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EVALUATION OF SPEED LIMITS IN KENTUCKY

(KYSPR-96-172)

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16. Abstract

The objectives of this study were to examine current criteria and procedures used for setting speed limits on public roads and to recommend appropriate speed limits for various types of roadways. The major components of the study were a review of the literature, the collection and analysis of speed data, and the collection and analysis of accident data.

The speed data showed that operating speeds for most types of highways are substantially above the posted speed limit and that speeds of cars are slightly above those of trucks. Data taken before and after speed limit changes show that operating speeds are changed much less than the change in speed limit. Speed data taken in construction zones show that, while speeds are lower than typical for the specific type of highway, there is a disregard for lowered speed limits. A comparison of accident rates at adjacent sections of interstate showed no increase in either total, injury, or fatal injury rates at locations with a 65 mph speed limit compared to a 55 mph speed limit.

Except where legislatively mandated speed limits apply, the 85th percentile speed should be used to establish speed limits. Maximum limits are given for various types of roadways. In many instances, the maximum speed limit is slightly higher than the existing limit. Also, different speed limits for cars and trucks are recommended for some roadways. An engineering study must be conducted before the speed limit should be increased for any specific section of roadway.

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EXECUTIVE SUMMARY

The objectives of this study were to examine current criteria and procedures used for setting speed limits on public roads and to recommend appropriate maximum speed limits for various types of roads. The study involved three major areas. These were: review of literature, collection and analysis of speed data, and collection and analysis of accident data. The speed data included collecting data on various highway types using the "moving" radar mode, use of data from speed monitoring stations, comparison of spot speed data before and after speed limit changes, and both moving and spot speed data at construction zones. Accident data were collected at locations where speed limits were changed and also on sections of adjacent interstates with different speed limits.

A recommendation is that the 85th percentile speed should be used as the standard method to establish speed limits. The speed limit should be posted in 5 mph increments and should be obtained by rounding the 85th percentile speed down to the nearest speed value in miles per hour that end in 5 or 0. The posted speed limit may be set at a speed where the minimum design speed for an entire road may allow the design speed for a specific location to be less than the speed limit. In those instances, advisory speed signs may be used to warn drivers to reduce their speed to less than the posted speed limit. An exception to the use of the 85th percentile speed would be for legislatively mandated speed limits.

The speed data show that a large percentage of vehicle speeds exceed currently posted speed limits. The highest percentage exceeding the limit was on urban interstates and two-lane parkways where the speed limit was 55 mph. The speeds for trucks was slightly less that for cars on all types of highways with a difference of less than 5 mph when the 85th percentile speed is considered.

A comparison of speed data at locations where speed limits were changed showed differences but not dramatic changes. The data support the theory that drivers will drive what they consider an appropriate speed regardless of the speed limit. A comparison of accident rates at adjacent sections of interstate where the speed limit was 55 and 65 mph did not find a substantial difference in the total, injury, or fatal accident rates.

Maximum speed limits are given for various types of roads. In many instances, different limits are given for cars and trucks. The speed limit for a specific location would be based on an engineering study which would consider such factors as operating speed, design speed, roadway design elements, roadside appurtenances and obstacles, operational features, and an accident analysis. Statewide maximum speed limits of 70 mph for cars and 65 mph for trucks are recommended as well as 35 mph in business or residential areas.

1.0 INTRODUCTION

Appropriate speed limits are a necessary component to ensure a reasonable level of safe and efficient travel on highways and streets. Various methods have been used to establish speed limits. These methods vary from arbitrary judgment and legislative statute to prevailing speed and engineering analysis. Subjectivity of some of the procedures for setting speed limits support the need to reexamine these criteria and procedures as well as the current posted speed limits.

The practice of speed control was founded on the assumption that controlling speeds reduces accidents. However, a compromise must be reached between the desires to maximize efficiency of travel and to exercise control over travel speeds. The basic speed rule according to the Uniform Vehicle Code states that "No person shall drive a vehicle at a speed greater than is reasonable and prudent under the conditions and having regard to the actual and potential hazards then existing." The Kentucky Revised Statutes (189.390) require adherence to speed limits according to the following; "An operator of a vehicle upon a highway shall not drive at a greater speed than is reasonable and prudent, having regard for the traffic and for the condition and use of the highway."

