While we may take some comfort that over half of the respondents selected the anchor "Unacceptable," it is disconcerting that so many selected responses at or below the midpoint of the scale. We would hypothesize that the public would express significant dismay over the death and injury toll exacted by motor vehicle crashes if these were caused by some other event or disease. Clearly the magnitude of the traffic crash problem needs to be made more salient to the general public before they will be more likely to support efforts to increase safety on the roads of the U.S.

Using Technology to Free Up Police Officers for Other Duty

We asked the following question to determine if respondents would be willing to permit the use of "proven technologies" to enforce traffic laws (in general) to free up police for other duties: *"Some suggest that tax dollars may be best utilized if trained police officers are used in crime prevention and crime solving activities when there are available proven technologies that can be used for traffic law enforcement. Others believe that all law enforcement activities (including traffic law enforcement) should be conducted by trained officers and not machines. In general, do you favor or oppose the use of proven technologies to conduct traffic law enforcement if the use of these technologies frees up police officers for other duties?"* The response anchors were 1="Favor," 4="Neither favor nor oppose," and 7="Oppose." Mean response for this item was 3.6 (SD=2.2). When specific response categories are examined we find that 24.8 percent of respondents selected response category 1, "Favor," 21.0 percent of respondents selected response category 4, "Neither favor nor oppose," and 19.5 percent selected response category 7, "Oppose." In general, we can state that people favor this proposal more than they oppose it. However, the mean (and median) response is really "No Opinion." Once again, strong opinions were expressed in the unsolicited comments written on many of the surveys (Appendix E).

General Conclusions

Analyses of the speed data on the enforcement zone roads show that the ASED field test had no effect on travel speeds. As stated earlier, we should not be surprised at the lack of effect the ASED program had on travel speeds. Indeed, the program had no true enforcement "teeth" (warning letters only), slightly less than half of the licensed drivers in the two pilot counties reported knowing about the ASED pilot program, and less than one-fifth of the drivers surveyed reported actually having seen an ASED in use. It has been repeatedly documented that for an enforcement program to be effective it has to be well publicized, enforcement needs to be high, and punishments need to be swift and sure. This program was not well publicized (as shown in the survey results), very few warning letters were distributed (less than one-third of all possible violators were identified accurately enough for a warning letter to be sent), and there was no punishment at all applied to violators.

People do favor ASED use to enforce speed limits. However, they are not universal in their support for ASED use across all situations. While some do favor ASED use in all situations and some oppose ASED use in all situations. Overall, people appear to be selective about the situations in which they would favor ASED use. People seem to be most favorable about ASED use in school zones, areas where traffic enforcement is dangerous for police, for heavy trucks, and in construction zones. The greatest opposition was found for ASED use on freeways, bridges, and "all roads."

It is instructive to compare these findings on public opinions about ASED use sites to suggested ASED sites from the MSP final report (Appendix A, page 2). The MSP report suggested possible application zones to include bridges, construction zones, congested traffic areas, areas unsafe for traffic stops, and commercial vehicle enforcement. With the exception of bridges, these recommendations are quite similar to the preferences of the public for ASED use.

There were no differences in opinions about ASED use by whether respondents knew about the ASED pilot program or had seen an ASED unit. Much of this may be explained by the relative lack of awareness that existed about the ASED program and the unit placements. In general, opinions about ASED use followed opinions about sanctions. Opinions were less strongly held (i.e., more "no Opinion" responses) for the warning-only sanction than for sanctions with more teeth (i.e., fine-only and fine-and-points). Women held more favorable opinions about ASED use than men.

Radar detector owners were in greater opposition to ASED use than nonowners. Speeders (who received or did not receive a warning letter) were in greater opposition than the general population sample, and respondents who reported having no tickets were generally more favorable than those reporting getting one or more tickets in the past two years. These results show that, in general, people who oppose ASED use are those who may be at greater risk for speeding and subsequently getting a ticket. In addition, respondents who think that speeders are at greater crash risk were more favorable about ASED use. It may be valuable as part of an ASED PI&E program to publicize crash data that clearly show the crash risk associated with speeding. It may also be valuable to increase the public's awareness of the societal costs of crashes to increase the public's view that traffic crash injuries and death are an unacceptable cost of doing business. Greater knowledge of the enormous toll exacted by traffic crashes (especially those involving excessive speed), may be a useful component to an ASED PI&E program.

People were reluctant to support either of the meaningful sanctions (i.e., fine-only and fine-and-points sanctions). They were much more willing to support the essentially meaningless warning-only sanction. As seen in the speed data, a warning-only sanction is unlikely to have an effect on speeding behavior. However, as can be seen in the unsolicited write-in responses, people may favorably receive a more complex sanction procedure by which drivers would receive more severe sanctions (moving from warning to fine and finally fine-and-points) as they were caught by the ASED more frequently. While we think this would cause a number of significant administrative problems, this is clearly an alternative to consider.

People also appear to be troubled by the fact that they will be photographed by the ASED. It is going to be hard to overcome the uncertainty and fear that comes from photographic evidence. Because this is clearly a sensitive area, enabling legislation and PI&E efforts should focus on ensuring that people's legitimate privacy concerns are accounted for.

In general, these data support the idea that ASEDs are a workable system for speed enforcement in Michigan. However, there are considerable PI&E hurdles to overcome before ASEDs are going to work. People don't seem to know much about them, and there is considerable mistrust about their use for law enforcement. On the other hand, people seem to be willing to have these devices used in specific areas. If these areas are targeted for initial implementation, we should be able to show the public that the systems can be a fair and effective means to enforce Michigan's speed limits. The key will be to ensure that the public understands the systems and the manner in which the systems will be used to enforce the law.

ASEDs should never be used to replace traffic officers on the road. But instead, these systems can be an alternative for enhancing the dwindling resources available for traffic law enforcement and law enforcement in general.

In addition, we must ensure that ASEds are not used for "speed trap" type revenue generation. There were several unsolicited comments from respondents referring to this possibility. This would be a significant abuse of a potentially valuable speed reduction and safety enhancement system. Such an abuse would probably doom any ASED program and probably other future automated enforcement programs such as automated traffic signal enforcement as well.

References

- Blackburn, R.R. and Glauz, W.D. (1984). *Pilot Tests of Automated Speed Enforcement Devices and Procedures*. Washington, D.C.: National Highway Traffic Safety Administration.
- Freedman, M., Williams, A.F., and Lund, A.K. (1990). Public Opinion Regarding Photo Radar. *Transportation Research Record 1270*, pp. 59-65.

APPENDIX A
Michigan State Police
Automated Speed Enforcement Devices Evaluation

**MICHIGAN DEPARTMENT OF STATE POLICE
SPECIAL OPERATIONS DIVISION
FIELD SUPPORT SECTION
TRAFFIC SERVICES UNIT
MAY 26, 1992**

FIELD TEST OF AUTOMATED SPEED ENFORCEMENT DEVICES EVALUATION

MICHIGAN BACKGROUND:

Michigan, along with the states of New Jersey and Washington, were selected by the National Highway Traffic Safety Administration (NHTSA) to field test various automated speed enforcement devices (ASED). The purpose of each project was to determine the "deterrent impact on speeding and speed-related crashes" for automated speed enforcement devices. Each state was permitted to modify the general guidelines provided by NHTSA to meet their own needs.

The University of Michigan Transportation Research Institute (UMTRI) in Ann Arbor has been contracted by the Office of Highway Safety Planning (OHSP) to conduct a final evaluation of the project. The UMTRI evaluation is scheduled to be completed by October 1, 1992.

SUMMARY RECOMMENDATIONS:

The Special Operations Division would recommend that future applications of this equipment be designed around a one camera system equipped with the minimum specifications listed below.

- * 35mm color film format.
- * Camera, radar antennae, and control module (processing unit) enclosed within the vehicle (not exposed to the weather and elements). It must not be necessary to open a window, trunk, or lift gate for unit operation.
- * Vehicle selective (ability to distinguish between commercial and passenger vehicles). Separate "target speeds" that can be set for simultaneous operation on both types of vehicles.
- * Capable of photographing a minimum of two lanes of vehicle traffic in one direction.
- * Multiple camera lenses that may be changed depending on traffic, location, and other conditions.
- * Portable digital display board allowing motorists to view their speed as they pass the unit.

In addition to the above listed equipment specifications, front license plates should be issued for all passenger and commercial vehicles. A front photograph would be taken of an approaching target vehicle. Driver identification would also be potentially included in the frontal photograph.

These recommendations are based on departmental experience gathered during the Field Test of Automated Speed Enforcement Devices Project and may not be suitable for operation in other states.

FUTURE APPLICATION STRATEGIES:

The Special Operations Division believes that this technology has an application for traffic safety, however this equipment can not be considered a replacement for conventional traffic patrols, only a supplement to them. Special emphasis should be given to high traffic crash areas where it is difficult for an officer to work traffic or unsafe for either the motorist and/or officer.

Future applications may include, but not be limited to:

- * Bridges.
- * Construction zones.
- * Congested traffic areas.
- * Roadways with very narrow or no shoulders or areas to safely initiate a traffic stop.
- * Commercial vehicle enforcement.

An extremely critical point that must be considered prior to using this equipment is the speed limit itself. The speed limit must be realistic and established based upon accepted engineering principles and practices, regardless of the location where ASED are used.

MICHIGAN PROJECT:

Prior to implementation, a Field Test of Automated Speed Enforcement Devices Advisory Group was established with the following agencies participating: Eaton, Oakland, and Kalamazoo County Sheriff's Departments; Eaton, Oakland, and Kalamazoo County Prosecutor's Offices; Kalamazoo and Oakland County Road Commissions; Michigan Department of Transportation; Mackinac Bridge Authority; Michigan State University; University of Michigan; Office of Highway Safety Planning; and Michigan Department of State Police.

The purpose of this advisory group was to:

- * Disseminate further information to those components of the criminal justice system that may be impacted by this new technology.

- * Gain professional advice on program components that may assist in providing greater efficiency and effectiveness of this program.
- * Further examine the multiple ways in which these devices can be used in law enforcement and make recommendation on future use following completion of this project.
- * To explore operational requirements to satisfy the legal concerns of the court system in order to use this type of technology in criminal proceeding.

It should be noted that because of the grant requirement for "measurability" of effectiveness, major criteria for roadway selection included the following components.

- * High traffic crash experience.
- * Identified speed problem and availability of reliable speed data prior to, during, and following completion of the project.

The Michigan project involved operation of the automated speed enforcement devices from June to December 1991 in Kalamazoo and Oakland counties. Troopers and Motor Carrier officers from the Pontiac and Paw Paw Posts, and deputies from the Oakland and Kalamazoo County Sheriff's Departments operated the equipment.

Officers were requested to work a minimum of two hours within their assigned enforcement zone on each shift, after which they could work elsewhere within the county. Every attempt was made to operate the units for eight hours per day, five days per week.

All 35mm film from Oakland County was shipped to and processed by the Michigan State Police Media Production Center located at the Training Academy in Lansing.

Both the 35mm and 70mm films from Kalamazoo County were dropped off at Kalamazoo Color Lab where the 70mm film was processed. The 70mm negatives and the 35mm film were then sent to the Media Production Center where the 35mm film was developed.

A temporary clerical employee assigned to the Traffic Services Unit examined each negative to obtain the license plate number, speed, location, time and date. This information was entered into a personal computer and transferred onto a 5 1/4 inch floppy disk. This information was then converted onto a "mag tape" at OHSP and sent to the Department of State to obtain registered vehicle owner information. The information on the mag tape was reconverted onto a floppy disk and used by the Traffic Services Unit to generate the warning letters. The license plate number on each warning letter was again compared with the corresponding film negative to reverify that the information was correct prior to mailing the warning letters.

Other areas of the Field Test of Automated Speed Enforcement Devices Grant included implementation of a Laser Speed Detection System and

the use of a mobile display sign board. Neither topic will be addressed in this document.

PHOTORADAR - U.S. PUBLIC TECHNOLOGIES:

Two units were leased from U.S. Public Technologies Inc., 9883 Pacific Heights Blvd., Suite F, in San Diego, California and used in Oakland County under the trade name of "PhotoRadar." Each unit will be discussed separately.

PhotoRadar - Mobile Unit:

The PhotoRadar mobile unit was mounted in an unmarked full sized 1989 Pontiac Safari station wagon. It was equipped with a 35mm camera, designed to photograph the rear license plate of the target vehicle. A removable flash unit that mounted on top of the station wagon via a magnet was used during camera operation. A speed display board, providing a visual indication to the passing motorist of their speed, was also available.

This unit had two primary enforcement zones:

Interstate I-75 - Troopers and Motor Carrier Officers from the Pontiac Post used this unit on I-75 between Dixie Highway and Grange Hall Road in Oakland County. At this location, I-75 is three lanes in each direction with a 65 m.p.h. speed limit.

Duck Lake Road - Deputies from the Oakland County Sheriff's Department used the unit on Duck Lake Road between M-59 and Jackson Blvd. This location is a two lane county road (one lane in each direction) having a 35 m.p.h. speed limit.

The maintenance record of the mobile unit recorded for the duration of operation is as follows:

- 06/10/91 Officer training took place during this week for all officers involved with the project.
- 09/25/91 Mobile unit malfunctioning. Officers advised that once they activated the unit, "Help 4" appeared indicating a problem. Vendor notified.
- 09/27/91 Officer operating the unit advised that the "Help 4" reading would occur "now and then." Knowing this, the vendor indicated that it may be some sort of a short in the system.
- 10/03/91 Problem diagnosed as a malfunctioning antennae from exposure to soap and high water pressure from the car wash. The antennae was removed from the grill, dried out and then remounted inside the vehicle.
- 10/10/91 Unit not tracking cars.

10/11/91 Unit still not working properly, unable to operate when set on receding only traffic. To operate, the unit had to be set to take both front and rear photographs. Vendor advised that the antenna was bad. Mobile antennae was replaced with the antennae from the stationary unit.

As indicated in the attached correspondence from Tpr. Steve W. Shotwell of the Pontiac Post, this equipment was easy to setup and operate with minimal training involved.

The speed display board was used very little because the 100 foot cable to attach it to the vehicle was not received until nearly the end of the project. This unit used 400 speed Fuji color film throughout the entire project.

