*AN ANALYSIS OF PUBLIC POSTING IN REDUCING
SPEEDING BEHAVIOR ON AN URBAN HIGHWAY*

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The effects of public posting on speeding behavior on an urban highway were assessed using a reversal design. During baseline the percentage of drivers speeding was measured with a concealed radar unit. During the daily posting condition a highway sign was installed which provided feedback on the percentage of drivers not speeding yesterday and the best record to date. This sign was then covered and reintroduced. Results indicated that the sign was effective in reducing speeding behavior. Furthermore, the effects were most pronounced in reducing the speeds of the faster drivers. Next, daily and weekly postings were compared with the sign alone without numerical feedback: results revealed that the weekly posting condition was as effective as the daily posting condition, but that the sign had no influence when numbers were not posted. Finally, the weekly posting procedure remained effective during a 6-month follow-up condition.

DESCRIPTORS: public posting, speeding behavior, driving speed, feedback, highways, police procedures, driving behavior

Although the automobile is certainly a useful tool, its use is also associated with societal costs such as accidents and resulting casualties. One factor that has been associated with accidents is deviation from prudent driving speeds. Data obtained from many American states (Cirillo, 1968) show that as vehicle speed varies from the mean traffic speed, the chance of an accident increases.

One method of managing excessive speeds and thereby decreasing accidents is the posting of speed limits. For example, the Department of Scientific Research, Road Research Laboratory (1963) cites evidence obtained from Great Britain, Northern Ireland, the Netherlands, France, the United States of America, and Germany,

showing that posting speed limits decreases speed. In one study reported, the removal and reintroduction of a 30-mph sign was associated with an increase and subsequent decrease in mean speed. Furthermore, all studies reported that have examined the results of posting speed limits have found a more pronounced effect in reducing the percentage of drivers traveling at higher speeds than in reducing the percentage of drivers traveling close to the mean speed (Department of Scientific Research, Road Research Laboratory, 1963).

In every case where information is available, the imposition of speed limits has also resulted in a reduction in accidents and casualties. This effect tends to be largest on main traffic routes in built-up areas, where the posting of speed limits has been found to reduce fatalities and serious casualties by 50% (Department of Scientific Research, Road Research Laboratory, 1963).

Research has also suggested that the reduction of the speed limit to 55 mph on American highways had led to a reduction in the number of fatalities (Labrum, 1976) and that a mandatory 55 mph speed limit is more effective in reducing

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driving speeds than a voluntary 55 mph speed limit (Gadallah, 1976).

Although the posting of speed limits has been shown to be effective in reducing both speeding and accidents, there is still a good deal of room for further improvement. One possible way of potentiating the effect of posted speed limits that has been studied is increased enforcement of speed limits. Cirillo (1968) found that the level of enforcement on a section of road had little or no apparent influence on speeding, with the number of hours of police patrol and the number of arrests being unrelated to mean speed or accident rate. Edwards and Brackett (1978) reported the results of a large study conducted in Texas which showed that traffic speeds were unrelated to the frequency with which citations were issued. These findings are in accord with data indicating saturation patrolling is not effective in decreasing burglary (Schnelle, Kirchner, McNees, & Lawler, 1975) or in decreasing crime (Schnelle, Kirchner, Casey, Uselton, & McNees, 1977).

Similarly, stricter penalties for those caught speeding have not proven effective to date. Campbell and Ross (1968) performed an analysis of a crackdown on speeding in Connecticut which involved stricter penalties. A time series analysis of the data obtained did not reveal a significant change in the number of fatalities.

Another approach to increasing compliance with speed limits is to increase police visibility. Edwards and Brackett (1978) reported that stationary patrols were more effective than moving patrols in reducing traffic speeds in terms of distance over which speeds were affected and the absolute degree of effect. However, even with stationary patrols the degree of influence was limited to 3 miles on either side of the vehicle, and only persisted while the vehicle was present. Further, the cost of placing police cars around the clock in areas where speeding is a problem is certainly prohibitive. However they also presented data indicating that daily (Monday through Friday) random deployment of stationary patrols along a section of highway followed

by a thinning schedule with the presence of patrols reduced from 5 to 3 days per week was moderately effective in reducing speeding. Unfortunately, this strategy still involves the use of a large amount of manpower and equipment. In another study, Galizio, Jackson, and Steele (1979) also found that the presence of a marked police car reduced driving speed. They also demonstrated that a standard "radar-enforced" speed limit sign had no effect on driving speed.