As an aid to enforcement of the basic speed rule, "prima facie limits" are posted to indicate speeds at which a driver is presumed to be driving at greater than reasonable and prudent speeds. Because considerable judgment must be exercised to determine the reasonable and proper speed, the need for more strict limits was recognized. Some states provide for reasonable and proper speed with "prima facie limits" in designated speed zones; however, there is an absolute maximum on open roadways.

Both the Uniform Vehicle Code and the Kentucky Revised Statutes (KRS) make reference to the absolute or maximum speed. The following speed limit requirements are currently given in the KRS: 1) 35 mph in any business or residential district, 2) 55 mph in all other locations, except for rural interstates and parkways, and 3) 65 mph on rural interstates and parkways. The National Highway System Designation Act of 1995 repealed the mandated national maximum speed limit and allowed states to set their own limits. This legislative change has resulted in changes in speed limits in many states.

The current AASHTO (American Association of State Highway and Transportation Officials) definition for design speed is "the maximum safe speed that can be maintained over a specified section of highway when conditions are so favorable that the design features of the highway govern". The AASHTO definition for operating speed is "the highest overall speed at which a driver can travel on a given highway under favorable weather conditions and under

prevailing traffic conditions without at any time exceeding the safe speed as determined by the design speed on a section-by-section basis." In general practice, the posted speed limit sets the maximum speed limit for a roadway such that the operating speed may be above the design speed for a particular location of the roadway. When this situation occurs, warning signs with advisory speeds may be used to warn drivers to reduce their speed to less than the posted speed limit.

The 85th percentile speed is commonly used by highway agencies for describing actual operating speeds (not the AASHTO defined operating speed) and establishing speed limits. This is the speed at or below which 85 percent of the traffic is traveling and is thought by many traffic engineers to reflect the safe speed for given road conditions. The 85th percentile speed is in the speed range where the accident involvement rate is lowest. The literature review revealed that vehicles traveling one standard deviation above the average speed have the lowest involvement rate. The average speed plus one standard deviation is approximately the 85th percentile speed. Vehicles traveling two standard deviations above the average speed have been found to have significantly higher accident rates.

With the high levels of noncompliance of posted speed limits on many roadways, the reassessment of current methods is justified. It should be noted that many factors may influence speed and consideration should be given to as many as practical. Factors which have been considered, in addition to the 85th percentile speed, include visibility restrictions, roadway geometrics, pedestrian activity, accident rate, vehicle mix, roadside development, and location of speed zone.

Operational conditions exist in work zones which require special consideration when setting speed limits. Constrained roadway geometrics, in combination with the proximity of workers and vehicles, create conditions which may justify reduced speed limits in work areas. However, appropriate analysis and evaluation should be undertaken prior to alteration of existing limits.

The objectives of this study were to examine current criteria and procedures used for setting speed limits on public roads and to recommend appropriate speed limits for various types of roadways.

2.0 PROCEDURE

There were three major components of the study. These were:

a. review of literature,
b. collection and analysis of speed data, and
c. collection and analysis of accident data.

Following is a description of the procedure used in each of these areas.

2.1 REVIEW OF LITERATURE

A literature search was obtained for reports which dealt with either establishing speed limits or analyzing the results of changing speed limits. The reports were reviewed with a brief summary of the conclusions prepared for those which had results relating to the objectives of this study.

2.2 SPEED DATA

Four types of speed data were collected. They included:

a. radar data along sections of highways using the "moving" mode of operation,
b. speeds for specific locations obtained at speed monitoring stations,
c. data at specific locations taken before and after changes in speed limit, and
d. speeds (both moving and spot locations) in construction zones where the regulatory speed limit was reduced..

Following is a description of the methods used to collect and analyze these various types of data.