PhotoRadar - Stationary Unit:

The stationary unit was mounted inside a "bullet proof" metal container on a pole along the north side of westbound I-696 near Lincoln Drive in the city of Southfield. The pole was located approximately 30.5 feet from the first lane of travel (slow lane).

The enforcement zone for the stationary unit was as follows:

Interstate I-696 - The freeway at this location (at Lincoln Drive) is four lanes in each direction, plus an additional lane for the entrance ramp for westbound traffic. Posted speed limit of 55 m.p.h. Troopers from the Pontiac Post maintained the unit at this location.

The internal components of the stationary unit were identical to those in the mobile unit, except that an 800 shot film canister could be used to hold the 35mm film. The unit was powered by twelve volt marine batteries that were charged once during the project.

The original 90mm camera lens was later exchanged for the 150mm lens from the mobile unit.

The maintenance record of the stationary unit was as follows:

- 08/19/91 Stationary unit activated without the flash unit connected.
- 08/21/91 Negatives received from stationary unit. Film appeared to be overexposed and vehicles in the negatives were too far away to read the license plates.
- 08/23/91 Vendor suggested that we switch to the 150mm lens from the mobile unit.
- 09/04/91 Negatives received, distance improved but now experiencing problems with grainy film. Vendor

advised that it was a poor quality film. Unit shut down until new film arrived.

10/04/91 Vendor installed the flash unit ordered from the factory in Holland. Film shipped 10/07/91.

10/17/91 Unable to read license plate on negatives, film too grainy.

10/29/91 Still unable to read registrations in the 3rd and 4th lanes because of the distance.

It should be noted that the problem of not being able to read the rear license plates in the 3rd and 4th lanes was never corrected. Mounting the unit on the overpass between the 2nd and 3rd lanes may have helped rectify this problem.

As indicated in the attached correspondence from Trooper Shotwell, this unit was not mounted in accordance with vendor specifications. The vendor suggests that it be mounted on a hinged pole, not a fixed pole which makes it more difficult to work with. The mounting location was a joint decision reached between the Michigan Department of Transportation and the Department of State Police.

A drop-in film loading system with an automatic rewind would have assisted in making the operation of this unit more efficient. As the system was set up, the potential of losing exposed film was a problem that was dealt with throughout the entire project.

This unit initially used 400 speed Fuji color film (single rolls), however bulk 800 frame color Kodak film in both 160 and 200 speed was later used.

PhotoRadar - Vehicle Selectivity:

Both PhotoRadar units were vehicle selective. Any vehicle in excess of 21 feet in length was considered a "commercial vehicle." The operator could program in different "target speeds" for both passenger and commercial vehicles.

Since this unit was only taking photographs of the rear license plate, it could not be used strictly for commercial vehicle enforcement. At one point officers tried to photograph the front of commercial vehicles, however the unit had not been programmed to measure vehicle length in an approaching vehicle direction. This was a software change that should have been requested prior to program implementation.

PhotoRadar - Lane Selectivity:

Because of the necessity to make a print when multiple vehicles appeared in a negative, if there was a question of which vehicle was the violator, no warning letter was generated. This occurred 338

times with the mobile unit and 159 times with the stationary unit. These numbers were based on negatives that were otherwise identifiable.

PHOTOCOP - TRAFFIC MONITORING TECHNOLOGIES:

One mobile unit was leased from Traffic Monitoring Technologies Inc., 820 Friendswood Drive, Suite 204, in Friendswood, Texas and used in Kalamazoo County under the trade name of "PhotoCop."

It was mounted in a 1989 Ford Taurus station wagon furnished by the vendor and equipped with the following: 70mm camera with a flash in the rear of the vehicle to take a "frontal" photograph of approaching traffic; 35mm camera mounted on top of the station wagon to take a rear photograph; and a VHS video camera to take a frontal photograph. A mobile display board was also available for operator use.

The video camera was not used during the project.

To operate the unit, the rear tailgate of the station wagon had to be lifted up and kept open.

This unit had two primary enforcement zones:

Interstate I-94 - Troopers and Motor Carrier officers from the Paw Paw Post used this unit on I-94 in Kalamazoo County between 4th and 6th Streets. The freeway at this point is two lanes in each direction with a speed limit of 65 m.p.h.

Sprinkle Road - Deputies from the Kalamazoo County Sheriff's Department operated the unit on Sprinkle Road between Michigan and H Avenues. This location is a four-lane county road with a 55 m.p.h. speed limit.

The maintenance record for the PhotoCop unit was as follows:

07/24/91 Day of media conference, equipment had to be manually activated because it wouldn't take the photograph as vehicles passed the unit.

07/26/91 Upon delivery of the vehicle, there was a problem with the air conditioning in the car which the vendor advised had been taken care of. Vehicle overheated while in operation and had to be towed to a local Ford dealership for repairs.

07/29/91 Vehicle out of repair shop. Photographs unreadable according to Kalamazoo Color Lab and the officer taking the photographs.

08/01/91 Equipment not functioning at all. Repair personnel enroute from Texas. August 3, 1991, problem diagnosed as a display board processing chip blown, computer board blown, and camera out of alignment.

08/05/91 Contacted by an engineer from TMT and was advised that the equipment was working properly.

08/06/91 Negatives shipped to Lansing. Some were unreadable, unable to match the approaching shots with receding and no information (speed, date, time, etc.) superimposed on the photograph. Vendor made the necessary repairs.

08/20/91 During deployment, officer accidentally poked his finger through the shutter of the 35mm camera. System down until the new camera arrives.

08/23/91 New camera from vendor received and installed.

08/27/91 Negatives received in Lansing. 70mm photos were readable but the 35mm camera appeared to skip the receding shots (approximately one out of every five photos). Vendor advised this problem was a bad connection from camera to the unit. Problem corrected on August 29, 1991.

09/03/91 35mm camera only photographing a partial vehicle (35mm was taking picture too early). Unit was reprogrammed by the vendor.

09/09/91 Photos from the 35mm are now too far away to read the registration plate.

09/25/91 Negatives received, all shots from the 35mm with the exception of a few were blank.

09/27/91 Negatives shipped to TMT to diagnose the problem.

09/30/91 TMT has not received the negatives as of this date.

10/10/91 35mm negatives OK, however all 70mm exposures blank. Vendor contacted.

10/11/91 Vendor advised that the shutter on the 70mm camera was stuck. New camera shipped.

10/14/91 New camera received and installed.

10/17/91 Unable to match the rear 35mm negative with the front 70mm film. It appears that either the synchronization of the two cameras is off, or the alignment of the 35mm is out of adjustment on top of the vehicle. Vendor advised that it was operator error.

- 10/21/91 Negatives received from Kalamazoo, still unable to match the 35mm negatives with the 70mm.
- 10/28/91 Vendor recontacted regarding matching the 70mm with the 35mm negatives. Vendor advised to realign the 35mm camera.
- 10/30/91 Attempts to readjust the 35mm camera were unsuccessful, still unable to match the 35mm with the 70mm film. Vendor recontacted.
- 11/05/91 Officers climbed on top of the vehicle attempting to align the 35mm camera.
- 11/18/91 70mm not working. One could trigger it to take a photograph manually, but it would not work automatically with the computer setting it off. Vendor contacted.
- 11/19/91 Vendor advised that a fuse in the computer had blown out. Fuse replaced, camera operational.
- 11/22/91 Equipment operational, still unable to match the front and rear photographs.
- 11/29/91 Synchronization still off.
- 12/05/91 Unable to operate, inclement weather.
- 12/10/91 Photographs taken, unable to match 35mm with 70mm negatives.
- 12/16/91 Unable to operate, inclement weather.

On several occasions during December, Kalamazoo County experienced severe inclement weather. Because of the 35mm camera mounted on top of the station wagon and the rear tailgate window needing to be left open, this unit was not operated during these weather conditions.

Officers involved with operation of the TMT equipment maintained that it was not very "user friendly" even after operating it for several months.

As indicated in the attached correspondence from Tpr. George Adam:

"Once everyone felt they (operators) could operate the unit, we then experienced problems with the film loading equipment, not enough loading equipment and the company never sent the needed backup loading equipment. Then there were problems with the speed of target vehicles and the cameras. This, after talking to company representatives, was a computer problem that the 35mm was not getting all the needed information on all target vehicles. The company representative stated this could be corrected but it never was."

"It would be my opinion that a system with only one camera, like that used in Oakland County, would be the type needed for our use in traffic enforcement."

Many hours were spent trying to work out the synchronization difficulty between the 35mm and 70mm cameras. The 70mm negatives were of acceptable quality, however it was extremely difficult to "match" the frontal 70mm negative with the rear 35mm film to obtain the rear license plate number.

Both the 70mm and 35mm cameras used Ilford black and white film with ASA 400.

PhotoCop - Vehicle Selectivity:

In a meeting on April 1, 1991, the vendor advised that their unit was capable of distinguishing between passenger and commercial vehicles. The PhotoCop unit used during the project did not have this capability.

The vendor advised the unit could be mounted "on top" of a vehicle and then raised to photograph only "high" vehicles, which would presumably be trucks. If this option were selected, the unit could not be used for passenger and commercial vehicles at the same time. Additionally, it would be constantly exposed to the elements which would have been unacceptable for use in Michigan.

PhotoCop - Lane Selectivity:

Because of the necessity to make a print when multiple vehicles were present in a negative, when there was a question of which vehicle was the violator, no warning letter was generated. This aspect was the same as with the two units in Oakland county.

This occurred 290 times with this unit. It should be noted that this number was based on negatives that were otherwise identifiable.

PHOTOGRAPH PROCESSING/WARNING LETTER TOTALS

Listed below is a breakdown of the photograph/warning letter activity for the project.

	<u>OAKLAND</u> <u>MOBILE</u>	<u>OAKLAND</u> <u>STATIONARY</u>	<u>KALAMAZOO</u> <u>MOBILE</u>	<u>PROJECT</u> <u>TOTAL</u>
Photographs Processed *	4,813	2,333	2,784	9,930
Warning Letters Sent *	2,761	85	360	3,206
Percent Identified	57.4%	3.6%	12.9%	32.3%
Photos <u>Not</u> Identified	2,052	2,248	2,424	6,724
Percent <u>Not</u> Identified	42.6%	96.4%	87.1%	67.7%

* Estimated number of photographs processed and warning letters sent.

The following bar graph provides an illustration of all photograph/warning letter activity during the project. The number of photographs processed, not identified, and warning letters sent are included for the Oakland County mobile and stationary units, and the Kalamazoo County unit.



The following chart lists the various reasons for a photograph not being identifiable.

	OAKLAND <u>MOBILE</u>	OAKLAND <u>STATIONARY</u>	KALAMAZOO <u>MOBILE</u>	PROJECT <u>TOTAL</u>
No License Plate	65	7	22	94
Focus	61	29	99	189
Exposure	234	388	53	675
Distance	383	701	775	1,859
Out of State Vehicle	110	19	131	260
Commercial Vehicle	44	6	22	72
Multiple Vehicles	159	338	290	787
No Registered Owner	100	7	10	117
Speed	199	44	139	382
Other	697	709	883	2,289
Totals	2,052	2,248	2,424	6,724

Although self-explanatory, these definitions are provided for the above listed categories.

- No License Plate - No license plate on vehicle, temporary registration or plate not visible (snow, dirt, vehicle parts, etc.).
- Focus - Photograph out of focus.
- Exposure - Exposure on photograph incorrect (too dark or light).

- Distance - Vehicle too far away from camera to read the license plate number.
- Out of State Vehicle - Out of state plates were not processed.
- Commercial Vehicle - Trailer plate or no rear Michigan plate on tractor.
- Multiple Vehicles - Negative had multiple vehicles visible, unsure which vehicle was the violator.
- No Registered Owner - Initially, warning letters were not sent unless the vehicle was registered to an individual. This policy was changed when a high percentage of violating vehicles in Oakland County were found to be registered to industries and companies in the area.
- Speed - Speed threshold set too low as specified by project guidelines.
- Other - Any other reason not listed above.

FILM/FILM PROCESSING:

As previously indicated, all film processing with the exception of the 70mm film, was handled internally within the department.

The process of using a temporary clerical employee to gather the information from each negative was a very labor intensive, tedious, and boring task to complete. After approximately three weeks, the initial employee advised that she was seeking a new assignment because of the stress involved. A second employee was then hired for the duration of the project.

Photo-Vix equipment was used to project the negative onto a 13-inch color television monitor. The project could not have been completed without this equipment as it made viewing each negative a "much easier" task.

Color film was used in Oakland County, while black and white was used in Kalamazoo. It is recommended that color film be used for any future projects. Although initially slightly more expensive, color film can be used to assist with vehicle identification.

Upon completion of film processing, Kalamazoo Color Lab was contacted and asked to relate their experiences in dealing with the 35mm and 70mm films. From their perspective, the 70mm film was not worth the extra expense when comparing it to the quality of the 35mm photographs.

70mm/35mm Developing Cost Breakdown:

<u>Film Type</u>	<u>Develop/Frame</u>	<u>Print/Frame</u>	<u>Total</u>
70mm	\$.25	\$.65	\$.90
35mm	\$.11	\$.50	\$.66

This cost comparison does not include the initial purchase price for the film. These estimates were provided by Kalamazoo Color Lab.

Please note that Kalamazoo Color Lab was selected by Traffic Monitoring Technologies to develop the 70mm film. All processing costs associated with the 70mm film were paid for by the vendor.

ENFORCEMENT ZONE - SPEED SURVEY DATA:

Prior to selecting the enforcement zones within each county, the availability of speed and traffic crash data was a primary concern.

Michigan Accident Location Index crash data was obtained and provided to UMTRI prior to implementation. Speed data prior to, during, and following the project was provided directly to UMTRI by the Michigan Department of Transportation, and the Oakland and Kalamazoo County Road Commissions.

In addition, throughout the project UMTRI personnel conducted speed surveys in Oakland County, while Michigan State Police personnel conducted surveys in Kalamazoo County. These surveys were forwarded directly to UMTRI, and were not analyzed by Traffic Services Unit personnel. The LTI 20-20 Laser Speed Detection System was used at all speed survey locations to eliminate the possibility of "fuzzbuster" detection.

It should be noted that on January 1, 1992, the State of Michigan Official Traffic Crash Report (UD-10) was completely revised. It is unknown if this will have any effect on available crash data that UMTRI may need to analyze for completion of their evaluation.

