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16. Abstract

As part of a program to examine the relationship between highway traffic safety and the use of radar detectors, comparisons were made between speed distributions when a detectable radar transmission was present and when it was not. The impact of detectors on speeds varied as a function of the states sampled, highway facility type and vehicle classification. The influence of detectors is seen in reductions in the magnitude of three speed parameters when a detectable radar signal is broadcast. Reductions were observed in mean speed, variability among vehicle speeds and the proportion of vehicles exceeding the speed limit. In general, these reductions are most evident where traffic densities are lower, on higher class facilities where speed limits are higher, and among trucks.

The data analyzed for this effort clearly show an influence of radar detectors on traffic behavior when radar is present. This influence can have a negative impact on speed enforcement. Definitive conclusions about the larger issue of the relationship between detectors and traffic safety, however, require resolution of serious methodological issues. The magnitude of the potential negative effect of detectors on traffic safety may be insufficient to warrant further efforts in this regard.

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TECHNICAL SUMMARY

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The National Highway Traffic Safety Administration (NHTSA), responding to concerns of police organizations, the insurance industry, and safety officials, initiated a program of research that would attempt to provide information regarding the relationship, if any, between the use of traffic radar detection devices and highway safety. The primary objective of this project was to gather information that would allow a description of the relationship between radar detectors and traffic speeds on a broader national scale than previously available.

Vehicle speeds in four states were observed under two conditions: 1) in the presence of standard K band police traffic radar, and 2) in the absence of detectable radar. Under both conditions, speeds were measured using traffic radar. The radar units used for data collection were modified to preclude detection by commercially available radar detectors.

Speed data were collected during daylight hours from two moving, unmarked vehicles. The first data collection vehicle was equipped with an undetectable radar unit, a commercially available radar detector and a Citizens Band radio. Vehicle speeds were sampled in the moving mode from the on-coming traffic stream. The second data collection vehicle followed the first, maintaining approximately a five-mile gap. This vehicle was equipped with a standard, unmodified traffic radar unit, an undetectable unit and a CB radio. Speeds were measured using the undetectable unit while the unmodified, detectable unit was transmitting. The speed samples thus obtained were from the same traffic stream under both undetectable and detectable radar conditions. This sampling procedure allowed data collection under the two radar conditions on the same roadways separated temporally by only a few minutes, with nearly identical weather and general traffic conditions. Because the only salient distinction between the two speed surveys conducted on each highway segment was the potential for detecting a radar signal, observed differences in traffic speeds between those samples can reasonably be attributed to the influence of radar detectors. Observations of driver response to the onset of a radar transmission were also made.

Overall, the weight of evidence clearly demonstrated that radar detectors do have an influence on overall traffic speeds. The observed nature of this influence is the reduction of the speeds of some vehicles in the

(Continue on additional pages)

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presence of a radar signal. The number of vehicles influenced and the magnitude of the speed reduction varied as a function of the states sampled, highway facility type, and vehicle classification. In general, the data show that speed reductions are seen among a larger portion of the traffic stream:

- where traffic densities are lower,
- on higher class facilities, where speed limits are higher, and,
- for trucks, which are more likely to be equipped with radar detectors and CB radios.

The speed parameters affected when speed reductions were observed include: the average speed, the proportion of vehicles exceeding the speed limit, and variability among vehicle speeds. These parameters, in turn, produced differences in cumulative speed distributions. For some highway types in each state, neither the cumulative speed distributions nor the separate speed parameters differed in any way that could be attributable to the use of radar detectors.

A few aberrant, and perhaps dangerous braking maneuvers were observed that could be attributable to detector use. Their occurrence was so infrequent that it was impractical to compute a rate or other meaningful statistic. Those manuevers that were observed did not result in traffic conflicts or accidents. It is possible that similar aberrant braking could be exhibited by non-detector users when suddenly encountering an enforcement symbol.

An assessment of the impact of radar detectors on traffic safety requires consideration of the assumptions underlying possible relationships between detector usage and safety. A basic assumption made in most attempts to examine the relationship between radar detector usage and traffic safety is that vehicular speed and speed variance is related to crash severity and/or occurrence. Given that this assumption is valid, it remains to be demonstrated that detector usage influences speed in the absence of a detectable radar signal.

This and other studies have demonstrated that radar detector use is associated with speed reductions in the presence of a detectable signal. The critical information that is not known is whether the original higher speeds were selected because of information made available by the detector or if the only behavior affected was the subsequent speed reduction.

The potential negative influence of radar detectors on traffic safety may not be of sufficient magnitude to warrant the expenditure of the funds necessary to overcome serious methodological problems that need to be resolved if the causal relationship between detector use and traffic safety is to be fully defined.

This is not to be taken as an indication that detector usage has a positive or even a neutral influence on traffic safety. The authors interpretation of the data collected, is, in fact, that the influence of radar detectors is negative. If they have no other influence, the use of radar detectors undermines efforts to increase the perceived level of speed enforcement. This and other as yet unsubstantiated untoward influences of radar detectors, and perhaps the devices themselves, may well be obviated through advances in enforcement technology and as a consequences of legal actions.

ADDENDUM

The Impact of Radar Detectors on Highway Safety
Texas Transportation Institute

On Friday, April 21, 1989 the National Highway Traffic Safety Administration (NHTSA) published in the Federal Register a notice of the availability of the draft final report of this study and created a file to provide the public with an opportunity to present comments on the draft report. The closing date for comments was June 20, 1989.

A total of 10 organizations and individuals submitted comments to the docket. Of these, six respondents agreed with all or part of the study, while four respondents commented in support of the use of radar detectors.

Comments In Support of the Study

The Department of California Highway Patrol (CHP) and the Group United Against Radar Detectors (GUARD) submitted similar comments on their perceptions regarding motorists who use radar detectors. The CHP stated that the only real purpose for radar detectors was to allow speeding motorists to avoid police radar surveillance and the resulting enforcement action, while GUARD agreed with the authors statement that the use of radar detectors undermines efforts to increase the perceived level of speed enforcement.

The National Safety Council commented that they agreed with the authors statement that radar detectors have a clear, negative effect on traffic behavior and speed enforcement. The American Trucking Association (ATA) was also among the respondents commenting in support of the study. ATA restated their position strongly supporting effective speed limit enforcement, supporting a ban on the use of radar detectors or any other device designed to circumvent speed limit enforcement and encouraged the Federal Highway Administration to take action to ban the possession and/or use of radar detectors by drivers of heavy trucks.

The Insurance Institute for Highway Safety (IIHS) submitted 3 comments, including excerpts from its publication, Status Report. These excerpts are entitled "Radar Detectors: Ally of the Law-Abiding," and "many motorists admit driving faster when they use a 'Fuzz Buster'." IIHS also complimented the Texas Transportation Institute (TTI) on the design and competency of the study and urged NHTSA to investigate the potential methods for reducing the impact of radar detectors. The Commissioner of the Department of Motor Vehicles for the State of New York commented that she endorses the author's opinion that radar detectors have a detrimental effect on enforcement and traffic safety efforts and supports further research on this subject by NHTSA.

Comments In Support of Radar Detectors

Of the four respondents favoring the use of radar detectors, one was from a citizen who commented that detectors allow citizens to know when their police officers are nearby should they need any assistance, that they slow drivers in many instances and that they make drivers aware of speed laws.

The second response in support of radar detectors came from Maxon Systems, Inc. (MSI), a corporation engaged in the design, manufacture, sale and distribution of radar detectors. MSI claimed the study did not establish any casual relationship between radar detectors and traffic safety. MSI also questioned the methodology used by the authors in gathering the data and the accuracy of the measuring devices used (radar guns). Additionally, MSI asserted that the study failed to establish any direct link between radar detectors and vehicle travel speeds higher than the driver would normally select. Finally, MSI commented that the authors made a subjective judgment in their final conclusions by stating that "the influence of radar detectors is negative" and requested NHTSA to take several actions, including not publishing the report and not using the report as a basis for a rule-making but to adopt the authors' recommendation that no further investigation be undertaken.

RADAR, Inc., the third commenter favoring the use of radar detectors, is a trade association composed of radar detector manufacturers, distributors and retailers, as well as motorists. RADAR commented that the study was inconclusive at best and did not provide credible answers to the issue as to whether there is any relationship between the use of radar detectors and highway safety. RADAR commented on what they thought were contradictions and alleged that the report's results did not support the conclusion. RADAR also urged NHTSA to reject the study as the basis for government action.

The fourth dissenter from the study was The Citizens For Rational Traffic Laws, Inc. who concluded that the report lacked definitive evidence that radar detector use makes highways less safe and recommended that NHTSA not undertake any further investigation of the issue.

Conclusion

The factual findings in this report were limited, as clearly noted in the "Discussion" chapter of the draft report (Chapter 4.0, pp. 37-41). While the authors expressed their own personal views on radar detectors (see Section 4.4, p. 41), they also recommended against further expenditure of resources on the subject, given the inherent difficulties of measuring real-world safety impact in a sufficiently objective manner.

The Agency received very little comment on the factual material and analysis presented in the draft report. Instead, most of the commenters simply re-stated their own previously held (and widely known) views on radar detectors -- some in favor and some opposed -- citing one or more of the report's limitations to support their respective positions. While NHTSA appreciates knowing of those policy viewpoints, the comments did not provide a basis for amending the report. Accordingly, the report is accepted and published in its entirety.

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1.0 INTRODUCTION

1.1 Objective

The National Highway Traffic Safety Administration (NHTSA), responding to concerns of police organizations, the insurance industry, and safety officials, initiated a program of research that would attempt to provide information regarding the relationship, if any, between the use of traffic radar detection devices and highway safety. The primary objective of the initial project in this program, which is reported here, was to gather information that would allow a description of the relationship between radar detectors and traffic speeds on a broader national scale than previously available. In addition, the contractors were requested to offer any insights they might have, based on analysis of the data collected during the course of this study and on their informed opinion, regarding the feasibility of pursuing further study of the impact of detector use on highway safety. This assessment, necessarily, would include a review of methodological alternatives that might be used to address the issue.

1.2 Background

The primary tool used in many jurisdictions for the enforcement of traffic speed laws is Doppler effect traffic radar. Measurement of the speed of moving vehicles is made possible with radar by virtue of the fact that the frequency of a reflected radio wave transmitted by traffic radar is altered in linear proportion to the speed of the object off of which it is reflected. Like any other radio transmissions, microwaves transmitted by traffic radar can be received by receivers tuned to the appropriate frequency. Radar detection devices are specialized radio receivers tuned to respond to the frequencies allocated by the Federal Communications Commission (FCC) for use by traffic radar and other radio-location devices. Radar detectors receive traffic radar transmissions and provide a visual and/or audible signal of the radar presence.

It has been hypothesized by traffic law enforcement officials and others concerned with highway traffic safety that the increasing use of radar detectors decreases voluntary compliance with speed laws both by those motorists using detectors and by other drivers in the traffic stream who are influenced by detector-equipped vehicles, thereby encouraging, if not causing, excessive traffic speeds in the absence of a detected traffic radar transmission. Excessive speed, in turn, has been related to increased severity of accidents that occur, and is posited as a factor contributing to increased accident frequency. In addition, another negative impact on highway safety resulting from detector use has been suggested. That is a presumed increase in the probability that detector equipped drivers will engage in sudden braking or other unsafe driving manuevers in response to a detected traffic radar transmission.

1.3 Related Investigations

While there is no dearth of opinion on the influence of radar detectors on traffic speeds, traffic law enforcement, and other aspects of highway safety, much of the evidence cited to support various viewpoints is, at best, anecdotal and/or methodologically flawed, and, at worst, reflects particular ideological or pecuniary interests with little more than a semblance of objectivity.

Several systematic efforts to quantify the influence of radar detectors on traffic speeds have been undertaken. Three studies employing traffic radar which was modified to be undetectable by commercially available radar detectors have been reported.

Based on a relatively small sample, Goodson (in Maryland State Police, 1986) reports mean vehicle speeds measured with undetectable radar to be nearly 3 miles per hour faster than speeds measured at the same Texas Interstate highway location with standard detectable radar. The proportion of vehicles exceeding 60 mph decreased by 12 percent when measured with detectable radar compared with speeds determined using undetectable radar. A similar, but more extensive study conducted in Maryland and Virginia by the Insurance Institute for Highway Safety, (Ciccone, Goodson, and Pollner, 1987) also found statistically significant, though much smaller, differences in mean speeds when measured in the presence and absence of a radar transmission. The effect of detectable radar on speed distributions varied by road and vehicle type. Reductions in mean speeds as a function of the presence of a detectable radar transmission were greatest on interstate highways and among tractor-trailers and sport/specialty cars. Similarly, the greatest reductions in the proportion of vehicles exceeding 65 and 70 mph when a detectable signal was present were seen among these vehicles. The proportion of all vehicles exceeding 65 and 70 mph declined by 20 and 44 percent, respectively, on a Maryland interstate. Both of these studies monitored speeds at fixed locations with stationary speed measurement instrumentation. In addition to measuring vehicle speeds, these efforts also included observations of braking behavior exhibited by drivers of vehicles suspected of using radar detectors.

A third recent effort to quantify the influence of radar detectors on traffic speeds was conducted by the present investigators for the Texas Department of Highways and Public Safety (Pezoldt, 1987, Pezoldt and Brackett, 1987). Speed data were collected on more than a thousand miles of Texas highways with 55 mph posted speed limits under two conditions: 1) in the presence of conventional traffic radar and 2) in the absence of detectable radar. Under both conditions, speeds were measured with radar modified to be undetectable as in the Goodson and Insurance Institute for Highway Safety studies. Unlike those efforts, however, data were collected in the moving radar mode from the oncoming traffic stream. The highways sampled included urban and rural interstates, two and four lane state and U.S. highways and farm-to-market roads. For all vehicle classifications combined, small but significant decreases were observed in means speeds when measured in the presence of a detectable radar signal on all highway types. These differences were primarily a function of higher mean truck speeds when the radar signal was not detectable. The influence of radar detectors on speeds was also observed in traffic speed distributions. Markedly different speed profiles were observed when detectable radar was present than when it was not. For example, on all highways combined, 16.5 percent of the truck speeds sampled exceeded 65 mph when a radar signal was not detectable, compared to 5.5 percent in the presence of detectable radar, a three-fold change. The proportion of trucks exceeding 70 mph, while very small under both conditions, was more than four and a half times greater when measured in the absence of detectable radar than when a detectable radar transmission was present. Although the observed differences were less pronounced than for trucks, the proportion of passenger vehicles exceeding 70 mph was significantly greater when radar was not detectable. Overall, the greatest impact of detectable radar, and presumably of radar detector use, was apparent among drivers of passenger vehicles in the highest speed categories (>70 mph) and among drivers of commercial trucks. The Texas study provided the basic model for the project reported here.

In a recently reported study conducted in Kentucky (Pigman, Agent, Deacon & Kryscio, 1987) an attempt was made to take advantage of the speed reducing influence of radar detectors in the presence of detectable radar transmissions. Automated data collection at existing speed monitoring stations and manual time-distance techniques were used to measure speeds in the presence and absence of both unmanned radar and active police speed enforcement. Statistically significant reductions in the number of vehicles exceeding speed levels in five mph increments from 65 to 80 mph were observed when "radar on" speeds were compared to expected speeds with no radar present. Also, the variability of vehicle speeds was decreased significantly in the presence of a radar transmission.

Pigman, et al also compared accident data for the three years prior to and one year after the installation of unmanned radar in the Kentucky study. A reduction in both truck-related and speed-related accidents was observed in the post-radar period. The period after the installation of unmanned radar, however, coincided with the diversion of through trucks off a portion of the highway section studied.

In another effort to determine if radar detectors have an influence on traffic safety, a telephone survey conducted by Yankelovich, Skelly and White/Clancy Shulman, Inc. (1987) was undertaken to provide a comparison of the accident rates of radar detector users and non-users. Based on self reports, the results of this survey indicate that although radar detection device users reported more accidents in the year preceding the survey than non-users, the mileage-adjusted crash rate of detector users is considerably lower than that of non-users. Users drive an average of 233,933 miles between accidents compared to 174,554 miles for non-users. The basic conclusion drawn from the survey, that detector users have fewer accidents per mile than non-users, has been challenged by Lund (1988) on sampling and logical grounds. The sampling problems identified by Lund include the reported discrepancies in the age, gender, socioeconomic, and miles driven per year distributions of the user and non-user samples. Also important to crash rates, but unreported among the survey respondents, are the types roads travelled. In addition to these sampling issues, Lund suggests that the comparison between crash rates of detector users and non-users does not address the more pertinent issue of whether the crash rates of detector users would be different if they did not use radar detection devices.

The implications of the studies noted briefly here are addressed further in Section 4 along with the discussion of the results of the present investigation.

2.0 METHOD

2.1 Speed Data Collection Procedure

Vehicle speeds in four states were observed under two conditions: 1) in the presence of standard K band police traffic radar, and 2) in the absence of detectable radar.

Under both conditions, speeds were measured using traffic radar. The radar units used for data collection were modified to preclude detection by commercially available radar detectors. Radar detectors now in service are predominantly of the superheterodyne type. These receivers are characterized by narrow band widths and high sensitivity. They are sensitive to transmissions in the K (24.150 GHz) and X (10.525 GHz) band frequencies allocated by the Federal Communications Commission for police radar transmitters and other radio location services. Typically, radar detectors will receive signals +/- 100 MHz around these frequencies. The radar transmitters used for measuring vehicle speeds in this project were tuned to a frequency outside those received by radar detectors. The modifications to the radar units result in speed indications that are consistently higher than those of unmodified radar. Thus, the speeds collected were inflated by a small amount compared to speeds measured with unmodified radar. Although all speed comparisons conducted for this project are relative, the speed data were adjusted to account for this measurement error before analysis. All speed data presented in this report have been adjusted.

Speed data were collected during daylight hours from two moving, unmarked vehicles. The first data collection vehicle was equipped with an undetectable radar unit, a commercially available radar detector and a Citizens Band radio. Vehicle speeds were sampled in the moving mode from the on-coming traffic stream. No data were collected when the radar detector indicated that police radar or other radio transmissions to which the detector is sensitive were present. The second data collection vehicle followed the first, maintaining approximately a five-mile gap. This vehicle was equipped with a standard, unmodified traffic radar unit, an undetectable unit and a CB radio. Speeds were measured using the undetectable unit while the unmodified, detectable unit was transmitting. The speed samples thus obtained were from the same traffic stream under both undetectable and detectable radar conditions. This sampling procedure allowed data collection under the two radar conditions on the same roadways separated temporally by only a few minutes, with nearly identical weather and general traffic conditions. The majority of vehicles sampled were included in both conditions, albeit at different positions on the highway. The logic of the approach employed and its implications for evaluating the influence of radar detectors on traffic speeds is simple and straightforward. If the only salient distinction between the two speed surveys conducted on each highway segment is the potential for detecting a radar signal, then observed differences in traffic speeds between those samples can reasonably be attributed to the influence of radar detectors.

Under both radar conditions, only free flowing vehicles were sampled. The proportion of vehicles in the traffic stream for which speeds were ascertained, therefore, varied as a function of traffic volume. On low volume, rural two lane highways, virtually 100 percent of the vehicles were sampled. On high volume roadways the proportion of the total stream sampled was considerably smaller.

Speed surveys from previous research have shown that speeds of cars and trucks produce two distinct distributions on most roadways. Consequently, for purposes of clarity and analytic precision, each vehicle sampled was classified as a passenger vehicle or a truck. Passenger vehicles included automobiles, pickup trucks, small vans and recreational vehicles. A large majority of the vehicles classified as trucks were 18-wheel tractor/ semi-trailer combinations. Also included in the truck classification were straight trucks, and other commercial freight hauling and service vehicles. Neither buses nor motorcycles were included in the sample. Vehicle classification and speeds were recorded directly on data forms or, in some cases, recorded on audio tape and subsequently transcribed.

2.2 Data Collection Sites

Vehicle speeds were sampled from as broad a geographical distribution nationwide as practicable within project constraints. In each geographical area surveyed, the sample included rural roadways with different speed limits, particularly 65 and 55 mph, a mix of functional classifications, encompassing interstate highways, non-interstate multi-lane limited access roads, and two and four lane highways with at-grade intersections. High volume urban highways and city streets with frequent traffic control devices were also sampled, though to a lesser extent.

Since the primary tenor of this study was descriptive, the roadways on which speed surveys were conducted provide neither a true random sample of all U.S. highways nor a sample stratified by, for example, traffic volume or functional classification. Such samples would have included a very large proportion of urban roadways and of secondary rural highways that in the aggregate carry a large proportion of traffic nationwide, but which individually carry low volumes.

<u>2.2.1 Sample States</u>. Initially, three states, Ohio, New York, and New Mexico were selected for inclusion in the speed surveys. These states were chosen, in consultation with NHTSA, to provide a geographically broad sample nationwide. Because of a concern that low traffic volumes in New Mexico would preclude efficient sampling, speed samples were taken in west Texas as well. In addition to providing a broad geographic sample, these states also provided the opportunity to sample speeds on rural interstate highways with different legal speed limits. The 1987 Surface Transportation and Uniform Relocation Act included a provision that allowed the states to raise the speed limit above the previous 55 mph maximum on certain rural interstate highways. As of the data collection periods, the sample states had responded differently to the new speed provision. New York has retained the 55 mph speed limit on all interstate highways. New Mexico raised the speed limit to 65 mph on all eligible highways for all vehicles. Both Ohio and Texas instituted differential speed limits for passenger vehicles (65 mph) and trucks (55 and 60 mph in Ohio and Texas respectively) on rural interstates.

<u>2.2.2 Sample Highway Segments</u>. Speed surveys were conducted on 118 roadway segments comprising a total of more than 3,200 highway miles in the four states. The length of survey segments ranged from as short as 3 miles for low speed urban streets and short speed-zoned sections of rural highways, to as long as 82 miles for essentially uninterrupted stretches of rural interstate and other primary highways. The highways sampled are categorized in Table 2.1 by facility type and speed limit. Identification of each individual segment is

Table 2.1 Highway facilities sampled in Ohio, New York, Texas and New Mexico.

OHIO	NEW YORK
65/55 mph Interstates	55 mph Interstates
55 mph Interstates	55 mph 4 Lane Divided
55 mph 4 Lane Divided	55 mph 2/4 Lane
55 mph 2 Lane	50 mph 2 Lane
50 mph 2/4 Lane	45 mph 2/4 Lane
45 mph 2/4 Lane	40 mph 2/4 Lane
40 mph 2/4 lane	35 mph 2/4 Lane
35 mph 2/4 Lane	30 mph 2/4 Lane
25 mph 2/4 Lane	

TEXAS	NEW MEXICO
65/60 mph Interstates	65 mph Interstates
55 mph Interstates	55 mph Interstates
55 mph 4 Lane Divided	55 mph 4 Lane Divided
55 mph 2 Lane	55 mph 2 Lane
	55 mph 2/4 Lane (urban)
	45 mph 2/4 Lane
	40 mph 2/4 Lane
	35 mph 2/4 Lane

provided in Appendix A. The legal speed on the roadways sampled ranged from 25 to 65 mph. As previously indicated, the majority of the sample data was collected on rural interstates and 55 mph rural highways. To a lesser extent, lower speed roadways, including urban streets, were also sampled.

2.3 Speed Data Analysis

Speed limits, enforcement, and other roadway and traffic characteristics varied considerably from state to state, consequently no attempt was made to aggregate the data across states. Within each sample state, speed data were grouped across segments into highway facility groups with similar attributes. These groups are identified in Table 2.1 for each of the four sample states. Speed distributions within each facility group are analyzed separately for passenger vehicles and trucks.

The cumulative speed distributions of each highway facility group were subjected to a Kolmogorov-Smirnov two-sample test. This test provides a means to determine whether two independent samples, in this case speed samples collected when a detectable radar signal was either present or absent, have been drawn from the same population or populations with the same distribution. If the availability of a detectable radar signal has no influence on traffic speeds, the cumulative distributions of the two should be fairly close to each other since each should show only random deviations from the population distribution. If, on the other hand, the two sample cumulative distributions reveal a substantial difference at any point on the distribution, the samples likely come from different populations. The two-tailed test employed here is sensitive to any differences in the distributions, including central tendency, dispersion, and skewness (Siegel, 1956). If the two samples were drawn from different populations, further analyses were conducted to determine the nature of the difference. For ease of exposition, the speed distributions will henceforth be referred to as "detectable" and "undetectable" with regard to the presence or absence of a detectable radar transmission when the sample data were collected.

Three parameters of significantly different detectable and undetectable distributions were evaluated: average speed, characterized by the mean; differences in the proportion of vehicles exceeding selected 5 mph speed increments; and speed variability, as represented by the standard deviation and variance. Differences in mean speeds and in the proportion of vehicles exceeding various speeds as a function of the presence or absence of a detectable radar transmission were assessed by two-tailed z tests of means and proportions, respectively. Sample variances were subjected to F tests to evaluate the significance of any differences in variability.

2.4 Observations of Driver Control Behavior

As noted previously, it has been suggested that radar detectors may influence other driver behaviors in addition to selected speed. Ciccone, et al (1987) report a high incidence of sudden braking among vehicles judged to be using detectors. Similar observations were made in the present effort.

Observations of driver response to the onset of a radar transmission were made from both stationary positions, including highway access roads, overpasses, and highway shoulders, and from moving vehicles. In the latter case, two vehicles travelling slightly slower than the traffic stream were deployed. In the lead vehicle, a detectable radar unit with the antenna pointing rearward was intermittently activated. Observers in the trailing vehicle, equipped with a radar detector, observed the behavior of vehicles interposed between the two test cars at the onset of radar transmission.

3.0 RESULTS

In all, the speeds of more than 30,000 vehicles were observed. Of these, 66% were classified as passenger vehicles and 34% were trucks. Summary descriptive statistics for the detectable and undetectable sample distributions obtained from the various highway facility groups in each state are provided in Tables B1 through B29 in Appendix B. For each sample, the number of vehicles sampled, mean speed, standard deviation, and percentage of vehicles exceeding five mph incremental speed levels are provided for all vehicles combined and for passenger vehicles and trucks separately. All subsequent analyses were performed separately for the two vehicle classifications.

3.1 Comparisons of Detectable and Undetectable Speed Distributions.

The results of the Kolmogorov-Smirnov tests are summarized in Table 3.1. Detailed statistical tables for each of the tests and a complete listing of the cumulative speed distributions are provided in Appendix C and D, respectively. As is evident from inspection of the table, observed differences in detectable and undetectable speed distributions are not identical among the four sample states and vary as a function of facility group and vehicle type. The volume of truck traffic on low speed roads is generally quite small. Insufficient numbers of trucks were observed on the low speed roads sampled to allow meaningful statistical analysis.

3.1.1 Interstate Highways. The presence of a detectable radar transmission resulted in statistically significant differences between the detectable and undetectable cumulative speed distributions in all sample states for both passenger vehicles and trucks on those rural interstate highways with the fastest legal speed limits. Detectable and undetectable speed distributions on these highways are compared graphically in Figures 3.1 - 3.4 for each of the sampled states. Although the Kolmogorov-Smirnov test is performed on the cumulative distributions, observed speeds are displayed in these figures as density functions for five mph speed groups. In New York, Texas, and New Mexico the undetectable distribution is shifted to the right (higher speeds) relative to the detectable distribution for both passenger vehicles and trucks. In Ohio this shift is reversed for the passenger vehicle distributions. On the Ohio rural interstates sampled, the overall speed distribution for passenger vehicles appears higher when a detectable radar transmission is present.

The speed distributions for those interstates sampled in Ohio, Texas and New Mexico on which the speed limit is 55 mph for all vehicles are shown in Figures 3.5 - 3.7. These are more urban interstates. As such, they did not qualify for the increased speed limit as did rural interstates. Differences in the passenger vehicle distributions are statistically significant for the roadways sampled in New Mexico, but not in Ohio and Texas. Analysis of truck speed distributions reveals the opposite result. Truck distributions in Ohio and Texas differ significantly as a function of radar condition, whereas in New Mexico they do not.