2.2.1 Moving Speeds

One objective of the study was to determine operating speeds on various types of roads. To accomplish this, data were taken using the moving mode of a Kustom HR-12 hand held traffic radar. Moving, rather than stationary, data were taken so that drivers would be less likely to detect the radar. Data were collected on various types of highways with vehicles classified as either a car or truck. A truck was defined as a tractor trailer or a single unit truck having at least three axles. Data were taken where roadway geometrics were not a limiting factor. For example, truck speeds were not taken on steep grades and speeds were not taken where roadway curvature limited travel speeds. The following roadway types were used:

1. 65 mph interstate,
2. 55 mph interstate,
3. 50 mph interstate,
4. four-lane parkway,
5. two-lane parkway,

6. four lane, non-interstate and parkway,
7. two lane with full width shoulder, and
8. two lane without full width shoulder.

The data were entered into a data base with a computer program used to summarize the data. For each highway type, the number of vehicles in the sample was given along with the average speed, 50th percentile speed, 85th percentile speed, 10 mph pace speed, percent in pace speed, and percent of vehicles exceeding the speed limit. The speed data for cars and trucks were analyzed separately.

2.2.2 Speed Monitoring Stations

For several years, the Transportation Cabinet was required to establish stations to monitor traffic speeds across the state. Specifically, the percentage of vehicles exceeding the 55 or 65 mph speed limits was monitored and reported by the Department of Highways on a quarterly basis from 1978 through 1994. This requirement was eliminated with the federal legislation passed in 1995 which changed speed limit requirements. The speed monitoring program was discontinued in 1995 with data taken at some of the stations in 1995.

The speed monitoring data were collected using loops placed in the pavement along with a speed classifier. This allowed large samples of data to be obtained. Vehicles were not classified by type.

Data collected in 1994 and 1995 were summarized. A total of 41 sites were used. Each site was classified into a category by highway type and speed limit. The average speed, 50th percentile speed, 85th percentile speed, and percent over the speed limit were determined for each category. The following seven highway types were used.

1. 55 mph interstate (six lane)
2. 55 mph interstate (four lane),
3. 65 mph interstate,
4. 65 mph parkway,
5 four lane non-interstate and parkway,
6. two lane with full width shoulder, and
7. two lane without full width shoulder.

2.2.3 Speed Limit Changes

Locations were identified where speed data were available prior to a speed limit change (through a search of the file containing speed limit official orders and discussion with district traffic engineers). Since speed data are not typically

collected by the Department of Highways after a speed limit change, radar measurements were taken at the same location as the data taken prior to the speed limit change to determine any change in speeds after the speed limit change. These data were spot speeds taken at the location identified on the "before" data collection form. None of the "after" data were taken immediately after the speed limit change so any initial effect of the change would not be a factor.

2.2.4 Construction Zone Speeds

Locations were identified where the regulatory speed limit had been reduced in a construction zone. Almost all of the locations were on interstates and parkways. Data were taken using both the moving and stationary radar modes. The speeds were compared to the reduced speed limit as well as typical speeds for the type of highway where the construction was occurring.

2.3 ACCIDENT DATA

Copies of all traffic accidents are sent to the Kentucky State Police with the information placed into a computer file. This file was used to determine characteristics of speed-related accidents and to compare locations with different speed limits. Following is a description of the analysis of accident data.

2.3.1 Characteristics of Speed-Related Accidents

Accidents in which unsafe speed was identified as a contributing factor on the police report were identified. An analysis of these accidents was conducted for the three-year period of 1993 through 1995. The characteristics of the speed-related accidents were compared to all accidents. This comparison was performed for two categories; all accidents and fatal accidents. Also, the percentage of accidents involving unsafe speed was determined by county.

The accident rate involving unsafe speed was calculated by highway type (using 1992 through 1994 data). These data were used to obtain a critical number and rate of accidents for each highway type. One-mile sections having a critical number of speed-related accidents were identified. Accident rates were calculated for these sections with critical rate factors determined for each section.

2.3.2 Speed Limit Changes

For a sample of locations where the speed limit was changed, the date of the change and the milepoint range for the change were determined. Before and after accident data were identified at these locations. The length of the before and after study period varied by location and was related to the date of the posting of the

speed limit change. Locations were included if a minimum of one year of before and after data were available.