"FUZZBUSTER" DETECTABILITY:

Although several individuals have indicated that their "fuzzbuster" did detect the signal emitted from the ASED units, it was extremely weak and usually detected after it was too late for the driver to slow down. This was the case in extremely light traffic. There is more chance of detecting the signal if it is reflected off of another vehicle during heavier traffic conditions, however, even then, the signal was reported to be extremely weak.

No tests were conducted by project personnel using various fuzzbusters that detect different radar frequencies.

NIGHTTIME PHOTOGRAPHY:

The mobile PhotoRadar unit was used several times in Oakland County during the hours of darkness. The flash highlighted the license plate (which was reflective) to make it more identifiable, however, vehicle identification was difficult.

The highest recorded violator speed for the project (118 m.p.h.) was obtained in Oakland County in a nighttime photograph.

The PhotoCop unit was not used after dark.

LICENSE PLATE CONFIGURATION:

The number of "errors" in reading a license plate number could be substantially reduced if letters that "appear" similar were eliminated during license plate manufacturing. For example, "U" and "V", "E" and "F", and "X" and "V."

If this equipment is eventually used for traffic enforcement, Michigan should return to issuing two license plates, one plate for both the front and rear of the vehicle.

One frontal photograph could then be taken that includes all pertinent violation information (date, time, location, speed, officer identification, etc.), driver identification and license plate information.

In addition, trailer hitch balls, spare tires and ladders (on the back of vans), and license plate trim made it difficult, if not impossible, on many negatives to read a complete license plate number.

WARNING LETTERS - CITIZEN CONTACTS:

Approximately 3,206 warning letters were sent to registered vehicle owners. During this process, six (6) vehicle owners contacted the Traffic Services Unit and advised they had received warning letters and believed their vehicles were not involved. The following contacts were noted:

Michelle Wyde - 303 Smith, Apt. 407, Clio, Michigan 48420.
Registration plate was read as 747QCZ, correct plate in the negative was 747VCZ.

Donna McDonald - 2000 Francis, Jackson, Michigan 49203. The registration plate on her vehicle appeared to match the negative. Her vehicle was a black Buick, negative was also a "dark" Buick, but one could not tell if it was black or dark blue because of the "black and white" film.

L. V. Reams - 1401 Beaver, Flint, Michigan 48503.
Registration plate was read as 447TWX, correct plate in the negative was 447TWV.

Michael G. Grantham - 62 Firelite North Hills Farms, Pontiac, Michigan 48340. Registration was read as CWG436, correct plate was CUG436.

Stanley Silka - 6599 Ziegler, Taylor, Michigan 48180. Plate was read as 332DVV, correct registration was 332DVU.

David A. Kolliker - 20774 Indian, Southfield, Michigan 48034. Plate was read as 185MVE, correct registration was 185MVF. A license plate guard made the "E" look like an "F."

In addition, the following information was recorded from two telephone calls concerning warning letters.

I have received two warning letters. My ex-wife has the vehicle, it is still registered in my name, will you find her and please write her a ticket.

A woman called in very upset because she had received a warning letter for going 88 m.p.h. in a 65 m.p.h. zone on I-69. She said her husband was mad at her for driving that fast. It was explained to her that we had no units working near I-69 and she was asked to mail in the warning letter so it could be examined. She called back a few minutes later and advised that her brother in-law had received the warning letter. Her husband and brother in-law then altered the letter and sent it to her as a "joke."

TELEPHONE CONTACTS - CITIZEN COMMENTS:

A log of telephone calls generated as a result of either warning letters or media articles was kept. Listed below are the comments of citizens who contacted the Traffic Services Unit.

You feel like the invisible man is watching, you tend to feel threatened.

I like the idea, but my concern is if you all start issuing tickets, will my insurance rates go up?

This a great system, will definitely slow people down.

I like the idea, but it's a bit unfair because you can't try and talk the officer out of the ticket.

I speed, but knowing that this is out there, I now find myself slowing down. I am also worried about the points on my driving record.

I was surprised to get a letter, I normally don't speed, but others around me do.

Good idea, but perhaps a bit unfair that you can't talk to the officer on the spot.

I think it's great, good for the knuckle heads who cut people off on the freeway.

I think it's a good idea and I try to stay away from the nuts. At first you feel like you have been violated but later I understood what was going on.

I like the system if it really works.

I think that it's for our own good and is an excellent idea.

It's kind of neat because you can't have policemen everywhere.

It doesn't really bother me. The system tells me that I should watch it. I am not offended.

A little big-brotherish, I think it's a waste of money. Warning letters are OK, but tickets are a waste of money.

I know that my son had my truck and that tells me that he speeds when he has my truck. This system could keep the crazies off the road.

If it's going to slow people down, it's fine.

I think it's great because the kids in the neighborhood are playing and cars are speeding.

I don't have a problem, there are a lot of people who drive faster than they should.

It's a good idea and I hope that it works.

I think it's good because I travel a lot, usually about 10 m.p.h. over the speed limit. Once my radar detector picked up the signal, it just chirped.

I think it's a good idea because it keeps my wife from speeding.

I think it is great because I own trucks and my drivers use the trucks and I am curious to see if they speed.

I think it's great. This way people will think twice before speeding.

As long as the right person gets the ticket and not just the registered owner of the vehicle.

I have mixed feelings about it. There are good and bad things when you are considering this type of technology.

TO: LT. DAN SMITH
FROM: TPR STEVE W SHOTWELL
DATE: 02/01/92

SUMMARY ON AUTOMATED SPEED ENFORCEMENT DEVICE
U.S PUBLIC TECHNOLOGIES(PHOTO RADAR)

OVERALL IMPRESSION:

I found the U.S. Public Technologies equipment easy to operate, and setup. The training needed to operate the U.S. Public Technologies equipment is minimal. An Officer with prior radar training would be able to figure out the system in approximately 20 minutes.

THE U.S. Public Technologies equipment uses a high speed 35mm camera, able to take two photographs a second, and ordinary color film, so film is easily obtained from many sources. Moreover if necessary the film can be developed by any film processing agency.

The Photo Radar is car specific so there isn't any question as to which vehicle it locked onto, and if required photographs of the front and rear of the vehicle can be taken.

The ability to count traffic, and track speeds is a function contained in the Photo Radars Central Processing Unit. When this data is loaded into a computer, statistics can be obtained, showing Photo Radars effect on traffic.

EQUIPMENT PERFORMANCE(Experience with):

MOBILE UNIT:

The mobile unit was housed in a brown Pontiac Sationwagon. The camera photographed the speeders through the front windshield. Initially the antenna was placed in the front grill of the car, but was moved to the interior when it stopped working. It was returned to the Company and they informed us that a high pressure car wash forced water and suds inside the antenna causing it to shortout.

SUMMARY ON AUTOMATED SPEED ENFORCEMENT DEVICE
U.S PUBLIC TECHNOLOGIES(PHOTO RADAR)PG2

EQUIPMENT PERFORMANCE(continued)

When the antenna was moved into the interior of the car another problem presented itself. The photo radar antenna is a low power unit, .25 milliwatts of power. Traditional police radar uses 100 milliwatts of power. Because of the low power output the hood of the car blocked part of the radar beam, and the result of this was that the Photo radar failed to take photos of some speeders. The solution was to mount the antenna to the windshield with suction cups.

Of the two locations the exterior location was the best. With the antenna in the grill, the unit tracked traffic better. I think the reason for this is that the Radar beam was striking more of the body of the car. Also in consideration of possible health risk, associated with the use of Police Radar, it should be placed on the exterior of the vehicle.

It should be mentioned that the Mobile Unit was used strictly in a stationary configuration. U.S. Public Technologies Photo Radar, with the addition of a digital speedometer can be used in a moving mode. Because of the cosine effect caused by the sideways shooting Photo Radar, a digital speedometer is necessary to measure patrol car speed,

STATIONARY UNIT:

The Stationary Unit was not mounted per company specifications so it was difficult to work with. It was hard to do any work on the unit, and to do the routine job of changing the film. The Unit was mounted on a fixed pole, and the company recommends that it be mounted on an hinged pole.

We had the Unit setup to cover a four lane highway(I-696/Lincoln Ave), and it was mounted into the shoulder of the road. In effect the unit was shooting across five lanes to get speeding traffic in a sixth lane. To its credit the unit was tracking and taking photos of vehicles in the left(6th) lane, but the resolution of the photographs were poor due to the distance. Moreover resolution did not improve with the use of a the higher powered lens. We had the use of a 90mm lens and a 150mm lens.

The Units will function on multilane highways, but should be mounted on the overpass. If no overpass is available, then a lens greater then 150mm will have to be utilized.

SUMMARY ON AUTOMATED SPEED ENFORCEMENT DEVICE
U.S PUBLIC TECHNOLOGIES(PHOTO RADAR)PG3

EQUIPMENT PERFORMANCE(continued)

CAMERA:

The camera can be viewed as the weak link in the chain. The camera has to manually loaded and the film rewound manually. If the camera is improperly loaded and it is not noticed film can be wasted. In the process of rewinding the film the results of a days work can be lost if the film becomes exposed to the light. To rewind the film you have to take it out of the camera, place it into what is called a black bag, then using a power screwdriver rewind the film into a canister.

With experience the above conditions are minimized, but the possibility of film lost exist whenever the film is rewound. This Officer would like to see a drop in loading system with auto rewind.

Central Control Unit:

The CPU is where the speed thresholds are set, direction of vehicle to be clocked, and type of vehicle to clock, trucks or cars. There were no problems with the CPU, and any wrong setting becomes readily apparent.

FLASH UNIT:

There was no problems with the flashunit. The flash is so fast that even when looking directly at it you are not blinded. I feel it should be used at all times, because it is a visual clue to traffic that A.S.E. is taking place.

SPEED DISPLAY BOARD:

The speed display board did not get much use, because it was not until near the end of the program that the cables became available. The speed display board needed to be set down the road away from the car approximately 100 feet. The latter required cables 100 feet long and they were cumbersome to work with. A wireless connection would be better and would facilitate the use of the speed display board by the Officers. Another problem is that the speed display board sets on top of a tripod and offers a wide surface area to the wind, and speeding semi trucks. Even when it was placed low to the ground, semi trucks blew the speed display board over resulting in damage to the board.

SUMMARY ON AUTOMATED SPEED ENFORCEMENT DEVICE
U.S PUBLIC TECHNOLOGIES(PHOTO RADAR)PG4

EQUIPMENT PERFORMANCE(continued)

I liked the speed display board, it is highly visible, and in the absence of a flash, and a marked patrol unit, it will be the only way that the Public will know that Photo Radar speed enforcement is taking place. The speed display board is a visual indication to the Public of there speed. Whereas the flash when the Photo Radar takes a picture indicates to those few Motorist in the area that something has occurred. The speed display board will have an effect on traffic all the time, regardless of the speed of the traffic passing it. Given the opportunity I would use the Speed Display Board whenever possible.

I would recommend the Department let the Public know that A.S.E. is taking place. This is easily accomplished via use of the news media and mentally re enforced by the use of the flash unit, or by use of the speed display board on the side of the roadway. The affect on the mind of the public would be that the State Police is not trying to hide there efforts at speed control, but are sincere in wanted to slow traffic down and reduce accidents. The additional benefit to be open to the Public concerning A.S.E. is that when a flash is seen or a speed display board is on the side of the road Drivers will think that the possibility exist that they might be speeding and have been photographed and a citation is in the mail.

THE COMPANY(US PUBLIC TECHNOLOGIES)

I established a good working relationship with Zev Fogel the president of US Public Technologies. He was very punctual in answering any questions that I had about the equipment, and went out of his way to solve the few operational problems that occurred. Also when I was unable to contact Mr Fogel directly the staff at the Company was always pleasant, and did not hesitant to forward a message to Mr Fogel.

SUMMARY:

My overall impression of the A.S.E.D. equipment from U.S. Public Technologies is that when it is put into operation it will achieve the purpose of slowing traffic and reducing traffic accidents. And since we have had this evaluation period with the equipment, downtime from the installation of an operational program will be minimal.

MEMORANDUM

State of Michigan

DEPARTMENT OF STATE POLICE

DATE: January 30, 1992

TO : Lt. Dan Smith, Traffic Services Unit, Field Support Section,
Special Operations Division

FROM : Tpr. George Adam, Fifth District ASED Coordinator, Paw Paw

SUBJECT : ASED Project

I would like to say that this was an exciting project to be involved with and am thankful to have played a small part in it.

However, we in the Fifth District did seem to have a little more frustration than the group in Oakland County. I believe this was related to the equipment we were given. This is not to say that it was not good but because of the short time we had with the company personnel from Traffic Monitoring Technologies to learn the system.

With the location of the vendor being in Texas, time changes and working schedules, it was at times difficult to contact the right person from the company so we could try to trouble shoot the problem we were having. This resulted in down time.

Our first problem was getting everyone (operators) familiar and comfortable with the equipment. I can see this being a problem at the post. The posts would just about have to limit the number of officers to the equipment to assure proper care and usage.

Once everyone felt they could operate the unit, we then experienced problems with the film loading equipment, not enough loading equipment and the company never sent the needed back up loading equipment. Then there were problems with speed of target vehicles and the cameras. This, after talking to company representatives, was a computer problem that the 35mm was not getting all the needed information on all target vehicles. The company representative stated this could be corrected but it never was.

It would be my opinion that a system with only one camera, like that used in Oakland County, would be the type needed for our use in traffic enforcement.

All the officers involved believe the idea of using an automated speed enforcement device is great and that we definitely have need of such equipment.

As you can guess, there are lots of operator stories to tell and too many to write but if myself or any of the personnel from the Fifth District can be of further assistance, please call. Again, it was a pleasure working on this project, and I am looking forward to future projects.

GA/mh

APPENDIX B
Press Materials

AUTOMATED SPEED ENFORCEMENT

MEDIA CONFERENCE

3:00 AM ON WEDNESDAY, JULY 24, 1991

OAKLAND COUNTY SHERIFF'S DEPARTMENT

AGENDA

Overview

**Col. Michael D. Robinson, Director
Michigan State Police**

Remarks

**Sheriff John F. Nichols
Oakland County Sheriff's Department**

Questions and Answers/Demonstration

**Tpr. Steven Shotwell
and
Tpr. Roderick Williams
Michigan State Police**

**Sgt. James R. Heiligenthal
Oakland County Sheriff's Department**

MICHIGAN STATE POLICE/SHERIFFS DEPARTMENT
MEDIA RELEASE

The State of Michigan, along with the states of New Jersey and Washington, have been selected by the National Highway Traffic Safety Administration to conduct a pilot project on the impact of Automated speed Enforcement Devices on speed and speed related crashes. This project is subsidized by 100% Percent federal funding, and will last approximately 6 months, beginning Thursday, July 25, 1991.