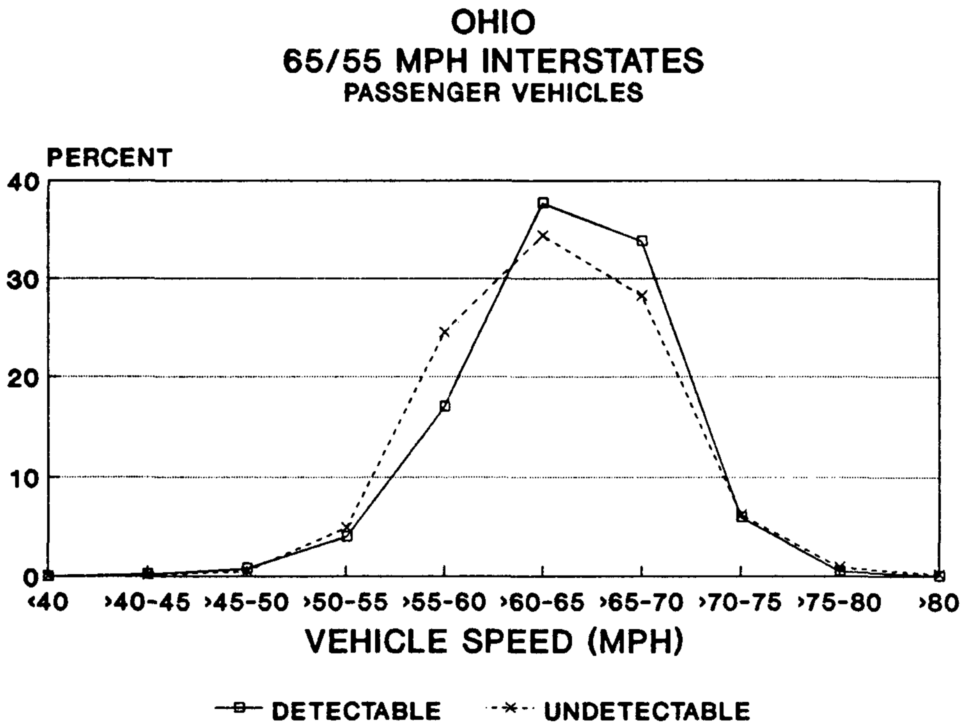
3.1.2 Non-Interstate 55 mph Highways. Significant differences in cumulative speed distributions due to radar condition were observed on two and four lane non-interstate highways in Texas and New Mexico, but not in Ohio or New York.

Table 3.1 Summary of results of Kolmogorov-Smirnov tests

D Max is significant at <.05 level for facility classifications and vehicle type indicated by X.

STATE	FACILITY CLASSIFICATION	PASSENGER VEHS.	TRUCKS
OH	65/55 mph Interstates	X	X
	55 mph Interstates		X
	55 mph 4 Lane Divided		
	55 mph 2 Lane		
	50 mph 2/4 Lane		NA*
	45 mph 2/4 Lane		NA
	40 mph 2/4 lane		NA
	35 mph 2/4 Lane	X	NA
	25 mph 2/4 Lane	X	NA
NY	55 mph Interstates	X	X
	55 mph 4 Lane Divided		
	55 mph 2/4 Lane		
	50 mph 2 Lane		NA
	45 mph 2/4 Lane		NA
	40 mph 2/4 Lane		NA
	35 mph 2/4 Lane		NA
	30 mph 2/4 Lane	X	NA
TX	65/60 mph Interstates	X	X
	55 mph Interstates		X
	55 mph 4 Lane Divided	X	X
	55 mph 2 Lane		X
NM	65 mph Interstates	X	X
	55 mph Interstates	X	
	55 mph 4 Lane Divided	X	
	55 mph 2 Lane	X	
	55 mph 2/4 Lane (urban)		NA
	45 mph 2/4 Lane	X	NA
	40 mph 2/4 Lane		NA
	35 mph 2/4 Lane		NA

*Not analyzed, insufficient sample size.



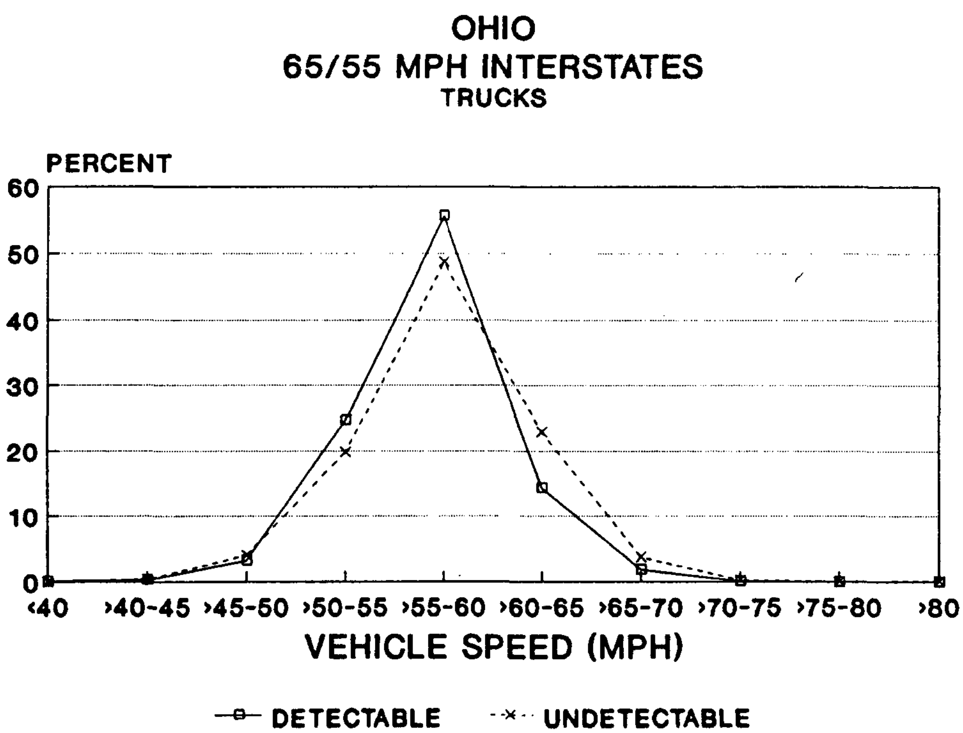
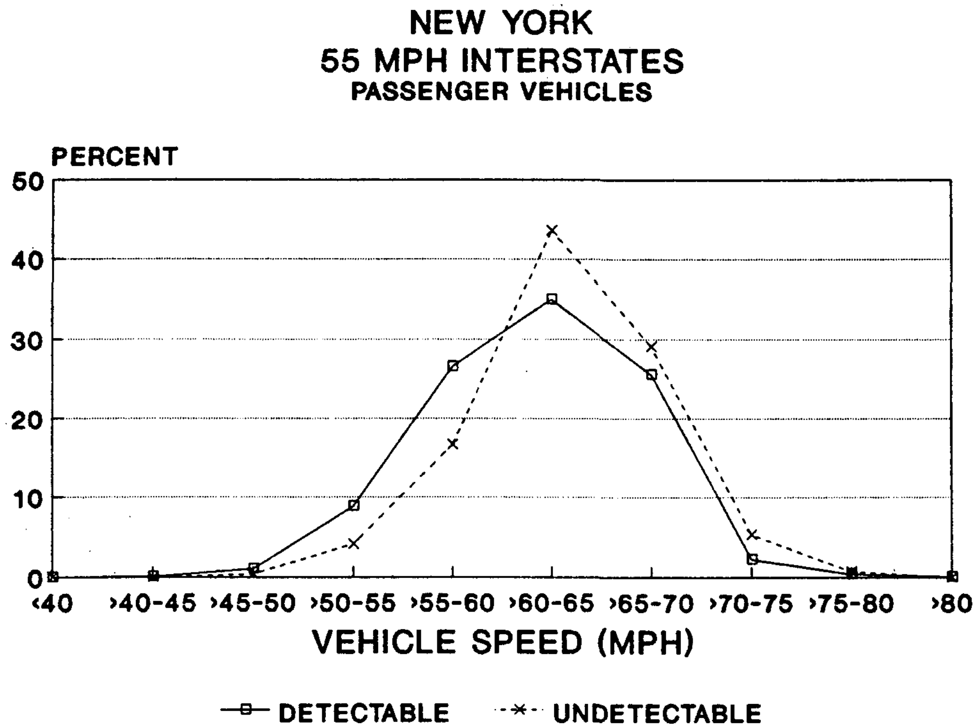


Figure 3.1. Speed distributions on Ohio 65/55mph interstates



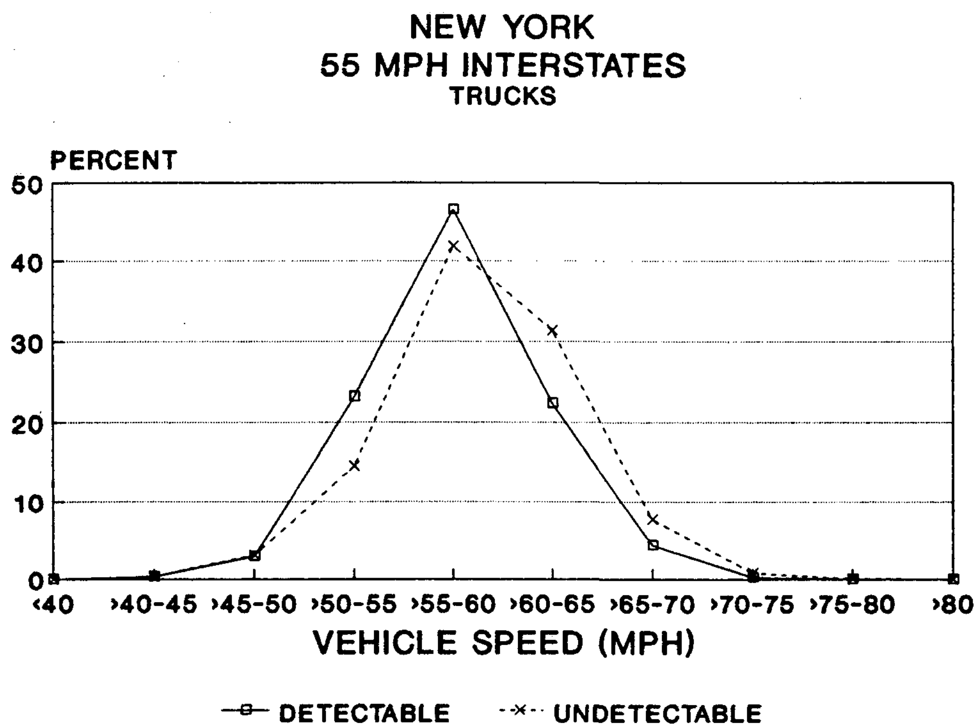
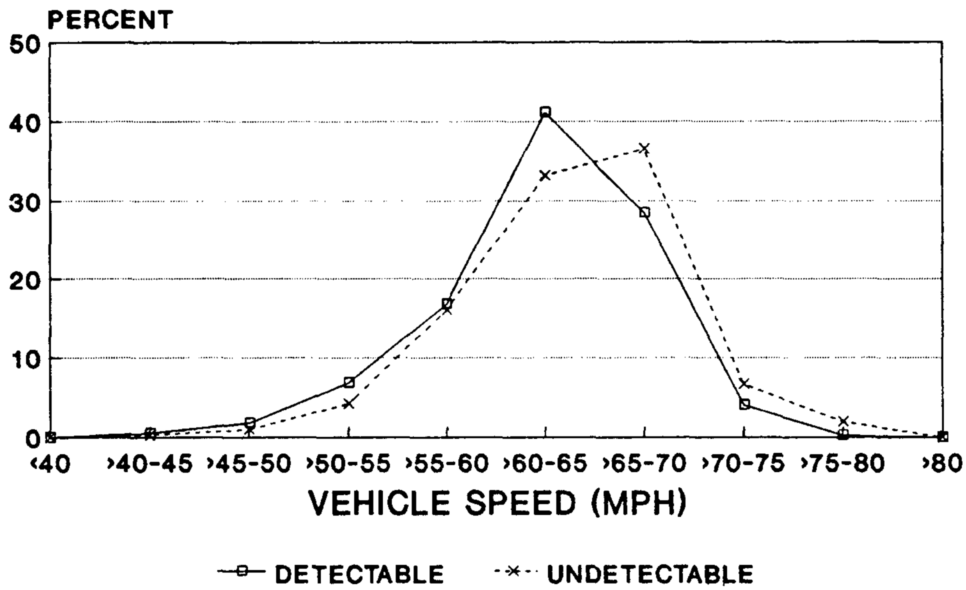


Figure 3.2. Speed distributions on NY 55 mph interstates.

TEXAS
65/60 MPH INTERSTATES
PASSENGER VEHICLES



TEXAS
65/60 MPH INTERSTATES
TRUCKS

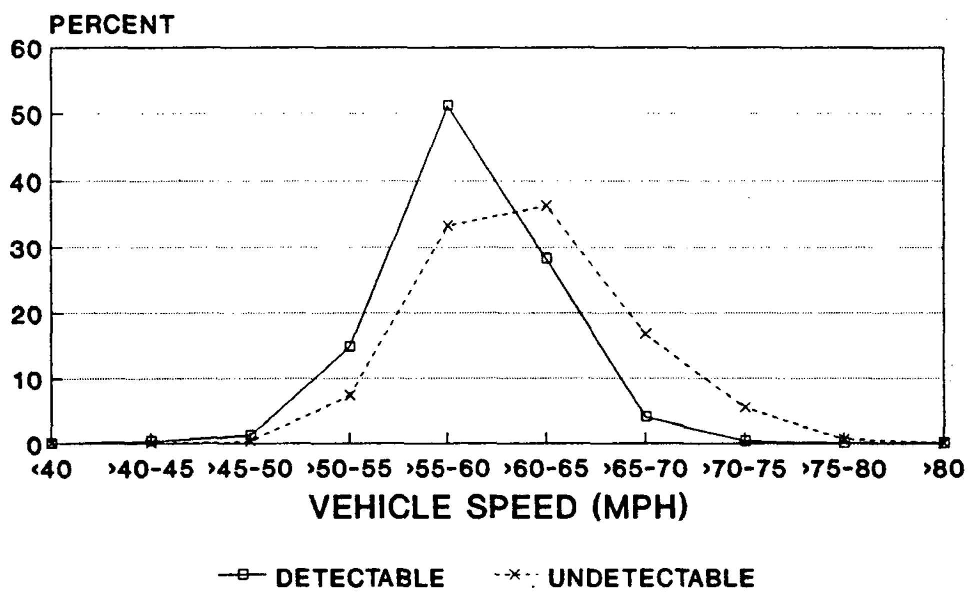
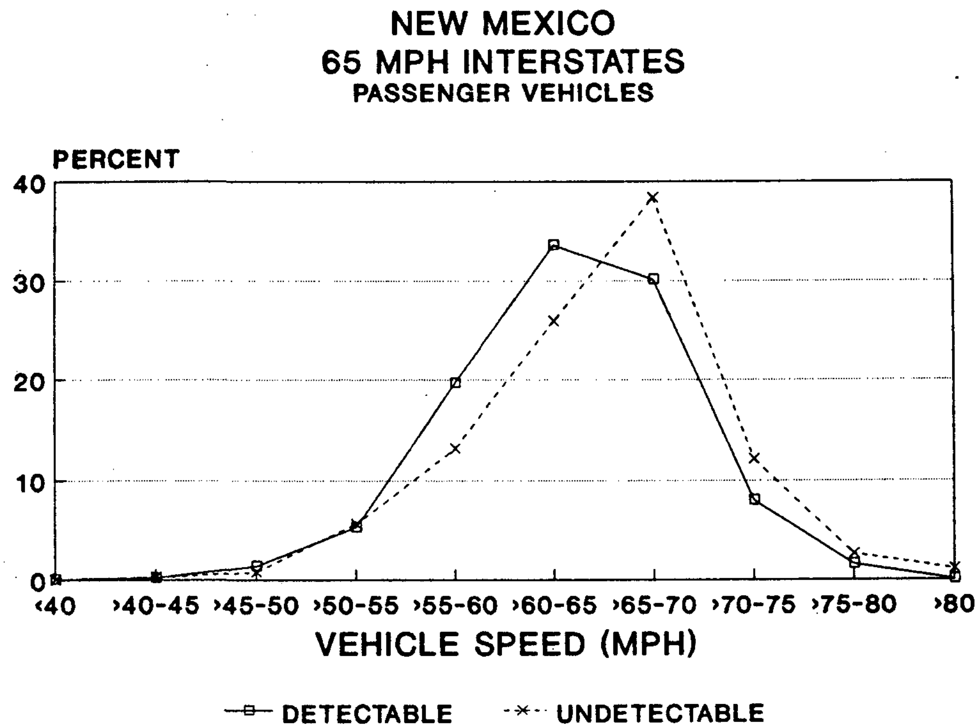


Figure 3.3. Speed distributions on TX 65/55 mph interstates.



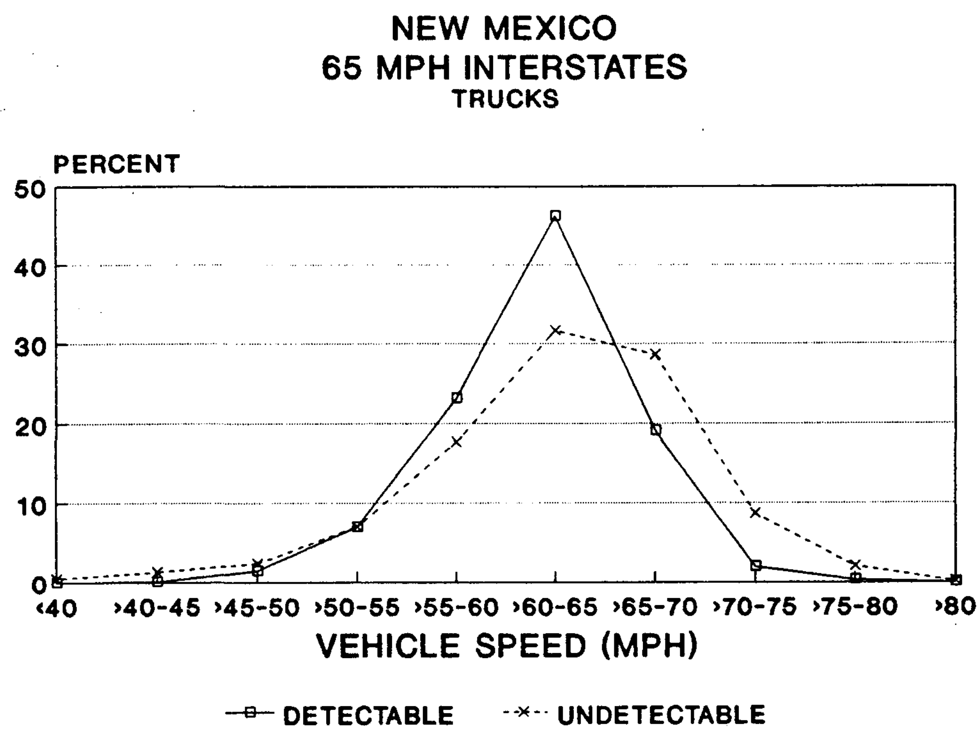
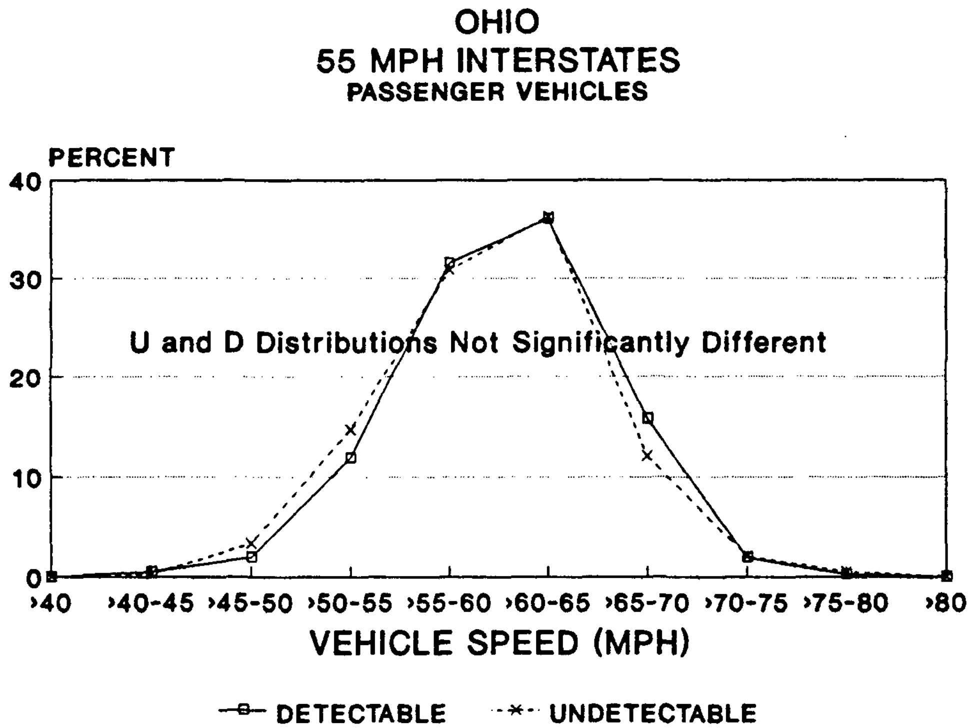


Figure 3.4. Speed distributions on NM 65 mph interstates.



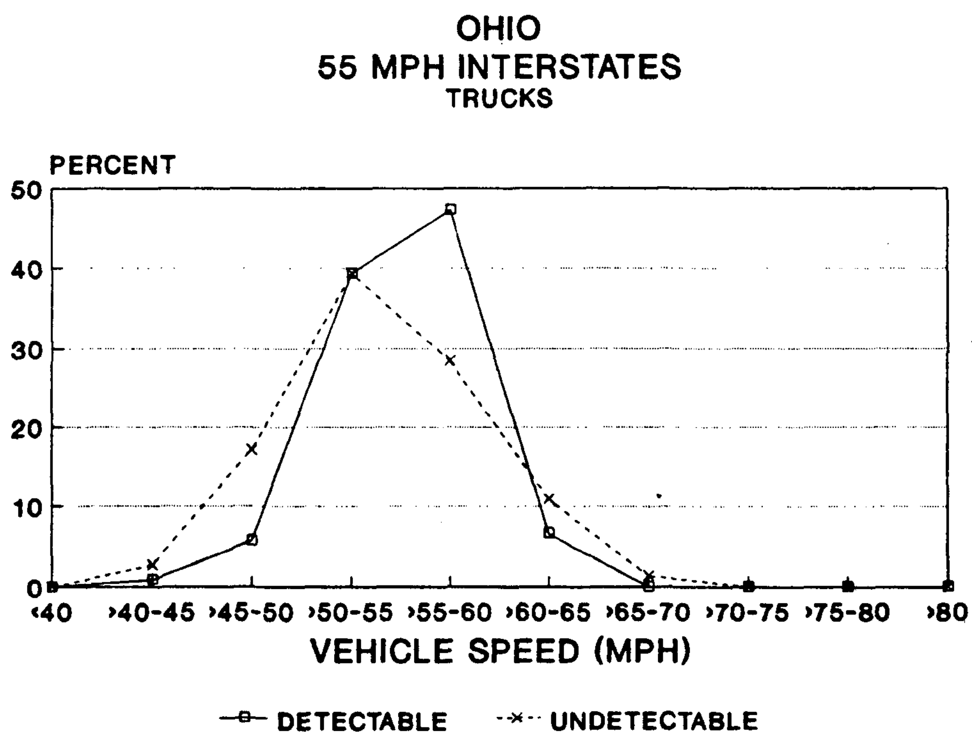
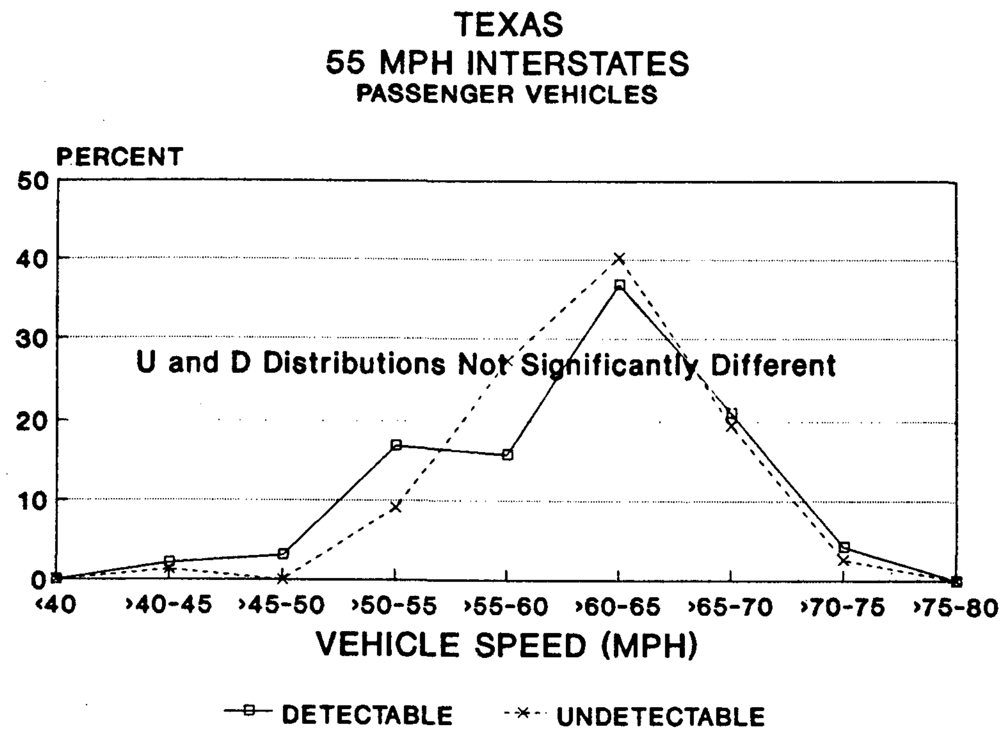


Figure 3.5. Speed distributions on OH 55 mph interstates.



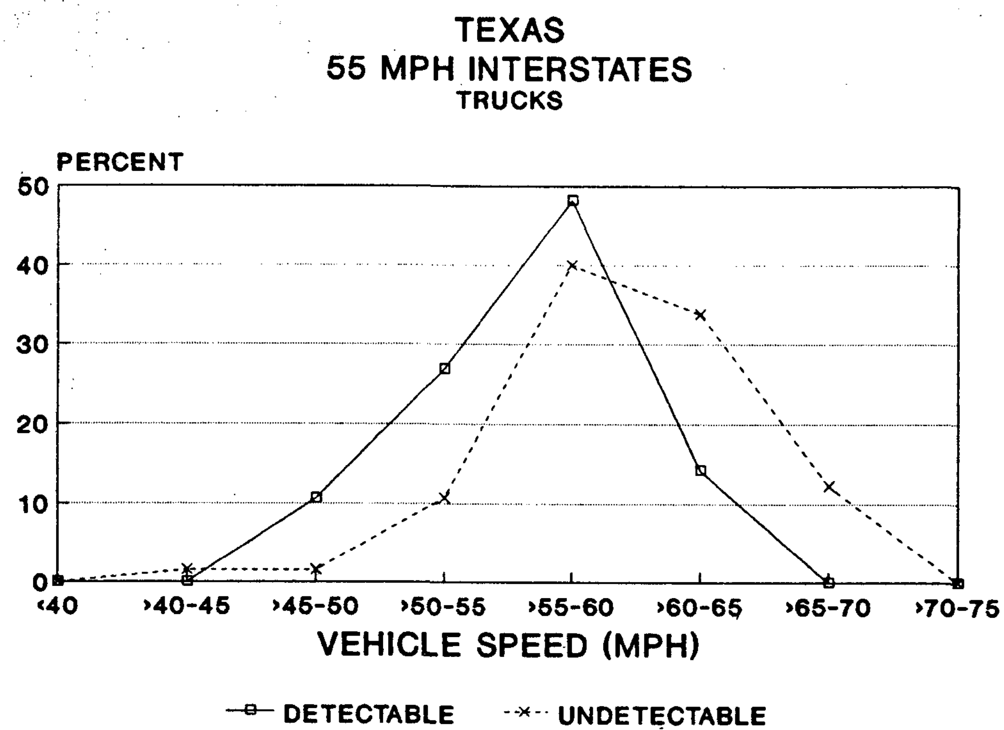
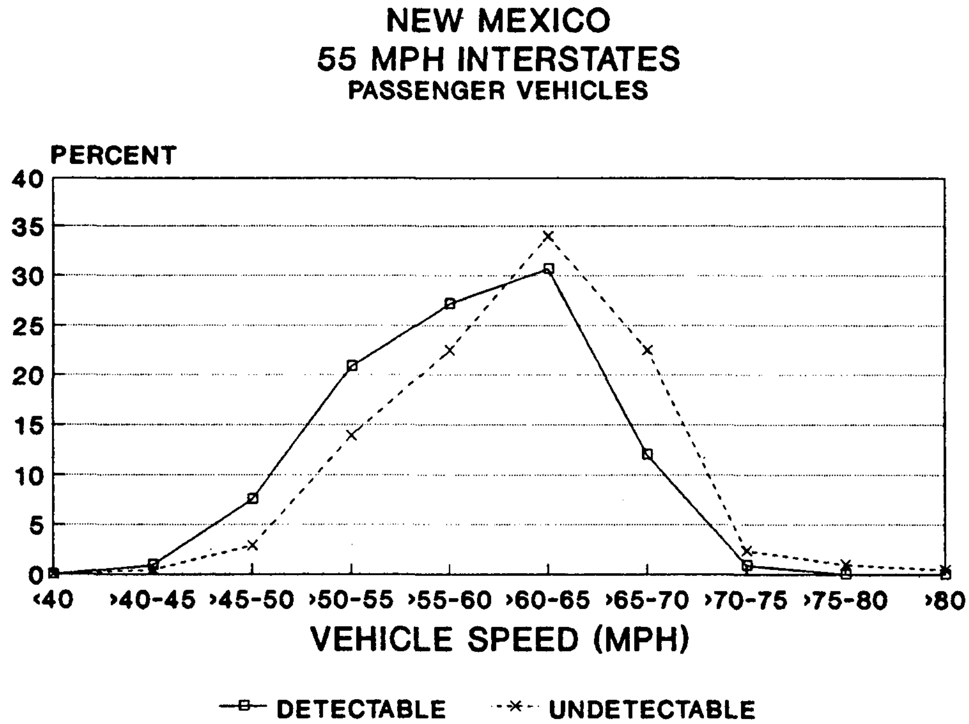


Figure 3.6. Speed distributions on TX 55 mph interstates.