2.3.3 65 mph versus 55 mph Interstate Speed Limits

The speed limit for urbanized sections of interstate near Louisville, Lexington, and in northern Kentucky near Cincinnati is 55 mph rather than 65 mph. The speed limit for a short section of Interstate 65 in Louisville is 50 mph. The milepoints of the sections of interstate where the speed limit is under 65 mph were obtained and accident rates were calculated for these sections and compared to adjacent sections where the speed limit is 65 mph.

3.0 RESULTS

3.1 REVIEW OF LITERATURE

A listing of the reports which were reviewed and brief summaries of the pertinent conclusions of these reports are given in Appendix A. Following is a summary of the literature review as it pertained to certain subjects.

3.1.1 Methods Used to Establish Speed Limits

A few reports have involved surveys which requested agencies to describe the method used to establish speed limits. The literature showed that the following factors have been used when setting speed limits:

- 85th percentile speed
- legislative statute
- accident experience
- roadside development
- parking/pedestrian activity
- traffic volume and vehicle mix
- design speed
- public attitude
- safe speed for curves
- visibility restrictions
- road surface characteristics and width
- shoulder type and width
- number of intersections
- existing traffic control devices
- average test run speed
- upper limit of 10 mph pace

The 85th percentile speed was typically used. Other factors listed most often were: legislative statute, accident experience, roadside development, roadway geometry, and parking/pedestrian activity.

The literature showed that most states have roads where the operating speed or the posted speed limit exceeds the design speed. In those instances, actions were usually taken to either reduce speeds or warn drivers of the situation. The most common action was to install advance warning signs.

In some instances, speed limits are reduced in work zones. The factors considered when determining the need for reduced work zone speed limits are the type of work and whether work is being performed in the roadway. Legislation in Kentucky allows reducing the regulatory speed limit by 10 mph without an official order and having double fines in marked, active work zones. The general opinion has been that a speed limit reduction of more than 10 mph is not recommended unless the design speed of a geometric element in the work zone is more than 10 mph below the normal speed limit.

3.1.2 Results of Changing Speed Limits

Several studies evaluated the effects of changing speed limits on operating speeds. The majority of the reports found that changing speed limits had only a minimal effect on traffic speeds. The conclusion of most research is that the travel speed selected by drivers is speed based on roadway and surrounding conditions more than the posted speed limit.

The effects of changing speed limits on accidents has also been investigated. Studies have resulted in various conclusions with no consensus of opinion in this area. However, the data have not supported a conclusion that lowering speed limits can be expected to reduce accidents.

There have been some preliminary data collected to determine the effect of repeal of the national maximum speed limit. Increasing the speed limit by 10 mph has resulted in an increase in the 85th percentile speed of only about 2 mph.

Speed studies in work zones show that motorists reduce their speed in active work zones even with no speed limit reduction. Studies indicate that regulatory speed limits are not very effective in reducing vehicle speeds in work zones. The presence of law enforcement officers has been found to be the most effective speed reduction procedure. Compliance decreases where the speed limit is reduced by more than 10 mph. A suggestion has been made that the maximum speed limit reduction should be 15 mph below the normal speed of traffic. Only limited evaluations have been made of the effect of work zone speed limits on accidents.

The few evaluations in this area have not related a reduction in speed limits to a reduction in accident rates.

3.1.3 Differential Speed Limits

Several studies dealt with the use of different speed limits for cars and trucks. The possible effects on accidents, speeds, and speed variance have been investigated. The research has not shown that lower truck speed limits have resulted in more variation in travel speeds. For example, in states where the speed limit for cars was increased by 10 mph with no change in the truck speed limit, car speeds increased 1 to 4 mph with no increase in truck speeds and a decrease in speed fluctuations.

No major differences have been found in the overall number of accidents or accident severity between states which had or did not have different speed limits for cars and trucks. There has been a suggestion of differences in types of accidents. For example, in differential speed limit states there are more collisions involving cars striking trucks compared to more collisions involving trucks striking cars in uniform speed limit states.

In summary, comparisons between states with uniform speed limits and states with differential speed limits have not found evidence of any significant negative impact on speed, speed variance, or accidents where differential speed limits are used.