This new system will be used on selected roadways in Oakland and Kalamazoo Counties, combines a high speed camera and a computer to record speed violations on photographs. Superimposed onto the photograph of the speeding vehicle is the date, time and location of the violation, as well as the violators speed and issuing officers badge number. Violators will receive warning letters as opposed to citations.

Troopers & Motor Carrier officers from the Pontiac and Paw Paw Post in conjunction with officers from the Oakland and Kalamazoo County Sheriff's Departments will be operating the equipment for the duration of the program. Following the completion of the project, an evaluation will be conducted by the University of Michigan Traffic Research Institute.

If you have any questions regarding Automated Speed Enforcement Devices or the program, you may contact Trooper Roderick Williams at (517)322-5489, Monday through Friday, 8:00 a.m. to 4:00 p.m.

AUTOMATED SPEED ENFORCEMENT QUESTIONS

HOW MANY DAYS A WEEK WILL EACH DEPARTMENT BE USING THE EQUIPMENT:

- ▶ STATE POLICE TROOPERS- 2 DAYS SHERIFFS DEPARTMENT- 2 DAYS
STATE POLICE MOTOR CARRIER OFFICERS- 1 DAY

HOW LONG WILL THE PROJECT LAST:

- ▶ APPROXIMATELY SIX MONTHS, UNTIL JANUARY 1992.

WHAT SITES WERE SELECTED FOR THIS PROJECT:

- ▶ OAKLAND COUNTY- DUCK LK RD BETWEEN (M-59 & JACKSON
BLVD) I-75 BETWEEN GRANGE HALL RD AND
DIXIE HWY I-696 AT LINCOLN DR
- ▶ KALAMAZOO COUNTY- SPRINKLE RD FROM (MICHIGAN AVE TO H.
AVE) I-94 BETWEEN (4TH & 6TH STREETS)

WHY WERE THESE PARTICULAR SITES SELECTED:

- ▶ IDENTIFIED OR PERCEIVED ACCIDENT/SPEEDING PROBLEM BY BOTH
THE MICHIGAN ACCIDENT LOCATION INDEX AND THE DEPARTMENTS
INVOLVED.

WILL VIOLATORS RECEIVE TICKETS FOR SPEEDING:

- ▶ NO, WARNING LETTERS ONLY.

CAN VIOLATORS LEGALLY BE ISSUED A CITATION:

- ▶ CURRENTLY MICHIGAN LAW REQUIRES THAT PRIOR TO ANY
ENFORCEMENT ACTION BEING TAKEN, FOR A CIVIL INFRACTION OR
MISDEMEANOR, THE OFFICER MUST FIRST WITNESS THE VIOLATION
AND ALSO IDENTIFY THE DRIVER.

WHAT IF SOMEONE ELSE WAS DRIVING MY CAR:

- ▶ ONLY WARNING LETTERS WILL BE SENT TO THE REGISTERED
OWNER. NO CITATIONS WILL BE ISSUED. THERE WILL BE NO
FOLLOW-UP TO IDENTIFY THE DRIVER.

AUTOMATED SPEED ENFORCEMENT QUESTIONS

WILL THERE BE A PENALTY AFTER A CERTAIN AMOUNT OF WARNING LETTERS:

- ▶ NO PENALTIES ASSOCIATED WITH THE PROGRAM, WE WILL NOT BE KEEPING TRACK OF REPEAT VIOLATORS.

HOW FAST CAN VIOLATORS GO BEFORE A PHOTOGRAPH IS TAKEN:

- ▶ MANY FACTORS WILL BE CONSIDERED REFERENCE THE SETTING OF THE SPEED THRESHOLD SUCH AS VOLUME OF TRAFFIC, WEATHER CONDITIONS, AND AREA OF DEPLOYMENT. THESE FACTORS IN ADDITION TO OFFICER DISCRETION WILL BE EVALUATED ON A DAILY BASIS.

ARE THERE ANY STATES WRITING TICKETS USING THESE SYSTEMS:

- ▶ NO STATES ARE WRITING TICKETS, VARIOUS CITY JURISDICTIONS IN CALIFORNIA AND ARIZONA ARE ISSUING CITATIONS. THESE TYPES OF DEVICES HAVE BEEN USED FOR YEARS IN EUROPE AND CANADA.

WHAT HAS BEEN THE EXPERIENCE OF OTHER LOCATION USING THESE DEVICES:

- ▶ IN SWITZERLAND OVER A FOUR YEAR PERIOD, AFTER THE INTRODUCTION OF THESE UNITS, ACCIDENTS DECREASED OVER 15% PERCENT. PARADISE VALLEY, ARIZONA ATTRIBUTES A 38% PERCENT REDUCTION IN TRAFFIC ACCIDENTS TO THE USE OF THIS EQUIPMENT WHICH WAS INTRODUCED IN OCTOBER, 1987.

ARE WE GOING TO PURSUE CHANGING LEGISLATION TO ALLOW ENFORCEMENT WITH THIS TYPE OF TECHNOLOGY:

- ▶ WE WILL CERTAINLY BE EXPLORING THIS. ONE MAJOR FACTOR OF THIS PROJECT WILL BE PUBLIC ACCEPTANCE OF THIS TYPE OF ENFORCEMENT.

WHAT WILL BE VISIBLE IN THE PHOTOGRAPH:

- ▶ KALAMAZOO COUNTY FOR EXPERIMENTAL PURPOSES, WILL TAKE THE FRONT OF THE VEHICLE AND REAR PLATES. THE EQUIPMENT IN OAKLAND COUNTY HAS THE SAME CAPABILITY, BUT WILL ONLY TAKE PICTURES OF THE REAR LICENSE PLATE OF THE VEHICLE.

AUTOMATED SPEED ENFORCEMENT QUESTIONS

HOW IS THE PROGRAM FUNDED:

- ▶ THE PROGRAM IS PAID FOR BY 100% FEDERAL FUNDING . . . ADMINISTERED BY THE OFFICE OF HIGHWAY SAFETY PLANNING

ARE THERE ANY OTHER STATES PARTICIPATING IN A PROJECT LIKE THIS:

- ▶ YES, NEW JERSEY AND WASHINGTON STATE HAVE SIMILAR PROJECTS.

WHAT IS THE CAPABILITY OF THE UNIT (HOW MANY PICTURES PER DAY):

- ▶ WE WILL BE TAKING 150 PHOTOGRAPHS PER DAY/PER UNIT. FOR TOTAL OF 450 PHOTOS PER DAY. EQUIPMENT HAS THE CAPABILITY TO TAKE MORE PHOTOGRAPHS, BUT WE HAVE LIMITED THE NUMBER BASED ON OUR GRANT FUNDING.

WILL THE RADAR SET OFF RADAR DETECTORS:

- ▶ THE RADAR BEAM USED SENDS A VERY LOW POWER SIGNAL AND SHOOTS ACROSS THE ROAD AS OPPOSED TO DOWN THE ROAD, SO BY THE TIME A RADAR DETECTOR PICKS UP THE SIGNAL, THE PHOTOGRAPH WILL HAVE ALREADY BEEN TAKEN.

HOW WILL THIS PROJECT BE EVALUATED:

- ▶ THE UNIVERSITY OF MICHIGAN TRANSPORTATION RESEARCH INSTITUTE WILL CONDUCT THE EVALUATION FOLLOWING THE COMPLETION OF THE PROJECT. SPEED SURVEYS WILL BE COLLECTED AND PLOTTED DURING THE IMPLEMENTATION PHASE. ALSO PUBLIC OPINION SURVEYS WILL BE TAKEN BY SENDING A SURVEY CARD TO REGISTERED DRIVERS IN THE STATE.

CAN THE EQUIPMENT DISCRIMINATE BETWEEN PASSENGER CARS COMMERCIAL VEHICLES:

- ▶ BOTH PIECES OF EQUIPMENT HAVE THE ABILITY TO DISCRIMINATE BETWEEN CARS & TRUCKS. HOWEVER, THE EQUIPMENT IN KALAMAZOO IN IT'S IN ITS PRESENT CONFIGURATION IS NOT

WHAT OTHER ASPECTS ARE INVOLVED WITH THE PROJECT:

- ▶ LASER SPEED GUNS FOR ENFORCEMENT IN ONE COUNTY, YET TO BE FORMALLY IDENTIFIED. A SPEED DISPLAY SIGN BOARD WHICH ADVISES MOTORIST OF THEIR SPEED AS THEY PASS THE UNIT IN CONSTRUCTION & SCHOOL ZONES.

AUTOMATED SPEED ENFORCEMENT QUESTIONS

WHO ARE THE MANUFACTURERS OF THIS EQUIPMENT:

- ▶ OAKLAND COUNTY: U.S. PUBLIC TECHNOLOGIES INC.
TRAFFIC SERVICES GROUP
PHOENIX, ARIZONA

- KALAMAZOO COUNTY: TRAFFIC MONITORING TECHNOLOGIES
FRIENDSWOOD, TEXAS 77546

AUTOMATED SPEED ENFORCEMENT QUESTIONS

WHAT ARE AUTOMATED SPEED ENFORCEMENT DEVICES:

- ▶ THESE SYSTEMS COMBINE A HIGH SPEED CAMERA WITH A RADAR UNIT. ONCE A VIOLATOR PASSES BY THE UNIT, A PHOTOGRAPH OF THE VEHICLE AND CORRESPONDING REGISTRATION PLATE IS TAKEN.

APPENDIX C
Warning Letter



REGISTERED OWNER LICENSE # 313TZC
Jill Marie Jones
3131 Mockingbird Lane
Lansing, MI 48911

NOTICE DATE: 01 AUG 91
REF. NUMBER: 00000050

WARNING NOTICE


In an effort to reduce the number of traffic crashes and the associated injuries and deaths, the Michigan law enforcement community, including the Michigan State Police, Kalamazoo County Sheriff's Department and the Oakland County Sheriff's Department, are testing the use of a new radar system in order to monitor vehicle speeds on selected Michigan roadways. This system combines a high-speed camera with a radar unit and is capable of photographing the violator's vehicle and corresponding registration plate.

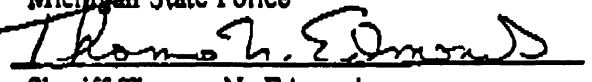
A VEHICLE REGISTERED IN YOUR NAME WAS PHOTOGRAPHED EXCEEDING THE SPEED LIMIT IN VIOLATION OF MICHIGAN LAW.

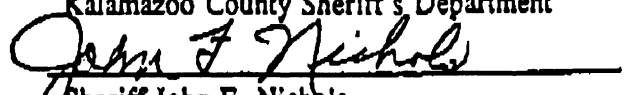
DATE: 22 JUL 91 TIME: 16:35
LOCATION: I-69 NB at Canal Road, Eaton County
In EATON County
VEHICLE LICENSE: 313TZC Registered to a 1987 Chevrolet Cavalier 2 Door
VEHICLE SPEED: 55 SPEED LIMIT: 45

THIS IS A WARNING NOTICE ONLY. YOU ARE NOT REQUIRED TO RESPOND.

Your cooperation is requested in the future to reduce highway speeds so that our roadways will be a safe place to travel. If you have any questions regarding Automated Speed Enforcement Devices or the program, you may contact Trooper Roderick Williams at (517) 322-5489, Monday through Friday, 8:00 AM to 4:00 PM.


Colonel Michael D. Robinson, Director
Michigan State Police


Sheriff Thomas N. Edmonds
Kalamazoo County Sheriff's Department


Sheriff John F. Nichols
Oakland County Sheriff's Department

APPENDIX D
ASED Survey

We are interested in your beliefs about the effects of speeding and speeds on Michigan's roads. Please check the response box that most closely represents your views on the following items.

Some people think that drivers that exceed posted speed limits greatly increase their risk of getting into crashes. Others think that speeder are no more likely to get into crashes than non-speeders. In general, do you think that a driver that exceeds posted speed limits is **much more likely** or **no more likely** to get into a crash than a non-speeder? (Please check the box that most closely represents your own opinion.)

Much more likely to get into a crash							No more likely to get into a crash
1	2	3	4	5	6	7	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In general, do you think that most drivers obey or drive faster than posted speed limits on the following roads in Michigan?

	Obey speed limits						Drive faster than speed limits
	1	2	3	4	5	6	7
Freeways	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local streets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction zones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you think there are enough or not enough police patrolling the roads to enforce speed limits?

Enough						Not enough
1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The next set of questions are about the use of a type of traffic enforcement equipment called automated speed enforcement devices (ASEDs).

ASEDs combine a high speed camera with a radar unit. When vehicles exceeding a specified speed pass by an ASED, the ASED can take a picture of the vehicle, license plate, and the driver (or any combination of these). The picture would include information from the ASED such as the posted speed limit, location, time and date the picture was taken, and vehicle speed. One possible strategy for using the ASED devices would be to mail speeding tickets based on these pictures to the vehicle owner (based on vehicle registration information). At that time the vehicle owner could either: (1) pay the ticket, (2) indicate who was driving the vehicle if a person other than the owner was driving the vehicle at the time the picture was taken (that person could then pay the ticket or challenge it in court), or (3) the vehicle owner who received the ticket could challenge the ticket in court.

Do you know about a pilot program in Michigan designed to test the use of ASEds?

Yes No

Have you seen any ASED unit in use in Michigan?

Yes No

If you responded yes, where did you see the ASED unit being used?

For the following items, please check the box that most closely represents your views about the use of ASEDs in Michigan.