Using another approach, Liswood (1975) examined the effects of a large-scale public education project on speeding on the Riverside Freeway in California. Their treatment package included saturating the freeway with patrol cars equipped with "IT'S 55" signs, the distribution of "IT'S 55" bumper stickers, and an extensive coordinated public relations program. They reported a 43% change in compliance with the speed limit. However, this project cost approximately \$2.04 per individual daily driver affected.

To date, no one has reported a method that increases the efficacy of posted speed limits in an economical manner. One technique that has been successful in producing changes in other areas is public posting of performance. For example, public posting has been successfully used to improve the performance of psychiatric aides and attendants (Panyan, Boozer, & Morris, 1970; Pomerleau, Bobrove, & Smith, 1973; Quilitch, 1975), swimmers (McKenzie & Rushall, 1974), tutors (Barnard, Christophersen, & Wolf, 1974), and elementary school children (Van Houten, Hill, & Parsons, 1975; Van Houten, Morrison, Jarvis, & McDonald, 1974; Van Houten & Van Houten, 1977). The purpose of the present experiment is to determine whether public posting of driver performance can reduce speeding in a residential area.

METHOD

Participants and Setting

The participants in this study were drivers traveling along a section of public highway be-

tween 10:30 and 10:50 a.m. and between 2:30 and 2:50 p.m. on weekdays.

The highway studied was a four-lane undivided highway entering a residential area of Dartmouth, Nova Scotia. Only westbound traffic (traffic entering the city) was studied. Drivers traveling along this portion of highway were required to reduce their speeds from 80 to 50 km/hr (50 to 30 mph). This particular roadway was selected for study for several reasons: first, there was limited opportunity for cars to enter the roadway after passing the sign thereby making it possible for the observer to be sure that all recorded cars had passed the sign; second, the transition from a limited access highway to a main street with intersections made the failure to slow down particularly dangerous; third, the police suggested that this section of roadway had one of the worst speeding problems in the city.

Apparatus

Vehicle speeds were measured using a Mark IV-A Radar Speedalyzer manufactured by the Stephenson Company. The radar antenna was housed inside a specially constructed wooden box fitted with a glass window. The box protected the antenna from the weather and any other outside disturbance. The box containing the antenna was placed along the road, inside a yellow litter can and was aimed at oncoming traffic through a 22-cm wide $\times$ 18-cm high opening, which had been cut into the drum for this purpose. The radar antenna was placed approximately 0.5 m from the edge of the pavement at an angle of less than 10° with the highway center line. No corrections of speeds were necessary at these small angles. The metering component of the radar unit was placed inside an automobile parked on a side street and hidden from the view of approaching traffic. The radar unit was connected to the antenna by means of a 30-m extension cable, and powered from the automobile battery by means of the car cigarette lighter outlet.

The litter can which concealed the radar unit was constructed from a steel drum, painted high-

way yellow, which measured 0.86 m high and 0.6 m in diameter. The litter can was located approximately 0.5 km inside the 50 km speed zone.

The feedback sign was constructed from 1.8-cm thick plywood and measured 1.2 m high by 2.1 m wide. This sign was placed approximately 2 m from the side of the roadway at its closest point, and its bottom edge was 2.3 m above the ground. The sign was constructed in the same manner as those made by the Nova Scotia Department of Highways. The sign was white with black Scotch vinyl print. All letters were 15.2 cm in height, and numbers were either 20.3 cm in height or 15.2 cm in height. Numbers were mounted on plywood rectangular panels so they could be easily changed. These number panels were mounted on the sign by slipping a hole in the top of the panels over bolts projecting from the sign and securing the panels in place with the use of wing nuts. A photograph of the basic feedback sign is presented in Figure 1.

The sign was installed at the beginning of the 50 km speed zone next to the first 50 km speed limit sign. The overall layout of the setting is presented in Figure 2.

Apparatus Reliability

The radar unit was calibrated and inspected by a private company (Atlantic Instrumentation Services) at 2-month intervals throughout the experiment. In addition, the calibration of the unit was checked prior to beginning each session by switching the unit on and holding a vibrating tuning fork in front of the radar antenna. During these tests the unit read 35 mph (56 km/hr) if it was properly calibrated. On all occasions the unit functioned normally.