3.1.4 Current Status of Speed Limits

As a result of Congress repealing the National Speed Limit in 1995, numerous states have changed speed limits on different type of roadways. Speed limits across the country are being changed on a routine basis from state to state. The following discussion refers to an unpublished summary of the speed limit status in various states. This information was valid at the start of 1997, and additional changes may have been made since that date.

Considering only rural interstates, the most common speed limit was 65 mph with almost one half of the states having this limit. Only three states had a speed limit less than 65 mph for cars. For trucks, seven states had 55 mph speed limits and two states had 60 mph speed limits. Thirteen states had a speed limit for cars of 70 mph with a speed limit of 75 mph in nine states. Ten states had a different speed limit for cars and trucks with the difference ranging from 5 to 15 mph. In Montana, there is no posted speed limit for cars on rural interstates and trucks are restricted to 65 mph day or night.

When a road category classified as "other primary" is considered, the large majority of states had a speed limit of 55 mph. The speed limit for cars for this category was 55 mph in 33 states with 36 states having a 55 mph speed limit for trucks. Fifteen states had a speed limit over 55 mph. Five states had different speed limits for cars and trucks. In addition to the 15 states with a speed limit over 55 mph for this category, another 14 states had sections of non-interstate highways with a speed limit over 55 mph.

3.2 SPEED DATA

3.2.1 Moving Speeds on Various Highway Types

Results of the data collected using the radar in the moving mode are given in Tables 1 and 2 for cars and trucks, respectively. Speed data for a total of 48,577 cars and 13,118 trucks are included in these data sets. Data were taken in the moving radar mode to reduce the ability of motorists to detect the radar. This method should result in a more accurate speed estimate than using spot speeds with the radar in a stationary mode. For the various types of highways, average, 50th percentile, and 85th percentile speeds are given. The 10 mph pace speed, the 10 mph range with the highest percentage of vehicles, is also given along with the percent in the 10 mph pace. The percent of vehicles traveling at a speed above the posted speed limit is given. Data for specific highways are given in Appendix B.

A comparison of the data in Tables 1 and 2 shows that the speeds of trucks are consistently slightly below that of cars for the various highway types. The differences in the average speeds for cars and trucks were found to be statistically significant for all highway types (except the 50 mph urban interstate where the sample size was small). Considering the 85th percentile speed, this difference was less than five mph. The difference was the greatest for the 65 mph sections of rural interstates and parkways and 55 mph rural parkways where there was a difference in 85th percentile speeds of about four mph. The difference in the operating speeds of cars and trucks would support a differential speed limit for these vehicle types on certain types of highways.

Data for all highway types show that a large percentage of vehicle speeds exceed the speed limit. Average speeds typically exceeded the speed limit. The standard method of using the 85th percentile speed to set the speed limit would support the conclusion that the speed limit, especially for cars, should be increased for most road types. For example, the 85th percentile speeds on rural interstates and parkways were about 73 to 74 mph for cars and about 69 to 70 mph for trucks. The 65 mph speed limit represents only about the 30th percentile speed for cars on rural interstates and parkways. Using these data, the logical limits based on the 85th percentile speeds would be 70 mph for cars and 65 mph for trucks.

An especially high percentage of vehicle speeds exceeded the speed limit on urban interstates and two-lane parkways where the posted speed limit is 55 mph. The posted speed limit represents only about the 10th to 15th percentile speed for cars on these roadways. The data would support an increase in speed limits to 65 mph for cars and 60 mph for trucks on most of these highways.

Example comparisons of posted speed limit versus operating speed for specific sections of highway are given in Table 3. These data apply to cars and show that speed limits are typically ignored by drivers if the limit does not match what they perceive as an appropriate speed. For example, the 85th percentile speed on Interstate 75 in the 55 mph speed zone in northern Kentucky is 67.8 mph with about 90 percent of cars exceeding the speed limit. The section of Interstate 265 (Gene Synder Freeway) in Jefferson County with a 55 mph speed limit has an 85th percentile speed of 66.9 mph with 92 percent of cars exceeding the speed limit.

Considering four-lane, non-interstate and parkway highways, US 23 between Prestonsburg and Pikeville had an 85th percentile speed of 65.3 mph with 78 percent exceeding the 55 mph speed limit. Also, US 25E between Corbin and Middlesboro had an 85th percentile speed of 64.1 mph with 73 percent exceeding the speed limit.