Do you favor or oppose the use of ASEDs to issue speeding tickets in the following situations:

	Favor		Neither favor nor oppose			Oppose	
	1	2	3	4	5	6	7
On bridges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For heavy trucks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In construction zones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Where traffic enforcement is dangerous for police officers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Where traffic enforcement is difficult for police officers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
On freeways	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In school zones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All roads in the state	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you favor or oppose the following types of photographs that might be taken by ASEDs

	Favor		Neither favor nor oppose			Oppose	
	1	2	3	4	5	6	7
Rear license plate only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Both rear license plate and front of vehicle showing only the driver	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Both rear license plate and front of vehicle showing all vehicle occupants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you favor or oppose the following types of enforcement actions that might be taken based on evidence of speed limit violation provided by ASEDs:

	Favor		Neither favor nor oppose			Oppose	
	1	2	3	4	5	6	7
Fine only -- no points	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Both fine and points like with other traffic violations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Warning letter only -- no fine or points	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Some have suggested that the use of ASEDs are an invasion of privacy since photographs of offenders' vehicles are taken. Others believe that use of ASEDs is no more an invasion of privacy than being pulled over by an officer at the roadside. Compared to being pulled over by an officer at the roadside, would you say that having an ASED take a picture of **only** a vehicle's rear license plate was: (check the box that most closely represents your view)

A much greater invasion of privacy		No different than being pulled over at roadside			A much lower invasion of privacy	
1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Compared to being pulled over by an officer at the roadside, would you say that having an ASED take a picture of **both** the vehicle's rear license plate and of the driver was: (check the box that most closely represents your view)

A much greater invasion of privacy		No different than being pulled over at roadside			A much lower invasion of privacy	
1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Some have suggested that the use of ASEDs is not fair because use of these devices does not allow drivers to explain to an officer why they believe they were not speeding or should not receive a speeding ticket at the time of the alleged offense. Others believe that ASEDs are more fair because the device cannot be talked out of issuing a ticket to all vehicles observed travelling in excess of the preset speed for issuing a ticket. How would you rate the fairness of ASEDs with respect to how they handle who receives a speeding ticket?

ASEDs are much less fair than officers		ASEDs and officers are equally fair			ASEDs are much more fair than officers	
1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Compared to current speed radar technologies, rate how well you believe ASEDs are in accurately measuring vehicle speeds.

ASEDs are much less accurate		ASEDs and current radar are equally accurate			ASEDs are much more accurate	
1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Compared to current manual operation of speed radar by officers, rate how well you believe ASEDs are in accurately identifying the vehicle identified by radar as the speeder.

ASEDs are much less accurate		ASEDs and officer's judgment are equally accurate			ASEDs are much more accurate	
1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you believe you would drive more slowly in areas where ASEDs might be in use?

Yes No

The next set of questions ask for your opinions about a variety of general public policy issues.

How would you describe the current number of deaths and injuries that result each year from traffic crashes?

Acceptable					Unacceptable	
1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Some suggest that tax dollars may be best utilized if trained police officers are used in crime prevention and crime solving activities when there are available proven technologies that can be used for traffic law enforcement. Others believe that all law enforcement activities (including traffic law enforcement) should be conducted by trained officers and not machines. In general, do you favor or oppose the use of proven technologies to conduct traffic law enforcement if the use of these technologies frees up police officers for other duties?

Favor		Neither favor nor oppose			Oppose	
1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please answer the following questions about yourself.

Age: _____

Sex: M F

Do you own a radar detector? Yes No

How many tickets (not including parking tickets) have you received in the past 2 years?

0	1	2	3	4	5	more than 5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX E
Survey Respondent Comments

Note: Respondents' comments are given here verbatim (including vulgarities), as they appeared on the survey forms, so as to best represent the views they expressed.

() = respondent comment, {} = explanatory comment.

We are interested in your beliefs about the effects of speeding and speeds on Michigan's roads. Please check the response box that most closely represents your views on the following items.

- You can't argue with a belief {with a line to and circle around "beliefs" in text.}
- It's the crashes that hurt! {with a line to and circle around "speeding" in text.}

Some people think that drivers that exceed posted speed limits greatly increase their risk of getting into crashes. Others think that speeder are no more likely to get into crashes than non-speeders. In general, do you think that a driver that exceeds posted speed limits is much more likely or no more likely to get into a crash than a non-speeder? (Please check the box that most closely represents your own opinion.)

- Depends on speed over limit - 70-75 mph gets you away from groups of cars which cause trouble.
- Excessive speeders can cause more accidents.
- I think that speed relative to the posted speed is not nearly as important as the speed relative to the rest of the traffic. Drivers substantially different crash or cause crashes much more than other drivers.
- Or cause one.
- It still takes longer, a greater distance, to stop from 75 than at 65 or less.
- Too slow also is a problem.
- Poorly worded!! Exceed posted limit by how much, where, conditions, etc.? My answers are based on when, where, and how much I exceed posted limits.
- Depends on conditions and how fast they are going!
- Don't think speed is only thing involved in crashes.
- Depends on how much over the speed limit. If 10 mph or less not likely at all.
- Are they driving 60 in a 55 zone or 80 in a 55 zone? Depends greatly on how much driver is exceeding limit.
- Depends on traffic conditions and how much they exceed.
- Much depends on how much faster than the posted limits one is driving - 5 mph or 25 mph.
- Depends on type of road.
- It depends on the driver.
- Except interstates.
- This is a really dumb question. It's way to general.
- As long as old people driving 20 MPH under the speed limit stay off the road and there is no alcohol involved.
- Speed kills.
- It depends on how fast they were going.
- Yes - residential areas. No - freeways.
- Or cause an accident.
- It depends on how greatly driver speeds, traffic conditions and condition of driver. I never speed unless I deemed it safe and have good cause.

In general, do you think that most drivers obey or drive faster than posted speed limits on the following roads in Michigan?

- It's about the only freedom we have left to us!
- You need to be more specific in question. Yes, most people go over the limit by a small amount. There is a big difference between 5 and 35 over.

Freeways

Local streets

- Are you kidding?

Construction zones

- Most people obey.
- In city, 2. On highway, 5.

Do you think there are enough or not enough police patrolling the roads to enforce speed limits?

- Don't see great reason to enforce.
- Too many!
- Who cares?
- Need more patrol on highways.
- Too much emphasis on revenue generation, not safety enforcement. Need active patrolling (i.e. Calif), not speed traps.
- Have them do something meaningful, like protecting us from crime.
- Sometimes when they are needed.
- I agree more police should be on the road. However, I would like to see them going after drug dealers and other real criminals not after someone going 5 or 10 over the speed limit on a freeway.
- Depends on streets. School zones are generally well patrolled.
- Enough cops isn't the answer - jail repeat offenders.
- Best if police drive with flow of traffic instead of hiding to get ticket and others speeding by.

The next set of questions are about the use of a type of traffic enforcement equipment called automated speed enforcement devices (ASEDs).

ASEDs combine a high speed camera with a radar unit. When vehicles exceeding a specified speed pass by an ASED, the ASED can take a picture of the vehicle, license plate, and the driver (or any combination of these). The picture would include information from the ASED such as the posted speed limit, location, time and date the picture was taken, and vehicle speed. One possible strategy for using the ASED devices would be to mail speeding tickets based on these pictures to the vehicle owner (based on vehicle registration information). At that time the vehicle owner could either: (1) pay the ticket, (2) indicate who was driving the vehicle if a person other than the owner was driving the vehicle at the time the picture was taken (that person could then pay the ticket or challenge it in court), or (3) the vehicle owner who received the ticket could challenge the ticket in court.

- Machines can't determine traffic-road-weather conditions.
- Too many variables! Lawyers would love this!

Do you know about a pilot program in Michigan designed to test the use of ASEDs?

- I heard of this; assumed it was in the officer's patrol car.
- We know that the program was in use on Duck Lake Rd., Highland Township, Oakland County. We did receive a notice stating we exceeded the speed limit, however they identified a portion of Duck Lake Rd. which we did not travel - confusing.
- Heard some about it don't know about the test.
- Yes, and fuck them.
- Have heard of program but unaware if pilot program has started.
- But have seen prototypes testing.
- Read about one in Troy, MI.
- I seen it on T.V. Top Cops or one of them programs.

Have you seen any ASED unit in use in Michigan?

- I only read an article in the Kzoo Gazette.
- I only heard about it on the news.
- I did read about program - have not seen it in MI. but did see it in use in Australia and was impressed.
- Portage, MI., on local news.
- Heard about it on TV and newspaper.
- Saw it on T.V. and read about it in the paper.
- Saw in the newspaper.
- My son got a warning in Highland.
- I have heard about one on I-75 and Crooks.
- I've seen it in Texas.
- Read about it in the newspaper.

If you responded yes, where did you see the ASED unit being used?

<u>Number of Responses</u>	<u>Location</u>
46	Sprinkle Rd.
12	Kalamazoo, MI
43	I-94 in Kalamazoo County
11	Other Kalamazoo County
23	Duck Lake Road
5	Highland Township
19	I-75 in Oakland County
4	Other I-75
6	Other Oakland County
6	Troy, MI
6	I-696 and Greenfield
4	I-69 in Ingham County

- Also mentioned were Van Buren County, south of Hill Rd. on US-23, I-96, John Lodge, near Lansing, I-75 southbound at Davison Hwy., I-94 near Battle Creek (2), in Jackson, Maryland, I-75 north of Frankenmuth, Detroit, and I-27 {US-27}.

Comments at the bottom of page one.

- These may be effective for the purpose of "speeding" tickets but they would do nothing for stopping the speeders before they cause damage or injury at the time they are going too fast, for this we need more police observing the offenders.
- The only ticket I have ever received in the past 29 years was from an ASED in Indiana. I considered it totally unfair.
- It's the people that drive too slow (35 to 45) on the freeway, especially in the passing lane, that cause the accidents and the traffic jams!!!
- I do not go along with this ASEDs. My answers to the following questions are all against ASEDs. The chances for mistakes with ASEDs are too great.
- I strongly oppose the idea of ASEDs because it takes away a persons freedom and to me it would be like the government is able to watch your every move while driving. I mean, after all, isn't this supposed to be the land of freedom?
- Forget the cameras and machines. More good police. This is going too far with a good thing!! If law enforcement can't handle this, forget it. Police and radar are enough! It won't be long and police will know the drivers blood pressure and the color or his underwear.
- My husband or I (I cannot recall) received a mailing, not a ticket, that one of our vehicles had been cited for 5 mph over on Duck Lk. Rd. between the above mentioned streets (Beaumont and White Oak Beach Streets) and explained the ASED process and its future implications.
- Your plan of usage is not acceptable as written. Should be an element of reference in a court for such thing as unpaid tickets, outstanding warrants or some other crime. The driver must be contacted at the scene of violation. Good evidence of car, plate and driver (unless he has a mask on). He might even have one on if he were trying to avoid identification while driving. Personal contact must be made to issue citation. You might be letting a drug addict high on drugs or a drunk driver continue on his merry way - or evidence of a robbery, murder, etc. in progress - just happened or on the way to happen. A letter to tell dear old dad about what his car was doing last week is not basic enforcement.
- I received a warning letter in the mail that I wa speeding in another city in Michigan and it wasn't me driving. That made me angry.
- I think it is a good idea though, it's not safe, especially at night, for police officers to stop cars, there are too many crazy people out there.
- I strongly oppose the philosophy of the whole system. When is "big brother" going to stop!!!
- As I got to the end of this questionnaire I became doubtful of the accuracy of this device. If it isn't accurate then it shouldn't be used!
- Driving at the posted speed limits on most urban freeways subjects one to a 10-30 MPH speed differential. This is dangerous.
- I would like to state that the use of ASED is a lazy approach by the state of Michigan to apprehend people on something minor. It is not the speed at which someone drives, it's the total skill of each individual driver and if you've ever had the unfortunate chance to drive in Kalamazoo you'd see just how poorly people are being trained as drivers.
- If you were interested in our beliefs, you would have allowed a comment area!!

- What do you do if/when you catch a repeat offender? You allow drunks to drive again and again. Same with speeders and dangerous drivers (reckless). Shoot their G-D tire to stop them - would that do it.
- I do not think this should be sent by mail -- an officer down the road should be contacted and car stopped - ticket issued - pay by mail.
- Did not see ASED being used but received a warning notice of speeding by ASED going 75 miles per hour in a 65 mile per hour speed limit. Location of s-bound I-75 one third mile south of Davisburg Rd. in Oakland County. I drive to Detroit for 16 years and never brake (sic) the speed limit and I don't go for ASED. I want a policeman to stop me if I am speeding. I never drive 75 miles an hour on I-75. You have no defense of protecting yourself if not speeding. I am 80 years old and driving cars for 63 years. Plus I drove a van delivering for the Standard Paper co. in Detroit and only got one speeding ticket and one ticket with my car. I delivered for 16 years for Standard paper. I also drive to Detroit for 16 years from Westbranch, MI to Detroit which is 157 miles on I-75. No ASED for me. Thank you.

For the following items, please check the box that most closely represents your views about the use of ASEDs in Michigan.

Do you favor or oppose the use of ASEDs to issue speeding tickets in the following situations:

- All will be used for harassment purposes.
- For info in court of law where permitted if contact is made at scene of infraction.
- Violation of my rights!
- I received a notice that my car on I-75 was exceeding the speed limit and I was not the driver and I have proof I was at work at the time.

On bridges

- May cause distraction and accident.
- Depends on how it is managed.

For heavy trucks

- A lot of heavy trucks drive unsafely.
- Do not think Necessary.
- Depends on how it is managed.

In construction zones

- May cause distraction and accident.
- Depends on how it is managed.

Where traffic enforcement is dangerous for police officers

- How would it be difficult.
- Could be a very broad definition! Could be anywhere.
- Vague.
- I don't understand where or how it would be dangerous.
- If it's dangerous for them it's dangerous for us to have speeders there!

Where traffic enforcement is difficult for police officers

- How would it be difficult.
- Could be a very broad definition! Could be anywhere.

On freeways

In school zones

- Let's save the kids.
- The officers should be there themselves.
- Only during school hours.
- Please more radar here.

All roads in the state

- Use ASEDs on heavily traveled roads. Bridges and construction zones, even all roads, would be too excessive.

- I would favor this process for extreme conditions -- not 5 mph over, but for exceeding, say, beginning with 10 mph over on any regular road or street or for 20 mph over on freeways. The dangerous speeders need to be stopped...not normal freeway traffic. I remember when we drove 75 mph on the freeway years ago!
- Can't say I want this but if we do it - do it everywhere.
- All types of vehicles.
- Also residential areas.
- If used at all.