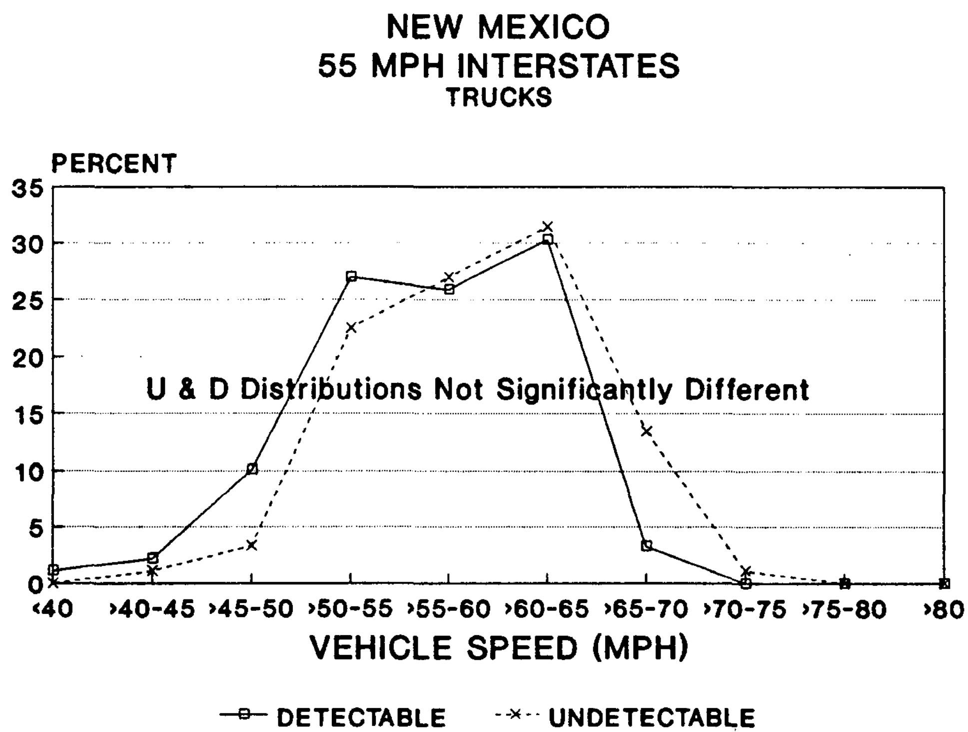


Figure 3.7. Speed distributions on NM 55 mph interstates.

The distributions for Texas and New Mexico are illustrated in Figures 3.8 -3.11. In Texas, differences were observed for trucks on both four and two lane 55 mph highways. Passenger vehicle distributions differ significantly only on the four lane facilities. In New Mexico, passenger vehicle distributions differ significantly on both four and two lane highways, whereas the differences observed in truck speed distributions are not statistically significant.

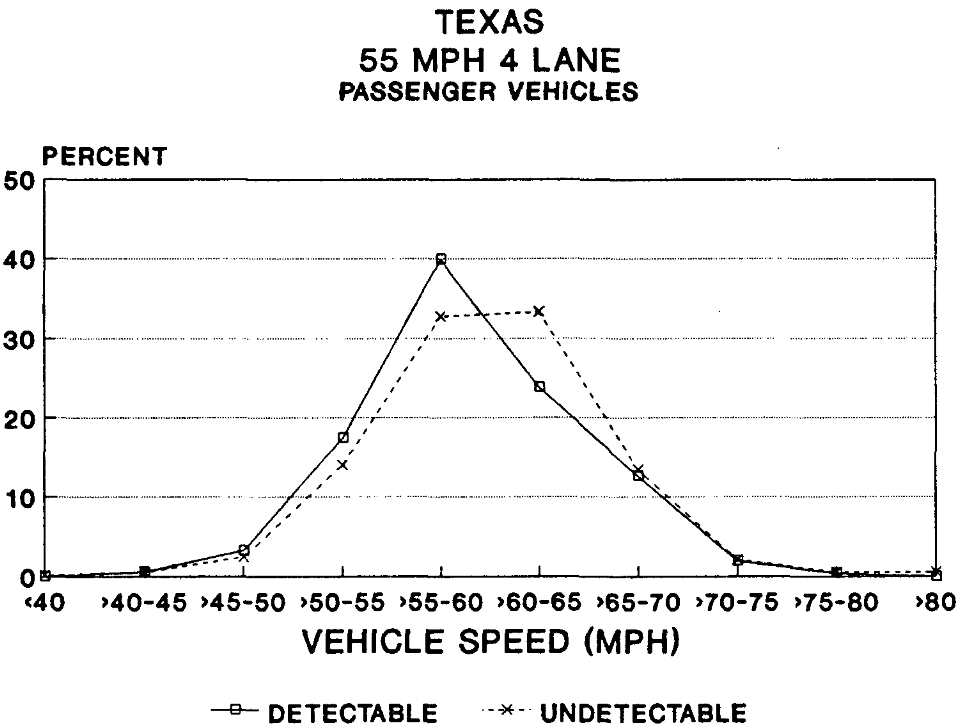
3.1.3 Low Speed Roads. Cumulative speed distributions differed significantly as a function of radar condition on some lower speed roads in Ohio, New York and New Mexico. Distributions of passenger vehicle speeds, as shown in Figure 3.12, are different on 25 and 35 mph urban streets sampled in Ohio. The detectable distributions for these facilities are shifted toward lower speeds. The passenger vehicle distributions for New York 30 mph roadways exhibit a similar shift, as shown in Figure 3.13. Figure 3.14 depicts the distributions for cars sampled on New Mexico 45 mph facilities. In this case, the relationship between detectable and undetectable distributions is reversed. The overall distribution observed in the presence of a radar transmission is skewed toward higher speeds relative to the undetectable distribution.

3.2 Comparisons of Mean Speeds and Proportion of Vehicles Exceeding Speed Levels.

The results of additional analyses are provided for those highway facility groups noted above for which statistically significant differences in the cumulative speed distributions were observed.

3.2.1 Interstate Highways. Mean speeds and the percent of vehicles exceeding speed levels in five mph increments under both radar conditions are provided in Table 3.2 for the interstate highways sampled that exhibited significant differences between undetectable and detectable distributions. Also shown are the absolute differences between these parameters as a function of the two conditions. In all cases, the mean speeds observed on the interstate highways differ significantly ($p<.05$) as a function of radar condition. On New York, Texas and New Mexico interstates, the mean speeds observed in the presence of detectable radar were lower than those observed when no radar transmission was detectable. For passenger vehicles, these differences ranged from 1.6 to 2.6 mph. Differences in mean truck speeds ranged from 1.3 to 3.7 mph. In Ohio, mean speeds of trucks on 65/55 mph interstates were 1.48 mph lower in the presence of radar. Average truck speeds on 55 mph interstates did not differ significantly. Nor were significant differences in mean passenger vehicle speeds observed on either 65 or 55 mph Ohio interstates as a result of the introduction of detectable radar.

Results of the analysis of the proportion of vehicles exceeding five mph incremental speed levels follows a pattern similar to that for mean speeds. Statistically significant decreases in the proportion of both cars and trucks exceeding the speed limit were observed on all interstate highway groups sampled in New York, Texas and New Mexico and in trucks on Ohio interstates when detectable radar was present. No significant change in the proportion of passenger vehicles speeding was observed on Ohio 55 mph interstates. On 65 mph highways in Ohio, an increase in the proportion of cars exceeding 65 mph was observed in the detectable sample. Only the proportion of cars exceeding the limit by more than ten mph is statistically smaller on these roads under the undetectable condition.



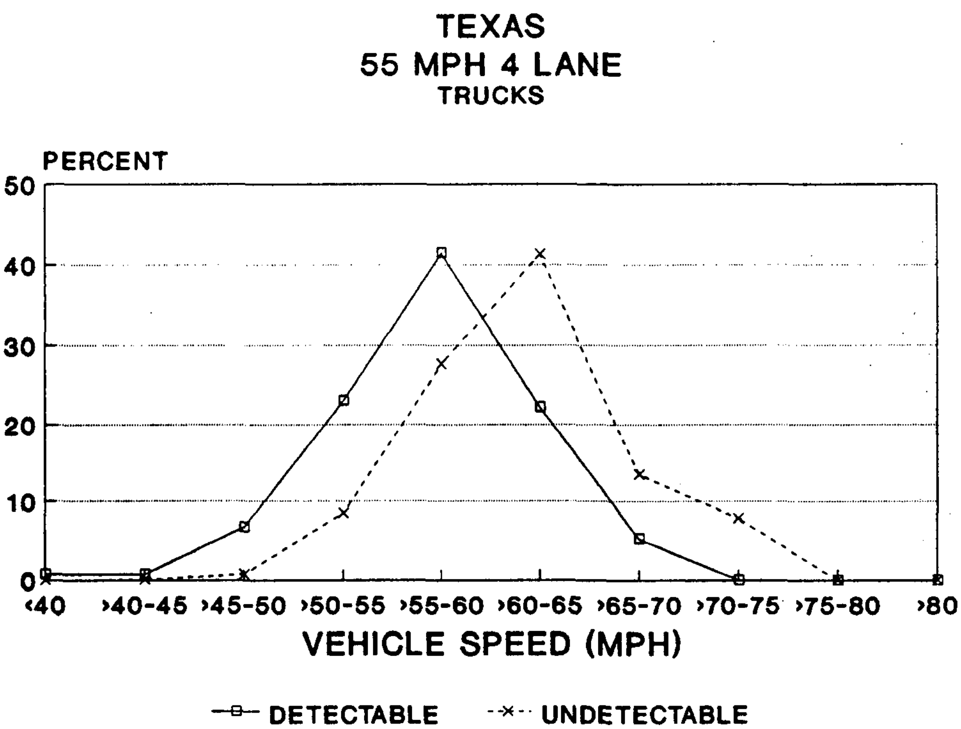
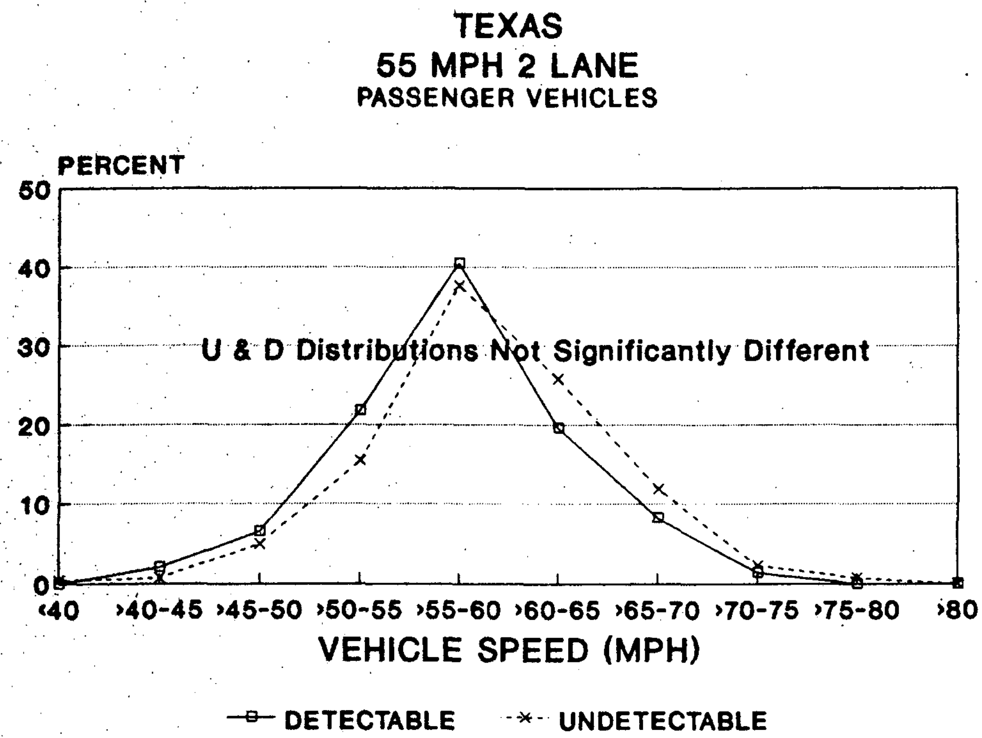


Figure 3.8 Speed distributions on TX 55 mph four lanes.



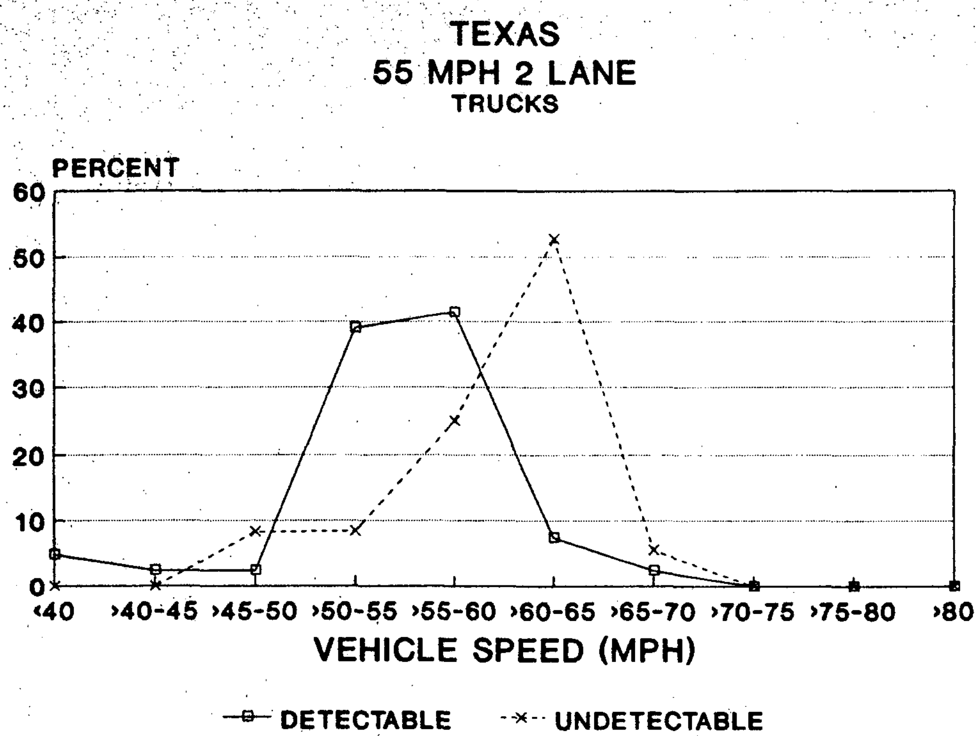
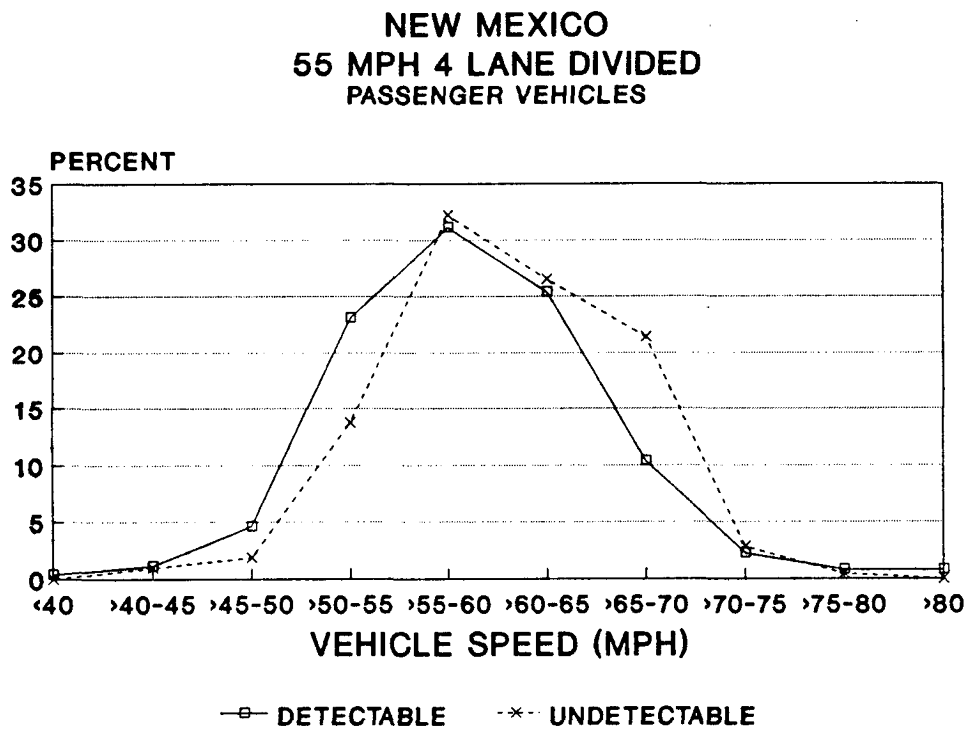


Figure 3.9. Speed distributions on TX 55 mph two lanes.



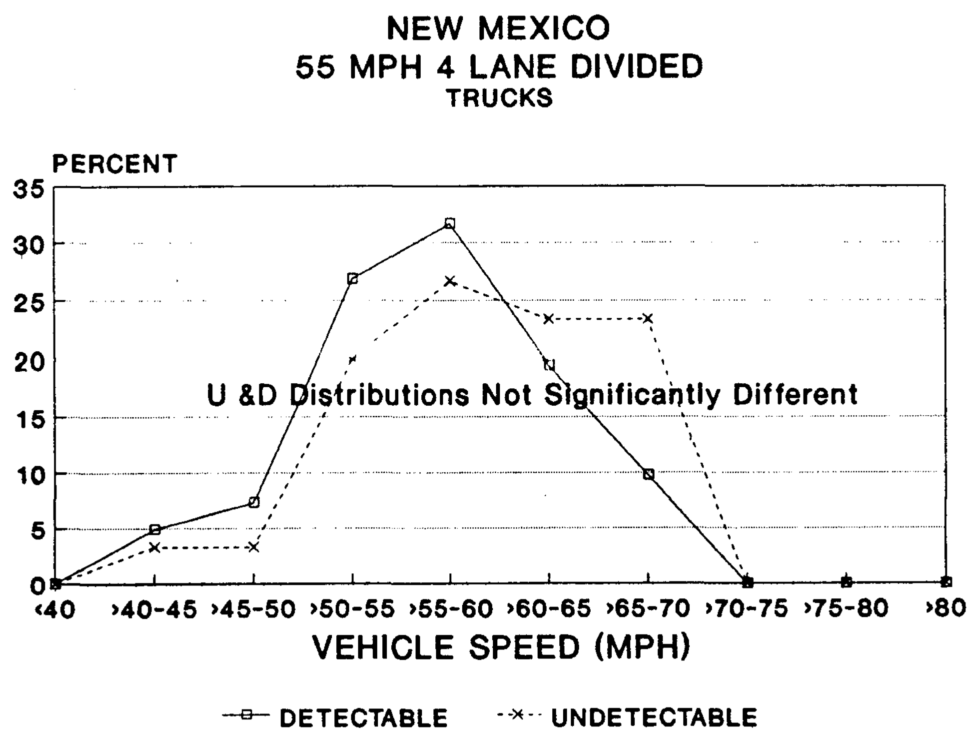
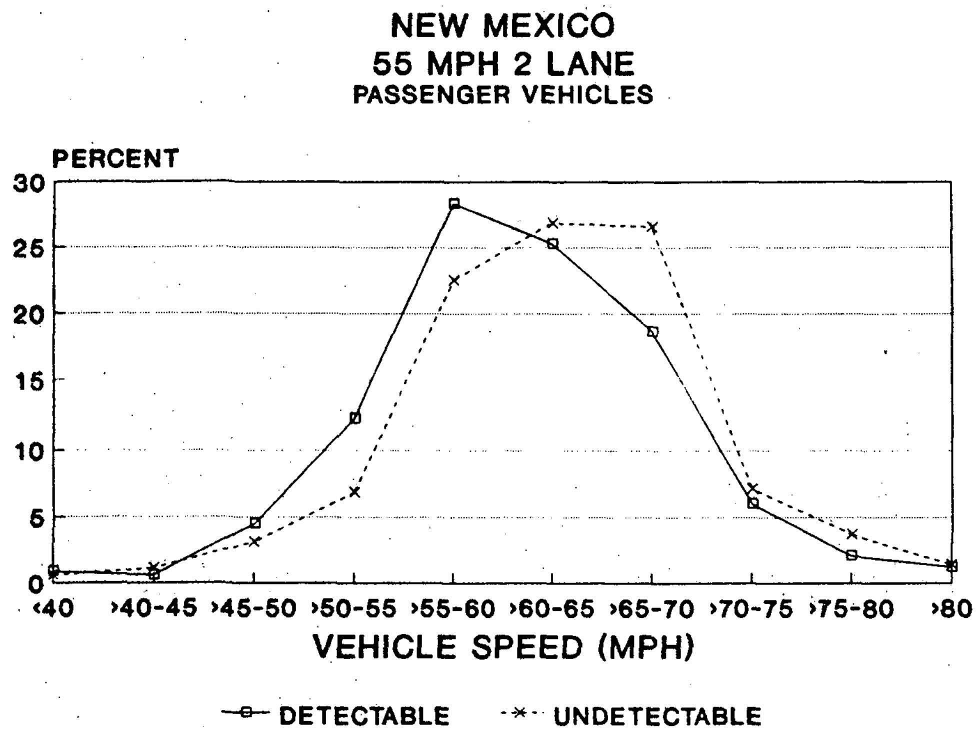


Figure 3.10. Speed distributions on NM 55 mph four lanes.



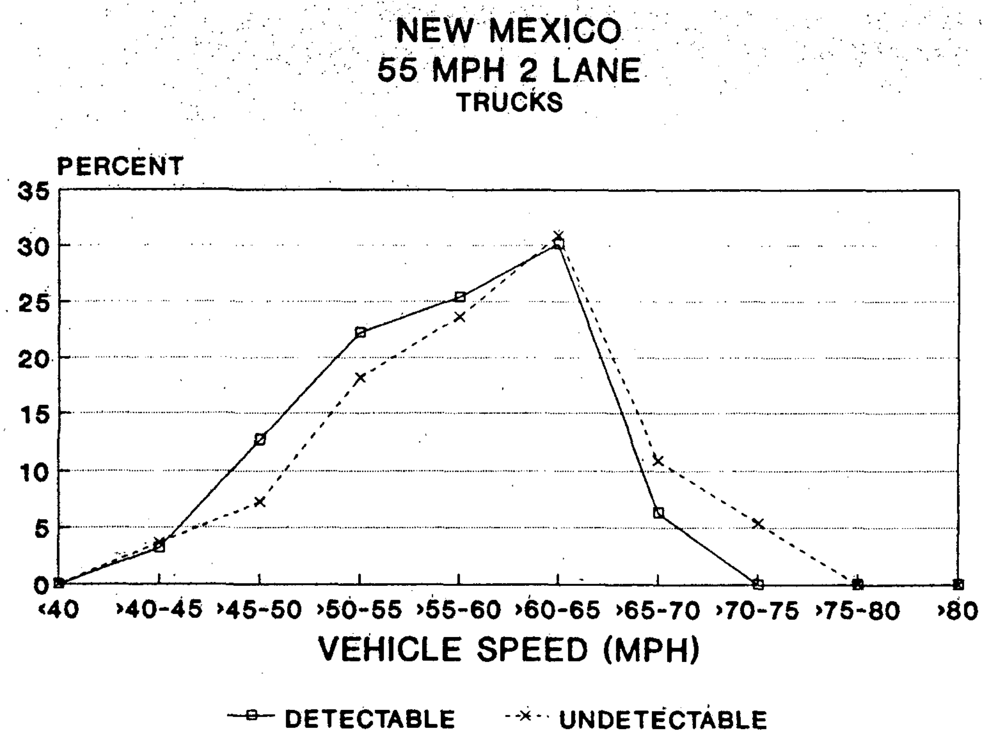
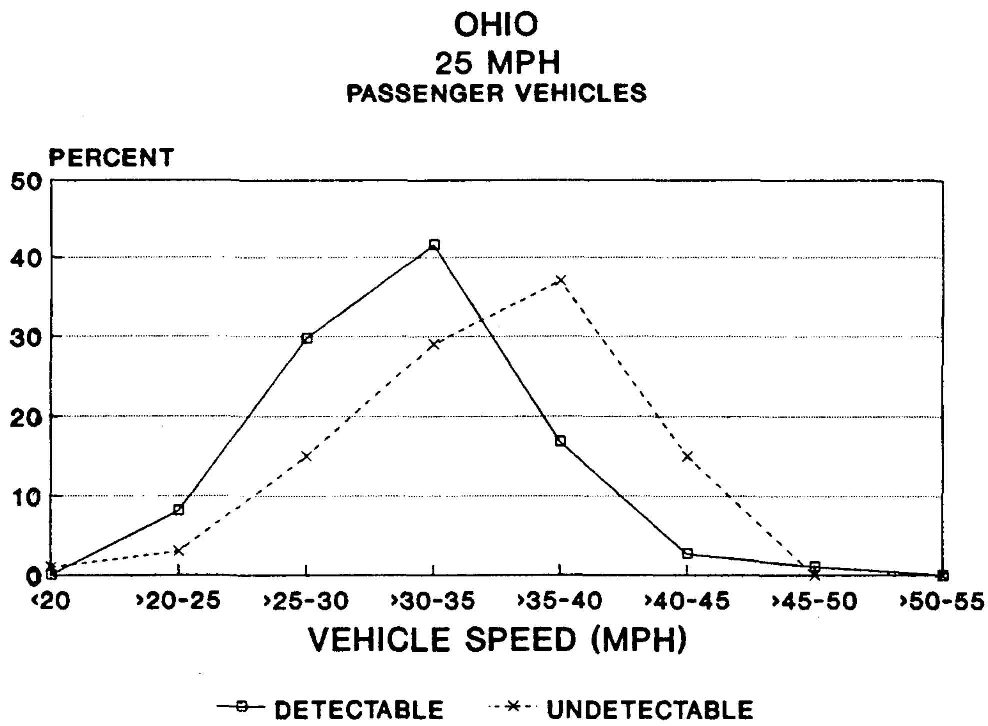


Figure 3.11. Speed distributions on NM 55 mph two lanes.



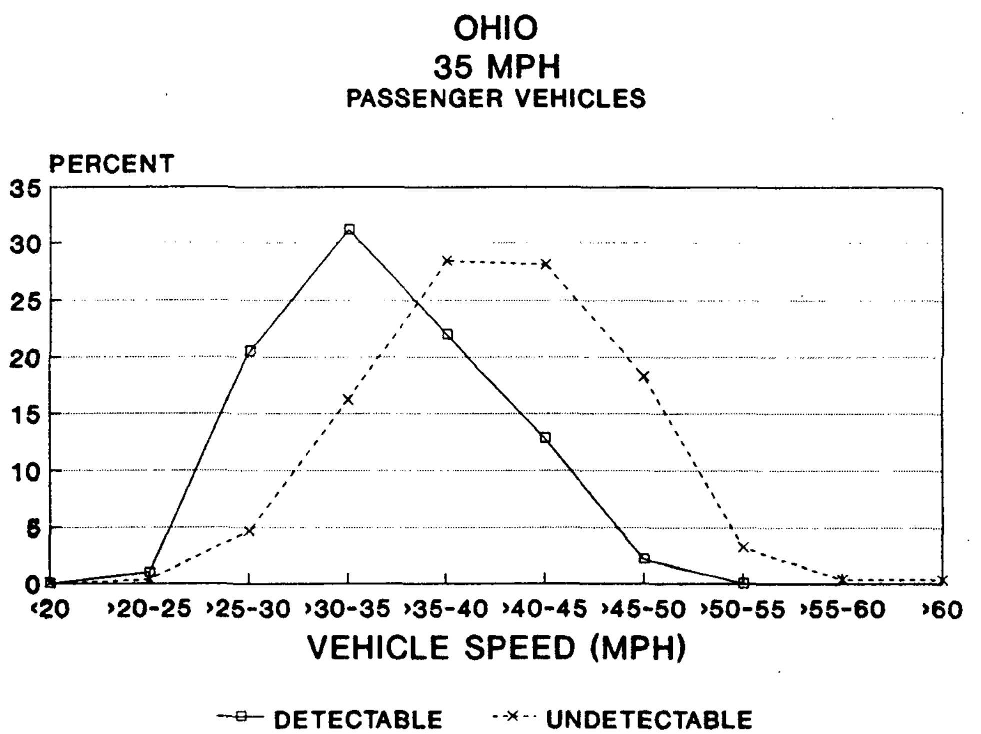


Figure 3.12 . Speed distributions on OH 25 and 35 mph roads.