The section of KY 80 between Somerset and London, which is two lane with a full width shoulder, had an 85th percentile speed of 65.5 mph with 78 percent exceeding the 55 mph speed limit. The section of KY 9 between Alexandria and Maysville, which is two lane with a full width shoulder, had an 85th percentile speed of 65.5 mph with 82 percent exceeding the speed limit. Also, about 93 percent of cars were found to be exceeding the 55 mph speed limit on the 55 mph two-lane section of the Mountain Parkway.

3.2.2 Speed Monitoring Data by Type of Highway

Large samples of vehicle speeds have been obtained as part of the speed monitoring program which ended in 1995 when the national maximum speed limit was ended. The speed data were obtained using loops placed in the pavement. A summary of the data collected at various speed monitoring stations in 1994 and 1995 is given in Table 4. These data are not separated into the car and truck categories. Data for specific stations are given in Appendix C.

The speeds at the monitoring stations were generally similar to that found using the moving radar. The 85th percentile speed was over 70 mph on rural interstates and parkways where the existing speed limit is 65 mph and was between 65 and 70 mph on urban interstates where the speed limit is 55 mph. The

85th percentile speed was between 60 and 65 mph on other four lane roadways and two lane roadways with a full width shoulder. The only roadway type where the 85th percentile speed was less than 5 mph higher than the posted speed limit was for two lane roadways which did not have a full width shoulder.

About 50 percent of all vehicles exceeded the speed limit on rural interstates and parkways where the speed limit is 65 mph and on rural, four-lane, non-interstate and parkway highways where the speed limit is 55 mph. This percent was slightly higher (59 percent) on two lane roadways with full width shoulders. The lowest percentage (32 percent) above the speed limit was on two lane roads without a full width shoulder. The percent exceeding the speed limit increased substantially for interstates where the speed limit is 55 mph (71 percent for six lane locations and 83 percent for four lane locations). Using the 85th percentile speed, the data would support increased speed limits for several highway types.

3.2.3 Speed Data Before and After Speed Limit Change

A listing of the results of the comparison of the spot speed studies taken before and after speed limit changes is presented in Table 5. Data were taken at 145 sites. In some instances, data were taken at more than one site within a specific speed limit change location. Data were taken for 122 speed zone change locations. The speed limit was lowered at the large majority of locations. Data were taken at 12 sites where the speed limit was increased. This represents seven locations where speed zone increases were implemented. The before data were taken by Department of Highways personnel with almost all of the after data taken by Transportation Center personnel. While all data are spot speeds, there could be variability in data collection techniques and selection of vehicles.

Following is the average change in the 85th percentile speed at the sites as a function of the type of change in speed limit.

Change in Speed Limit	Number of Sites	Average Change in 85th Percentile Speed
Decrease 5 mph	4	+0.5 mph
Decrease 10 mph	125	+0.4 mph
Decrease 20 mph	4	+1.8 mph
Increase 5 mph	1	+0.5 mph
Increase 10 mph	11	+1.1 mph

The change in the 85th percentile speeds was much less than the change in the speed limit. None of the average changes in 85th percentile speeds for each category was statistically significant. There was a reduction in the speed limit of 20 mph (from 55 mph to 35 mph) at four locations. At three of these locations, the 85th percentile speed before the speed change was about 40 mph and the 85th percentile speed after the change actually increased slightly. At the other location, the 85th percentile speed was slightly over 55 mph before the reduction with the 20 mph speed reduction resulting in a decrease of 5.9 mph (from 57.7 to 51.8 mph).

Data were taken at 12 sites (at 7 locations) where the speed limit was increased. There was a slight increase in the operating speeds at these locations. The speed limit was increased at these locations because the 85th percentile speed was substantially above the speed limit. Prior to the speed limit change at these 7 locations, the average 85th percentile speed was 12.1 mph higher than the speed limit. After the speed limit was changed, this difference decreased to 4.5 mph. This shows the new speed limit was more representative of operating speeds.