General Procedure

The 20-min radar sampling sessions were begun each day, Monday through Friday, at 10:30 a.m. and 2:30 p.m. Before beginning each sample the roadway was inspected to ensure that traffic was not hindered by construction crews. The radar antenna was then placed inside the

Fig. 1. A picture of the feedback sign taken during one of the daily posting conditions.

steel drum by the experimenters and sampling was begun. Drivers' speeds were recorded for 20 consecutive min during both morning and afternoon sessions. The mean number of cars re-

corded each day during the experiment was 244 with a range of 201 to 286. Not all drivers passing the radar antenna during these periods were included in the samples because the radar unit

Fig. 2. The overall layout of the experimental setting with the position of the litter can and feedback sign indicated.

required manual resetting by the operators each time a vehicle was detected. Because the operation of the reset button took approximately 1 sec, a car passing close behind an observed car was occasionally missed. It was also impossible to record cars in the shadow of an observed car, i.e., a car driving alongside an observed car. However, no more than 9% of the total cars passing the unit were excluded for these reasons.

In order to obtain a finer degree of experimental control, the head of the police traffic division agreed to keep all patrol activity constant in the area under study. Officers patrolling the area were not informed of the purpose of the research by their supervisors. Observers also kept a record of each time a police unit passed them when they were obtaining data. A tabulation of these data revealed that police patrolling remained constant. Lastly, the experimenters obtained from the police a record of the number of tickets given out each day in the area under study.

Interobserver Agreement

The radar unit displayed vehicle speeds on an analogue meter. In order to assure that this meter was being read correctly, a second observer independently recorded meter readings twice during each condition. The second observer was unable to see the results being recorded by the primary observer.

Because both observers were unable to view the meter from exactly the same angle, some disagreement due to parallax must be assumed. Thus, the two observers were considered to have agreed when there was less than a 2 mph difference between their estimates. The measure of interobserver agreement was calculated by dividing the number of agreed upon readings by the number of agreed upon readings plus the number of disagreed upon readings. These values were converted to percentages by multiplying them by 100. Interobserver agreement was high throughout the study, ranging from 98 to 100%.

Experimental Design

The study used a reversal design (Baer, Wolf, & Risley, 1968).

Baseline 1. During this phase, vehicle speeds were recorded daily according to the procedure outlined above. The feedback sign had not yet been erected. This condition lasted eight sessions.

Daily posting 1. During this phase the sampling of vehicle speeds continued as before. However, prior to the first sampling session the feedback sign was erected at the beginning of the 50 km/hr zone. The sign indicated the percentage of drivers traveling at 66 km/hr (41 mph) or less during the preceding day ("Drivers Not Speeding Yesterday") and the highest percentage of nonspeeding drivers recorded to date ("Best Record"). Although the speed limit was 50 km/hr, 66 km/hr was chosen as the cutoff point because vehicles traveling below this speed were not considered to be significant threats to safety under most conditions by both the local police department and the Nova Scotia Highways Department.

The percentages posted on the sign were based on the combined results of the morning and afternoon sampling periods and were changed each day following the afternoon sampling period.

Baseline 2. During this phase the feedback sign was covered with a large green tarpaulin while the daily sampling of vehicle speeds continued as before.

Daily posting 2. This phase was conducted in exactly the same manner as the first daily posting condition.

No-numbers 1. During this condition the sign remained visible; however, no numbers were placed on the sign. Radar sampling continued as before.

Daily posting 3. This phase was conducted in the same manner as the first two daily posting conditions.

No-numbers 2. This phase was conducted in the same way as the first no-numbers condition.

Weekly posting 1. At the beginning of this

condition the feedback sign was changed to read "Drivers Not Speeding Last Week." During this phase the percentage values posted on the sign were changed only once each week, although the sampling of drivers' speeds continued on a daily basis. New values were posted immediately prior to the first recording session of the week and were based on the results obtained on a randomly chosen day from the previous week.

No-numbers 3. This phase was conducted in the same way as the preceding two no-numbers conditions.

Weekly posting 2. This phase was conducted in the same manner as the first weekly posting condition.