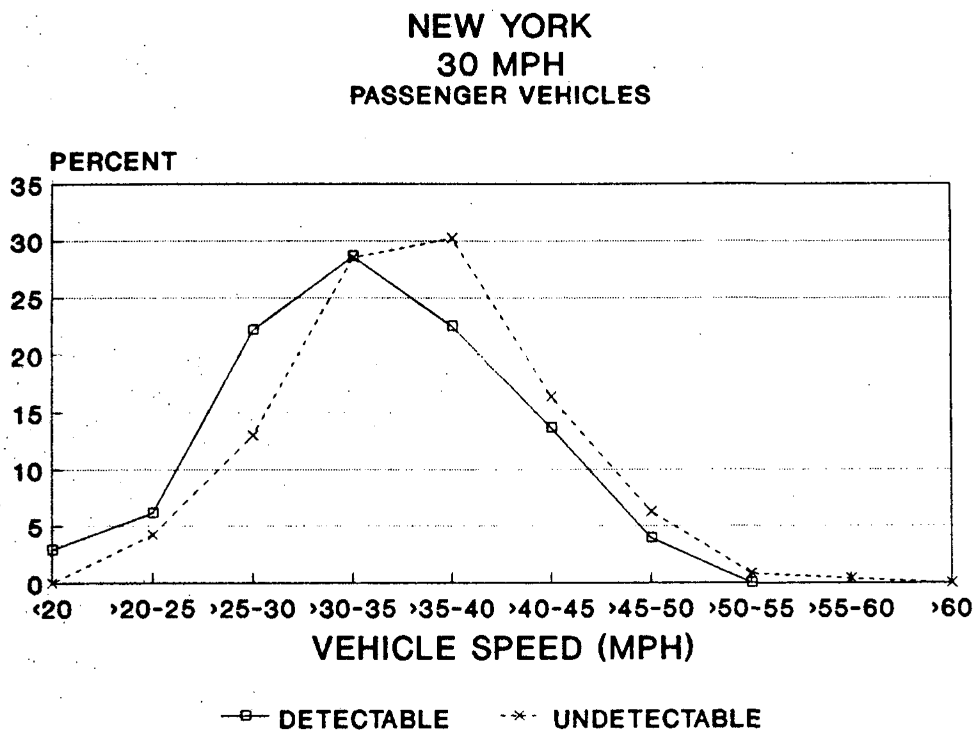


Figure 3. 13. Speed distributions on NY 30 mph roads.

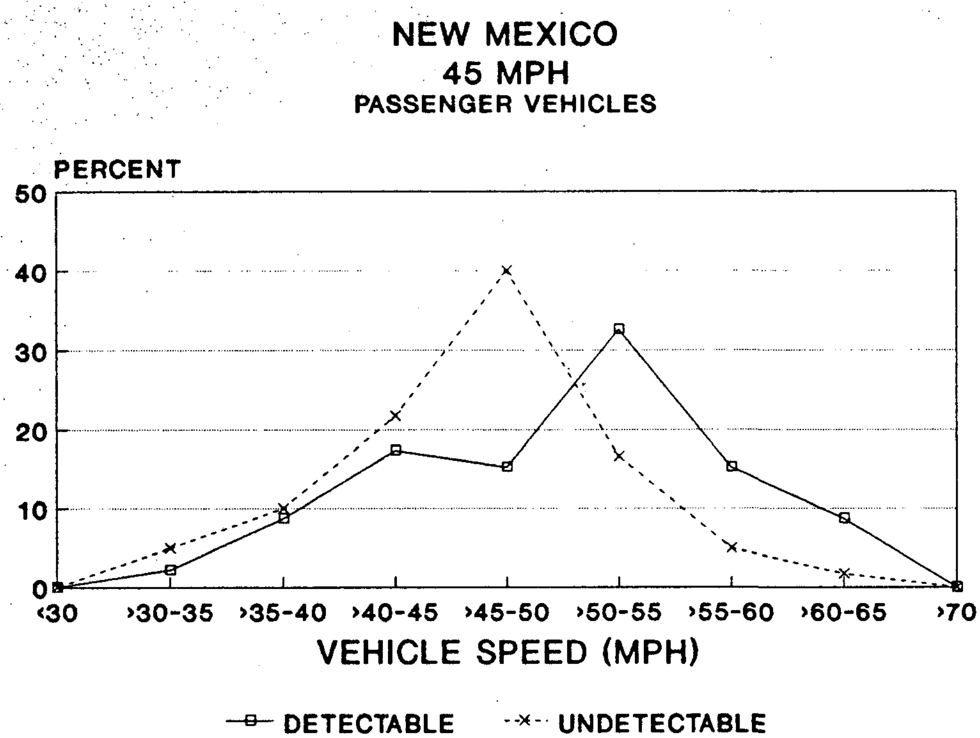


Figure 3.14. Speed distributions on NM 45 mph road.

Table 3.2. Differences in mean speeds and proportion of vehicles exceeding the speed limit on rural interstate highways as a function of radar condition.

STATE	SPEED LIMIT	VEHICLE TYPE	RADAR COND.	N	MEAN	PERCENT >55	>60	>65	>70	>75
			D	2253	63.19	95.03	77.98	40.26	6.48	.53
OH	65/55	PASS	U	2049	63.15	94.49	69.99	35.58	7.32	1.12
			Difference		.04	.54	7.99*	4.68*	-.84	-.59*
			D	2312	56.50	71.76	16.22	1.95	.09	.00
OH	65/55	TRUCK	U	2197	57.98	75.83	27.08	4.14	.36	.05
			Difference		-1.48*	-4.07*	-10.86*	-2.19*	-.27	-.05
OH	55	PASS	D & U distributions not significantly different							
			D	330	54.89	53.94	6.67	.00	.00	.00
OH	55	TRUCK	U	292	54.45	40.75	12.33	1.37	.00	.00
			Difference		.44*	13.19*	-5.66*	-1.37*	.00	.00
			D	1401	61.42	89.94	63.38	28.41	2.78	.30
NY	55	PASS	U	1274	63.59	95.45	78.81	35.16	6.04	.71
			Difference		-2.17*	-5.51*	-15.43*	-6.75*	-3.26*	-.41
			D	910	57.22	73.52	26.92	4.62	.22	.00
NY	55	TRUCK	U	894	59.27	81.99	40.04	8.61	.89	.11
			Difference		-2.05*	-8.47*	-13.12*	-3.99*	-.67	-.11

*indicates significant difference between detectable and undetectable, p<.05.

Continued on next page

Table 3.2. (Continued from preceding page)

STATE	SPEED LIMIT	VEHICLE TYPE	RADAR COND.	N	MEAN	PERCENT >55	>60	>65	>70	>75
			D	393	62.11	90.84	74.05	32.82	4.33	.25
TX	65/60	PASS	U	404	63.67	94.55	78.47	45.30	8.66	1.98
			Difference		-1.56*	-3.71*	-4.42	-12.48*	-4.33*	-1.73*
			D	346	58.30	83.82	32.66	4.34	.29	.00
TX	65/60	TRUCK	U	328	61.32	92.38	59.15	22.87	6.10	.61
			Difference		-3.02*	-8.56*	-26.49*	-18.53*	-5.81*	-.61
TX	55	PASS	D & U distributions not significantly different							
			D	56	55.24	62.50	14.29	.00	.00	.00
TX	55	TRUCK	U	65	58.92	86.15	46.15	12.31	.00	.00
			Difference		-3.68*	-23.65*	-31.86*	-12.31*	.00	.00
			D	1086	63.09	93.09	73.39	39.78	9.67	1.66
NM	65	PASS	U	1155	64.78	93.33	80.17	54.20	15.84	3.72
			Difference		-1.69*	-.24	-6.78*	-14.42*	-6.17*	-2.06*
			D	612	61.22	90.85	67.65	21.41	2.29	.33
NM	65	TRUCK	U	598	62.52	88.80	71.07	39.46	10.87	2.17
			Difference		-1.30*	2.05	-3.42	-18.05*	-8.58*	-1.84*
			D	225	58.24	70.67	43.56	12.89	.89	.00
NM	55	PASS	U	209	60.79	82.78	60.26	26.32	3.83	1.44
			Difference		-2.55*	-12.11*	-16.70*	-13.43*	-2.94*	-1.44
NM	55	TRUCK	D & U distributions not significantly different							

*indicates significant difference between detectable and undetectable, p<.05.

A useful way to capture both the direction and magnitude of the influence of detectable radar on the proportion of vehicles travelling at the various speed levels is to construct a ratio of the undetectable (U) and detectable (D) distributions within each speed level. If no differences in speeds were observed as a function of radar condition, the ratios of the proportion of vehicles in a speed category when observed in the absence of radar to the proportion observed in the presence of a detectable transmission would in all cases be 1.0 except for small variations due to sampling error. A ratio greater than 1.0 would result if the proportion of vehicles was greater in the U sample than in the D sample. If the ratio is less than 1.0, then the reverse is true. Because the frequency of vehicles travelling in each higher speed group becomes increasingly smaller, the absolute differences due to radar condition also become progressively smaller in the higher speed levels. The U:D ratios allows a direct comparison of the relative effect of radar at the various speed levels. Caution must be used in interpreting these ratios, however, since they depict proportionally larger differences within progressively smaller groups of vehicles at the higher speed levels.

Figure 3.15 illustrates the U:D ratios for vehicles observed on the highest speed limit interstate highways sampled in each of the states. Ratios are shown only for those speed levels at which the underlying difference between U and D samples was determined to be statistically significant. With the exception of the ratios for passenger vehicles on Ohio interstates, all of the ratios are greater than 1.0. Among passenger vehicles, the ratios for all cars exceeding the speed limit by more than five mph are 1.24 in New York, 1.64 in New Mexico, and 2.0 in Texas. For trucks, the ratios for speeds greater than five mph over the speed limit are 1.49, 1.67, 4.75, and 5.27 for New York, Ohio, New Mexico and Texas, respectively. The ratios increase at the higher speed levels, indicating the proportionally greater impact of detectable radar at higher speeds. The proportion of passenger vehicles exceeding 65 mph in Ohio is significantly larger when radar was detectable. The associated ratio is 0.88. However, the proportion of cars exceeding 75 mph, while very small, is more than twice as great when no radar is detectable.

Figure 3.16 depicts the U:D ratios for the 55 mph interstates sampled in Ohio, Texas and New Mexico. Again, ratios are shown only for those speed levels where significant differences were found between the detectable and undetectable distributions. In some cases, at the highest speed levels, no ratio is shown because no vehicles in the detectable sample were observed at those speeds. The U:D ratio in that case is indeterminate. As indicated in Figure 3.16, the proportion of trucks on Ohio 55 mph interstates exceeding the speed limit by more than five mph was nearly twice (1.85) as great when radar was not detectable than when a detectable signal was transmitted. On comparable Texas highways, the proportion of trucks exceeding the speed limit by more than five mph was more than three times as great when no radar was detectable. In New Mexico the truck ratios are of comparable magnitude but do not reach statistical significance. For passenger vehicles, the U:D ratios for vehicles exceeding the speed limit by more than five and ten mph are 1.38 and 2.04, respectively.

3.2.2 Non-Interstate 55 mph Highways. Results of the comparison of mean speeds and proportion of vehicles exceeding the speed levels for detectable and undetectable speed samples taken on non-interstate 55 mph rural highways are summarized in Tables 3.3. As shown previously, the differences between

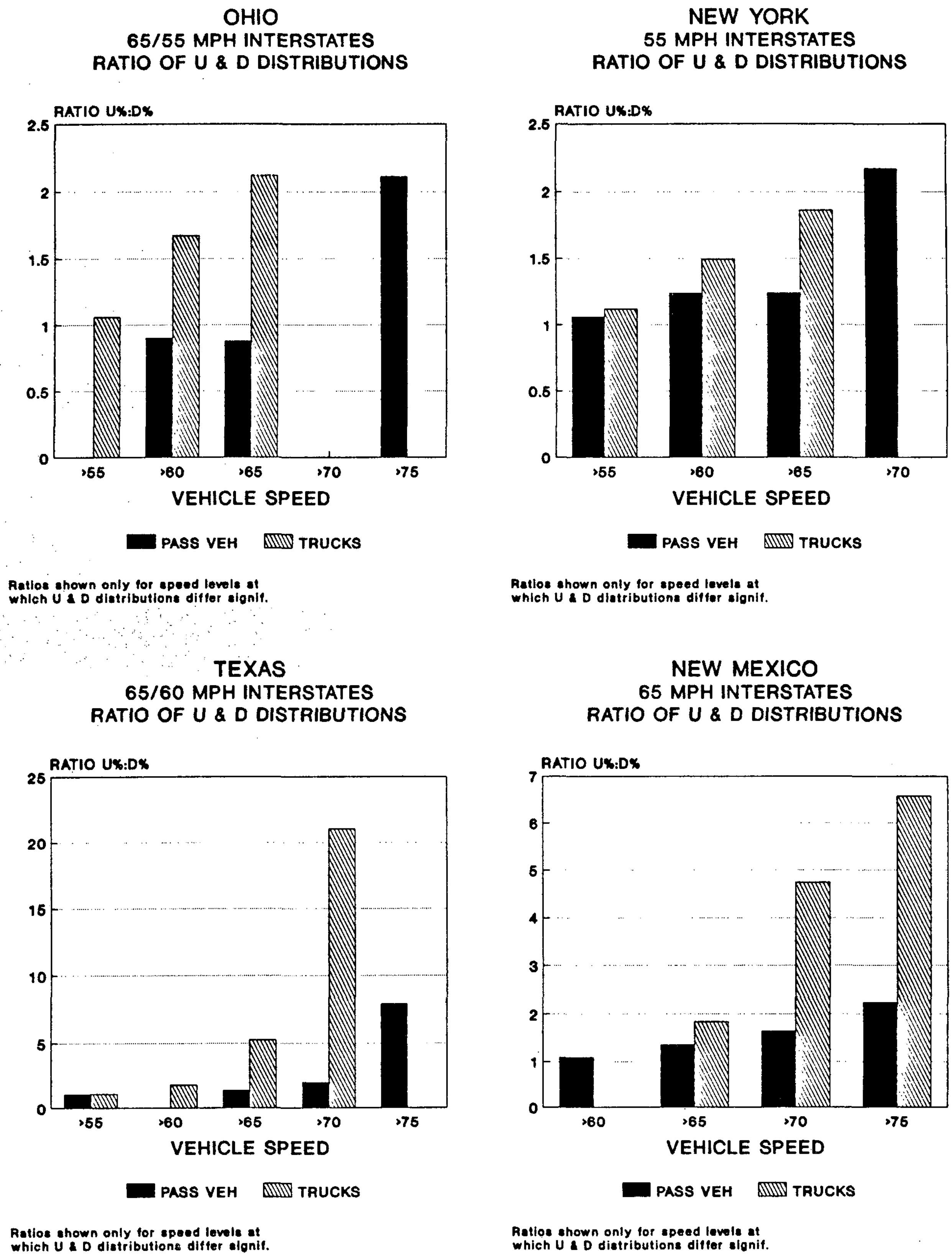
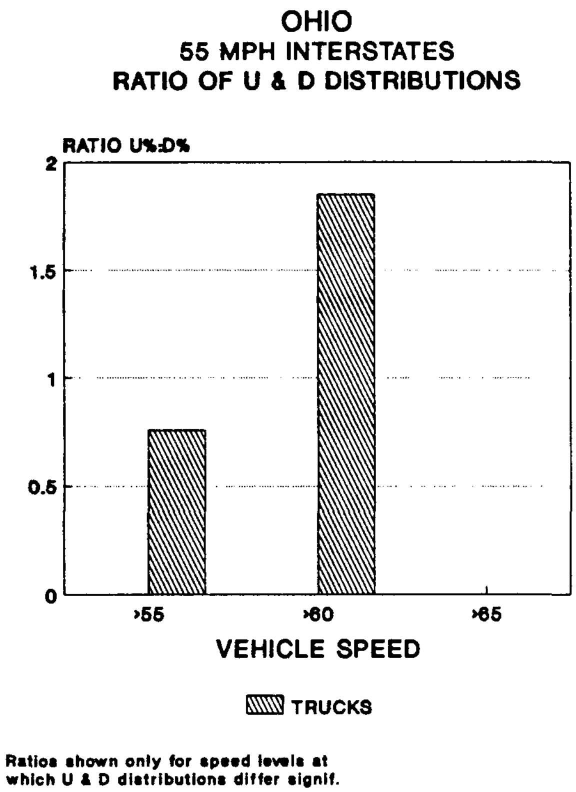
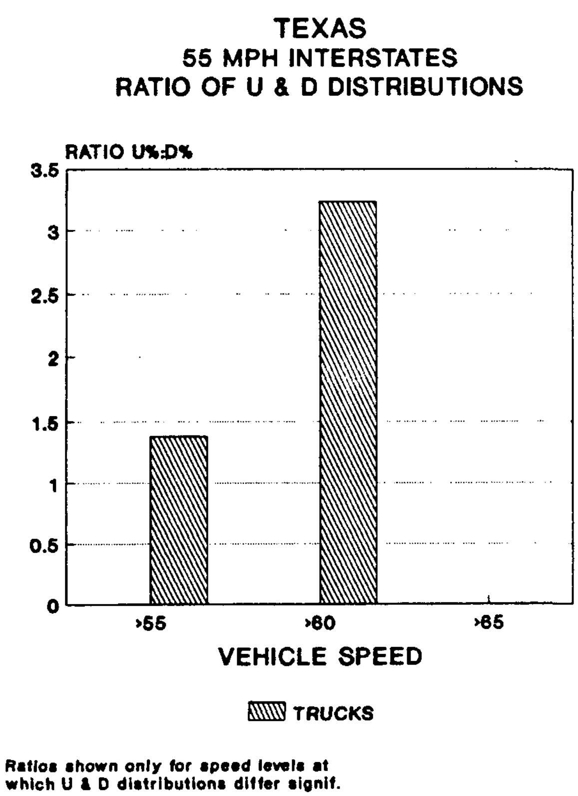


Figure 3.15 U:D ratios for highest speed interstates





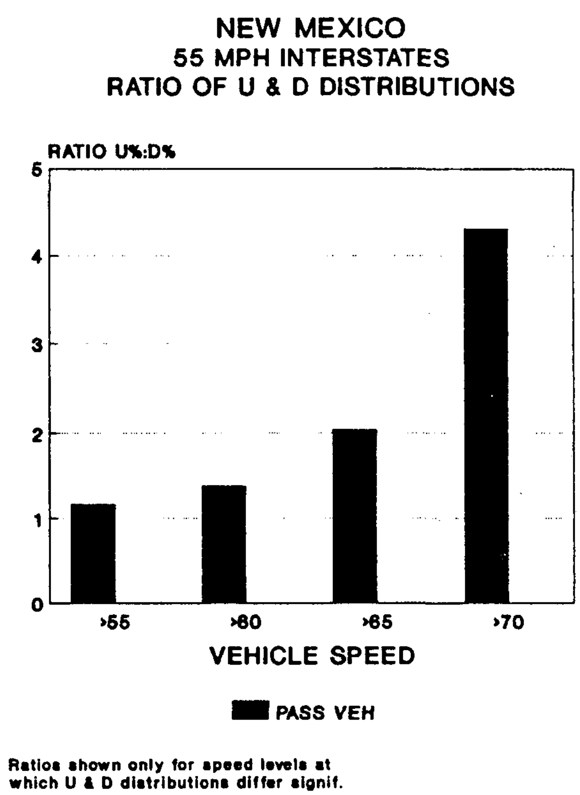


Figure 3.16 U:D ratios for urban interstates

Table 3.3. Differences in mean speeds and proportion of vehicles exceeding the speed limit on non-interstate 55 mph highways as a function of radar condition.

STATE	SPEED LIMIT	TRAVEL LANES	VEHICLE TYPE	RADAR COND.	N	MEAN	PERCENT >55	>60	>65	>70	>75
				D	516	58.79	78.68	38.76	14.92	2.33	.39
TX	55	4 DIV.	PASS	U	528	59.73	82.77	50.00	16.67	3.22	1.12
				Difference		-.94*	-4.09	-11.24*	-1.75	-.89	-.73
				D	135	56.67	68.89	27.41	5.19	.00	.00
TX	55	4 DIV.	TRUCK	U	141	60.91	90.07	62.41	21.28	7.80	.00
				Difference		-4.24*	-21.18*	-35.00*	-16.09*	-7.80*	.00
TX	55	2	PASS	D & U distributions not significantly different							
				D	41	54.66	51.22	9.76	2.44	.00	.00
TX	55	2	TRUCK	U	36	58.88	83.33	58.33	5.56	.00	.00
				Difference		-4.22*	-32.11*	-48.57*	-3.12	.00	.00
				D	260	58.35	70.77	39.62	14.23	3.85	1.54
NM	55	4 DIV.	PASS	U	211	60.39	83.41	51.18	24.64	3.32	.47
				Difference		-2.04*	-12.64*	-11.56*	-10.41*	.53	1.07
NM	55	2	TRUCK								
OH	55	4 DIV.	PASS								
OH	55	4 DIV.	TRUCK								
OH	55	2	PASS								
OH	55	2	TRUCK								
				D & U distributions not significantly different							
NY	55	4 DIV.	PASS								
NY	55	4 DIV.	TRUCK								
NY	55	2/4	PASS								
NY	55	2/4	TRUCK								
NY	55	2	PASS								
NY	55	2	TRUCK								

*indicates significant difference between detectable and undetectable, p<.05.

undetectable and detectable speed distributions on these highways reached significance only in Texas and New Mexico. Truck speeds on both two and four lane highways in Texas averaged more than 4 mph faster when radar was not detectable. Mean passenger vehicle speeds were significantly higher, but by only 0.9 mph, in the undetectable condition on the four lane divided facilities. Passenger vehicle speeds on the comparable New Mexico roadways averaged about 2 mph faster in the absence of radar. Average truck speeds on these roads were also about 2 mph greater in the undetectable sample, but these differences failed to reach statistical significance.

Significant differences between the detectable and undetectable distributions in terms of the proportion of vehicles exceeding the speed limit by various amounts are illustrated by the U:D ratios shown in Figure 3.17. The proportion of trucks exceeding the speed limit by more than five mph was more than twice as large when speeds were measured in the absence of detectable radar on the four lane highways and nearly six times greater on two lane roads. In New Mexico differences between the two radar conditions did not reach statistical significance due to the small sample sizes. The proportion of passenger vehicles exceeding the speed limit by more than five and ten mph was greater among the undetectable sample.

3.2.3 Low Speed Roads. Differences between the detectable and undetectable speed distributions on low speed urban roadways reached statistical significance on the 25 and 35 mph roadways in Ohio, the 30 mph segments in New York, and the 45 mph road in New Mexico. The results of the analyses of these speed distributions are shown in Tables 3.4 and Figure 3.18. Average passenger vehicle speeds were 3 and 1.8 mph faster on the 25 and 35 mph Ohio streets when radar was not detectable. Paradoxically, the average speed of cars on the New Mexico 45 mph road was 3.6 mph faster when radar was detectable.

The proportion of cars exceeding the speed limit by more than 10 mph was more than twice as large on the Ohio 25 mph facility when radar was not detectable. Smaller, but still significant, increases in the proportion of cars exceeding the speed limit by more than five mph were observed on the Ohio 35 and New York 30 mph facilities when no radar was detectable. On the New Mexico 45 mph facility, the U:D ratio for cars travelling greater than 55 mph is 0.28. This indicates that more than three times as many cars exceeded the speed limit by more than 10 mph when radar was detectable.

3.3 Speed Variance as a Function of Radar Condition

Comparisons of the variation of speeds as a function of radar condition were made for those facility groups for which the detectable and undetectable cumulative distributions differed significantly. An F statistic was used to compare the variances (the square of the standard deviations) for the speeds collected in the presence and absence of detectable radar. The results of these comparisons are shown in Table 3.5. For trucks, variability is reduced when a detectable signal is present. This reduction is statistically significant on the interstate highways with the fastest speed limits in each of the sampled states and on 55 mph interstates in Ohio. Differences in speed variability among passenger vehicles are less uniform. Variability was significantly reduced among cars when detectable radar was present on 65 mph interstates in New Mexico and 55 mph four lane roads in Texas. On New York

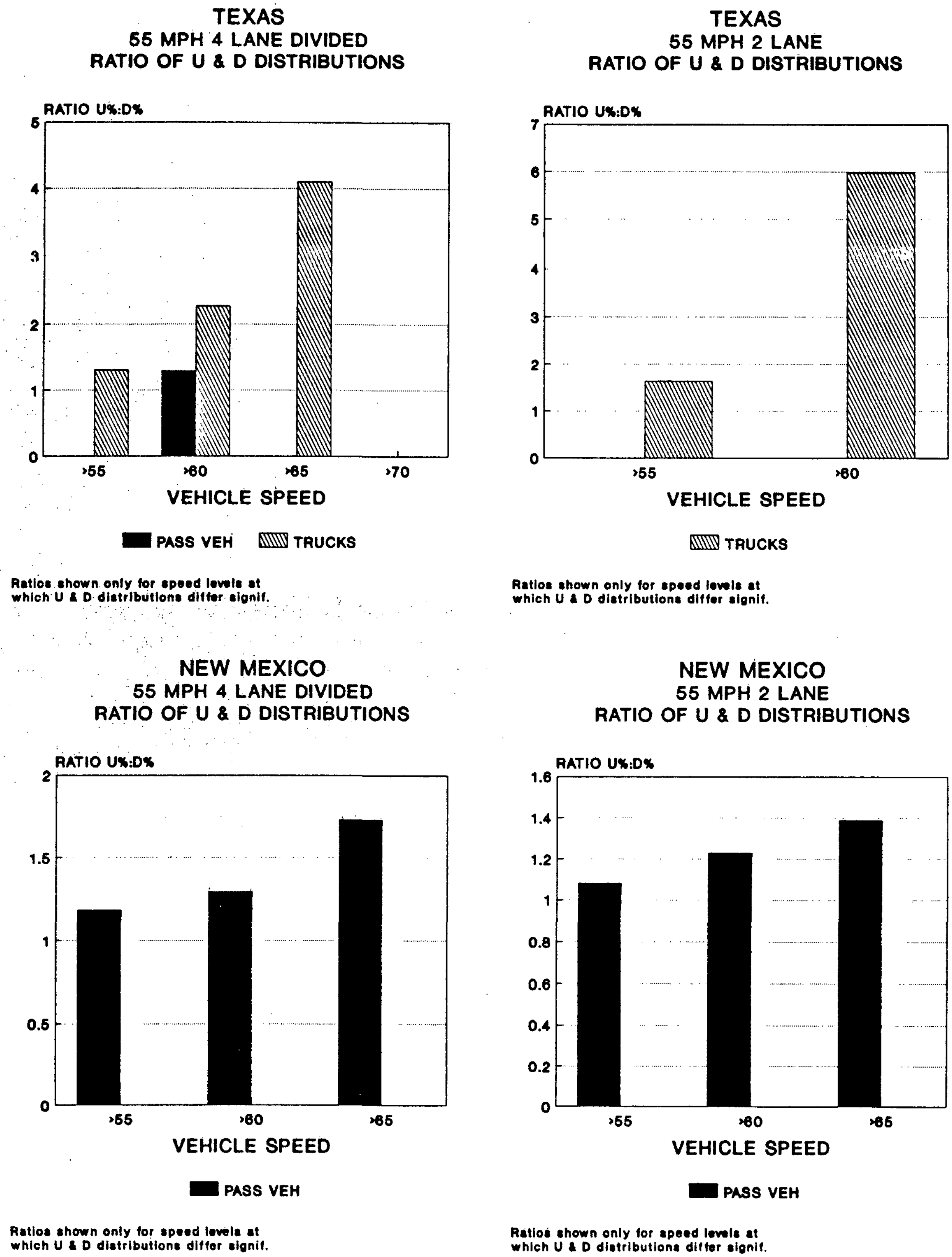


Figure 3.17 U:D ratios for 55 mph non-interstate highways

Table 3.4. Differences in mean speeds and proportion of vehicles exceeding the speed limit on low speed roadways as a function of radar condition.