In some instances, the speed limit was changed to a speed which was substantially below the 85th percentile speed. For example, the speed limit on a section of KY 9 in Campbell County was reduced from 55 mph to 45 mph even though the 85th percentile speed before the change was 58.2 mph. After the change, the 85th percentile speed was 57.3 mph. This shows that drivers did not respond to what they perceived as an unreasonable speed limit.

Another method of determining whether changing the speed limit will affect operating speed is to compare the change in 85th percentile speed after the speed limit change to the difference in the 85th percentile speed before the change and the new speed limit. For example, if the 85th percentile speed before the change is substantially above the new speed limit, an attempt is being made to reduce the speed by imposing a speed limit which does not reflect operating speeds.

85th Percentile Speed Before Change - Speed Limit After Change	Number of Sites	Average Change in 85th Percentile Speed
Over 10 mph	13	-3.4 mph
5.0 to 9.9 mph	31	-0.3 mph
0.0 to 4.9 mph	83	+1.2 mph
-0.1 to -4.9 mph	14	+1.7 mph
-5.0 to -9.9 mph	4	+3.4 mph

The data again show the limited effect speed limit changes have on operating speeds. For example, a speed limit reduction from 55 to 45 mph on a section of US 460 in Franklin County reduced the 85th percentile speed from 55.6 mph to 51.8 mph. Another example was the lowering of the speed limit on a section of US 45 in Graves County from 55 to 45 mph which corresponded to only a reduction in the 85th percentile speed from 53.7 to 52.9 mph. The data show that reducing the speed limit to a level substantially below operating speeds will reduce speeds slightly but will result in a high rate of noncompliance.

Operating speeds tended to change very little when the new speed limit was close to the 85th percentile speed prior to the speed limit change. For example, while the speed limit was changed from 35 to 45 mph on a section of KY 536 in Boone County, the 85th percentile speed only changed from 44.8 to 46.2 mph.

3.2.4 Construction Zone Speeds

Data were taken in several construction zones where the regulatory speed limit was reduced. Data collected at these construction zones for cars and trucks are given in Tables 6 and 7, respectively. Data were taken at 11 different locations. Data were not taken when construction activity and related congestion controlled traffic speeds. At two locations, insufficient truck data were obtained to include in the analysis. Most locations were on interstates and parkways. The reduction in the regulatory speed limit was either 10 or 20 mph. The 50th and 85th percentile speeds are given as well as the percent of vehicles exceeding the construction zone speed limit. A notation is given indicating whether moving or stationary radar was used to collect the data.

In general, the data show the overall disregard for the lowered speed limit. Typically, over 90 percent of the vehicle speeds exceeded the lowered speed limit. This level of noncompliance was found whether the speed limit was reduced by 10 mph or 20 mph. However, the speeds at these locations were lower than typical speeds for the highway types (as shown in Tables 1 and 2). The extent of the reduction in speeds was a function of the activity in the construction zone rather than the lowered speed limit. If there was activity in the area, the speeds would be reduced compared to times when there was no activity.

3.3 ACCIDENT DATA

3.3.1 Characteristics of Speed-Related Accidents

Comparisons were made of all speed-related accidents with all accidents (Table 8) and fatal speed-related accidents with all fatal accidents (Table 9). The percent of speed-related accidents in various counties is given in Table 10.

Following is a summary of the comparisons.

Severity: The percentage of fatal accidents was three times higher for speed-related accidents. Also, the percentage of speed-related injury accidents was about 60 percent higher than for all accidents.

Aid System: The highest percentage of speed-related accidents occurred on rural collector roadways. The highest percentage of all accidents was on urban arterials. For both all accidents and speed-related accidents, the highest percentage of fatal accidents occurred on rural arterials. There were more speed-related accidents in rural areas. While most accidents occurred in urban areas, most fatal accidents occurred in rural areas.

Directional Analysis: There was a relatively low percentage of speed-related accidents at intersections. The highest percentage of speed-related accidents involved a fixed object, followed by single vehicle run-off- the-road accidents. These were also the most common types of all fatal accidents.

Seat Belt Usage: The percentage of drivers wearing their seat belt was lower in speed-related accidents.