Do you favor or oppose the following types of photographs that might be taken by ASEDs

- These answers do not show support or opposition to the program - only relate to opinion based on a given that the program will be used like it or not.
- Big Brother is watching.

Rear license plate only

Both rear license plate and front of vehicle showing only the driver

- Promiscuous use of the machine at this time does not meet with my approval.

Both rear license plate and front of vehicle showing all vehicle occupants

- Big brother!
- Gives owner some proof if not driving.
- Driver may have someone else's wife in car.

Do you favor or oppose the following types of enforcement actions that might be taken based on evidence of speed limit violation provided by ASEDs:

- Your wording-rewording and various attempts at re-phrasing (sic) not acceptable or compatible to arriving at any logical conclusion on ASEDs use. These variations are misleading and are not conclusive for a definite opinion - too nebulous.
- Depends on the situation and where - which streets.

Fine only -- no points

- 2nd year ASED in effect.
- 2 time offenders.
- After 1st time.
- For second offense.
- Fine only except points for repeated violations.
- Would depend on how excessive the speed was.
- More lenient (sic) to truckers with exception (sic).
- 2nd offense.
- Pay for ticket only, don't raise insurance rates.
- First time only.

Both fine and points like with other traffic violations

- 3rd year?
- per say 3rd violation.

- Depends on the number of violations.
- After a warning at that location.
- Not first time.
- 2nd offense.
- If proven.
- Would depend on how excessive the speed was.
- 2nd ticket-violation.

Warning letter only -- no fine or points

- First offense.
- Favor for first offense, otherwise oppose.
- 2nd time = fine. 3rd time = fine/points. 4th time = suspension.
- Really have no opinion.
- First time only.
- First time a letter.
- First time warning. Any more, pay a fine, points issued if speeding excessively.
- First time only.
- 1st year in effect.
- For 1st time offenders.
- Depends on speed over limit.
- For 1st time offenders.
- Depends on situation.
- 1st time.
- Sounds like "big brother" to me!! No, thanks!!
- Depending on the persons prior driving record with a warning letter now enclosed with his driving record.
- First time only!
- For 1st offense.
- 1st time offenders.
- The first time only.
- Take their money and they will slow down!
- 1st time.
- First time only.
- Depends on the number of violations.
- I oppose the use of ASEDs in all cases but if they have to be used then I would give a warning letter only.
- 1st time only.
- Certainly it would not make sense to warn people numerous times if this option were complemented. If a driver received several letters - additional steps would need to be taken.
- Depending on severity.
- Might be a reminder to make some people think about their actions and possible consequences (accidents and injuries).
- For 1st offense.
- All depends on situation, speed, etc.
- For first time or maybe two times.
- 1st offense.
- Warning first and begin fines later.

- What about medical emergency where you cannot get an escort?
- Warning letter at first until people know they are in operation, but after that it should be the same as if a police officer pulled you over for speeding.
- 1st time.
- First time.
- 1st offense ASED's used.
- 1st time only.
- If not proven.
- After a third offense then a possible fine - 0 points.
- For first time offense.
- First time violation.
- Depending on severity law should be enforced but more of a study for commercial drivers.
- First offense.
- For first time only; then both fine and points.
- 1st offense.
- This type of "cloak and Dagger" stuff does not belong in our country. I find it an intrusion of my privacy.
- First time only.
- 1st time.
- One, after that both fine and points.
- Depends on the severity of violation.
- First time warning letter with points.
- If first offense.

Some have suggested that the use of ASEDs are an invasion of privacy since photographs of offenders' vehicles are taken. Others believe that use of ASEDs is no more an invasion of privacy than being pulled over by an officer at the roadside. Compared to being pulled over by an officer at the roadside, would you say that having an ASED take a picture of only a vehicle's rear license plate was: (check the box that most closely represents your view)

- People not observing laws should not be given their rights to privacy.
- Privacy is a privilege for a driver, not a right. You should lose that privilege by improper driving.
- This is not an arrest. {With line to "invasion of privacy" in text.}
- This is technically an arrest! {With line to "pulled over by an officer at the roadside" in text.}
- But if you're doing wrong face ant consequences!
- Speeding is the LEAST of our crime problem and is a STATE and LOCAL revenue producer only.
- Plate might be stolen.
- Yes {By underlined "invasion of privacy" in text.}
- It's an invasion of privacy which should not be sanctioned under any circumstance.
- I do not feel this question can be answered as it is started. While it is not technically an invasion of privacy a car (or auto) owner would be required to remember exactly who was driving their vehicle at all times or risk being held legally responsible. This is unreasonable and I believe unconstitutional. Vehicle owner is being assumed guilty not proven guilty.
- None of the above.

- When you are pulled over you face your accuser.
- "Big Brother" electronic observation of general public by law enforcement is extremely invasive.
- Especially if owner of car is not driving and is held responsible.

Compared to being pulled over by an officer at the roadside, would you say that having an ASED take a picture of both the vehicle's rear license plate and of the driver was: (check the box that most closely represents your view)

- Picture of driver only.
- But the ASEDs didn't arrest, they didn't search, they didn't shoot.
- It's an invasion of privacy which should not be sanctioned under any circumstance.
- One is aware they are being pulled over, however, may have no idea they are being photographed.
- None of the above.
- This will allow person driving to get the ticket not the owner of the car.

Some have suggested that the use of ASEDs is not fair because use of these devices does not allow drivers to explain to an officer why they believe they were not speeding or should not receive a speeding ticket at the time of the alleged offense. Others believe that ASEDs are more fair because the device cannot be talked out of issuing a ticket to all vehicles observed travelling in excess of the preset speed for issuing a ticket. How would you rate the fairness of ASEDs with respect to how they handle who receives a speeding ticket?

- My opinion exactly. {This part of the above paragraph was underlined.} Some have suggested that the use of ASEDs is not fair because use of these devices does not allow drivers to explain to an officer why they believe they were not speeding or should not receive a speeding ticket at the time of the alleged offense.
- No excuses should be considered. The only excused activity would be medical emergency and police can assist them.
- What about if you're speeding to a hospital or an emergency etc.?
- Should be checked for accuracy often.
- Sometimes there might be an emergency situation where speeding might occur.
- If there is a medical emergency you can't explain this to a picture. You also may need help.
- Removes the human element.
- Depends - How many ASED used vs. officers.
- Fair meaning everyone who deserves a ticket gets one.
- What if ASEDs are malfunctioned?
- This is a loaded question! Yes, ASEDs are more fair because everyone gets a ticket, no one gets off, but you don't get the chance to explain.
- They could make an error. (Driver would have no chance against defending self.)
- Are posted limits absolute or "prima facie?" Fairness is/not the issue!
- I don't know how accurate they are in comparison.
- I guess it depends on the circumstances. (Emergencies should be taken into consideration.)
- I can not respond to this query. Is it fair if the machine suffers from random errors in recording, apologize and self-correct.
- That depends on the officer that day. he could be in a good mood or bad. ASED has no mood.
- Don't know about accuracy.

- How accurate are ASEDs? What if two cars pass by at the same speed at the same time? What factors can make ASEDs inaccurate?
- #7 If ticket or letter was sent to everyone photographed. #4 if only some were selected to receive ticket or letter.
- {Much less fair} like a steep hill they want you to ride the brakes wore them out.
- I just don't want ASED.
- It's better to pinpoint the behavior at the time it happened and stop it rather than waiting till something comes in the mail and you try to remember.
- Too new to evaluate?
- But with exceptions in special cases.
- Being spied on at any time is somehow not the American way.
- Don't know enough to answer.
- Can't answer.
- I've never been stopped by either one. So I'm not to {sic} sure, what to say.
- Balances out.
- Officers suck!
- No respect of persons.

Compared to current speed radar technologies, rate how well you believe ASEDs are in accurately measuring vehicle speeds.

- I do not know enough of how ASEDs operate to answer these two questions.
- How am I supposed to judge?
- Don't know enough about it.
- Not qualified to rate.
- I don't know because I've never seen one used.
- No way to know.
- I have no knowledge for answers.
- I have no idea!
- Not familiar with ASEDs accuracy. Can't compare.
- Don't know - ASED worthless if not absolutely accurate.
- I have no idea.
- No actual knowledge.
- I don't know how accurate either is.
- Haven't researched this.
- Don't know about ASEDs accuracy.
- How am I supposed to know, you haven't provided me that information!?
- All are inadequate!
- No way of really forming an opinion on this.
- I can't answer this because I don't know enough about each.
- I have no idea.
- I have no idea.
- I really have no idea. I assume they are the same.
- I don't have enough knowledge to answer this question.
- Could possibly fail.
- How can one rate such a device w/o knowledge of the technology?
- Since I have no knowledge of ASEDs cannot answer these questions.
- Don't have enough information to give a rating.

- No knowledge on which to base an answer.
- Have no idea.
- Would have to see it.
- Can't judge, no premises.
- I am not familiar with the system.
- Don't know stats.
- Haven't seen them used.
- Do not know enough about ASEDs to answer this question.
- Have not read up on.
- Don't know enough to make this comparison.
- Who cares !!
- Don't know their accuracy rate.
- I do not have enough information about ASEDs to answers.
- I have no knowledge.
- Don't know-have seen 0 evidence.
- I don't know enough to have belief about ASEDs.
- Not familiar with this technology.
- No opinion.
- Not enough data.
- I have no idea. Please send me the scientific literature and test studies.
- I've had no experience to judge this.
- Who knows as of yet?
- I don't know how accurate either are.
- No knowledge to comment.
- No information to base an opinion.
- Not enough info or knowledge.
- This is inappropriate! ASED technology is not in use. It {sic} reliability has not been proven.
- No test data provided.
- Assume much more but do not have enough information to answer fairly.
- No knowledge for opinion.
- Who knows - so many different results of tests.
- Like computers, I suspect speed radar technologies and ASEDs are about 50% of the time inaccurate. Human factor in operation dictates inaccuracy.
- I don't have enough knowledge to answer.
- I can't answer this cause I don't know how accurate or unaccurate {sic} they are, especially in heavy traffic.
- Not an expert. Very Bad question.
- I have no basis to make an informed judgement.
- I have no info. either way.
- If ASED's are not accurate-they should not be used!
- I have no idea how they measure a cars speed.
- I have two real experiences where device is 6 MPH off.
- How should I know?
- NA - need to see results of actual usage.
- American technology is unsurpassed.
- Don't know enough to answer.

- Not enough personal info. to answer this question!
- I don't begin to understand how they function. How can this be answered?
- Don't know, never seen one in action.
- Can't answer due to lack of information.
- Neither.
- Can't answer.
- Both seem to be inaccurate instruments.
- Have no knowledge of ASEDs, no comparison with ASEDs.
- Both are not.
- Don't know about any test results showing accuracy!
- No knowledge of either device.
- No information on which to make judgement.
- Not enough info on ASED accuracy.
- Insufficient data for answer.
- I have no info to base my decision.

Compared to current manual operation of speed radar by officers, rate how well you believe ASEDs are in accurately identifying the vehicle identified by radar as the speeder.

- Because they do not rely on judgement and they cannot be called away from post.
- Not enough info/comparison to make a fair judgement.
- Don't know enough about it.
- Not qualified to rate.
- A camera cannot be wrong on a picture. People sometimes make mistakes.
- No way to know.
- I have no knowledge for answers.
- I have no way of knowing that.
- Not familiar with the operation. Can't compare.
- I have no idea.
- Don't know comparative accuracies. I'm guessing.
- I don't know how accurate either is.
- Probably much more accurate.
- I do not know how either an officer or ASED identifies the speeder.
- Since I have no knowledge of ASEDs cannot answer these questions.
- Don't have enough information to give a rating.
- No knowledge on which to base an answer.
- Depending on if a photo is taken.
- Would have to see it.
- Probably much more accurate.
- Equally, I suppose considering I've not heard of this before.
- Can't judge, no premises.
- Don't know stats.
- Haven't seen them used.
- Do not know enough about ASEDs to answer this question.
- Have not read up on.
- Who cares !!
- I have no information on which to base an answer.

- Don't know-have seen 0 evidence.
- No idea.
- No opinion.
- Not enough data.
- I have no idea. What if 2 cars pass by at the same time?
- I've had no experience to judge this.
- I believe is also inaccurate. (With line to and circle around "officer's judgement.")
- I don't know how accurate either are.
- No info.
- Not enough info or knowledge.
- This is inappropriate! ASED technology is not in use. It {sic} reliability has not been proven.
- No test data provided.
- Assume much more but do not have enough information to answer fairly.
- No knowledge for opinion.
- Who knows - so many different results of tests.
- Haven't studied either process so cannot answer this. Nor can anyone else who hasn't studied the process.
- I wouldn't know. I've never received a speeding ticket.
- Want this explained by an officer. Too many differences (human).
- I can't answer this cause I don't know how accurate or unaccurate {sic} they are, especially in heavy traffic.
- Bad question - they are or they are not.
- I have no basis to make an informed judgement.
- I have no info. either way.
- How would we know what's the possibility of picturing the wrong car?
- Again, how should I know?
- I think they are both accurate. I just resent the sneakiness.
- Don't know enough to answer.
- Not enough personal info. to answer this question!
- Don't know, never seen one in action.
- Can't answer due to lack of information.
- Neither.
- Can't answer.
- Both seem to be inaccurate instruments.
- Have no knowledge of ASEDs, no comparison with ASEDs.
- I've heard from one who had their picture taken.
- Neither.
- Don't know about any test results showing accuracy!
- No knowledge of either device.
- No information.
- Not enough info on ASED accuracy.
- Insufficient data for answer.

Do you believe you would drive more slowly in areas where ASEDs might be in use?

- No. If I knew, I would drive more slowly.