STATE	SPEED LIMIT	TRAVEL LANES	VEHICLE TYPE	RADAR COND.	N	MEAN	PERCENT >25	>30	>35	>40	>45	>50	>55	>60
				D	185	31.44	91.89	62.16	20.54	3.78	1.08	-	-	-
OH	25	2/4	PASS	U	100	34.44	96.00	81.00	52.00	15.00	.00	-	-	-
				Difference		-3.00*	-4.11	-18.84*	-31.46*	-11.22*	1.08	-	-	-
				D	420	38.02	-	-	68.10	36.90	15.00	2.14	.00	-
OH	35	2/4	PASS	U	278	39.82	-	-	78.78	50.36	22.30	3.96	.72	-
				Difference		-1.80*	-	-	-10.68*	-13.46*	-7.30*	-1.82	-.72	-
				D	307	33.52	-	68.73	40.07	17.59	3.91	.00	-	-
NY	30	2/4	PASS	U	238	35.39	-	82.77	54.20	23.95	7.56	1.26	-	-
				Difference		-1.87*	-	-14.04*	-14.13*	-6.36	-3.65	-1.26	-	-
				D	46	49.55	-	-	-	-	71.74	56.52	23.91	8.70
NM	45	2/4	PASSS	U	60	45.97	-	-	-	-	63.33	23.33	6.67	1.67
				Difference		3.58*	-	-	-	-	8.41	33.19	17.24*	7.03
OH	50	2/4	PASS											
OH	45	2/4	PASS											
OH	40	2/4	PASS											
NY	45	2/4	PASS											
NY	40	2/4	PASS											
NY	35	2/4	PASS	D & U distributions not significantly different										
NM	55urban	2/4	PASS											
NM	40	2/4	PASS											
NM	35	2/4	PASS											
NM	55	2/4	PASS											
NY	55	2/4	PASS											

*indicates significant difference between detectable and undetectable, p<.05.

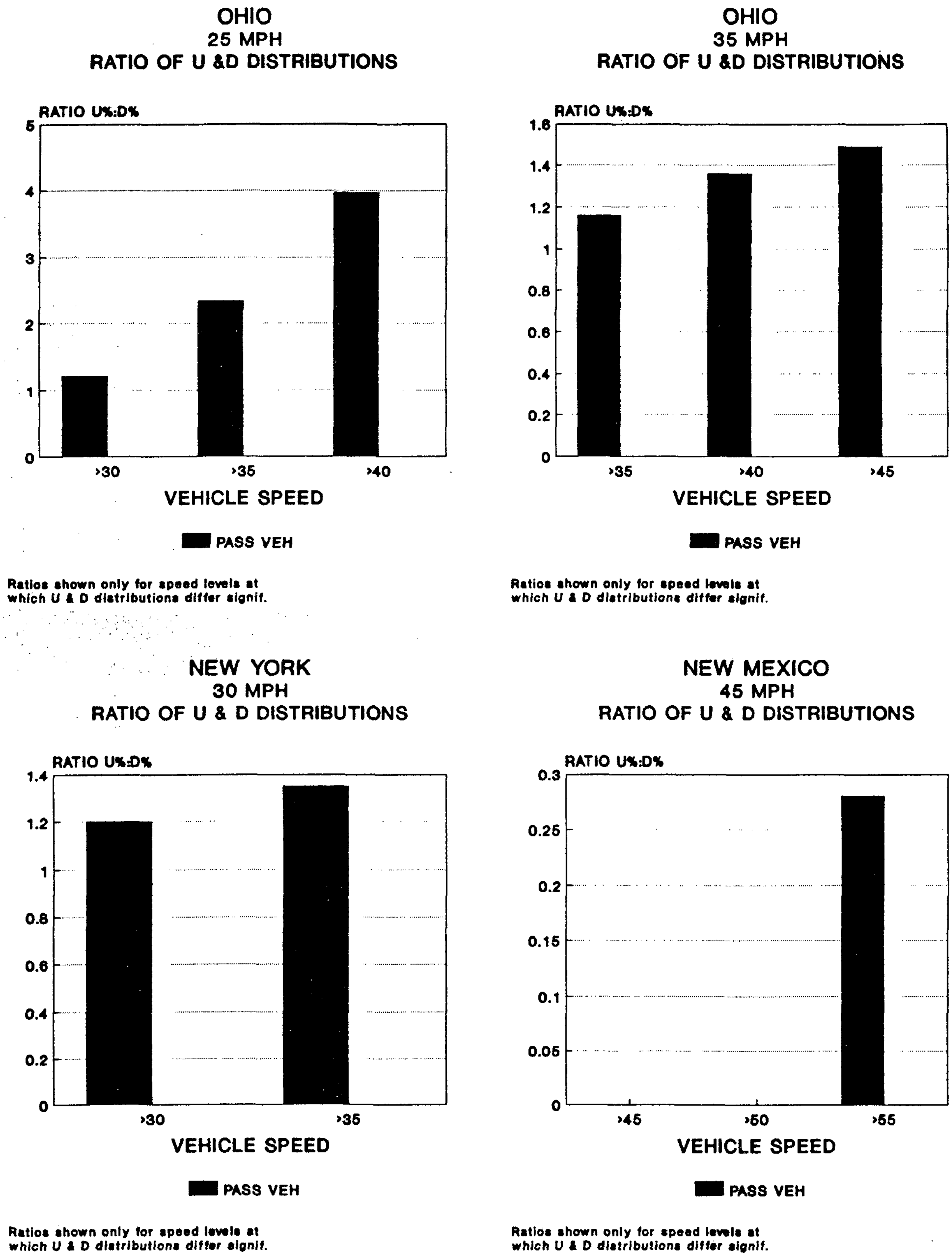


Figure 3.18 U:D ratios for low speed roads

Table 3.5. Standard deviations of passenger vehicle and truck speeds measured in the presence (D) and absence (U) of detectable radar.

STATE	FACILITY CLASS	PASSENGER VEH			TRUCK		
		D	U	F	D	U	F
OH	65/55 mph Interstates	5.01	5.09	1.03	3.63	4.24	1.36*
	55 mph Interstates				3.44	4.94	2.06*
	35 mph 2/4 Lane	6.07	6.38	1.10			
	25 mph 2/4 Lane	4.72	5.10	1.17			
NY	55 mph Interstates	5.05	4.52	1.25*	4.15	4.62	1.24*
	30 mph 2/4 Lane	6.36	6.38	1.01			
TX	65/60 mph Interstates	5.38	5.46	1.03	3.83	5.10	1.77*
	55 mph Interstates				3.89	4.66	1.44
	55 mph 4 Lane Divided	5.35	5.84	1.19*	5.13	5.63	1.20
	55 mph 2 Lane				5.43	5.77	1.13
NM	65 mph Interstates	5.94	6.38	1.15*	4.88	6.83	1.96*
	55 mph Interstates	5.69	6.07	1.14			
	55 mph 4 Lane Divided	6.47	5.88	1.21			
	55 mph 2 Lane	7.47	7.57	1.03			
	45 mph 2/4 Lane	7.01	5.71	1.51			

*Indicates significant difference between detectable and undetectable variances (squared standard deviations), $p<.05$

interstates, variability was significantly greater when a radar signal was detectable.

3.4 Driver Response to the Onset of Detectable Radar

Observations of driver response to the sudden onset of detectable radar were made in each of the four sample states. The signal received by detector equipped drivers is comparable to that encountered by drivers targeted by law enforcement personnel using "instant on" radar. Because the observers had no legitimate law enforcement function, considerable caution was exercised in the timing of signal propagation to minimize the potential for hazardous vehicle interactions in the event of severe driver response to the radar transmission. No systematic effort was made to observe only those vehicles with radar detectors. The observations were made both during daylight hours and, to a lesser extent, in darkness. The later observations were conducted to make the onset of brake lights easier to detect.

Consistent with similar observations reported by Ciccone et al (1987), instances of braking were observed in response to the radar transmission. Although no attempt was made to establish the probability of occurrence, braking events were observed in only a very low proportion of the sudden onset trials among either passenger vehicles or trucks. More frequently observed, but also more difficult to ascertain, were instances of apparent slowing in response to the radar. It appears that some drivers using detectors simply back off the accelerator. In a very few cases, few enough to be remembered individually quite distinctly by the observers, more dramatic responses to radar onset were evoked. These consisted of rapid lane changes and, in at least one instance, sufficiently extreme braking that the change in vehicle weight distribution was clearly evident.

4.0 DISCUSSION AND CONCLUSIONS

4.1 The Influence of Radar Detectors on Traffic Speeds

Overall, the weight of evidence clearly demonstrates that radar detectors do have an influence on overall traffic speeds. The observed nature of this influence is the reduction of the speeds of some vehicles in the presence of a radar signal. The number of vehicles influenced and the magnitude of the speed reduction vary as a function of the states sampled, highway facility type, and vehicle classification. In general, the data show that speed reductions are seen among a larger portion of the traffic stream:

- in Texas and New Mexico, where traffic densities are lower,
- on higher class facilities, where speed limits are higher, and,
- for trucks, which are more likely to be equipped with radar detectors and CB radios.

The speed parameters affected when speed reductions were observed include: the average speed, the proportion of vehicles exceeding the speed limit, and variability among vehicle speeds. These parameters, in turn, produced differences in cumulative speed distributions. For some highway types neither the cumulative speed distributions nor the separate speed parameters differed in any way that could be attributable to the use of radar detectors. Taken by themselves, such results are not particularly surprising; they merely suggest that the influence of radar detectors is not all pervasive on all roads.

4.1.1 Detector Influence on Average Speeds. On those highways where differences were observed between the overall speed distributions as a function of radar condition, mean speeds were generally lower when a detectable radar signal was present. The magnitude of this difference varied considerably. On highways with speed limits of 55 mph or more, average truck speeds ranged from less than 1 to more than 4 mph slower as a consequence of the detectable radar. The influence on passenger vehicles on these roads was somewhat less. Average speeds were about 1 to 2.5 mph slower in the detectable sample. Reductions in average vehicle speed were seen on both interstate and non-interstate highways, but less frequently on the latter. When it was observed, the magnitude of reduction was at least as great on the non-interstate highways.

Some evidence for a detector influence on overall traffic speeds on lower speed urban roads was observed. On two low speed facility groups in Ohio (25 & 35 mph) and one in New York (30 mph) significantly lower average speeds were observed in the detectable condition. Conversely, on the 45 mph New Mexico road, mean speeds were higher when radar was detectable. Because the opportunity for many speed influencing factors to be operating differentially on vehicles in the detectable and undetectable speed samples is greater on city and town streets than on the higher class highways, differences in the speeds measured under the two radar conditions are more likely to reflect influences in addition to radar detectors. Speed distributions developed from speed samples on these facilities, for example, are more prone to sampling differences arising from differential vehicle platoons in the two radar conditions. Also, the proportion of vehicles that are included in both the detectable and undetectable samples, while unknown in all cases, is likely to be considerably smaller in the higher density urban samples.

The slower speeds observed in the presence of detectable radar should not be misinterpreted to imply that radar detectors enhance highway safety by reducing speeds. Such arguments are spurious because the "safety effect" is illusory. The downward influence of detectors on speeds only occurs when a detectable transmission is present. On most roads, most of the time, no signals are present.

4.1.2 Influence on the Proportion of Vehicles Exceeding the Speed Limit. The proportion of vehicles exceeding the speed limit generally decreased in the presence of detectable radar. Typically, on those roads that differed, the proportion of vehicles exceeding the posted speed limit by more than five mph was on the order of 1.5 to 5 times greater when radar could not be detected. In general, this disparity between the two radar conditions increased at the higher speed levels. As suggested previously, comparisons of the relative proportion of vehicles at the highest extreme of the speed distribution need to be qualified carefully. The relative influence of detectors on speeds increases at the higher speeds, but the absolute number of vehicles travelling at the extreme speeds is quite small. Thus, while the impact of the detectable signal may be substantial on some specific individuals, the influence on the overall traffic stream is slight.

In two instances, the proportion of vehicles exceeding the speed limit was greater in the detectable condition. On the New Mexico 45 mph road, this may well be an artifact of a small sample size combined with a large turn over of vehicles between the two samples. Less open to this interpretation is the analysis of passenger vehicle speeds on Ohio 65 mph interstates. Compared to similar highways sampled in the other states, a relatively small percentage of vehicles exceeded the speed limit under either condition. When no radar signal was present, 35 percent of the passenger vehicles exceeded the speed limit. This increased to 40 percent when a detectable signal was transmitted. Some of this difference is accounted for by the vehicles exceeding 75 mph. A significantly greater proportion of the undetectable sample was included in this group. The absolute number of vehicles in this portion of the distribution is too small to account for all of the difference in the >65 mph group.

4.1.3 Detector Influence on Speed Variability. On those highway facilities where statistically significant differences in speed variance were observed as a function of radar condition, the variability of truck speeds was consistently smaller in the presence of a radar transmission. Changes in the variability of passenger vehicle speeds attributable to radar condition were less consistent. Though greater for trucks, changes in variability were small for both vehicle classifications.

4.2 Detector Influence on Braking Behavior

A few aberrant, and perhaps dangerous braking maneuvers were observed that could be attributable to detector use. The occurrence was so infrequent that it was impractical to compute a rate or other meaningful statistic. Those manuevers that were observed did not result in traffic conflicts or accidents. It is possible that similar aberrant braking could be exhibited by non-detector users when suddenly encountering an enforcement symbol.

4.3 Assessing the Impact Radar Detectors on Highway Safety

An assessment of the impact of radar detectors on traffic safety requires consideration of the assumptions underlying possible relationships between detector usage and safety. Further, consideration must be given to methodological problems that must be overcome in order to fully define that relationship. Finally, there are practical considerations that must be addressed.

4.3.1 Underlying Assumptions. A basic assumption made in most attempts to examine the relationship between radar detector usage and traffic safety is that vehicular speed is related to crash severity and/or occurrence. This assumption has a logical appeal and has had empirical support from crash tests and other research. Test data show, and the laws of physics dictate, that crashes at higher speeds result in greater damage to vehicles and occupants. There has also been evidence gathered that would suggest that greater variability in traffic speed increases the probability of a crash. This variability can result when vehicles travel at speeds greater or less than the average speeds of vehicles on a given roadway.

If these assumptions are correct, then establishment of a relationship between radar detector usage and speed would provide evidence for an influence of detectors on traffic safety. In this context, that use implies that the behavior of the user is altered as a consequence of the information provided by detectors. For detector use to have a positive influence, speeds or deviations from mean traffic speeds of the users would have to be reduced. A negative impact of use on traffic safety would accrue if speeds or speed variation was increased.

4.3.2 Methodological Issues. Given that the assumption of the relationship between speed and traffic safety is valid, it remains to be demonstrated that detector usage influences speed. Basically, there are two methods that can be applied to this determination. The most definitive is the experimental (or quasi-experimental) method, which directly assesses cause and effect. The other method is correlational, which shows only concomitant occurrence, and relies upon an accumulation of positive findings to imply cause and effect.

The studies thus far conducted have been correlational in nature. In these studies it has been necessary that certain speed or crash behaviors be observed or reported. However, this alone is not sufficient to prove the relationship. It must be further shown that the behaviors observed were caused by detector usage.

The studies attempting to define this relationship using the correlational method have been able to address only the necessary condition, leaving the sufficient condition untested, or addressed in a methodologically flawed manner. In the current study, for example, the data indicate that some detector users decrease speeds in the presence of a radar signal. Though based on essentially correlational data, this result is consistent with a position that the behavior of detector users is influenced by the device. Since speeds and, to some extent, speed variability are reduced, a positive influence of detectors might be posited. The rationale for disputing such a claim, of course, is that the speed of these detector users was higher before the radar signal was received. The critical information that is not known is whether the original higher speed was selected because of information made available by the detector or if the only behavior affected was the subsequent speed reduction. The proportion of detector users traveling at or below the speed limit and thus unaffected by the presence of a radar signal is also not known. There are, of course, non-detector users who speed and it is not known if the ratio of speeders to non-speeders in the non-detector population is any greater than that in the user population.

An idealized experimental approach to determining the relationship between detector use and traffic safety might be to select a sample of naive drivers at random from the population, divide them into two groups, issue detectors to one group, then compare the crash records after a period of time. Unfortunately, in addition to being difficult to arrange, this approach would be both costly and fraught with ethical problems. Other approaches that have been suggested or considered also pose major implementation problems or simply will not address the question.

4.3.3 Practical Issues. Cost and implementation limitations make it unlikely that an experimental method can be employed to define a causal relationship between detector use and traffic safety. Consequently, it will require an accumulation of correlational type evidence to provide this insight. However, this accumulation would necessarily be the product of many studies, and the relationship defined would still be equivocal.

This leads to the question of the practicality of pursuing these correlational studies. Simply stated, the question is; Is the potential negative influence of radar detectors on traffic safety of sufficient magnitude to warrant the expenditure of the funds necessary to collect the evidence? At present there is not enough information to answer this question with precision. Based on the information developed in this and other studies, it can only be addressed in a subjective way.

4.4 Recommendations

At this time it is not recommended that further investigation of the relationship between radar detectors and highway safety be undertaken by NHTSA. This recommendation is derived from the subjective comparison of the complex assumptions underlying that relationship, the methodological difficulties posed, and the practical consideration of the cost of further study versus the potential benefits that might accrue.

This recommendation should not be taken as an indication that detector usage has a positive or even a neutral influence on traffic safety. The authors interpretation of the data collected is, in fact, that the influence of radar detectors is negative. If they have no other influence, the use of detectors undermines efforts to increase the perceived level of speed enforcement. Such efforts are directed toward instilling the belief that the level of enforcement is higher than manpower and budgetary constraints actually allow. The immediate goal of increasing the perception of enforcement is to exert a positive influence on controlling traffic speeds. It has been suggested that radar detectors extend the speed controlling influence of enforcement since the presence of enforcement is made known to more drivers. Any benefit accrued from detector use in this sense, however, is likely to be more than offset by the lessening of uncertainty about the presence of enforcement when, as is most often the case, no enforcement is being conducted.

On balance, this untoward influence of radar detectors and perhaps the devices themselves will likely be obviated through advances in enforcement technology and possibly as a consequence of legal actions.

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APPENDIX A

Speed Data Highway Segments

OHIO DATA COLLECTION SEGMENTS

SEGMENT	HIGHWAY	LANES	SPDLMT	MILES	FROM - TO
OH1	I80 W	4div	65/55	35	Gate 9, I480 - Gate 7, US250, Milan
2	I80 W	4div	65/55	65	Gate 7, Milan - Gate 4, US20,Toledo
3	I75 S	4div	65/55	47	I475, Toledo - US224, Findlay
4	US224 E	2	55	26	Findlay E Limit - OH231, Tiffin
5	US224 E	2	55	23	OH231 - OH103, Willard
6	US224 E	2	55	36	OH103 - US42, Lodi
7	I71 S	4div	65/55	40	OH83, Burbank - OH97, Lexington
8	I71 S	4div	65/55	23	OH97 - I270
9	I270	4	55	26	I71 - US23
10	I71 S	4	65/55	43	I270 - OH72, Bowersville
11	US42 N	2/4	25	?	I275 - N of Lebanon
12	US42 N	2/4	35	?	I275 - N of Lebanon
13	US42 N	2/4	40	?	I275 - Begin div. 4m N of Lebanon
14	US42 N	2/4	45	17	I275 - N of Lebanon
15	US42 N	2/4	50	?	I275 - N of Lebanon
16	US42 N	4div	55	14	4m N of Lebanon - US35, Xenia
17	US42 N	2	55	27	N of Xenia - London
18	I70 W	4	65/55	33	US42 - I675, Fairborn
19	I70 W	4	65/55	10	I675 - I75
20	I75 N	4	65/55	30	I70 - OH47, Sidney
21	I75 N	4	65/55	?	OH65 - US30, Beaverdam
22	I75 S	4	65/55	34	OH309 - OH47, Sidney
23	I75 S	4	65/55	30	OH47 - I70
24	I75 S	4	55/55	?	OH47 - I70
25	I70 E	4	65/55	3	I75 - I675
26	I70 E	4	65/55	36	I675 - US42
27	I70 E	4	65/55	13	US42 - I270
28	I70 E	4	65/55	44	I270 - US60, Zanesville
29	I70 E	4	65/55	25	US60 - I77, Cambridge
30	I70 E	4	55/55	32	I75 - I77
31	I77 N	4	65/55	57	US40 - US30
32	US30 E	4	55	10	OH94 - OH21
33	OH21 N	4	50	20	US30 - I76
34	OH21 N	4	55	20	US30 - I76
35	OH261 E/W	2	35	18	OH21 - I77
36	I90 W	4	65/55	17	OH7 - OH45, Austinberg
37	US20 W	4	45	21	OH45 - OH86, Painsville
38	US20 W	4	35	21	OH45 - OH86, Painsville
39	US20 W	4	50	21	OH45 - OH86, Painsville
40	US20 W	4	40	21	OH45 - OH86, Painsville
41	US20 W	4	25	20	OH615 - 20th St., Cleveland
42	US20 W	4	35	20	OH615 - 20th St., Cleveland

NEW YORK DATA COLLECTION SEGMENTS

SEGMENT	HIGHWAY	LANES	SPDLMT	MILES	FROM - TO
NY1	I90 E	4div	55	37	Int 59, NY60 - Int 55, Seneca
2	I90 E	4div	55	10	Int 55 - Int 50
3	I90 E	4div	55	56	Int 50 - Int 46, Henrietta
4	I390 S	4div	55	53	NY5 - NY17, Avoca
5	NY17 E	4div	55	38	I390 - NY14, Horseheads
6	NY17 E	4div	55	55	NY14 - NY201, Binghamton
7	NY17 E	4div	55	42	I88 E - NY97, Hancock
8	NY17 E	4div	55	75	NY97 - I84
9	I87 N	4div	55	71	Int 17 - Int 21, I90
10	I87 N	4div	55	14	Int 21A - Int 24
11	City	4	30	16	Albany city streets
12	City	4	40	16	Albany city streets
13	US20 W	4	40	3	NY155 - Begin 55 mph
14	US20 W	4	45	3	NY155 - Begin 55 mph
15	US20 W	2	55	20	I88 - Sloansville
16	US20 W	4div	55	24	Sloansville - NY166
17	US20 W	2/4	55	42	NY166(End Div.) - NY46, Pinewoods
18	US20 W	4div	55	15	NY46 - NY13, Cazenovia
19	US92 W	2	50	12	US20 - I481
20	US92 W	2	55	12	US20 - I481
21	City	4	30	5	Syracuse city streets
22	City	4	30	5	Syracuse city streets
23	I90 W	4div	55	11	Int 35 - Int 39
24	I90 W	4div	55	48	Int 39 - Int 43, NY21
25	I90 W	4div	55	31	Int 44, NY96 - Int47, NY19
26	NY19 S	2	55	9	I90 - US20
27	NY19 S	2	35	9	I90 - US20
28	US20 W	2	55	25	NY19 - Alden
29	US20 W	4	55	9	Alden - NY130, Depew
30	US20 W	2	30	34	NY19 - NY130
31	US20 W	2	40	34	NY19 - NY130
32	US20 W	2	45	34	NY19 - NY130
33	NY130 W	2/4	30	6	US20 - US62
34	NY130 W	2/4	40	6	US20 - US62
35	NY130 W	2/4	45	6	US20 - US62
36	US62 S	2/4	30	9	NY130 - NY179
37	US62 S	2/4	35	9	NY130 - NY179
38	I90 W	4div	55	34	Int 56, NY179 - Int 59, NY60
39	I90 W	4div	55	26	Int 59 - Int 61, PA State Line

TEXAS DATA COLLECTION SEGMENTS

SEGMENT	HIGHWAY	LANES	SPDLMT	MILES	FROM - TO
TX1	TX36 W	2	55	60	TX317 - US281, Hamilton
2	TX36 W	2	55	60	US281 - US183, Rising Star
3	TX36 W	2	55	53	US183 - LOOP322, Abilene
4	I20 W	4div	55	12	LOOP322 - LOOP320
5	I20 W	4div	65/60	40	LOOP320 - US84
6	US84 N	4div	55	76	I20 - US380, Post
7	US84 N	4div	55	33	US380 - Loop289S, Lubbock
TX8	US84 N	4div	55	90	Loop289N - TX/NM State Line
TX9	I20 E	4div	65/60	58	Big Spring - US84
10	I20 E	4div	65/60	40	US84 -LOOP320
11	I20 E	4div	55	12	LOOP320 - LOOP322

NEW MEXICO DATA COLLECTION SEGMENTS

SEGMENT	HIGHWAY	LANES	SPDLMT	MILES	FROM - TO
NM1	US60 W	2	55	59	Clovis - US84, Fort Sumner
2	US84 N	2	55	42	US60 - I40, Santa Rosa
3	I40 W	4div	65	58	US84 - US285, Clines Corners
4	I40 W	4div	65	51	US285 - Begin 55mph, Albuquerque
5	I40 W	4div	55	26	Begin 55mph - End 55, Albuquerque
6	I40 W	4div	65	28	Exit 140 - NM279, Laguna
7	I40 E	4div	65	35	NM276 - Exit 149
8	I25 S	4div	55	3	Gibson Blvd,Albuquerque - End 55mph
9	I25 S	4div	65	82	Begin 65 mph - US380, San Antonio
10	US380 E	2	55	63	I25 - US54, Carrizozo
11	US54 N	2	55	68	US380 - NM3, Duran
12	US285 N	2	55	28	US60, Encino - I40, Clines Corners
13	US285 N	2	55	42	I40 - I25
14			35		Albuquerque "low speed"
15			40		Albuquerque "low speed"
16			45		Albuquerque "low speed"
17			55		Albuquerque "low speed"
18	I25 S	4div	65	63	US60, Socorro - Nm52 Elephant Butte
19	I25 S	4div	65	75	NM51, T or C - US82, Las Cruces
20	I25S,I10W	4div	55	13	Las Cruces
21	I10E,I25N	4div	55	13	Las Cruces
22	I10 W	4div	65	11	West of Las Cruces
23	I10 E	4div	65	11	West of Las Cruces
24	US82 E	4div	55	68	I25 - Alamogordo
25	US82 E	2	55	59	Elk - Artesia
26	US82 E	2	55	31	Artesia - NM529

APPENDIX B

Summary Descriptive Statistics

Table B1. Summary descriptive statistics

STATE: OHIO
FACILITY: 65/55 MPH INTERSTATE
SEGMENTS: 1,2,3,7,8,10,18,19,20,21,22,23,25,26,27,28,29,31,36

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	4565	59.80	5.50	83.24	46.70	20.85	3.24	.26
PASS VEH	2253	63.19	5.01	95.03	77.98	40.26	6.48	.53
TRUCK	2312	56.50	3.63	71.76	16.22	1.95	.09	.00
UNDETECTABLE								
ALL VEH	4246	60.48	5.33	84.83	47.79	19.31	3.72	.57
PASS VEH	2049	63.15	5.09	94.49	69.99	35.58	7.32	1.12
TRUCK	2197	57.98	4.24	75.83	27.08	4.14	.36	.05

Table B2. Summary descriptive statistics

STATE: OHIO
FACILITY: 55 MPH INTERSTATE
SEGMENTS: 9, 24, 30

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	735	57.77	5.08	71.43	32.79	9.93	1.22	.14
PASS VEH	405	60.12	5.00	85.68	54.07	18.02	2.22	.25
TRUCK	330	54.89	3.44	53.94	6.67	.00	.00	.00
UNDETECTABLE								
ALL VEH	681	57.62	5.82	64.17	34.36	8.96	1.47	.29
PASS VEH	389	60.01	5.27	81.75	50.90	14.65	2.57	.51
TRUCK	292	54.45	4.94	40.75	12.33	1.37	.00	.00

Table B3. Summary descriptive statistics

STATE: OHIO
FACILITY: 55 MPH 4 LANE DIVIDED
SEGMENTS: 16, 32, 34

				PERCENT EXCEEDING				
	N	MEAN	STD DEV	55	60	65	70	75
DETECTABLE								
ALL VEH	208	56.47	6.36	61.06	29.81	10.58	1.92	.48
PASS VEH	171	57.04	6.56	66.08	33.33	12.28	2.34	.58
TRUCK	37	53.83	4.59	37.84	13.51	2.70	.00	.00
UNDETECTABLE								
ALL VEH	190	58.07	5.22	67.89	33.68	10.00	1.58	.00
PASS VEH	166	58.50	5.28	70.48	36.75	11.45	1.81	.00
TRUCK	24	55.12	3.70	50.00	12.50	.00	.00	.00