Follow-up. This phase was conducted in much the same way as were the preceding weekly posting sessions. The difference between this phase and the others was that daily measurement was discontinued and drivers' speeds were only sampled on a randomly selected day each week. As was the case in previous phases of the experiment, 20-min readings were taken at 10:30 a.m. and 2:30 p.m.

Probe Data

During the seventh session of the initial baseline condition and the eighth week of the follow-up weekly posting condition, 20-min measures were made at hourly intervals from 9:30 a.m. to 4:30 p.m. These data were collected in order to examine whether speeding behavior tended to vary over the day and whether the sign was equally effective throughout the day. Early morning and late afternoon readings were not obtained because dense traffic made speeding virtually impossible at these times.

Social Validation Data

In order to validate the importance of any speed reduction produced by the treatment conditions, the Dartmouth Police Department computed statistics on the number and estimated cost of accidents that occurred on the portion of the highway covered by the sign from the location of the sign to the controlled intersection at

Woodlawn Avenue. The cost figures were based on estimates made at the scene of the accidents by police officers on their accident reports. The police officers who completed these reports were unaware of the purpose of the experiment. Information on medical costs were not included because this information was confidential and, therefore, unavailable to the experimenters.

RESULTS

The results of the study are illustrated in Figure 3. The topmost curve in this figure represents the percentage of drivers traveling at 51 km/hr (32 mph) and over, and, therefore, indicates the percentage of drivers that were technically in violation of the 50 km/hr speed limit. These values were calculated for each day of the study by dividing the number of drivers traveling 51 km/hr or more by the total number of drivers sampled on that day. Similar curves are also presented in order to show the percentage of drivers traveling at or over 58 km/hr (36 mph), 66 km/hr (41 mph), and 74 km/hr (46 mph). These speeds represent increments of 5 mph over the speed limit, 10 mph over the speed limit, and 15 mph over the speed limit, respectively.

Baseline 1

During the first baseline condition (Baseline 1), an average of 6% of the drivers sampled were traveling 74 km/hr or over. An average of 24% were traveling 66 km/hr or over, whereas an average of 63% were traveling 58 km/hr or over, and an average of 90% were traveling at 51 km/hr or over. It can be seen that the results were quite stable from day to day.

Daily Posting 1

The erection of the feedback sign and the daily posting of the percentage of drivers found to be speeding on the previous day produced decreases in the percentage of drivers traveling at all levels. Throughout this phase, the percentage

Fig. 3. The percentage of motorists driving at or over 74, 66, 58, and 51 km/hr during each session across experimental conditions and the percentage of motorists driving at or above these speeds posted for each week during follow-up.

of drivers traveling 74 km/hr or more decreased to an average of 2.6%. This represented a 57% reduction relative to the baseline average. The mean percentage of drivers traveling 66 km/hr or more decreased to 12%; this represented a 50% reduction relative to the baseline average. Drivers traveling 58 km/hr or more declined to an average of 40% of the total; this representing a 37% reduction relative to the baseline average. Finally, the mean percentage of drivers traveling 51 km/hr or more declined to 78%. This was a 13% reduction relative to the baseline average. There was no overlap between the results obtained during the daily posting condition and the initial baseline condition. Additional analysis revealed no change in the distribution of speeds of motorists driving below the speed limit.

Baseline 2

Figure 3 shows that the percentage of drivers in all four speed categories returned to the initial baseline levels when the sign was covered with the tarpaulin. There was no overlap between these baseline results and the results obtained during the preceding posting condition. The mean percentage of drivers traveling at or above 74, 66, 58, and 51 km/hr was 8.6%, 26%, 63.2%, and 92.7%, respectively, during this condition.

Daily Posting 2

The daily posting of the percentage of speeding drivers during this condition again reduced the percentage of drivers sampled in each of the four speed categories. The mean percentage of drivers traveling at or about 74, 66, 58, and 51 km/hr was 1.3%, 8%, 39%, and 77.3%, respectively, during this condition. This time the percentage of motorists driving at or about 74, 66, 58, and 51 km/hr was reduced by 83%, 61%, 37%, and 16%, respectively.

No-Numbers 1

Removal of the numbers from the feedback sign resulted in an immediate return to baseline

performance in all four speed categories. The mean percentage of drivers traveling at or above 74, 66, 58, and 51 km/hr was 7.5%, 23.7%, 64.7%, and 92.8%, respectively, during this condition.