- I do not drive over the posted limits anyway and those who do will continue to do so. They will just try to beat the ASERDs and tie up court rooms.
- I would drive the speed limit as I usually do.
- I don't speed.
- I drive the speed limit to drive carefully.
- Only if there was signs posted.
- I would drive the speed limit.
- No, because speeding is not always intentional. Sometimes it's a habit or an individual doesn't realize he or she is speeding. I myself would never intentionally break the law but I have sped.
- Carefully keep driving the same.
- I don't like ASERDs.
- I already try to observe posted limits.
- No, because I obey speed limit signs.
- That's what officers are paid for. I don't believe in this at all!
- Just obey speed limit.
- I always try to stay within the speed limits.
- Who wants to be caught?
- Speed only partial factor involved in accidents.
- More carefully.
- I really wouldn't worry about it. I drive with the flow safely.
- I always drive speed limit or no more than 3-5 miles over so my driving would not be changed by ASERDs.
- I never speed now - anywhere.
- No, because I drive the speed limit and obey the laws.
- I don't speed.
- I would drive the speed limit.
- Could possibly fail.
- No more so than where radar is in use.
- I currently drive to posted limit, it might make me more conscience of the speed I'm driving.
- I do not go over speed limit.
- I follow limits accurately.
- I would go the speed limit.
- I try to go by what is posted now.
- I don't speed.
- Unless there were an emergency. If this is the case they should be able to explain the situation.
- Hopefully the same.
- But I would also drive more slowly if a public safety officer were following me or I knew where a radar, speed trap, were located.
- Unfair question.
- Probably would be more aware.
- I do not speed anyway.
- Yes or any police car (visible).
- Yes if I knew where they were operating. But I would drive just as slowly if an empty police car was parked on the side of the road.
- I don't speed.

- Will drive the speed limit.
- I believe that areas with ASEDs should be identified with signs that are easily viewed from the road.
- All depending on if/how I would know they are in use.
- I obey speed limits like most people.
- I would drive the same as I am now.
- I do not exceed speed limit now.
- I try to obey speed limits, whenever: ASED or not.
- Unfortunately we have to fear an inanimate object. Pretty ridiculous huh?
- I would be more likely to be aware of my speed and drive within the speed limit.
- Except for the interstate, I generally go the limit.
- To (sic) slow!
- I do not speed.
- I do and would drive posted limit!
- Would signs be posted?
- Would not change my driving habits!
- I'd set the cruise control.
- If you are a speeder.
- I obey all speeds.
- When the drivers in my area realized what was happening everyone slowed down.

The next set of questions ask for your opinions about a variety of general public policy issues.

How would you describe the current number of deaths and injuries that result each year from traffic crashes?

- No number of deaths is acceptable but people will die no matter what.
- But not always due to speeding.
- Fix the cause. Safety issues, not the speed traps.
- (Unacceptable) by drunk drivers, not speeders.
- Suggestion; tell me the figures. Any amount of deaths in crashes is unnecessary.
- Get drunk drivers off the road. This would help!!
- But it helps limit the population.
- Too much drinking and driving.
- #1 - alcohol, #2 - drugs, #3 - traffic violations, #4 speed.
- Dumb question - who's going to say lots of deaths is acceptable ?!
- While we should try for zero deaths and injuries I don't think it's possible. Accidents do happen.
- If you are trying to imply that traffic fatalities will decrease simply by the use of ASEDs, I find that unacceptable!! If that is not your intent, you must surely realize that many of your "randomly selected" participants will make that inference. Shame on you!
- How can any deaths be acceptable.
- One is unacceptable.
- Loaded question.
- Drinkers who walk away unharmed yet kill or maim others should be severely punished.
- Focus should be on drunk drivers.
- Any death is unacceptable.
- No death is acceptable if it can be avoided.
- Too general of a question. Speeding, faulty equipment, drunk or what, small cars?
- Mass transportation (amenable and acceptable) rather than big brother tactics would be more effective.
- #3 for those not involving drugs (including alcohol). #7 for those involving the use of drugs (including alcohol).
- This is a stupid question! What number of deaths due to any one cause are either acceptable or unacceptable?
- This question is ludicrous.
- Unnecessary.
- It's not speed as you know. It's 90% due to drugs and alcohol.
- Drinking is more of a problem than 10 miles over the limit.
- This is an insulting question. I refuse to answer.
- I don't know the statistics.
- I do not know the number described above.
- Most accidents I have witnessed involved stupidity as much as speed.
- This is a stupid question. But I don't want all posted speed 20 MPH either.

Some suggest that tax dollars may be best utilized if trained police officers are used in crime prevention and crime solving activities when there are available proven technologies that can be used for traffic law enforcement. Others believe that all law enforcement activities (including traffic law enforcement) should be conducted by trained officers and not machines. In general, do you favor or oppose the use of proven technologies to conduct traffic law enforcement if the use of these technologies frees up police officers for other duties?

- In combination they would be acceptable.
- Depends on the area they are being used.
- But another way.
- Let's have police, plenty of them, and forget the machines.
- Like everything, it would have its good points and bad points. Can we rely on the machines to not malfunction {sic}?
- If frees them up are the police trained for other duties?
- Clock of speed only.
- What kind of loaded question is this!?! C'mon guys, be fair!
- Only if the ASEDs are 100% accurate, which I doubt.
- Because I believe law enforcement should be conducted by trained officers and not machines.
- Machines can't help motorists stranded roadside!
- Although drunk driving is a crime and without an officer present there would be no breathalyzer {sic}.
- Leading question invalid.
- Not enough information. Question is vague, general and could be misleading.
- Machines puts people out of a job.
- If implemented they will just cut back the number of officers in general like all automation.
- Favor by far.
- However, traffic law enforcement consists of more than speeding.
- Please not that the majority of criminals captured are through vehicle stops by police officers! This is a program designed for revenue-gathering-not law enforcement!!
- Neither because of possible error in human or ASEDs.
- Does traffic law enforcement really work? If 50-80% of all cars speed on the freeway and the police catch 1% of all speeders what difference does it make? In Germany on the Autobahn there is no speed limit. What studies show about the number of traffic accidents there? Please send studies to me.
- I fear that government would just use this as a means or excuse to lay off more police officers over time citing {sic} budget reasons, not maintain current number of officers and just reassign them to crime.
- But I am suspicious of criteria for determining proven!
- Sometimes just seeing police cars on the road acts to slow down cars.
- Depends whether you talking about city police or state police.
- Mixed feelings - I would prefer a person to a machine, but I also know funds are tight. Crime has gone up in my city and the police force is very much appreciated.
- But a lot depends on who the violator is and particular {sic} officer's attitude is he over worked/or stressed or chip on his shoulder that day.
- We need more officers who work in both areas.
- Use the officer with the technology.
- We still need police on the highways in case of emergency.
- I do believe the police could be used for more serious crimes (other than speeding) but do not agree with ASED's.
- Depends on the type of "proven technology."
- I agree very much so.
- "Other duties" should still be attended to before traffic. Speeding, etc. on the road will not run rampant without traffic cops.
- Officers should keep their noses out of traffic control.
- Want police on the road for protection or help.

Please answer the following questions about yourself.

Age: _____

- None of your business.

Sex: M F

- Not necessary.

Do you own a radar detector?

- I wouldn't want one.
- They should be illegal - all they are intended to do is break the law!
- None of your business.
- Don't use radar detector.
- Yes, but don't use it.
- No and I never have owned one.
- But it doesn't work.
- But very, very infrequent only on trips of 150 miles or more.
- However, believe it or not, we never use it! Too much hassle.
- If you don't go over 10 miles over the limit their {sic} not needed unless ASED's in use.
- I have cruise and I use it.
- I think they should be illegal.
- They should be outlawed - only the cheater {sic} have them.
- Father's.

How many tickets (not including parking tickets) have you received in the past 2 years?

- First one in 25 years! Dam it!
- But I always drive over the posted speed on the freeway because it's too slow.
- No tickets in 15 years.
- Have never received a ticket.
- I have never had a ticket!
- None of your business.
- Never have received a ticket.
- None in 20 years!
- Zero with no accidents and I speed.
- Both in Maryland
- Never had a ticket in all my driving years.
- One in Canada.
- FYI: I'm 33 yrs. old and never received a ticket.
- 2 in 5 years.
- Stopped {sic} on steep hill.
- 0, however, speed a great deal.
- No tickets in 25 years.
- No tickets during my lifetime driving 1929.
- The first ticket in 26 years and I feel the negro female officer loved giving it to me. She just asked for my license and made out the ticket. I wrote and protested and the charge - missing a stop sign - was reduced. I still paid the fine but no points. OK. You guys just don't get the point. We have plenty of drunks, speeders, and those who kill

with a car. You just don't take them off the road. You have the numbers on how many repeat offenders cause how much and many accidents and injuries. Toughen up the laws on repeaters. Some people don't give a dam {sic} others do. Don't pass some more dumb ass laws that lump all drivers in a group. Of course I may be talking to the same bunch of black hearted son of a bitches that sold our legislature on no-fault. What a lie to the people and a boon to the insurance industry. About these ASED's you are going to be photographed every time you enter and leave the building with whoever you leave with. We will do this whenever we like - without your knowledge or consent. Now how do you like it.

- I have had 1 ticket in the last 28 years.
- Never since I've received my license when I was 16, and yes I'm very proud.
- I have not had a violation in 15 yrs or more and I drive approx. 25,000 miles per year as a salesman. In 65 zones I'm at the end of the line most of the time. I seem to be in the way of 75 to 80 speeders. Something has to slow the speed and save some lives.
- Not in 56 years of driving.
- No tickets, no accidents.
- two total in my life!

Additional comments at the end of the survey.

- This will only use tax dollars at (inflated) rates to administer this technology and program and then make courts busier and lawyers richer. If want fewer traffic accidents/injuries, put more money into good technology for roads, auto safety and decent public transportation. Use the majority of the tax money that would be wasted on regulating behavior to build decent houses and parks.
- I do not like the idea of big brother watching me.
- Don't spend too much time and money on ASEDs.
- What else will prevent accidents? Fix the roads.
- I oppose ASED so strongly because the danger the flash causes to the driver, especially at night or on a motorcycle.
- Just get the drunks off the road and the accident rate will go down.
- I also feel a need for the personal contact to continue as lots of times I feel drugs, alcohol and other warrants, etc., are found when it is a personal pull over! And also feel let them know about it when it happens, not a day or week later! If they're foolish enough to drive reckless let them be embarrassed! They've brought it only unto themselves!!
- We need policemen to assess the real causes of most accidents: 1. People in a hurry - pull out in traffic when not safe, 2. People driving below the posted speed limit, 3. People not using their turning signals.
- I disagree with the use of ASED as prescribed. If it were ever to be implemented its use in my opinion might be in special situations be used for criminal identification only with the preapproval of the court of law for selected enforcement. My opinion on ASED use taking photos of persons in a vehicle whether in violation or not is like a mug-shot - as in a criminal vogue. One of the highest forms of invasion of privacy on persons. If my speedometer is off 10 or more miles per hour am I instant criminal? Mug shot and all. (Special approved situations) I firmly believe ASED could be used as a fact gathering method only. If necessary the pictures could be used in a court of law spec. situations only. Using as suggested to fine the owners (and/or) driver by mail would be the highest form of enforcement delinquency - to allow the vehicle to proceed after a civil infraction would be completely derelict (sic) - allowing DUILs, etc. to continue down the road will eventually bring the roof down on the enforcement dept. You cannot hide behind a machine. Traffic enforcement has to stay with a base of contact. Basic police duties are: 1. Protection of life and property, 2. Apprehension of tr. viol., 3. Prevention of crimes or civil infractions. The basic tools are: Enforcement, engineering, education.
- Nothing in this survey form regarding alcohol/driving/speeding/accidents. Short of prohibition I strongly favor abolition of all advertising of alcohol products, very heavy taxation of them and more public education of the moral and destructive aspects of alcohol use and abuse.
- Yes, police should spend more time on crime and less on traffic. No, excessive speed is not the major contributor to traffic crashes. The biggest major cause of traffic crashes is people who drive in the passing lane without passing (True! Check the statistics!) (The usual crash is when they finally merge right they smack into somebody passing on that side.) If we want to attack traffic safety let's start with more obstructing traffic tickets, not an unconstitutional "brave new world" surveillance device.
- Is this supposed to be an argument or a questionnaire? I see it as a series of "have you stopped beating your wife?" questions. Why can't you ask "Do you think speeding causes auto crashes? If that's really what you want to know. Of course driving too fast for conditions causes crashes, but speed limits are more often political than safety

related. Speed limits are no way to judge safe speed! As far as ASED, this concept is an outrage and clearly a violation of the constitution. What's next? Bugs in our homes? Camera supervision in our bedrooms? No! to ASEDs and let's get the cops out of the speed trap business and into the crime fighting business. If we must have traffic cops let's have them enforce safety not politics. Let them go after the 20 year old doing 80 on a side street and the 80 year old doing 20 on an interstate but lay off if I want to do 65 where there's a 55 energy crisis limit.

- Automated systems should be used to monitor those driving thru {sic} red lights - this is increasingly more common and dangerous.
- I believe the very young and very elderly driver cause more accidents by far than speeders, also the drunk drivers.
- Human beings are not perfect, however, more drivers education, in my opinion would help.
- This whole thing is a "big brother is watching you" that has ramifications for beyond traffic control. If Dr. Streff wants to really do something to effect efficient traffic flow I would suggest he apply his human factors research to figuring out how to increase speed limits, not reduce them (remember, when the freeway speed limit was 70 mph in Mich?). P.S. I believe Michigan has the finest state police force in the U.S.A. and their human qualities are to be preferred to automatons.
- The trouble with this survey is we can answer your questions only. I believe cars, brakes, etc. are safer now than they were 20-50 years ago. I believe speed limits should be increased and then strictly enforced. Interstates in open country would be safe at 75 mph. Most city streets are too slow at 25. Rural roads could be 65 unless there are a lot of houses or heavy traffic. Most people drive 10 mph over the posted limit. Is speed really the cause of accidents or is carelessness regardless of speed?
- Thank you for asking me to participate in this survey. Some questions were difficult because speed limits in this city are very inconsistent 25-55. Also how can one prove if our speedometer or your equipment is malfunctioning.
- My complaint with this new technology is that the person is not stopped while doing the speeding. Stopping motorists in the act of violating traffic laws allows policemen to detect intoxicated or otherwise impaired drivers who are an immediate threat. There are some valid uses for this technology, but I feel it should NOT replace police officers in the traffic enforcement area.
- It is stupid to waste money on speeding unless you are honest and admit that it is just a form of taxation and a harassment of the citizenry.
- Questions: What happens to pictures after taken and processed? Who checks and how often the reliability of the speed detectors?
- Do you have a camera that can stop drunks? I would love to stop drinking and driving.
- P.S. I have never had a speeding ticket in over 30 years of driving. I resent speed "traps" used by towns to generate profits. I support starter interlocks to prevent vehicle operation by an impaired (alcohol/drugs, etc.) driver. That would be good use of technology!!
- A drunk driver is much more dangerous on any road than a speeder. You would lower the death rate by controlling drunk drivers. Permanent loss of license, 2nd drunk driving offense, lane checks, random car checks at Mackinac Bridge toll gate, construction sites when one lane has to be stopped. More officers on the road not less.