Table B4. Summary descriptive statistics

STATE: OHIO
FACILITY: 55 MPH 2 LANE
SEGMENTS: 4, 5, 6, 17

				PERCENT EXCEEDING				
	N	MEAN	STD DEV	55	60	65	70	75
DETECTABLE								
ALL VEH	236	56.26	5.51	66.10	25.42	4.66	.42	.00
PASS VEH	177	56.23	5.60	66.67	24.86	3.95	.56	.00
TRUCK	59	56.34	5.29	64.41	27.12	6.78	.00	.00
UNDETECTABLE								
ALL VEH	213	56.83	5.62	65.73	26.76	5.16	.47	.47
PASS VEH	146	57.07	5.17	65.75	26.71	5.48	.68	.68
TRUCK	67	56.30	6.49	65.67	26.87	4.48	.00	.00

Table B5. Summary descriptive statistics

STATE: OHIO
FACILITY: 50 MPH
SEGMENTS: 15, 33, 39

	N	MEAN	STD DEV	PERCENT EXCEEDING 50	55	60	65	70
DETECTABLE								
ALL VEH	75	50.83	5.07	58.67	20.00	4.00	1.33	.00
PASS VEH	69	50.97	5.18	60.87	21.74	4.35	1.45	.00
TRUCK	6	49.11	3.38	33.33	.00	.00	.00	.00
UNDETECTABLE								
ALL VEH	68	52.16	7.32	57.35	32.35	11.76	5.88	.00
PASS VEH	59	52.32	7.59	57.63	35.59	11.86	6.78	.00
TRUCK	9	51.15	5.50	55.56	11.11	11.11	.00	.00

Table B6. Summary descriptive statistics

STATE: OHIO
FACILITY: 45 MPH
SEGMENTS: 14, 37

	N	MEAN	STD DEV	PERCENT EXCEEDING 45	50	55	60	65
DETECTABLE								
ALL VEH	131	47.58	6.25	67.94	35.11	11.45	3.05	.00
PASS VEH	123	47.82	6.24	69.11	36.59	12.20	3.25	.00
TRUCK	8	43.98	5.45	50.00	12.50	.00	.00	.00
UNDETECTABLE								
ALL VEH	161	48.34	6.39	75.78	42.24	13.66	1.24	.00
PASS VEH	150	48.62	6.39	76.67	44.00	14.67	1.33	.00
TRUCK	11	44.48	5.07	63.64	18.18	.00	.00	.00

Table B7. Summary descriptive statistics

STATE: OHIO
FACILITY: 40 MPH
SEGMENTS: 13, 40

	N	MEAN	STD DEV	PERCENT EXCEEDING 40	45	50	55	60
DETECTABLE								
ALL VEH	75	40.62	4.57	53.33	18.67	4.00	.00	.00
PASS VEH	70	40.48	4.59	52.86	17.14	4.29	.00	.00
TRUCK	5	42.57	4.32	60.00	40.00	.00	.00	.00
UNDETECTABLE								
ALL VEH	35	40.91	4.10	57.14	14.29	2.86	.00	.00
PASS VEH	30	40.81	4.28	56.67	13.33	3.33	.00	.00
TRUCK	5	41.47	3.16	60.00	20.00	.00	.00	.00

Table B8. Summary descriptive statistics

STATE: OHIO
FACILITY: 35 MPH
SEGMENTS: 12, 35, 38, 42

	N	MEAN	STD DEV	PERCENT EXCEEDING 35	40	45	50	55
DETECTABLE								
ALL VEH	431	38.04	6.14	67.75	36.66	15.31	2.55	.00
PASS VEH	420	38.02	6.07	68.10	36.90	15.00	2.14	.00
TRUCK	11	38.79	8.89	54.55	27.27	27.27	18.18	.00
UNDETECTABLE								
ALL VEH	280	39.79	6.37	78.57	50.36	22.14	3.93	.71
PASS VEH	278	39.82	6.38	78.78	50.36	22.30	3.96	.72
TRUCK	2	36.15	6.97	50.00	50.00	.00	.00	.00

Table B9. Summary descriptive statistics

STATE: OHIO
FACILITY: 25 MPH
SEGMENTS: 11, 41

	N	MEAN	STD DEV	PERCENT EXCEEDING 25	30	35	40	45
DETECTABLE								
ALL VEH	185	31.44	4.72	91.89	62.16	20.54	3.78	1.08
PASS VEH	185	31.44	4.72	91.89	62.16	20.54	3.78	1.08
TRUCK	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UNDETECTABLE								
ALL VEH	100	34.44	5.10	96.00	81.00	52.00	15.00	.00
PASS VEH	100	34.44	5.10	96.00	81.00	52.00	15.00	.00
TRUCK	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table B10. Summary descriptive statistics

STATE: NEW YORK
FACILITY: 55 MPH INTERSTATE
SEGMENTS: 1, 2, 3, 23, 24, 38, 39, 4, 9, 10

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	2311	59.77	5.14	83.47	49.03	19.04	1.77	.30
PASS VEH	1401	61.42	5.05	89.94	63.38	28.41	2.78	.50
TRUCK	910	57.22	4.15	73.52	26.92	4.62	.22	.00
UNDETECTABLE								
ALL VEH	2168	61.81	5.03	89.90	62.82	24.22	3.92	.46
PASS VEH	1274	63.59	4.52	95.45	78.81	35.16	6.04	.71
TRUCK	894	59.27	4.62	81.99	40.04	8.61	.89	.11

Table B11. Summary descriptive statistics

STATE: NEW YORK
FACILITY: 55 MPH 4 LANE DIVIDED
SEGMENTS: 5, 6, 7, 8, 16, 18, 29

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	1359	59.17	5.64	79.91	47.61	17.07	1.55	.07
PASS VEH	1109	59.85	5.45	83.41	52.93	19.75	1.89	.09
TRUCK	250	56.14	5.51	64.40	24.00	5.20	.00	.00
UNDETECTABLE								
ALL VEH	1152	59.78	5.99	79.08	48.61	16.58	3.47	.87
PASS VEH	902	60.41	5.97	82.04	52.99	19.62	4.21	1.11
TRUCK	250	57.51	5.51	68.40	32.80	5.60	.80	.00

Table B12. Summary descriptive statistics

STATE: NEW YORK
FACILITY: 55 MPH 2/4 LANE
SEGMENTS: 15, 17, 28, 20, 26

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	205	54.54	6.33	52.68	20.49	3.90	.00	.00
PASS VEH	188	54.66	6.29	53.19	21.28	4.26	.00	.00
TRUCK	17	53.22	6.79	47.06	11.76	.00	.00	.00
UNDETECTABLE								
ALL VEH	225	55.59	6.12	54.67	20.44	6.22	.44	.00
PASS VEH	188	55.84	6.08	56.38	21.28	6.91	.53	.00
TRUCK	37	54.29	6.22	45.95	16.22	2.70	.00	.00

Table B13. Summary descriptive statistics

STATE: NEW YORK
FACILITY: 50 MPH
SEGMENTS: 19

	N	MEAN	STD DEV	PERCENT EXCEEDING 50	55	60	65	70
DETECTABLE								
ALL VEH	21	48.90	6.47	42.86	23.81	4.76	.00	.00
PASS VEH	19	48.76	6.41	42.11	21.05	5.26	.00	.00
TRUCK	2	50.26	9.76	50.00	50.00	.00	.00	.00
UNDETECTABLE								
ALL VEH	25	52.90	4.48	80.00	36.00	.00	.00	.00
PASS VEH	25	52.90	4.48	80.00	36.00	.00	.00	.00
TRUCK	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table B14. Summary descriptive statistics

STATE: NEW YORK
FACILITY: 45 MPH
SEGMENTS: 14, 32, 35

	N	MEAN	STD DEV	PERCENT EXCEEDING 45	50	55	60	65
DETECTABLE								
ALL VEH	105	46.04	8.87	57.14	32.38	15.24	7.62	1.90
PASS VEH	93	46.24	8.65	59.14	32.26	15.05	7.53	2.15
TRUCK	12	44.43	10.73	41.67	33.33	16.67	8.33	.00
UNDETECTABLE								
ALL VEH	45	45.57	6.82	64.44	20.00	13.33	.00	.00
PASS VEH	43	45.73	6.91	65.12	20.93	13.95	.00	.00
TRUCK	2	42.06	4.18	50.00	.00	.00	.00	.00

Table B15. Summary descriptive statistics

STATE: NEW YORK
FACILITY: 40 MPH
SEGMENTS: 12, 13, 31, 34

	N	MEAN	STD DEV	PERCENT EXCEEDING 40	45	50	55	60
DETECTABLE								
ALL VEH	97	42.85	4.78	74.23	31.96	6.19	1.03	.00
PASS VEH	91	42.93	4.86	75.82	32.97	6.59	1.10	.00
TRUCK	6	41.72	3.45	50.00	16.67	.00	.00	.00
UNDETECTABLE								
ALL VEH	61	40.80	6.27	57.38	32.79	3.28	.00	.00
PASS VEH	57	41.27	6.07	61.40	35.09	3.51	.00	.00
TRUCK	4	33.51	5.97	100.00	.00	.00	.00	.00

Table B16. Summary descriptive statistics

STATE: NEW YORK
FACILITY: 35 MPH
SEGMENTS: 27, 37

	N	MEAN	STD DEV	PERCENT EXCEEDING 35	40	45	50	55
DETECTABLE								
ALL VEH	27	34.60	5.06	40.74	14.81	3.70	.00	.00
PASS VEH	24	34.41	5.23	37.50	12.50	4.17	.00	.00
TRUCK	3	36.79	3.17	66.67	33.33	.00	.00	.00
UNDETECTABLE								
ALL VEH	9	35.05	4.71	66.67	11.11	.00	.00	.00
PASS VEH	9	35.05	4.71	66.67	11.11	.00	.00	.00
TRUCK	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table B17. Summary descriptive statistics

STATE: NEW YORK
FACILITY: 30 MPH
SEGMENTS: 11, 21, 22, 30, 33, 36

	N	MEAN	STD DEV	PERCENT EXCEEDING 30	35	40	45	50
DETECTABLE								
ALL VEH	316	33.42	6.34	68.04	39.56	17.09	3.80	.00
PASS VEH	307	33.52	6.36	68.73	40.07	17.59	3.91	.00
TRUCK	9	30.11	4.73	44.44	22.22	.00	.00	.00
UNDETECTABLE								
ALL VEH	249	34.98	6.63	80.32	52.61	22.89	7.23	1.20
PASS VEH	238	35.39	6.38	82.77	54.20	23.95	7.56	1.26
TRUCK	11	26.11	5.88	27.27	18.18	.00	.00	.00

Table B18. Summary descriptive statistics

STATE: TEXAS
FACILITY: 65/60 MPH INTERSTATE
SEGMENTS: 5, 9, 10

				PERCENT EXCEEDING				
	N	MEAN	STD DEV	55	60	65	70	75
DETECTABLE								
ALL VEH	739	60.33	5.08	87.55	54.67	19.49	2.44	.14
PASS VEH	393	62.11	5.38	90.84	74.05	32.82	4.33	.25
TRUCK	346	58.30	3.83	83.82	32.66	4.34	.29	.00
UNDETECTABLE								
ALL VEH	732	62.62	5.42	93.58	69.81	35.25	7.51	1.37
PASS VEH	404	63.67	5.46	94.55	78.47	45.30	8.66	1.98
TRUCK	328	61.32	5.10	92.38	59.15	22.87	6.10	.61

Table B19. Summary descriptive statistics

STATE: TEXAS
FACILITY: 55 MPH INTERSTATE
SEGMENTS: 4, 11

				PERCENT EXCEEDING				
	N	MEAN	STD DEV	55	60	65	70	75
DETECTABLE								
ALL VEH	151	58.35	6.04	72.19	44.37	15.89	2.65	.00
PASS VEH	95	60.18	6.34	77.89	62.11	25.26	4.21	.00
TRUCK	56	55.24	3.89	62.50	14.29	.00	.00	.00
UNDETECTABLE								
ALL VEH	142	60.02	5.05	88.03	54.93	17.61	1.41	.00
PASS VEH	77	60.95	5.21	89.61	62.34	22.08	2.60	.00
TRUCK	65	58.92	4.66	86.15	46.15	12.31	.00	.00

Table B20. Summary descriptive statistics

STATE: TEXAS
FACILITY: 55 MPH 4 LANE DIVIDED
SEGMENTS: 6, 7, 8

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	651	58.35	5.37	76.65	36.41	12.90	1.84	.31
PASS VEH	516	58.79	5.35	78.68	38.76	14.92	2.33	.39
TRUCK	135	56.67	5.13	68.89	27.41	5.19	.00	.00
UNDETECTABLE								
ALL VEH	669	59.98	5.81	84.30	52.62	17.64	4.19	.90
PASS VEH	528	59.73	5.84	82.77	50.00	16.67	3.22	1.14
TRUCK	141	60.91	5.63	90.07	62.41	21.28	7.80	.00

Table B21. Summary descriptive statistics

STATE: TEXAS
FACILITY: 55 MPH 2 LANE
SEGMENTS: 1, 2, 3

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	332	56.81	5.53	67.47	26.81	8.73	1.20	.00
PASS VEH	291	57.11	5.49	69.76	29.21	9.62	1.37	.00
TRUCK	41	54.66	5.43	51.22	9.76	2.44	.00	.00
UNDETECTABLE								
ALL VEH	296	58.70	5.68	79.05	42.91	13.85	2.70	.68
PASS VEH	260	58.68	5.77	78.46	40.77	15.00	3.08	.77
TRUCK	36	58.88	5.04	83.33	58.33	5.56	.00	.00

Table B22. Summary descriptive statistics

STATE: NEW MEXICO
FACILITY: 65 MPH INTERSTATE
SEGMENTS: 3, 4, 6, 7, 9, 18, 19, 22, 23

				PERCENT EXCEEDING				
	N	MEAN	STD DEV	55	60	65	70	75
DETECTABLE								
ALL VEH	1698	62.42	5.65	92.29	71.32	33.16	7.01	1.18
PASS VEH	1086	63.09	5.94	93.09	73.39	39.78	9.67	1.66
TRUCK	612	61.22	4.88	90.85	67.65	21.41	2.29	.33
UNDETECTABLE								
ALL VEH	1753	64.01	6.62	91.79	77.07	49.17	14.15	3.19
PASS VEH	1155	64.78	6.38	93.33	80.17	54.20	15.84	3.72
TRUCK	598	62.52	6.83	88.80	71.07	39.46	10.87	2.17

Table B23. Summary descriptive statistics

STATE: NEW MEXICO
FACILITY: 55 MPH INTERSTATE
SEGMENTS: 5, 8, 20, 21

				PERCENT EXCEEDING				
	N	MEAN	STD DEV	55	60	65	70	75
DETECTABLE								
ALL VEH	314	57.61	5.77	67.52	40.76	10.19	.64	.00
PASS VEH	225	58.24	5.69	70.67	43.56	12.89	.89	.00
TRUCK	89	56.04	5.70	59.55	33.71	3.37	.00	.00
UNDETECTABLE								
ALL VEH	298	60.11	6.10	79.87	56.04	22.82	3.02	1.01
PASS VEH	209	60.79	6.07	82.78	60.26	26.32	3.83	1.44
TRUCK	89	58.52	5.91	73.03	46.07	14.61	1.12	.00

Table B24. Summary descriptive statistics

STATE: NEW MEXICO
FACILITY: 55 MPH 4 LANE DIVIDED
SEGMENTS: 24

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	301	58.12	6.46	69.44	38.21	13.62	3.32	1.33
PASS VEH	260	58.35	6.47	70.77	39.62	14.23	3.85	1.54
TRUCK	41	56.61	6.25	60.98	29.27	9.76	.00	.00
UNDETECTABLE								
ALL VEH	241	60.23	5.88	82.16	50.62	24.48	2.90	.41
PASS VEH	211	60.39	5.78	83.41	51.18	24.64	3.32	.47
TRUCK	30	59.10	6.53	73.33	46.67	23.33	.00	.00

Table B25. Summary descriptive statistics

STATE: NEW MEXICO
FACILITY: 55 MPH 2 LANE
SEGMENTS: 1, 2, 10, 11, 12, 13, 25, 26

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	395	60.10	7.42	78.48	50.63	24.56	7.85	2.78
PASS VEH	332	60.78	7.47	81.63	53.31	28.01	9.34	3.31
TRUCK	63	56.52	6.06	61.90	36.51	6.35	.00	.00
UNDETECTABLE								
ALL VEH	405	62.08	7.59	85.93	63.21	35.80	11.36	4.44
PASS VEH	350	62.61	7.57	88.29	65.71	38.86	12.29	5.14
TRUCK	55	58.72	6.89	70.91	47.27	16.36	5.45	.00

Table B26. Summary descriptive statistics

STATE: NEW MEXICO
FACILITY: 55 MPH URBAN
SEGMENTS: 17

	N	MEAN	STD DEV	PERCENT EXCEEDING 55	60	65	70	75
DETECTABLE								
ALL VEH	107	55.68	7.02	56.07	27.10	10.28	1.87	.00
PASS VEH	104	55.85	6.97	57.69	27.88	10.58	1.92	.00
TRUCK	3	49.60	7.13	.00	.00	.00	.00	.00
UNDETECTABLE								
ALL VEH	111	57.87	6.71	70.27	40.54	14.41	4.50	.90
PASS VEH	106	57.87	6.79	69.81	40.57	15.09	4.72	.94
TRUCK	5	57.95	5.19	80.00	40.00	.00	.00	.00

Table B27. Summary descriptive statistics

STATE: NEW MEXICO
FACILITY: 45 MPH
SEGMENTS: 16

	N	MEAN	STD DEV	PERCENT EXCEEDING 45	50	55	60	65
DETECTABLE								
ALL VEH	49	49.09	7.22	69.39	55.10	22.45	8.16	.00
PASS VEH	46	49.55	7.01	71.74	56.52	23.91	8.70	.00
TRUCK	3	42.05	8.21	33.33	33.33	.00	.00	.00
UNDETECTABLE								
ALL VEH	61	45.98	5.66	63.93	22.95	6.56	1.64	.00
PASS VEH	60	45.97	5.71	63.33	23.33	6.67	1.67	.00
TRUCK	1	46.32	N/A	100.00	.00	.00	.00	.00

Table B28. Summary descriptive statistics

STATE: NEW MEXICO
FACILITY: 40 MPH
SEGMENTS: 15

	N	MEAN	STD DEV	PERCENT EXCEEDING 40	45	50	55	60
DETECTABLE								
ALL VEH	92	40.57	6.30	47.83	21.74	8.70	2.17	1.09
PASS VEH	88	40.71	6.27	48.86	21.59	9.09	2.27	1.14
TRUCK	4	37.45	7.15	25.00	25.00	.00	.00	.00
UNDETECTABLE								
ALL VEH	161	42.03	5.56	64.60	31.06	7.45	1.86	.00
PASS VEH	159	42.10	5.53	64.78	31.45	7.55	1.89	.00
TRUCK	2	35.97	6.27	50.00	.00	.00	.00	.00

Table B29. Summary descriptive statistics

STATE: NEW MEXICO
FACILITY: 35 MPH
SEGMENTS: 14

	N	MEAN	STD DEV	PERCENT EXCEEDING 35	40	45	50	55
DETECTABLE								
ALL VEH	139	37.78	6.02	66.91	35.97	10.07	2.16	.00
PASS VEH	135	37.86	6.04	67.41	36.30	10.37	2.22	.00
TRUCK	4	34.99	5.37	50.00	25.00	.00	.00	.00
UNDETECTABLE								
ALL VEH	86	36.54	5.02	62.79	20.93	4.65	1.16	.00
PASS VEH	84	36.59	5.05	63.10	21.43	4.76	1.19	.00
TRUCK	2	34.49	4.18	17.48	50.00	.00	.00	.00

APPENDIX C

Kolmogorov-Smirnov Statistical Tables

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 65/55 MPH INTERSTATE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	0	.0000	.0000	
2	5	2	.0022	.0010	
3	17	11	.0098	.0063	
4	90	100	.0497	.0551	
5	384	502	.2202	.3001	*
6	850	705	.5974	.6442	
7	761	579	.9352	.9268	
8	134	127	.9947	.9868	
9	12	19	1.0000	.9980	
10	0	4	1.0000	1.0000	
TOTALS	2253	2049			

* D MAX = .0800

CRITICAL VALUE AT .05 LEVEL = .0415
CRITICAL VALUE AT .01 LEVEL = .0513

CHI-SQUARE = 27.468. D.F. = 2. PROB. = 1.085E-06

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 65/55 MPH INTERSTATE: TRUCK

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	2	0	.0009	.0000	
2	7	8	.0039	.0036	
3	74	89	.0359	.0442	
4	570	434	.2824	.2417	
5	1284	1071	.8378	.7292	*
6	330	504	.9805	.9586	
7	43	83	.9991	.9964	
8	2	7	1.0000	.9995	
9	0	0	1.0000	.9995	
10	0	1	1.0000	1.0000	
TOTALS	2312	2197			

* D MAX = .1086

CRITICAL VALUE AT .05 LEVEL = .0405
CRITICAL VALUE AT .01 LEVEL = .0501

CHI-SQUARE = 53.170. D.F. = 2. PROB. = 2.840E-12

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 55 MPH INTERSTATE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	0	.0000	.0000	
2	2	1	.0049	.0026	
3	8	13	.0247	.0360	
4	48	57	.1432	.1825	*
5	128	120	.4593	.4910	
6	146	141	.8198	.8535	
7	64	47	.9778	.9743	
8	8	8	.9975	.9949	
9	1	2	1.0000	1.0000	
TOTALS	405	389			

* D MAX = .0393

CRITICAL VALUE AT .05 LEVEL = .0965
CRITICAL VALUE AT .01 LEVEL = .1193

CHI-SQUARE = 1.226, D.F. = 2, PROB. = .5416

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 55 MPH INTERSTATE: TRUCK

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	0	.0000	.0000	
2	3	8	.0091	.0274	
3	19	50	.0667	.1986	*
4	130	115	.4606	.5925	
5	156	83	.9333	.8767	
6	22	32	1.0000	.9863	
7	0	4	1.0000	1.0000	
TOTALS	330	292			

* D MAX = .1320

CRITICAL VALUE AT .05 LEVEL = .1093
CRITICAL VALUE AT .01 LEVEL = .1350

CHI-SQUARE = 10.791, D.F. = 2, PROB. = 4.536E-03

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 55 MPH 4 LANE DIVIDED: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	1	0	.0058	.0000	
2	5	0	.0351	.0000	
3	17	11	.1345	.0663	*
4	35	38	.3392	.2952	
5	56	56	.6667	.6325	
6	36	42	.8772	.8855	
7	17	16	.9766	.9819	
8	3	3	.9942	1.0000	
9	1	0	1.0000	1.0000	
TOTALS	171	166			

* D MAX = .0682

CRITICAL VALUE AT .05 LEVEL = .1482
CRITICAL VALUE AT .01 LEVEL = .1831

CHI-SQUARE = 1.569. D.F. = 2. PROB. = .4564

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 55 MPH 4 LANE DIVIDED: TRUCK

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	0	0	.0000	.0000	
3	6	3	.1622	.1250	
4	17	9	.6216	.5000	*
5	9	9	.8649	.8750	
6	4	3	.9730	1.0000	
7	1	0	1.0000	1.0000	
TOTALS	37	24			

* D MAX = .1216

CRITICAL VALUE AT .05 LEVEL = .3564
CRITICAL VALUE AT .01 LEVEL = .4403

CHI-SQUARE = .861. D.F. = 2. PROB. = .6501

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 55 MPH 2 LANE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	4	0	.0226	.0000	
2	5	1	.0508	.0068	*
3	8	12	.0960	.0890	
4	42	37	.3333	.3425	
5	74	57	.7514	.7329	
6	37	31	.9605	.9452	
7	6	7	.9944	.9932	
8	1	0	1.0000	.9932	
9	0	1	1.0000	1.0000	
TOTALS	177	146			

* D MAX = .0440

CRITICAL VALUE AT .05 LEVEL = .1520
CRITICAL VALUE AT .01 LEVEL = .1878

CHI-SQUARE = .620, D.F. = 2, PROB. = .7336

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 55 MPH 2 LANE: TRUCK

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	1	.0000	.0149	
2	2	4	.0339	.0746	
3	2	7	.0678	.1791	*
4	17	11	.3559	.3433	
5	22	26	.7288	.7313	
6	12	15	.9322	.9552	
7	4	3	1.0000	1.0000	
TOTALS	59	67			

* D MAX = .1113

CRITICAL VALUE AT .05 LEVEL = .2428
CRITICAL VALUE AT .01 LEVEL = .2999

CHI-SQUARE = 1.555, D.F. = 2, PROB. = .4596

------------------------ NONPARAMETRIC TESTS ------------------------

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 50 MPH 2/4 LANE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	2	.0000	.0339	
2	10	7	.1449	.1525	
3	17	16	.3913	.4237	
4	27	13	.7826	.6441	*
5	12	14	.9565	.8814	
6	2	3	.9855	.9322	
7	1	4	1.0000	1.0000	
TOTALS	69	59			

* D MAX = .1385

CRITICAL VALUE AT .05 LEVEL = .2412
CRITICAL VALUE AT .01 LEVEL = .2979

CHI-SQUARE = 2.442, D.F. = 2, PROB. = .2950

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 45 MPH 2/4 LANE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	0	0	.0000	.0000	
3	0	1	.0000	.0067	
4	5	3	.0407	.0267	
5	6	5	.0894	.0600	
6	27	26	.3089	.2333	*
7	40	49	.6341	.5600	
8	30	44	.8780	.8533	
9	11	20	.9675	.9867	
10	4	2	1.0000	1.0000	
TOTALS	123	150			

* D MAX = .0756

CRITICAL VALUE AT .05 LEVEL = .1654
CRITICAL VALUE AT .01 LEVEL = .2041

CHI-SQUARE = 1.545, D.F. = 2, PROB. = .4618

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 40 MPH 2/4 LANE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	0	0	.0000	.0000	
3	1	0	.0143	.0000	
4	7	1	.1143	.0333	*
5	25	12	.4714	.4333	
6	25	13	.8286	.8667	
7	9	3	.9571	.9667	
8	3	1	1.0000	1.0000	
TOTALS	70	30			

* D MAX = .0810

CRITICAL VALUE AT .05 LEVEL = .2968
CRITICAL VALUE AT .01 LEVEL = .3666

CHI-SQUARE = .550, D.F. = 2, PROB. = .7594

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 35 MPH 2/4 LANE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	4	1	.0095	.0036	
3	44	13	.1143	.0504	
4	86	45	.3190	.2122	
5	131	79	.6310	.4964	*
6	92	78	.8500	.7770	
7	54	51	.9786	.9604	
8	9	9	1.0000	.9928	
9	0	1	1.0000	.9964	
10	0	1	1.0000	1.0000	
TOTALS	420	278			

* D MAX = .1345

CRITICAL VALUE AT .05 LEVEL = .1052
CRITICAL VALUE AT .01 LEVEL = .1299

CHI-SQUARE = 12.113, D.F. = 2, PROB. = 2.342E-03

---------------------- NONPARAMETRIC TESTS ----------------------

KOLMOGOROV-SMIRNOV TWO GROUP TEST

OH 25 MPH 2/4 LANE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	1	.0000	.0100	
2	15	3	.0811	.0400	
3	55	15	.3784	.1900	
4	77	29	.7946	.4800	*
5	31	37	.9622	.8500	
6	5	15	.9892	1.0000	
7	2	0	1.0000	1.0000	
TOTALS	185	100			

* D MAX = .3146

CRITICAL VALUE AT .05 LEVEL = .1688
CRITICAL VALUE AT .01 LEVEL = .2085

CHI-SQUARE = 25.697, D.F. = 2, PROB. = 2.630E-06

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 55 MPH INTERSTATE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	0	.0000	.0000	
2	1	0	.0007	.0000	
3	15	5	.0114	.0039	
4	125	53	.1006	.0455	
5	372	212	.3662	.2119	*
6	490	556	.7159	.6484	
7	359	371	.9722	.9396	
8	32	68	.9950	.9929	
9	6	9	.9993	1.0000	
10	1	0	1.0000	1.0000	
TOTALS	1401	1274			

* D MAX = .1542

CRITICAL VALUE AT .05 LEVEL = .0526
CRITICAL VALUE AT .01 LEVEL = .0650

CHI-SQUARE = 63.492, D.F. = 2, PROB. = 6.400E-13

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 55 MPH INTERSTATE: TRUCK

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	0	.0000	.0000	
2	3	3	.0033	.0034	
3	27	28	.0330	.0347	
4	211	130	.2648	.1801	
5	424	375	.7308	.5996	*
6	203	281	.9538	.9139	
7	40	69	.9978	.9911	
8	2	7	1.0000	.9989	
9	0	1	1.0000	1.0000	
TOTALS	910	894			