Daily Posting 3

The daily posting of feedback once again decreased the percentage of drivers sampled in all four speed categories. However, daily posting did not produce as large a change in the percentage of drivers traveling at 51 km/hr or more and at 58 km/hr or more as it did during the previous daily posting conditions. However, the reductions in the percentage of drivers traveling at the 66 km/hr and 74 km/hr or more speed categories were comparable to the reductions obtained during the two preceding daily posting conditions. The mean percentage of drivers traveling at or above 74, 66, 58, and 51 km/hr was 1.5%, 11.5%, 44.8%, and 84%, respectively, during this condition.

No-Numbers 2

During this condition the percentage of drivers sampled within each of the four speed categories again returned to the previous baseline levels. The mean percentage of drivers traveling at or above 74, 66, 58, and 51 km/hr was 8.5%, 33.5%, 72.2%, and 94.5%, respectively, during this condition.

Weekly Posting 1

When feedback was given only once each week, the percentage of drivers sampled within each of the four speed categories was again reduced. The percentage of drivers traveling at 51 km/hr or more, and the percentage of drivers traveling at 58 km/hr or more, although lower than baseline levels, were not as low as the percentages observed during the initial two daily posting conditions. Instead, the weekly posting results at 51 km/hr and 58 km/hr were more comparable to these obtained during the Daily Posting 3 condition. However, the reductions in the percentage of drivers traveling at or above

66 km/hr and at or above 74 km/hr were comparable to the reductions found during all three previous daily posting conditions. The mean percentage of drivers traveling at or above 74, 66, 58, and 51 km/hr was 2.2%, 10.5%, 45.3%, and 85%, respectively, during this condition.

No-Numbers 3

During this condition the percentage of drivers sampled within each of the four speed categories again rose to baseline levels. The mean percentage of drivers traveling at or above 74, 66, 58, and 51 km/hr was 5.5%, 21.8%, 60.5%, and 91%, respectively, during this condition.

Weekly Posting 2

The performance of drivers during this condition was comparable to the performance during the first Weekly Posting condition in all speed categories. The mean percentage of drivers traveling at or above 74, 66, 58, and 51 km/hr was 1.8%, 10.5%, 44.4%, and 86%, respectively, during this condition.

Follow-up

Figure 3 shows that, during the 26 weeks of follow-up data collection, the percentage of drivers falling into each of the four speed categories remained unchanged from the levels established during the preceding weekly posting conditions. The mean percentage of drivers traveling at or above 74, 66, 58, and 51 km/hr was 2.2%, 11.5%, 45.4%, and 84.9%, respectively, during this condition. The percentage reduction in speeding during follow-up compared to the performance across all baseline and no-numbers conditions equaled 69%, 54%, 29%, and 7% for the motorists driving at or over 74, 66, 58, and 51 km/hr, respectively.

Probe Results

The results of the probe data are presented in Figure 4. The data in the left curve show that the percentage of drivers speeding did not vary

much over the day during the baseline condition. However, there did appear to be a trend toward higher speeds as the day progressed. The data in the right curve show that the percentage of drivers speeding during the weekly posting condition was generally lower across the entire series of times sampled.

Social Validation Data

Both police and city officials were very satisfied with the improvements produced by the public posting system. Furthermore, an examination of accident data indicated that the public posting procedure was associated with a reduction in the mean number of accidents from a stable level of 1.56 per month during the 2 years prior to the installation of the sign to 0.67 per month following the installation of the sign. This represents a 57% reduction in accidents. The estimated cost associated with accidents over this period was reduced from a mean of \$1,088 per month before the sign was installed to a mean of \$133 per month after the sign was installed. This represents an 88% reduction in accident-related expenses. This cost data was based on the estimated repair costs and did not include medical costs.

The Number of Drivers Charged

The mean number of drivers charged with speeding by the Dartmouth Police Department averaged .75/day during the baseline conditions and .71/day during the no-numbers condition. During the daily posting conditions the mean number of drivers charged with speeding dropped to .47/day. The weekly posting conditions were associated with an average charge rate of .25/day. It is clear from these results that the reduction in speeding produced by public posting was not the result of increased ticketing by the police.