- The incredible economic stratification between the employed and unemployed, and the well paid and the poorly paid (many) is contributing to a growing crime situation which will become a very critical issue in our society. We need policing.
- I hope this didn't cost taxpayers any money because I don't see how any possible valid information could be garnered from these questions.
- I oppose the use of ASEDs because I believe it further distances the public from the people who are there to "serve and protect" them. When dealing with the human factor a machine can not call on feelings or past life experiences. To enlist people in the social network and to solidify public cooperation should not be underplayed.
- Have you read the book "1984?" Big brother is watching...
- I believe that ASEDs are in use in Europe and have been for a while. You might check and see what impact it has made on driver's and their habits.
- For people to trust the police like they used to the police need to get out and relate to people on all levels. (Including traffic enforcement) Hire more cops, use the money to be spent on machines!! Train them in public relations the way unions train their representatives. This would employ more people and take pressure off the already overworked police. Also I am against all invasions of privacy, ASEDs, seat belt laws, helmet laws, etc. Remember communism is dying.
- I believe: 1. Cars are built to achieve too great of speeds. No car on a road should be able to go over 85 mph; 2. Drivers, in general, don't follow signs or road lines. Maybe a more detailed test with important questions on it instead of which way would you park a truck. Would refresh their minds on; 3. Drivers, a small percent of them, are not polite - no respect for fellow drivers; 4. Some drivers are immature behind the wheel - peeling rubber - giving other cars the brights - cutting off cars - etc.
- I believe 55 mph is too slow of a freeway speed limit. I'm against machine's issuing tickets and I don't know how accurate the different kinds of radar are. I also believe poor driving and poor driving skills should be ticketed. Rush hour speed limits (55) is fine and necessary. 65 mph from 6:30pm to 7:00am Mon. thru {sic} Fri would be more acceptable.
- Speeding tickets are just another tax on citizens. Also the increase in insurance costs outweigh the cost of the tickets. Severe fines should be given for the consequence of our actions -- crashes, drunk driving that results in a crash, etc. I oppose any restriction in my freedom. (Drunk "check lanes" are next on my list.
- I wish Michigan traffic laws could prevent drinking and driving together.
- We still need officers on the roads. We have too much crime to take patrol officers off the road. We have stolen cars, stolen plates, drunk drivers etc. Taking pictures and issuing tickets won't arrest them. We have lots of people on the roads with suspended licenses or stolen IDs. We have lots of crimes on the roads that need officers, to say nothing about break downs and accidents.
- How would this device photograph a license plate that is hinged up out of sight?
- I believe ASEDs are completely unconstitutional as a deprivation of privacy rights. They do not meet procedural due process requirements and are completely arbitrary. What if 2 cars, side by side, are speeding - why should only one driver suffer a ticket. I absolutely refuse to accept ASEDs and as long as I live, will never pay for a ticket issued by a camera.
- I am not returning the questionnaire you sent to me because I now live in Chicago - and am working for a market research and consulting practice - both of which probably make me ineligible.

- I believe it should be mandatory to have more drivers education. The simple test given each year, does not show if people know how to merge on highways, drive in right lanes except to pass on left, how to judge breaking (sic) distances, etc. I believe 90% of all accidents are caused by the other person. There are a lot of dumb/stupid drivers out there. If a person is caught drunk driving once, he/she should never be allowed to drive again. All in all, I believe what I learned 20 years ago in drivers ed: driving is a privilege. This ASED won't educate drivers!!
- Far too many speed limits are unrealistically low and serve more to make law-breakers of otherwise law-abiding citizens than they do to promote safety. Devious enforcement of such laws is perceived as unfair and tends to increase the disrespect, even contempt, with which traffic laws and the traffic law enforcement system are viewed.
- Whoever is paying to have this "research" done is wasting their money. The only 4 valid questions are from age on. Every other question is worded too loosely with too many unknown variables for people to fill in for themselves. For research finding to be valid response (sic) must be answering the same questions, which means there should not be room for personal interpretation. State a clear, concise question if you want clear, concise answers. If someone is being paid in connection to this "research", especially if that person is a PhD, please let me know when this person is terminated as I would like to apply for this position. I may not have my PhD but I could certainly do better quality work than what I see here. Someone might want to consider signing up for remedial marketing research course.
- My big concern is malfunction of these things. I do not want to go to court to prove my innocence because of a malfunctioning machine.
- I sure would like to see more being done about drunk driving. It scared the {blank} out of me.
- Machines are not error free. How do you fight a picture of your car and a radar that says you were speeding if indeed you were not?
- I do not believe ASEDs are the answer to our traffic problems. The problem is not speeders as much as traffic volume. I feel our tax dollars would be better utilized if they were invested into public transportation programs.
- What would you do with out-of-state drivers? Only Michigan residents would receive and pay for tickets.
- I have been involved in three auto crashes . In none of these instances was speeding a factor.
- Take the people who have bad eyesight and cannot see over the steering wheel and are over 70 and always travel 20 miles below the speed limit of (sic) the road and the accident rate will decrease by 25%.
- I personally disagree with the use of ASED. I feel there would be too much inaccuracy in the use of this equipment. Without knowing more facts about this system, my opinion will not change. I feel with all the drug trafficking (sic), illegal aliens, drunk driving, etc. this will not stop any of these offenders. Why doesn't traffic law enforcement become a separate (sic) department.
- Large trucks are a real problem. No enforcement of 55 limits on freeways!!---
- For what it's worth - the highways of Michigan and elsewhere should never be without police officers in good numbers. Two years ago, on a Sunday before Memorial Day, I experience (sic) auto trouble. Traffic was heavy on the freeway. I walked 5 miles, as I didn't want to be stranded after dark. I saw no police car during that time. "Proven technologies" may deter speeders and therefore save lives, but they have little effect when one is stranded.

- Although speeding does add to the cause of accidents, I think other issues enter into accidents such as inexperienced drivers, alcohol, drug use, lack of adequate training. I also think that a machine does not let a speeders {sic} know right away that he is not following the laws. A piece of paper does not prevent an accident if other problems are causing the speeding such as alcohol or drug abuse. If a officer is on the scene he/she can assess the condition of the driver as well as the speeding and prevent accidents cause by other abuses.
- Biggest issue I would have with ASED's is that they don't address the issue of drunk drivers, wild drivers (who are necessarily speeding), etc. I would be concerned that these problem drivers might be less noticed if we replaced police officers with ASED's. The other issue is - how reasonable is it to ticket based on going over the posted speed limit, when the vast majority of people drive with 65 as there {sic} base speed?
- The ASED should do the same with slow drivers as well as speeders.
- This was sent to my 43 yr. old husband. He did not have time or interest in completing - so I did in his place.
- I may think the ASED is a good tool, however, I will be upset of it catches me speeding!! How will you be able to enforce a fine and points if you cannot be sure who is driving the car ie: son, daughter, friend, etc.?
- I also feel that current use of radar should be reevaluated as many times the use of radar is not accurate!
- I've lived around law enforcement people my entire life. My mother works for Kazoo county and my twin sister the state. What gripes me more than anything is our state officials are so eager to spend money on a stupid machine rather than invest the money into the people who support this state. Giving the current officers a raise and paying them what they're due and giving better training to the county and city officers so they are equal in abilities to the state police and hiring more police so we can have a human being there to protect us or pull us out of a crash {sic} vehicle. I sure like {sic} to see one of your little cameras try that.
- If speed control was the reason for accidents, then I would strongly favor ASEDs but "speed traps" have been used for revenue generation, graft, and tyranny. ASEDs would lead to even a stronger abuse of gov't power!
- I have driven in Europe, quite extensively in Great Britain where speeds on the expressways are 90 to 100 MPH. The British Police do not pull you over for speeding until you exceed 100 MPH but will pull you over for not obeying the rules of the highway (changing lanes without signaling, staying out in the passing lane, etc. The drivers all seem to display more common sense. I feel that pulling someone over for speed that is otherwise obeying the traffic laws is a waste of time and infringement on their rights.
- Would like more information on this survey will it allow politician's when guilty to be exempt and burn truck and bus drivers and working class in general waste tax payer's money and be a waste of time straight across the board for all ok then impliment {sic} now to save lives.
- Spend money teaching driver safety - the danger on our highways is not caused by speed as much as inept drivers with unsafe vehicles. How will your electronics for "speed patrol" handle a drunk driver? Educate and test drivers for proper skills!!
- I would appreciate a copy of the final report.
- MY VIEW ON THE ASED I think it is a BIG waste of money and time. People speed all the time and don't get caught, or into accidents. I feel it is a big invasion on my privacy. If I could scrap this operation I would in a second!!

- Machines can and do make mistakes the same as humans. Anyone who feels that he/she has been falsely accused by ASEDs or radar should indeed be able to contest in court.
- Don't you issue tickets to people and not cars? What are the implications if you loan your car to someone? What if the ASED's malfunction - does the supposed speeder get a fair shot at protesting? Does it become you {sic} word against a machine's? Then who do you believe?
- I think all efforts need to go to getting drunk drivers off the road...not taking pictures of speeders.
- ASEDs set a frightening precedent in surveillance techniques!!! This questionnaire seems biased to me - attempting to get positive responses about the ASED program (e.g. the laser question).
- NOTE: I think that what-ever is done should be very well publicized, so, the public can't say they were well advised and informed.
- It is all right to have the ASED's but if you take the police away from traffic duty who will bust the drunk drivers before they kill someone. Plus who will be on the highway when someone is threatening you with their vehicle.
- I think you are wasting my and your time, plus a lot of money for stamps-envelopes etc. Taxpayer probably foot the bill again. Studys-studys {sic-sic}.
- It would have been environmentally as well as financially prudent to decrease type size and print on 2 sides of the page for this survey!!
- Has a study been done to determine the amount of radiation an officer could or would get from those radar guns. If so is officer informed of the risk - high or low?
- I feel that it is much better to have trained police officers performing traffic stops. Not only would they be able to judge the fairness of a ticket, but they would also be available to determine if a driver is under the influence of any controlled substances. Those are the drivers of most concern! The ASEDs would not be able to do so. They would not immediately run a check on the vehicle to check to see if stolen, warrants on driver, etc.
- I have a few comments I would like to make regarding the enforcement of speed limits and the rights of individuals. I am opposed to the use of radar, in any form, or the monitoring of citizen's {sic}, by our government. Whether the police, who are government employees, use conventional microwave radar, VASCAR, laser (LIDAR) or aerial surveillance to check a person's speed, I feel the government is technically monitoring me without me knowing. That is why radar {detectors?} should be legal in all 50 states. I have the right to know if I am being monitored by the government. With ASED, they probably use "instant on" radar, which means I will not know I'm being monitored until it happens. I feel I have the right to know before hand. That will explain why all my responses to questions regarding the use of ASED, "oppose" is how I have to answer.

In response to comparing ASED issued tickets compared to being pulled over by an officer, I feel both are extreme invasions of privacy. The manpower should be used catching murderers, rapists, drug dealers and the like. Our highways were designed for 70+ MPH, cars are more crashworthy and safer, and drivers are better prepared to survive daily driving. I feel the current number of death's and injuries are acceptable, because accidents do happen. People die in the bathtub, too!

All speed limits are 10 MPH too slow as it is, and since they raised the speed limit to 65 MPH, less people per mile traveled have died. Money should be allocated teaching better driving habits, courteous driving skills and defensive driving skills.

One final note, if 50% of all accidents involve drunk drivers, what does that say for the 50% that weren't drunk when they were in an accident! The U.S. Government is too worried about saving us from ourselves!

P.S. Sobriety check lanes? Next thing you know they will be asking if they can check our houses for illegal handguns - it'll only take a few minutes!

- I'm declining to answer the questionnaire and am writing you because I object to the design and approach of the survey.

The questions seem to me to be leading. There is a clear progression set up: speeders cause accidents, speeding is bad, ASEDs could be used to replace police officers who aren't adequately regulating highway speeds, so why not use "proven technologies" to "free up police officers for other duties"?

Baloney. The survey doesn't allow me to express my opinions on the subject: 1. Since people don't know they're being ticketed, there will be no immediate compliance (as there is where some police departments park an idle squad car with a mannequin in uniform at roadside). 2. Because people won't slow down, those of us who are forced to keep up with prevailing speeds when we'd rather go slower will still not benefit. 3. The primary goal of ASEDs is more likely to be revenue increases for units of government, since it's difficult to see how they would lead to slower speeds. 4. Since speed enforcement on Michigan freeways is already preposterously inadequate, what evidence is there that "freed-up" officers would be put to productive use, rather than laid off to cut the budget?

Who funded this "study"?

- I'm really glad you chose me to fill out this questionnaire. I had this ASED happen to me once, the car was an older model, sitting at the bottom of a hill so when you went down the hill, your picture was taken. The second letter I received informing me I was speeding was in a location where I never drive, never was anywhere near at the time they stated, and could prove such. Very upset, I wrote a letter to John "patton" Nicholes informing him of the error and requested a retraction. He never had the courtesy to answer my letter, and I find that unexcusable when it comes to something this important to the public. I was very upset over this incidents, and still am. I was contemplating seeking an attorney, and feel that I should persue the matter. This "incident" has affected me emotionally very much.

I feel this is a total invasion of privacy and it has errored (sic) as I just pointed out. I also saw an old car on Wardlow, also at the bottom of an icline - is this the normal procedure, to put these things at the bottom of hills?

One more thing, these places were in 35MPH zones, why isn't there something done on M-59 at the time kids are driving to school in the morning? They not only disobey the speed limit, but I am appalled by the way they drive, not only do they exceed the speed limit, but the darting in and out of traffic makes one quite nervous.

- The kindergarten classes have been invited by the Kalamazoo Police Department and Detective Ron Snow to have an ice cream treat at the House of Flavors. The trip will be Monday, May 18, 1992. We will go by bus. Your child must have a completed permission slip in order to go. Please complete the attached form and return it to school as soon as possible.