* D MAX = .1312

CRITICAL VALUE AT .05 LEVEL = .0640
CRITICAL VALUE AT .01 LEVEL = .0791

CHI-SQUARE = 31.058, D.F. = 2, PROB. = 1.802E-07

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 55 MPH 4 LANE DIVIDED: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	1	0	.0009	.0000	
2	5	9	.0054	.0100	
3	38	32	.0397	.0455	
4	140	121	.1659	.1796	
5	338	262	.4707	.4701	
6	368	301	.8025	.8038	
7	198	139	.9811	.9579	*
8	20	28	.9991	.9889	
9	1	8	1.0000	.9978	
10	0	2	1.0000	1.0000	
TOTALS	1109	902			

* D MAX = .0232

CRITICAL VALUE AT .05 LEVEL = .0610
CRITICAL VALUE AT .01 LEVEL = .0753

CHI-SQUARE = 1.070, D.F. = 2, PROB. = .5856

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 55 MPH 4 LANE DIVIDED: TRUCK

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	4	1	.0160	.0040	
2	6	5	.0400	.0240	
3	15	17	.1000	.0920	
4	64	56	.3560	.3160	
5	101	89	.7600	.6720	*
6	47	68	.9480	.9440	
7	13	12	1.0000	.9920	
8	0	2	1.0000	1.0000	
TOTALS	250	250			

* D MAX = .0880

CRITICAL VALUE AT .05 LEVEL = .1216
CRITICAL VALUE AT .01 LEVEL = .1503

CHI-SQUARE = 3.872, D.F. = 2, PROB. = .1443

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 55 MPH 2/4 LANE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	4	1	.0213	.0053	
2	11	8	.0798	.0479	*
3	23	26	.2021	.1862	
4	50	47	.4681	.4362	
5	60	66	.7872	.7872	
6	32	27	.9574	.9309	
7	8	12	1.0000	.9947	
8	0	1	1.0000	1.0000	
TOTALS	188	188			

* D MAX = .0319

CRITICAL VALUE AT .05 LEVEL = .1403
CRITICAL VALUE AT .01 LEVEL = .1733

CHI-SQUARE = .383, D.F. = 2, PROB. = .8257

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 55 MPH 2/4 LANE: TRUCK

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	1	0	.0588	.0000	
2	1	2	.1176	.0541	
3	1	7	.1765	.2432	*
4	6	11	.5294	.5405	
5	6	11	.8824	.8378	
6	2	5	1.0000	.9730	
7	0	1	1.0000	1.0000	
TOTALS	17	37			

* D MAX = .0668

CRITICAL VALUE AT .05 LEVEL = .3985
CRITICAL VALUE AT .01 LEVEL = .4922

CHI-SQUARE = .208, D.F. = 2, PROB. = .9013

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 50 MPH 2 LANE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	0	.0000	.0000	
2	7	2	.3684	.0800	
3	4	3	.5789	.2000	*
4	4	11	.7895	.6400	
5	3	9	.9474	1.0000	
6	1	0	1.0000	1.0000	
TOTALS	19	25			

* D MAX = .3789

CRITICAL VALUE AT .05 LEVEL = .4139
CRITICAL VALUE AT .01 LEVEL = .5113

CHI-SQUARE = 6.201, D.F. = 2, PROB. = .0450

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 45 MPH 2/4 LANE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	1	0	.0108	.0000	
3	0	0	.0108	.0000	
4	9	2	.1075	.0465	
5	12	7	.2366	.2093	
6	16	6	.4086	.3488	
7	25	19	.6774	.7907	*
8	16	3	.8495	.8605	
9	7	6	.9247	1.0000	
10	7	0	1.0000	1.0000	
TOTALS	93	43			

* D MAX = .1133

CRITICAL VALUE AT .05 LEVEL = .2508
CRITICAL VALUE AT .01 LEVEL = .3098

CHI-SQUARE = 1.509, D.F. = 2, PROB. = .4702

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 40 MPH 2/4 LANE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	0	.0000	.0000	
2	0	0	.0000	.0000	
3	0	2	.0000	.0351	
4	6	9	.0659	.1930	
5	16	11	.2418	.3860	*
6	39	15	.6703	.6491	
7	24	18	.9341	.9649	
8	5	2	.9890	1.0000	
9	1	0	1.0000	1.0000	
TOTALS	91	57			

* D MAX = .1442

CRITICAL VALUE AT .05 LEVEL = .2297
CRITICAL VALUE AT .01 LEVEL = .2838

CHI-SQUARE = 2.915, D.F. = 2, PROB. = .2328

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 35 MPH 2/4 LANE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	0	.0000	.0000	
2	1	0	.0417	.0000	
3	3	2	.1667	.2222	
4	11	1	.6250	.3333	*
5	6	5	.8750	.8889	
6	2	1	.9583	1.0000	
7	1	0	1.0000	1.0000	
TOTALS	24	9			

* D MAX = .2917

CRITICAL VALUE AT .05 LEVEL = .5316
CRITICAL VALUE AT .01 LEVEL = .6567

CHI-SQUARE = 2.227, D.F. = 2, PROB. = .3284

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NY 30 MPH 2/4 LANE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	9	0	.0293	.0000	
2	19	10	.0912	.0420	
3	68	31	.3127	.1723	
4	88	68	.5993	.4580	*
5	69	72	.8241	.7605	
6	42	39	.9609	.9244	
7	12	15	1.0000	.9874	
8	0	2	1.0000	.9958	
9	0	1	1.0000	1.0000	
TOTALS	307	238			

* D MAX = .1414

CRITICAL VALUE AT .05 LEVEL = .1175
CRITICAL VALUE AT .01 LEVEL = .1451

CHI-SQUARE = 10.717, D.F. = 2, PROB. = 4.708E-03

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

TX 65/60 MPH INTERSTATE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	2	1	.0051	.0025	
3	7	4	.0229	.0124	
4	27	17	.0916	.0545	
5	66	65	.2595	.2153	
6	162	134	.6718	.5470	*
7	112	148	.9567	.9134	
8	16	27	.9975	.9802	
9	1	8	1.0000	1.0000	
TOTALS	393	404			

* D MAX = .1247

CRITICAL VALUE AT .05 LEVEL = .0964
CRITICAL VALUE AT .01 LEVEL = .1190

CHI-SQUARE = 12.396, D.F. = 2, PROB. = 2.033E-03

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

TX 65/60 MPH INTERSTATE: TRUCK

CLASS	OBSERVED FREQUENCIES GROUP 1	GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	1	0	.0029	.0000	
3	4	1	.0145	.0030	
4	51	24	.1618	.0762	
5	177	109	.6734	.4085	*
6	98	119	.9566	.7713	
7	14	55	.9971	.9390	
8	1	18	1.0000	.9939	
9	0	2	1.0000	1.0000	
TOTALS	346	328			

* D MAX = .2649

CRITICAL VALUE AT .05 LEVEL = .1048
CRITICAL VALUE AT .01 LEVEL = .1295

CHI-SQUARE = 47.253, D.F. = 2, PROB. = 5.479E-11

---------- NONPARAMETRIC TESTS ----------

KOLMOGOROV-SMIRNOV TWO GROUP TEST

TX 55 MPH INTERSTATE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	2	1	.0211	.0130	
3	3	0	.0526	.0130	
4	16	7	.2211	.1039	*
5	15	21	.3789	.3766	
6	35	31	.7474	.7792	
7	20	15	.9579	.9740	
8	4	2	1.0000	1.0000	
TOTALS	95	77			

* D MAX = .1172

CRITICAL VALUE AT .05 LEVEL = .2085
CRITICAL VALUE AT .01 LEVEL = .2576

CHI-SQUARE = 2.335, D.F. = 2, PROB. = .3112

---------- NONPARAMETRIC TESTS ----------

KOLMOGOROV-SMIRNOV TWO GROUP TEST

TX 55 MPH INTERSTATE: TRUCK

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	0	1	.0000	.0154	
3	3	1	.0566	.0308	
4	15	7	.3396	.1385	
5	27	26	.8491	.5385	*
6	8	22	1.0000	.8769	
7	0	8	1.0000	1.0000	
TOTALS	53	65			

* D MAX = .3106

CRITICAL VALUE AT .05 LEVEL = .2517
CRITICAL VALUE AT .01 LEVEL = .3109

CHI-SQUARE = 11.266, D.F. = 2, PROB. = 3.578E-03

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

TX 55 MPH 4 LANE DIVIDED: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	1	.0000	.0019	
2	3	3	.0058	.0076	
3	17	13	.0388	.0322	
4	90	74	.2132	.1723	
5	206	173	.6124	.5000	*
6	123	176	.8508	.8333	
7	65	71	.9767	.9678	
8	10	11	.9961	.9886	
9	2	3	1.0000	.9943	
10	0	3	1.0000	1.0000	
TOTALS	516	528			

* D MAX = .1124

CRITICAL VALUE AT .05 LEVEL = .0842
CRITICAL VALUE AT .01 LEVEL = .1040

CHI-SQUARE = 13.189, D.F. = 2, PROB. = 1.368E-03

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

TX 55 MPH 4 LANE DIVIDED: TRUCK

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	1	0	.0074	.0000	
2	1	1	.0148	.0071	
3	9	1	.0815	.0142	
4	31	12	.3111	.0993	
5	56	39	.7259	.3759	*
6	30	58	.9481	.7872	
7	7	19	1.0000	.9220	
8	0	11	1.0000	1.0000	
TOTALS	135	141			

* D MAX = .3500

CRITICAL VALUE AT .05 LEVEL = .1638
CRITICAL VALUE AT .01 LEVEL = .2023

CHI-SQUARE = 33.802, D.F. = 2. PROB. = 4.572E-08

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

TX 55 MPH 2 LANE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	1	.0000	.0038	
2	6	2	.0206	.0115	
3	19	13	.0859	.0615	
4	63	40	.3024	.2154	
5	118	98	.7079	.5923	*
6	57	67	.9038	.8500	
7	24	31	.9863	.9692	
8	4	6	1.0000	.9923	
9	0	2	1.0000	1.0000	
TOTALS	291	260			

* D MAX = .1156

CRITICAL VALUE AT .05 LEVEL = .1161
CRITICAL VALUE AT .01 LEVEL = .1434

CHI-SQUARE = 7.339, D.F. = 2, PROB. = .0255

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

TX 55 MPH 2 LANE: TRUCK

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	2	0	.0488	.0000	
2	1	0	.0732	.0000	
3	1	3	.0976	.0833	
4	16	3	.4878	.1667	
5	17	9	.9024	.4167	*
6	3	19	.9756	.9444	
7	1	2	1.0000	1.0000	
TOTALS	41	36			

* D MAX = .4858

CRITICAL VALUE AT .05 LEVEL = .3106
CRITICAL VALUE AT .01 LEVEL = .3837

CHI-SQUARE = 18.093, D.F. = 2, PROB. = 1.178E-04

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 65 MPH INTERSTATE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	1	0	.0009	.0000	
2	2	3	.0028	.0026	
3	15	9	.0166	.0104	
4	57	65	.0691	.0667	
5	214	152	.2661	.1983	
6	365	300	.6022	.4580	*
7	327	443	.9033	.8416	
8	87	140	.9834	.9628	
9	17	30	.9991	.9887	
10	1	13	1.0000	1.0000	
TOTALS	1086	1155			

* D MAX = .1442

CRITICAL VALUE AT .05 LEVEL = .0575
CRITICAL VALUE AT .01 LEVEL = .0710

CHI-SQUARE = 46.555, D.F. = 2, PROB. = 7.835E-11

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 65 MPH INTERSTATE: TRUCK

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	3	.0000	.0050	
2	4	8	.0065	.0184	
3	9	14	.0212	.0418	
4	43	42	.0915	.1120	
5	142	106	.3235	.2893	
6	283	189	.7859	.6054	*
7	117	171	.9771	.8913	
8	12	52	.9967	.9783	
9	2	12	1.0000	.9983	
10	0	1	1.0000	1.0000	
TOTALS	612	598			

* D MAX = .1806

CRITICAL VALUE AT .05 LEVEL = .0782
CRITICAL VALUE AT .01 LEVEL = .0966

CHI-SQUARE = 39.459, D.F. = 2, PROB. = 2.702E-09

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 55 MPH INTERSTATE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES	
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2
1	0	0	.0000	.0000
2	2	1	.0089	.0048
3	17	6	.0844	.0335
4	47	29	.2933	.1722
5	61	47	.5644	.3971 *
6	69	71	.8711	.7368
7	27	47	.9911	.9617
8	2	5	1.0000	.9856
9	0	2	1.0000	.9952
10	0	1	1.0000	1.0000
TOTALS	225	209		

* D MAX = .1673

CRITICAL VALUE AT .05 LEVEL = .1307
CRITICAL VALUE AT .01 LEVEL = .1614

CHI-SQUARE = 12.133, D.F. = 2, PROB. = 2.319E-03

---------- NONPARAMETRIC TESTS ----------

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 55 MPH INTERSTATE: TRUCK

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES	
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2
1	1	0	.0112	.0000
2	2	1	.0337	.0112
3	9	3	.1348	.0449
4	24	20	.4045	.2697 *
5	23	24	.6629	.5393
6	27	28	.9663	.8539
7	3	12	1.0000	.9888
8	0	1	1.0000	1.0000
9	0	0	1.0000	1.0000
10	0	0	1.0000	1.0000
TOTALS	89	89		

* D MAX = .1348

CRITICAL VALUE AT .05 LEVEL = .2039
CRITICAL VALUE AT .01 LEVEL = .2518

CHI-SQUARE = 3.236, D.F. = 2, PROB. = .1983

------------------------ NONPARAMETRIC TESTS ------------------------

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 55 MPH 4 LANE DIVIDED: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	1	0	.0038	.0000	
2	3	2	.0154	.0095	
3	12	4	.0615	.0284	
4	60	29	.2923	.1659	*
5	81	68	.6038	.4882	
6	66	56	.8577	.7536	
7	27	45	.9615	.9668	
8	6	6	.9846	.9953	
9	2	1	.9923	1.0000	
10	2	0	1.0000	1.0000	
TOTALS	260	211			

* D MAX = .1264

CRITICAL VALUE AT .05 LEVEL = .1260
CRITICAL VALUE AT .01 LEVEL = .1557

CHI-SQUARE = 7.447, D.F. = 2, PROB. = .0241

------------------------ NONPARAMETRIC TESTS ------------------------

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 55 MPH 4 LANE DIVIDED: TRUCK

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	2	1	.0488	.0333	
3	3	1	.1220	.0667	
4	11	6	.3902	.2667	
5	13	8	.7073	.5333	*
6	8	7	.9024	.7667	
7	4	7	1.0000	1.0000	
TOTALS	41	30			

* D MAX = .1740

CRITICAL VALUE AT .05 LEVEL = .3267
CRITICAL VALUE AT .01 LEVEL = .4036

CHI-SQUARE = 2.098, D.F. = 2, PROB. = .3504

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 55 MPH 2 LANE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	3	2	.0090	.0057	
2	2	4	.0151	.0171	
3	15	11	.0602	.0486	
4	41	24	.1837	.1171	
5	94	79	.4669	.3429	*
6	84	94	.7199	.6114	
7	62	93	.9066	.8771	
8	20	25	.9669	.9486	
9	7	13	.9880	.9857	
10	4	5	1.0000	1.0000	
TOTALS	332	350			

* D MAX = .1240

CRITICAL VALUE AT .05 LEVEL = .1042
CRITICAL VALUE AT .01 LEVEL = .1287

CHI-SQUARE = 10.481, D.F. = 2, PROB. = 5.298E-03

NONPARAMETRIC TESTS

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 55 MPH 2 LANE: TRUCK

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	2	2	.0317	.0364	
3	8	4	.1587	.1091	
4	14	10	.3810	.2909	
5	16	13	.6349	.5273	*
6	19	17	.9365	.8364	
7	4	6	1.0000	.9455	
8	0	3	1.0000	1.0000	
9	0	0	1.0000	1.0000	
10	0	0	1.0000	1.0000	
TOTALS	63	55			

* D MAX = .1076

CRITICAL VALUE AT .05 LEVEL = .2510
CRITICAL VALUE AT .01 LEVEL = .3100

CHI-SQUARE = 1.361, D.F. = 2, PROB. = .5063

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 55 MPH URBAN: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	1	0	.0096	.0000	
2	6	3	.0673	.0283	
3	12	10	.1827	.1226	
4	25	19	.4231	.3019	
5	31	31	.7212	.5943	*
6	18	27	.8942	.8491	
7	9	11	.9808	.9528	
8	2	4	1.0000	.9906	
9	0	1	1.0000	1.0000	
TOTALS	104	106			

* D MAX = .1268

CRITICAL VALUE AT .05 LEVEL = .1877
CRITICAL VALUE AT .01 LEVEL = .2319

CHI-SQUARE = 3.377, D.F. = 2, PROB. = .1848

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 45 MPH: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	OBSERVED FREQUENCIES GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	CUMULATIVE RELATIVE FREQUENCIES GROUP 2	
1	0	0	.0000	.0000	
2	0	0	.0000	.0000	
3	0	0	.0000	.0000	
4	1	3	.0217	.0500	
5	4	6	.1087	.1500	
6	8	13	.2826	.3667	
7	7	24	.4348	.7667	*
8	15	10	.7609	.9333	
9	7	3	.9130	.9833	
10	4	1	1.0000	1.0000	
TOTALS	46	60			

* D MAX = .3319

CRITICAL VALUE AT .05 LEVEL = .2665
CRITICAL VALUE AT .01 LEVEL = .3292

CHI-SQUARE = 11.472, D.F. = 2, PROB. = 3.228E-03

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 40 MPH 2/4 LANE: PASSENGER

CLASS	OBSERVED FREQUENCIES GROUP 1	GROUP 2	CUMULATIVE RELATIVE FREQUENCIES GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	0	0	.0000	.0000	
3	2	3	.0227	.0189	
4	13	12	.1705	.0943	
5	30	41	.5114	.3522	*
6	24	53	.7841	.6855	
7	11	38	.9091	.9245	
8	6	9	.9773	.9811	
9	1	3	.9886	1.0000	
10	1	0	1.0000	1.0000	
TOTALS	88	159			

* D MAX = .1592

CRITICAL VALUE AT .05 LEVEL = .1807
CRITICAL VALUE AT .01 LEVEL = .2232

CHI-SQUARE = 5.740, D.F. = 2, PROB. = .0567

KOLMOGOROV-SMIRNOV TWO GROUP TEST

NM 35 MPH 2/4 LANE: PASSENGER

	OBSERVED FREQUENCIES		CUMULATIVE RELATIVE FREQUENCIES		
CLASS	GROUP 1	GROUP 2	GROUP 1	GROUP 2	
1	0	0	.0000	.0000	
2	2	1	.0148	.0119	
3	14	8	.1185	.1071	
4	28	22	.3259	.3690	
5	42	35	.6370	.7857	*
6	35	14	.8963	.9524	
7	11	3	.9778	.9881	
8	3	1	1.0000	1.0000	
TOTALS	135	84			

* D MAX = .1487

CRITICAL VALUE AT .05 LEVEL = .1896
CRITICAL VALUE AT .01 LEVEL = .2335

CHI-SQUARE = 4.578, D.F. = 2, PROB. = .1013

APPENDIX D

Cumulative Speed Distributions

SPEED FREQUENCY DISTRIBUTIONS

STATE : OHIO
FACILITY GROUP : 65/55 MPH RURAL INTERSTATE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	5	0.22	5	0.22
> 45 - 50	3H	17	0.75	22	0.98
> 50 - 55	4H	90	3.99	112	4.97
> 55 - 60	5H	384	17.04	496	22.02
> 60 - 65	6H	850	37.73	1,346	59.74
> 65 - 70	7H	761	33.78	2,107	93.52
> 70 - 75	8H	134	5.95	2,241	99.47
> 75 - 80	9H	12	0.53	2,253	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	2	0.09	2	0.09
> 40 - 45	2H	7	0.30	9	0.39
> 45 - 50	3H	74	3.20	83	3.59
> 50 - 55	4H	570	24.65	653	28.24
> 55 - 60	5H	1,284	55.54	1,937	83.78
> 60 - 65	6H	330	14.27	2,267	98.05
> 65 - 70	7H	43	1.86	2,310	99.91
> 70 - 75	8H	2	0.09	2,312	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	0.10	2	0.10
> 45 - 50	3H	11	0.54	13	0.63
> 50 - 55	4H	100	4.88	113	5.51
> 55 - 60	5H	502	24.50	615	30.01
> 60 - 65	6H	705	34.41	1,320	64.42
> 65 - 70	7H	579	28.26	1,899	92.68
> 70 - 75	8H	127	6.20	2,026	98.88
> 75 - 80	9H	19	0.93	2,045	99.80
> 80	10H	4	0.20	2,049	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	8	0.36	8	0.36
> 45 - 50	3H	89	4.05	97	4.42
> 50 - 55	4H	434	19.75	531	24.17
> 55 - 60	5H	1,071	48.75	1,602	72.92
> 60 - 65	6H	504	22.94	2,106	95.86
> 65 - 70	7H	83	3.78	2,189	99.64
> 70 - 75	8H	7	0.32	2,196	99.95
> 80	10H	1	0.05	2,197	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : OHIO
FACILITY GROUP : 55 MPH INTERSTATE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	0.49	2	0.49
> 45 - 50	3H	8	1.98	10	2.47
> 50 - 55	4H	48	11.85	58	14.32
> 55 - 60	5H	128	31.60	186	45.93
> 60 - 65	6H	146	36.05	332	81.98
> 65 - 70	7H	64	15.80	396	97.78
> 70 - 75	8H	8	1.98	404	99.75
> 75 - 80	9H	1	0.25	405	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	3	0.91	3	0.91
> 45 - 50	3H	19	5.76	22	6.67
> 50 - 55	4H	130	39.39	152	46.06
> 55 - 60	5H	156	47.27	308	93.33
> 60 - 65	6H	22	6.67	330	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	0.26	1	0.26
> 45 - 50	3H	13	3.34	14	3.60
> 50 - 55	4H	57	14.65	71	18.25
> 55 - 60	5H	120	30.85	191	49.10
> 60 - 65	6H	141	36.25	332	85.35
> 65 - 70	7H	47	12.08	379	97.43
> 70 - 75	8H	8	2.06	387	99.49
> 75 - 80	9H	2	0.51	389	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	8	2.74	8	2.74
> 45 - 50	3H	50	17.12	58	19.86
> 50 - 55	4H	115	39.38	173	59.25
> 55 - 60	5H	83	28.42	256	87.67
> 60 - 65	6H	32	10.96	288	98.63
> 65 - 70	7H	4	1.37	292	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : OHIO
FACILITY GROUP : 55 MPH 4 LANE DIVIDED

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.58	1	0.58
> 40 - 45	2H	5	2.92	6	3.51
> 45 - 50	3H	17	9.94	23	13.45
> 50 - 55	4H	35	20.47	58	33.92
> 55 - 60	5H	56	32.75	114	66.67
> 60 - 65	6H	36	21.05	150	87.72
> 65 - 70	7H	17	9.94	167	97.66
> 70 - 75	8H	3	1.75	170	99.42
> 75 - 80	9H	1	0.58	171	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 45 - 50	3H	6	16.22	6	16.22
> 50 - 55	4H	17	45.95	23	62.16
> 55 - 60	5H	9	24.32	32	86.49
> 60 - 65	6H	4	10.81	36	97.30
> 65 - 70	7H	1	2.70	37	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 45 - 50	3H	11	6.63	11	6.63
> 50 - 55	4H	38	22.89	49	29.52
> 55 - 60	5H	56	33.73	105	63.25
> 60 - 65	6H	42	25.30	147	88.55
> 65 - 70	7H	16	9.64	163	98.19
> 70 - 75	8H	3	1.81	166	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 45 - 50	3H	3	12.50	3	12.50
> 50 - 55	4H	9	37.50	12	50.00
> 55 - 60	5H	9	37.50	21	87.50
> 60 - 65	6H	3	12.50	24	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : OHIO
FACILITY GROUP : 55 MPH 2 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	4	2.26	4	2.26
> 40 - 45	2H	5	2.82	9	5.08
> 45 - 50	3H	8	4.52	17	9.60
> 50 - 55	4H	42	23.73	59	33.33
> 55 - 60	5H	74	41.81	133	75.14
> 60 - 65	6H	37	20.90	170	96.05
> 65 - 70	7H	6	3.39	176	99.44
> 70 - 75	8H	1	0.56	177	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	3.39	2	3.39
> 45 - 50	3H	2	3.39	4	6.78
> 50 - 55	4H	17	28.81	21	35.59
> 55 - 60	5H	22	37.29	43	72.88
> 60 - 65	6H	12	20.34	55	93.22
> 65 - 70	7H	4	6.78	59	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	0.68	1	0.68
> 45 - 50	3H	12	8.22	13	8.90
> 50 - 55	4H	37	25.34	50	34.25
> 55 - 60	5H	57	39.04	107	73.29
> 60 - 65	6H	31	21.23	138	94.52
> 65 - 70	7H	7	4.79	145	99.32
> 75 - 80	9H	1	0.68	146	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	1.49	1	1.49
> 40 - 45	2H	4	5.97	5	7.46
> 45 - 50	3H	7	10.45	12	17.91
> 50 - 55	4H	11	16.42	23	34.33
> 55 - 60	5H	26	38.81	49	73.13
> 60 - 65	6H	15	22.39	64	95.52
> 65 - 70	7H	3	4.48	67	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : OHIO
FACILITY GROUP : 50 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	10	14.49	10	14.49
> 45 - 50	3H	17	24.64	27	39.13
> 50 - 55	4H	27	39.13	54	78.26
> 55 - 60	5H	12	17.39	66	95.65
> 60 - 65	6H	2	2.90	68	98.55
> 65 - 70	7H	1	1.45	69	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 45 - 50	3H	4	66.67	4	66.67
> 50 - 55	4H	2	33.33	6	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	2	3.39	2	3.39
> 40 - 45	2H	7	11.86	9	15.25
> 45 - 50	3H	16	27.12	25	42.37
> 50 - 55	4H	13	22.03	38	64.41
> 55 - 60	5H	14	23.73	52	88.14
> 60 - 65	6H	3	5.08	55	93.22
> 65 - 70	7H	4	6.78	59	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	11.11	1	11.11
> 45 - 50	3H	3	33.33	4	44.44
> 50 - 55	4H	4	44.44	8	88.89
> 60 - 65	6H	1	11.11	9	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : OHIO
FACILITY GROUP : 45 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	5	4.07	5	4.07
> 35 - 40	5L	6	4.88	11	8.94
> 40 - 45	6L	27	21.95	38	30.89
> 45 - 50	7L	40	32.52	78	63.41
> 50 - 55	8L	30	24.39	108	87.80
> 55 - 60	9L	11	8.94	119	96.75
> 60	10L	4	3.25	123	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 35 - 40	5L	2	25.00	2	25.00
> 40 - 45	6L	2	25.00	4	50.00
> 45 - 50	7L	3	37.50	7	87.50
> 50 - 55	8L	1	12.50	8	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 25 - 30	3L	1	0.67	1	0.67
> 30 - 35	4L	3	2.00	4	2.67
> 35 - 40	5L	5	3.33	9	6.00
> 40 - 45	6L	26	17.33	35	23.33
> 45 - 50	7L	49	32.67	84	56.00
> 50 - 55	8L	44	29.33	128	85.33
> 55 - 60	9L	20	13.33	148	98.67
> 60	10L	2	1.33	150	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 35 - 40	5L	2	18.18	2	18.18
> 40 - 45	6L	2	18.18	4	36.36
> 45 - 50	7L	5	45.45	9	81.82
> 50 - 55	8L	2	18.18	11	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : OHIO
FACILITY GROUP : 40 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 25 - 30	3L	1	1.43	1	1.43
> 30 - 35	4L	7	10.00	8	11.43
> 35 - 40	5L	25	35.71	33	47.14
> 40 - 45	6L	25	35.71	58	82.86
> 45 - 50	7L	9	12.86	67	95.71
> 50 - 55	8L	3	4.29	70	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 35 - 40	5L	2	40.00	2	40.00
> 40 - 45	6L	1	20.00	3	60.00
> 45 - 50	7L	2	40.00	5	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	1	3.33	1	3.33
> 35 - 40	5L	12	40.00	13	43.33
> 40 - 45	6L	13	43.33	26	86.67
> 45 - 50	7L	3	10.00	29	96.67
> 50 - 55	8L	1	3.33	30	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 35 - 40	5L	2	40.00	2	40.00
> 40 - 45	6L	2	40.00	4	80.00
> 45 - 50	7L	1	20.00	5	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : OHIO
FACILITY GROUP : 35 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	4	0.95	4	0.95
> 25 - 30	3L	44	10.48	48	11.43
> 30 - 35	4L	86	20.48	134	31.90
> 35 - 40	5L	131	31.19	265	63.10
> 40 - 45	6L	92	21.90	357	85.00
> 45 - 50	7L	54	12.86	411	97.86
> 50 - 55	8L	9	2.14	420	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	5	45.45	5	45.45
> 35 - 40	5L	3	27.27	8	72.73
> 45 - 50	7L	1	9.09	9	81.82
> 50 - 55	8L	2	18.18	11	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	1	0.36	1	0.36
> 25 - 30	3L	13	4.68	14	5.04
> 30 - 35	4L	45	16.19	59	21.22
> 35 - 40	5L	79	28.42	138	49.64
> 40 - 45	6L	78	28.06	216	77.70
> 45 - 50	7L	51	18.35	267	96.04
> 50 - 55	8L	9	3.24	276	99.28
> 55 - 60	9L	1	0.36	277	99.64
> 60	10L	1	0.36	278	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	1	50.00	1	50.00
> 40 - 45	6L	1	50.00	2	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : OHIO
FACILITY GROUP : 25 MPH