DISCUSSION

The results of this experiment demonstrated the efficacy of the public posting of performance

Fig. 4. The percentage of motorists driving at or over 74, 66, 58, and 51 km/hr at hourly intervals during a randomly selected baseline session and a randomly selected session during the weekly posting condition (follow-up).

feedback as a method of reducing speeding on an urban artery route. The results further indicated that the presence of numerical feedback was essential for the sign to be effective, because the sign was ineffective during the no-numbers condition.

The fact that the number of drivers charged with speeding declined during the posting conditions rules out increased ticketing as a possible confounding variable. Indeed, reports from police supervisors indicated that the public posting procedures were so effective that the police were unable to charge as many individuals during these conditions given the constant period of surveillance maintained throughout the study.

One interesting result of this experiment was

the larger effect on higher speed drivers and the proportionally small effect on the slower speed drivers. This is an important result because an increase in slower drivers would on its own constitute a traffic hazard (Cirillo, 1968; West & Dunn, 1971). The importance of slowing down fast drivers can be readily seen when one considers that a driver going 50 km/hr on wet pavement requires approximately 65 m to come to a complete stop given a reaction time of 2.5 sec, whereas a driver going 80 km/hr under identical conditions requires approximately 150 m to come to a complete stop given the same reaction time (Roads and Transportation Association of Canada, 1976). Furthermore, research has demonstrated (West & Dunn, 1971) that the likeli-

hood of an accident is greatest where vehicles enter roads with fast-moving traffic from a complete stop. The speed limit was set at 50 km/hr on the highway studied in the present experiment to reduce the discrepancy between the speeds of vehicles feeding onto the four-lane artery from side streets and driveways and traffic on the highway. In this regard one would expect that a reduction in the speed of faster vehicles should have the largest effect in reducing accidents. Indeed, the data on accident frequency showing a reduction in accidents during the public posting conditions seem to support this assumption.

Another issue is the cost effectiveness of the posting procedure. During the follow-up condition, a total of 40 min of observation time per week was required to maintain reduced speeds. The probe data suggest that 20-min weekly observation consisting of two 10-min measures would likely yield data reliable enough to be posted. In either case, the cost of this procedure in terms of salaries would be quite low (less than 1 hr/week/area covered). Indeed, it should be possible for police to gather these data as part of their regular routine.

It is not entirely clear why public posting was so effective in this setting. It is possible that the change in the behavior of many drivers was reinforced by the improvements in the percentage of drivers not speeding. It is also possible that the sign exerted discriminative control over driving behavior above & beyond that exhibited by the standard speed limit sign. In this regard, it is possible that the sign introduced a social comparison factor that further influenced driver behavior. However, another possible factor is the implied surveillance that the sign suggests. It is possible that drivers going by the sign responded to it as a discriminative stimulus for increased police surveillance in much the same way that they respond to a stationary police vehicle. Alternatively, motorists may have responded to both aspects of the sign simultaneously. One reason why it is unlikely that drivers were responding entirely to the implied surveillance threat is

that the sign was not correlated with any increase in ticketing or actual police surveillance during the 6-month follow-up condition.

Another factor influencing the effectiveness of the sign may have been the chain reaction established when one driver in a pack of cars applied their brakes. For example, if one driver in eight responded to the sign, that driver's brake lights would be a powerful discriminative stimulus for other drivers to respond in a similar manner. Further, if other drivers behind the initial responsive vehicle applied their brakes, other drivers behind them might also be expected to respond in a similar manner. This effect may persist for a considerable period until a large break occurs in the traffic.

It is interesting to note that the purpose of this study was to slow traffic down immediately following the transition from an 80 to a 50 km/hr speed zone. The police already were aware that traffic slows down past the first intersection 1 km into the 50 km/hr zone because of increasing traffic and a narrowing of the road from four to two lanes. Therefore, it was only important to slow drivers down for a short distance. In this regard the data clearly demonstrate that public posting can be useful in increasing compliance with a change in speed limit necessitated by changing driving conditions. Thus, this procedure should prove particularly valuable in slowing down drivers at those points at which trunk routes pass through cities, towns, and villages.

It remains to be demonstrated whether public posting can produce a sustained reduction in speeding behavior on highways.

If long-lasting effects could be produced on highways the benefits would consist of gasoline conservation as well as accident reductions. However, before ascertaining how long a reduction in the percentage of drivers speeding persists, it is first necessary to be certain that all of the drivers passing through radar have indeed passed the sign. This can only be assured on limited access highways with relatively long distances between exits.

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