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	15	8.11	15	8.11
> 25 - 30	3L	55	29.73	70	37.84
> 30 - 35	4L	77	41.62	147	79.46
> 35 - 40	5L	31	16.76	178	96.22
> 40 - 45	6L	5	2.70	183	98.92
> 45 - 50	7L	2	1.08	185	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 20	1L	1	1.00	1	1.00
> 20 - 25	2L	3	3.00	4	4.00
> 25 - 30	3L	15	15.00	19	19.00
> 30 - 35	4L	29	29.00	48	48.00
> 35 - 40	5L	37	37.00	85	85.00
> 40 - 45	6L	15	15.00	100	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW YORK
FACILITY GROUP : 55 MPH INTERSTATE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	0.07	1	0.07
> 45 - 50	3H	15	1.07	16	1.14
> 50 - 55	4H	125	8.92	141	10.06
> 55 - 60	5H	372	26.55	513	36.62
> 60 - 65	6H	490	34.98	1,003	71.59
> 65 - 70	7H	359	25.62	1,362	97.22
> 70 - 75	8H	32	2.28	1,394	99.50
> 75 - 80	9H	6	0.43	1,400	99.93
> 80	10H	1	0.07	1,401	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	3	0.33	3	0.33
> 45 - 50	3H	27	2.97	30	3.30
> 50 - 55	4H	211	23.19	241	26.48
> 55 - 60	5H	424	46.59	665	73.08
> 60 - 65	6H	203	22.31	868	95.38
> 65 - 70	7H	40	4.40	908	99.78
> 70 - 75	8H	2	0.22	910	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 45 - 50	3H	5	0.39	5	0.39
> 50 - 55	4H	53	4.16	58	4.55
> 55 - 60	5H	212	16.64	270	21.19
> 60 - 65	6H	556	43.64	826	64.84
> 65 - 70	7H	371	29.12	1,197	93.96
> 70 - 75	8H	68	5.34	1,265	99.29
> 75 - 80	9H	9	0.71	1,274	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	3	0.34	3	0.34
> 45 - 50	3H	28	3.13	31	3.47
> 50 - 55	4H	130	14.54	161	18.01
> 55 - 60	5H	375	41.95	536	59.96
> 60 - 65	6H	281	31.43	817	91.39
> 65 - 70	7H	69	7.72	886	99.11
> 70 - 75	8H	7	0.78	893	99.89
> 75 - 80	9H	1	0.11	894	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW YORK
FACILITY GROUP : 55 MPH 4 LANE DIVIDED

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.09	1	0.09
> 40 - 45	2H	5	0.45	6	0.54
> 45 - 50	3H	38	3.43	44	3.97
> 50 - 55	4H	140	12.62	184	16.59
> 55 - 60	5H	338	30.48	522	47.07
> 60 - 65	6H	368	33.18	890	80.25
> 65 - 70	7H	198	17.85	1,088	98.11
> 70 - 75	8H	20	1.80	1,108	99.91
> 75 - 80	9H	1	0.09	1,109	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	4	1.60	4	1.60
> 40 - 45	2H	6	2.40	10	4.00
> 45 - 50	3H	15	6.00	25	10.00
> 50 - 55	4H	64	25.60	89	35.60
> 55 - 60	5H	101	40.40	190	76.00
> 60 - 65	6H	47	18.80	237	94.80
> 65 - 70	7H	13	5.20	250	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	9	1.00	9	1.00
> 45 - 50	3H	32	3.55	41	4.55
> 50 - 55	4H	121	13.41	162	17.96
> 55 - 60	5H	262	29.05	424	47.01
> 60 - 65	6H	301	33.37	725	80.38
> 65 - 70	7H	139	15.41	864	95.79
> 70 - 75	8H	28	3.10	892	98.89
> 75 - 80	9H	8	0.89	900	99.78
> 80	10H	2	0.22	902	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.40	1	0.40
> 40 - 45	2H	5	2.00	6	2.40
> 45 - 50	3H	17	6.80	23	9.20
> 50 - 55	4H	56	22.40	79	31.60
> 55 - 60	5H	89	35.60	168	67.20
> 60 - 65	6H	68	27.20	236	94.40
> 65 - 70	7H	12	4.80	248	99.20
> 70 - 75	8H	2	0.80	250	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW YORK
FACILITY GROUP : 55 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	4	2.13	4	2.13
> 40 - 45	2H	11	5.85	15	7.98
> 45 - 50	3H	23	12.23	38	20.21
> 50 - 55	4H	50	26.60	88	46.81
> 55 - 60	5H	60	31.91	148	78.72
> 60 - 65	6H	32	17.02	180	95.74
> 65 - 70	7H	8	4.26	188	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	5.88	1	5.88
> 40 - 45	2H	1	5.88	2	11.76
> 45 - 50	3H	1	5.88	3	17.65
> 50 - 55	4H	6	35.29	9	52.94
> 55 - 60	5H	6	35.29	15	88.24
> 60 - 65	6H	2	11.76	17	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.53	1	0.53
> 40 - 45	2H	8	4.26	9	4.79
> 45 - 50	3H	26	13.83	35	18.62
> 50 - 55	4H	47	25.00	82	43.62
> 55 - 60	5H	66	35.11	148	78.72
> 60 - 65	6H	27	14.36	175	93.09
> 65 - 70	7H	12	6.38	187	99.47
> 70 - 75	8H	1	0.53	188	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	5.41	2	5.41
> 45 - 50	3H	7	18.92	9	24.32
> 50 - 55	4H	11	29.73	20	54.05
> 55 - 60	5H	11	29.73	31	83.78
> 60 - 65	6H	5	13.51	36	97.30
> 65 - 70	7H	1	2.70	37	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW YORK
FACILITY GROUP : 50 MPH 2 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	7	36.84	7	36.84
> 45 - 50	3H	4	21.05	11	57.89
> 50 - 55	4H	4	21.05	15	78.95
> 55 - 60	5H	3	15.79	18	94.74
> 60 - 65	6H	1	5.26	19	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	50.00	1	50.00
> 55 - 60	5H	1	50.00	2	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	8.00	2	8.00
> 45 - 50	3H	3	12.00	5	20.00
> 50 - 55	4H	11	44.00	16	64.00
> 55 - 60	5H	9	36.00	25	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW YORK
FACILITY GROUP : 45 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	1	1.08	1	1.08
> 30 - 35	4L	9	9.68	10	10.75
> 35 - 40	5L	12	12.90	22	23.66
> 40 - 45	6L	16	17.20	38	40.86
> 45 - 50	7L	25	26.88	63	67.74
> 50 - 55	8L	16	17.20	79	84.95
> 55 - 60	9L	7	7.53	86	92.47
> 60	10L	7	7.53	93	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	1	8.33	1	8.33
> 35 - 40	5L	3	25.00	4	33.33
> 40 - 45	6L	3	25.00	7	58.33
> 45 - 50	7L	1	8.33	8	66.67
> 50 - 55	8L	2	16.67	10	83.33
> 55 - 60	9L	1	8.33	11	91.67
> 60	10L	1	8.33	12	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	2	4.65	2	4.65
> 35 - 40	5L	7	16.28	9	20.93
> 40 - 45	6L	6	13.95	15	34.88
> 45 - 50	7L	19	44.19	34	79.07
> 50 - 55	8L	3	6.98	37	86.05
> 55 - 60	9L	6	13.95	43	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 35 - 40	5L	1	50.00	1	50.00
> 45 - 50	7L	1	50.00	2	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW YORK
FACILITY GROUP : 40 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	6	6.59	6	6.59
> 35 - 40	5L	16	17.58	22	24.18
> 40 - 45	6L	39	42.86	61	67.03
> 45 - 50	7L	24	26.37	85	93.41
> 50 - 55	8L	5	5.49	90	98.90
> 55 - 60	9L	1	1.10	91	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 35 - 40	5L	3	50.00	3	50.00
> 40 - 45	6L	2	33.33	5	83.33
> 45 - 50	7L	1	16.67	6	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 25 - 30	3L	2	3.51	2	3.51
> 30 - 35	4L	9	15.79	11	19.30
> 35 - 40	5L	11	19.30	22	38.60
> 40 - 45	6L	15	26.32	37	64.91
> 45 - 50	7L	18	31.58	55	96.49
> 50 - 55	8L	2	3.51	57	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 25 - 30	3L	1	25.00	1	25.00
> 35 - 40	5L	3	75.00	4	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW YORK
FACILITY GROUP : 35 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	1	4.17	1	4.17
> 25 - 30	3L	3	12.50	4	16.67
> 30 - 35	4L	11	45.83	15	62.50
> 35 - 40	5L	6	25.00	21	87.50
> 40 - 45	6L	2	8.33	23	95.83
> 45 - 50	7L	1	4.17	24	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	1	33.33	1	33.33
> 35 - 40	5L	1	33.33	2	66.67
> 40 - 45	6L	1	33.33	3	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 25 - 30	3L	2	22.22	2	22.22
> 30 - 35	4L	1	11.11	3	33.33
> 35 - 40	5L	5	55.56	8	88.89
> 40 - 45	6L	1	11.11	9	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW YORK
FACILITY GROUP : 30 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 20	1L	9	2.93	9	2.93
> 20 - 25	2L	19	6.19	28	9.12
> 25 - 30	3L	68	22.15	96	31.27
> 30 - 35	4L	88	28.66	184	59.93
> 35 - 40	5L	69	22.48	253	82.41
> 40 - 45	6L	42	13.68	295	96.09
> 45 - 50	7L	12	3.91	307	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	2	22.22	2	22.22
> 25 - 30	3L	3	33.33	5	55.56
> 30 - 35	4L	2	22.22	7	77.78
> 35 - 40	5L	2	22.22	9	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	10	4.20	10	4.20
> 25 - 30	3L	31	13.03	41	17.23
> 30 - 35	4L	68	28.57	109	45.80
> 35 - 40	5L	72	30.25	181	76.05
> 40 - 45	6L	39	16.39	220	92.44
> 45 - 50	7L	15	6.30	235	98.74
> 50 - 55	8L	2	0.84	237	99.58
> 55 - 60	9L	1	0.42	238	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 20	1L	2	18.18	2	18.18
> 20 - 25	2L	2	18.18	4	36.36
> 25 - 30	3L	4	36.36	8	72.73
> 30 - 35	4L	1	9.09	9	81.82
> 35 - 40	5L	2	18.18	11	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : TEXAS
FACILITY GROUP : 65/60 MPH RURAL INTERSTATE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	0.51	2	0.51
> 45 - 50	3H	7	1.78	9	2.29
> 50 - 55	4H	27	6.87	36	9.16
> 55 - 60	5H	66	16.79	102	25.95
> 60 - 65	6H	162	41.22	264	67.18
> 65 - 70	7H	112	28.50	376	95.67
> 70 - 75	8H	16	4.07	392	99.75
> 75 - 80	9H	1	0.25	393	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	0.29	1	0.29
> 45 - 50	3H	4	1.16	5	1.45
> 50 - 55	4H	51	14.74	56	16.18
> 55 - 60	5H	177	51.16	233	67.34
> 60 - 65	6H	98	28.32	331	95.66
> 65 - 70	7H	14	4.05	345	99.71
> 70 - 75	8H	1	0.29	346	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	0.25	1	0.25
> 45 - 50	3H	4	0.99	5	1.24
> 50 - 55	4H	17	4.21	22	5.45
> 55 - 60	5H	65	16.09	87	21.53
> 60 - 65	6H	134	33.17	221	54.70
> 65 - 70	7H	148	36.63	369	91.34
> 70 - 75	8H	27	6.68	396	98.02
> 75 - 80	9H	8	1.98	404	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 45 - 50	3H	1	0.30	1	0.30
> 50 - 55	4H	24	7.32	25	7.62
> 55 - 60	5H	109	33.23	134	40.85
> 60 - 65	6H	119	36.28	253	77.13
> 65 - 70	7H	55	16.77	308	93.90
> 70 - 75	8H	18	5.49	326	99.39
> 75 - 80	9H	2	0.61	328	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : TEXAS
FACILITY GROUP : 55 MPH INTERSTATE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	2.11	2	2.11
> 45 - 50	3H	3	3.16	5	5.26
> 50 - 55	4H	16	16.84	21	22.11
> 55 - 60	5H	15	15.79	36	37.89
> 60 - 65	6H	35	36.84	71	74.74
> 65 - 70	7H	20	21.05	91	95.79
> 70 - 75	8H	4	4.21	95	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 45 - 50	3H	6	10.71	6	10.71
> 50 - 55	4H	15	26.79	21	37.50
> 55 - 60	5H	27	48.21	48	85.71
> 60 - 65	6H	8	14.29	56	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	1.30	1	1.30
> 50 - 55	4H	7	9.09	8	10.39
> 55 - 60	5H	21	27.27	29	37.66
> 60 - 65	6H	31	40.26	60	77.92
> 65 - 70	7H	15	19.48	75	97.40
> 70 - 75	8H	2	2.60	77	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	1.54	1	1.54
> 45 - 50	3H	1	1.54	2	3.08
> 50 - 55	4H	7	10.77	9	13.85
> 55 - 60	5H	26	40.00	35	53.85
> 60 - 65	6H	22	33.85	57	87.69
> 65 - 70	7H	8	12.31	65	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : TEXAS
FACILITY GROUP : 55 MPH 4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	3	0.58	3	0.58
> 45 - 50	3H	17	3.29	20	3.88
> 50 - 55	4H	90	17.44	110	21.32
> 55 - 60	5H	206	39.92	316	61.24
> 60 - 65	6H	123	23.84	439	85.08
> 65 - 70	7H	65	12.60	504	97.67
> 70 - 75	8H	10	1.94	514	99.61
> 75 - 80	9H	2	0.39	516	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.74	1	0.74
> 40 - 45	2H	1	0.74	2	1.48
> 45 - 50	3H	9	6.67	11	8.15
> 50 - 55	4H	31	22.96	42	31.11
> 55 - 60	5H	56	41.48	98	72.59
> 60 - 65	6H	30	22.22	128	94.81
> 65 - 70	7H	7	5.19	135	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.19	1	0.19
> 40 - 45	2H	3	0.57	4	0.76
> 45 - 50	3H	13	2.46	17	3.22
> 50 - 55	4H	74	14.02	91	17.23
> 55 - 60	5H	173	32.77	264	50.00
> 60 - 65	6H	176	33.33	440	83.33
> 65 - 70	7H	71	13.45	511	96.78
> 70 - 75	8H	11	2.08	522	98.86
> 75 - 80	9H	3	0.57	525	99.43
> 80	10H	3	0.57	528	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	0.71	1	0.71
> 45 - 50	3H	1	0.71	2	1.42
> 50 - 55	4H	12	8.51	14	9.93
> 55 - 60	5H	39	27.66	53	37.59
> 60 - 65	6H	58	41.13	111	78.72
> 65 - 70	7H	19	13.48	130	92.20
> 70 - 75	8H	11	7.80	141	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : TEXAS
FACILITY GROUP : 55 MPH 2 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	6	2.06	6	2.06
> 45 - 50	3H	19	6.53	25	8.59
> 50 - 55	4H	63	21.65	88	30.24
> 55 - 60	5H	118	40.55	206	70.79
> 60 - 65	6H	57	19.59	263	90.38
> 65 - 70	7H	24	8.25	287	98.63
> 70 - 75	8H	4	1.37	291	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	2	4.88	2	4.88
> 40 - 45	2H	1	2.44	3	7.32
> 45 - 50	3H	1	2.44	4	9.76
> 50 - 55	4H	16	39.02	20	48.78
> 55 - 60	5H	17	41.46	37	90.24
> 60 - 65	6H	3	7.32	40	97.56
> 65 - 70	7H	1	2.44	41	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.38	1	0.38
> 40 - 45	2H	2	0.77	3	1.15
> 45 - 50	3H	13	5.00	16	6.15
> 50 - 55	4H	40	15.38	56	21.54
> 55 - 60	5H	98	37.69	154	59.23
> 60 - 65	6H	67	25.77	221	85.00
> 65 - 70	7H	31	11.92	252	96.92
> 70 - 75	8H	6	2.31	258	99.23
> 75 - 80	9H	2	0.77	260	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 45 - 50	3H	3	8.33	3	8.33
> 50 - 55	4H	3	8.33	6	16.67
> 55 - 60	5H	9	25.00	15	41.67
> 60 - 65	6H	19	52.78	34	94.44
> 65 - 70	7H	2	5.56	36	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW MEXICO
FACILITY GROUP : 55 MPH 4 LANE DIVIDED

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.38	1	0.38
> 40 - 45	2H	3	1.15	4	1.54
> 45 - 50	3H	12	4.62	16	6.15
> 50 - 55	4H	60	23.08	76	29.23
> 55 - 60	5H	81	31.15	157	60.38
> 60 - 65	6H	66	25.38	223	85.77
> 65 - 70	7H	27	10.38	250	96.15
> 70 - 75	8H	6	2.31	256	98.46
> 75 - 80	9H	2	0.77	258	99.23
> 80	10H	2	0.77	260	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	4.88	2	4.88
> 45 - 50	3H	3	7.32	5	12.20
> 50 - 55	4H	11	26.83	16	39.02
> 55 - 60	5H	13	31.71	29	70.73
> 60 - 65	6H	8	19.51	37	90.24
> 65 - 70	7H	4	9.76	41	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	0.95	2	0.95
> 45 - 50	3H	4	1.90	6	2.84
> 50 - 55	4H	29	13.74	35	16.59
> 55 - 60	5H	68	32.23	103	48.82
> 60 - 65	6H	56	26.54	159	75.36
> 65 - 70	7H	45	21.33	204	96.68
> 70 - 75	8H	6	2.84	210	99.53
> 75 - 80	9H	1	0.47	211	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	3.33	1	3.33
> 45 - 50	3H	1	3.33	2	6.67
> 50 - 55	4H	6	20.00	8	26.67
> 55 - 60	5H	8	26.67	16	53.33
> 60 - 65	6H	7	23.33	23	76.67
> 65 - 70	7H	7	23.33	30	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW MEXICO
FACILITY GROUP : 55 MPH 2 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	3	0.90	3	0.90
> 40 - 45	2H	2	0.60	5	1.51
> 45 - 50	3H	15	4.52	20	6.02
> 50 - 55	4H	41	12.35	61	18.37
> 55 - 60	5H	94	28.31	155	46.69
> 60 - 65	6H	84	25.30	239	71.99
> 65 - 70	7H	62	18.67	301	90.66
> 70 - 75	8H	20	6.02	321	96.69
> 75 - 80	9H	7	2.11	328	98.80
> 80	10H	4	1.20	332	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	3.17	2	3.17
> 45 - 50	3H	8	12.70	10	15.87
> 50 - 55	4H	14	22.22	24	38.10
> 55 - 60	5H	16	25.40	40	63.49
> 60 - 65	6H	19	30.16	59	93.65
> 65 - 70	7H	4	6.35	63	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	2	0.57	2	0.57
> 40 - 45	2H	4	1.14	6	1.71
> 45 - 50	3H	11	3.14	17	4.86
> 50 - 55	4H	24	6.86	41	11.71
> 55 - 60	5H	79	22.57	120	34.29
> 60 - 65	6H	94	26.86	214	61.14
> 65 - 70	7H	93	26.57	307	87.71
> 70 - 75	8H	25	7.14	332	94.86
> 75 - 80	9H	13	3.71	345	98.57
> 80	10H	5	1.43	350	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	3.64	2	3.64
> 45 - 50	3H	4	7.27	6	10.91
> 50 - 55	4H	10	18.18	16	29.09
> 55 - 60	5H	13	23.64	29	52.73
> 60 - 65	6H	17	30.91	46	83.64
> 65 - 70	7H	6	10.91	52	94.55
> 70 - 75	8H	3	5.45	55	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW MEXICO
FACILITY GROUP : 65 MPH RURAL INTERSTATE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.09	1	0.09
> 40 - 45	2H	2	0.18	3	0.28
> 45 - 50	3H	15	1.38	18	1.66
> 50 - 55	4H	57	5.25	75	6.91
> 55 - 60	5H	214	19.71	289	26.61
> 60 - 65	6H	365	33.61	654	60.22
> 65 - 70	7H	327	30.11	981	90.33
> 70 - 75	8H	87	8.01	1,068	98.34
> 75 - 80	9H	17	1.57	1,085	99.91
> 80	10H	1	0.09	1,086	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	4	0.65	4	0.65
> 45 - 50	3H	9	1.47	13	2.12
> 50 - 55	4H	43	7.03	56	9.15
> 55 - 60	5H	142	23.20	198	32.35
> 60 - 65	6H	283	46.24	481	78.59
> 65 - 70	7H	117	19.12	598	97.71
> 70 - 75	8H	12	1.96	610	99.67
> 75 - 80	9H	2	0.33	612	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	3	0.26	3	0.26
> 45 - 50	3H	9	0.78	12	1.04
> 50 - 55	4H	65	5.63	77	6.67
> 55 - 60	5H	152	13.16	229	19.83
> 60 - 65	6H	300	25.97	529	45.80
> 65 - 70	7H	443	38.35	972	84.16
> 70 - 75	8H	140	12.12	1,112	96.28
> 75 - 80	9H	30	2.60	1,142	98.87
> 80	10H	13	1.13	1,155	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	3	0.50	3	0.50
> 40 - 45	2H	8	1.34	11	1.84
> 45 - 50	3H	14	2.34	25	4.18
> 50 - 55	4H	42	7.02	67	11.20
> 55 - 60	5H	106	17.73	173	28.93
> 60 - 65	6H	189	31.61	362	60.54
> 65 - 70	7H	171	28.60	533	89.13
> 70 - 75	8H	52	8.70	585	97.83
> 75 - 80	9H	12	2.01	597	99.83
> 80	10H	1	0.17	598	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW MEXICO
FACILITY GROUP : 55 MPH INTERSTATE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	2	0.89	2	0.89
> 45 - 50	3H	17	7.56	19	8.44
> 50 - 55	4H	47	20.89	66	29.33
> 55 - 60	5H	61	27.11	127	56.44
> 60 - 65	6H	69	30.67	196	87.11
> 65 - 70	7H	27	12.00	223	99.11
> 70 - 75	8H	2	0.89	225	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	1.12	1	1.12
> 40 - 45	2H	2	2.25	3	3.37
> 45 - 50	3H	9	10.11	12	13.48
> 50 - 55	4H	24	26.97	36	40.45
> 55 - 60	5H	23	25.84	59	66.29
> 60 - 65	6H	27	30.34	86	96.63
> 65 - 70	7H	3	3.37	89	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	0.48	1	0.48
> 45 - 50	3H	6	2.87	7	3.35
> 50 - 55	4H	29	13.88	36	17.22
> 55 - 60	5H	47	22.49	83	39.71
> 60 - 65	6H	71	33.97	154	73.68
> 65 - 70	7H	47	22.49	201	96.17
> 70 - 75	8H	5	2.39	206	98.56
> 75 - 80	9H	2	0.96	208	99.52
> 80	10H	1	0.48	209	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	1.12	1	1.12
> 45 - 50	3H	3	3.37	4	4.49
> 50 - 55	4H	20	22.47	24	26.97
> 55 - 60	5H	24	26.97	48	53.93
> 60 - 65	6H	28	31.46	76	85.39
> 65 - 70	7H	12	13.48	88	98.88
> 70 - 75	8H	1	1.12	89	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW MEXICO
FACILITY GROUP : 55 MPH URBAN

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
< 40	1H	1	0.96	1	0.96
> 40 - 45	2H	6	5.77	7	6.73
> 45 - 50	3H	12	11.54	19	18.27
> 50 - 55	4H	25	24.04	44	42.31
> 55 - 60	5H	31	29.81	75	72.12
> 60 - 65	6H	18	17.31	93	89.42
> 65 - 70	7H	9	8.65	102	98.08
> 70 - 75	8H	2	1.92	104	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	1	33.33	1	33.33
> 50 - 55	4H	2	66.67	3	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 40 - 45	2H	3	2.83	3	2.83
> 45 - 50	3H	10	9.43	13	12.26
> 50 - 55	4H	19	17.92	32	30.19
> 55 - 60	5H	31	29.25	63	59.43
> 60 - 65	6H	27	25.47	90	84.91
> 65 - 70	7H	11	10.38	101	95.28
> 70 - 75	8H	4	3.77	105	99.06
> 75 - 80	9H	1	0.94	106	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 50 - 55	4H	1	20.00	1	20.00
> 55 - 60	5H	2	40.00	3	60.00
> 60 - 65	6H	2	40.00	5	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW MEXICO
FACILITY GROUP : 45 MPH

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	1	2.17	1	2.17
> 35 - 40	5L	4	8.70	5	10.87
> 40 - 45	6L	8	17.39	13	28.26
> 45 - 50	7L	7	15.22	20	43.48
> 50 - 55	8L	15	32.61	35	76.09
> 55 - 60	9L	7	15.22	42	91.30
> 60	10L	4	8.70	46	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 35 - 40	5L	2	66.67	2	66.67
> 50 - 55	8L	1	33.33	3	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	3	5.00	3	5.00
> 35 - 40	5L	6	10.00	9	15.00
> 40 - 45	6L	13	21.67	22	36.67
> 45 - 50	7L	24	40.00	46	76.67
> 50 - 55	8L	10	16.67	56	93.33
> 55 - 60	9L	3	5.00	59	98.33
> 60	10L	1	1.67	60	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 45 - 50	7L	1	100.00	1	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW MEXICO
FACILITY GROUP : 40 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 25 - 30	3L	2	2.27	2	2.27
> 30 - 35	4L	13	14.77	15	17.05
> 35 - 40	5L	30	34.09	45	51.14
> 40 - 45	6L	24	27.27	69	78.41
> 45 - 50	7L	11	12.50	80	90.91
> 50 - 55	8L	6	6.82	86	97.73
> 55 - 60	9L	1	1.14	87	98.86
> 60	10L	1	1.14	88	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	2	50.00	2	50.00
> 35 - 40	5L	1	25.00	3	75.00
> 45 - 50	7L	1	25.00	4	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 25 - 30	3L	3	1.89	3	1.89
> 30 - 35	4L	12	7.55	15	9.43
> 35 - 40	5L	41	25.79	56	35.22
> 40 - 45	6L	53	33.33	109	68.55
> 45 - 50	7L	38	23.90	147	92.45
> 50 - 55	8L	9	5.66	156	98.11
> 55 - 60	9L	3	1.89	159	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	1	50.00	1	50.00
> 40 - 45	6L	1	50.00	2	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE

SPEED FREQUENCY DISTRIBUTIONS

STATE : NEW MEXICO
FACILITY GROUP : 35 MPH 2/4 LANE

UNIT : DETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	2	1.48	2	1.48
> 25 - 30	3L	14	10.37	16	11.85
> 30 - 35	4L	28	20.74	44	32.59
> 35 - 40	5L	42	31.11	86	63.70
> 40 - 45	6L	35	25.93	121	89.63
> 45 - 50	7L	11	8.15	132	97.78
> 50 - 55	8L	3	2.22	135	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 25 - 30	3L	1	25.00	1	25.00
> 30 - 35	4L	1	25.00	2	50.00
> 35 - 40	5L	1	25.00	3	75.00
> 40 - 45	6L	1	25.00	4	100.00

UNIT : UNDETECTABLE RADAR

VEHICLE TYPE : PASSENGER

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 20 - 25	2L	1	1.19	1	1.19
> 25 - 30	3L	8	9.52	9	10.71
> 30 - 35	4L	22	26.19	31	36.90
> 35 - 40	5L	35	41.67	66	78.57
> 40 - 45	6L	14	16.67	80	95.24
> 45 - 50	7L	3	3.57	83	98.81
> 50 - 55	8L	1	1.19	84	100.00

VEHICLE TYPE : TRUCK

SPEED GROUP	RANGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
> 30 - 35	4L	1	50.00	1	50.00
> 35 - 40	5L	1	50.00	2	100.00

SOURCE : TEXAS TRANSPORTATION INSTITUTE