Time of Day: Considering all accidents, the highest percentage of accidents occurred between noon and 6 pm. This was also the most common time period for all speed-related accidents. For fatal speed-related accidents, the most common time period was from 6 pm to midnight.

Day of Week: In both cases, the highest percentage of all accidents and speed-related accidents occurred on Friday and Saturday.

Month: There was not a large variation by month. The highest percentage of all speed-related accidents occurred in December through February while the highest percentage of fatal speed-related accidents occurred in September through November.

Number of Vehicles: While the majority of all accidents involved two vehicles, most speed-related accidents were single vehicle. Most fatal accidents involved one vehicle.

Land Use: A higher percentage of speed-related accidents was in rural areas.

Road Surface Condition: Considering all accidents, a higher percentage of speed-related accidents occurred on a road that was either wet or snow or ice covered. This difference was smaller when fatal accidents were analyzed.

Weather: Compared to all accidents, more speed-related accidents occurred during inclement weather conditions.

Road Character: More speed-related accidents involved a curve.

Light Condition: More speed-related accidents occurred during darkness where there was no roadway lighting.

Speed Limit: Considering all accidents, there was a higher percentage of speed-related accidents where the speed limit was 50 to 55 mph. There was little difference for only fatal accidents.

Vehicle Type: A higher percentage of speed-related accidents involved a motorcycle.

Driver Sex: Males were involved in a higher percentage of speed-related accidents.

Driver Age: Drivers under the age of 30 were over represented in speed-related accidents.

Type Accident (1st Event): The largest differences were the higher percentage of speed-related accidents involving collisions with fixed objects such as earth embankment/rock cut/ ditch or a tree or utility pole.

Contributing Factors: A higher percentage of speed-related accidents involved alcohol, a tire problem, or a slippery surface or water pooling.

County: Counties with the highest percentage of accidents involving unsafe speed (20 percent or more) were Elliott, Gallatin, McCreary, Owen and Pike. Counties with the highest percentage of fatal accidents involving unsafe speed (50 percent or more) were Estill, Gallatin, Harrison, Hopkins, Jackson, Lyon, Magoffin, Monroe, Oldham, and Trimble.

3.3.2 Locations with High Number of Speed-Related Accidents

The subgroup of all accidents in which unsafe speed was listed as a contributing factor on the police report was used to determine accident rates for speed-related accidents, by highway type, for the three-year period of 1992 through 1994 (Table 11). These data were used to determine a critical number of speed-related accidents, by highway type, for a one-mile section of road. Lists of one-mile sections having the critical number of speed-related accidents were determined. Average and critical accident rates for each section were calculated as well as the

critical rate factor. Locations having the highest critical rate factors are listed in Appendix D for the various highway types.

3.3.3 Accident Data Before and After Speed Limit Change

Accident data were obtained before and after speed limit changes at a sample of locations where the date the new speed limit was posted could be determined as well as the milepoints for which the change applied. The length of the before and after period depended on the date of the change. Locations were not included unless at least one year of after data could be obtained. Up to three years of before and after data were used when available.

Accident data are given in Table 12 for 104 locations. In this table, the location is given along with the before and after speed limit, date of change, and the number of before and after accidents in the specified time period. Both total accidents and the number involving an injury or fatality are given.

Following is a summary of the change in the number of before and after accidents per location as a function of the type of change in the speed limit. Both total accidents and injury or fatal accidents are summarized.

Change in Speed Limit	Number of Locations	Average Change in Number of Accidents	
		Total	Injury/Fatal
Decrease 5 mph	3	+2.7	+0.6
Decrease 10 mph	91	+1.5	+0.1
Decrease 20 mph	4	-1.5	-0.5
Increase 10 mph	6	+2.7	+0.3

There was not a dramatic difference in the average change in the number of accidents as a result of the change in speed limits. The average number of accidents increased slightly at locations where the speed limit was decreased 10 mph as well as locations where it was increased 10 mph. Using the chi square statistical test, none of the categories of speed changes showed a statistically significant change in the number of before and after accidents.

At five of the six locations where the speed limit was increased, there was only a very minor change in the accident history. However, at one of these locations there was a substantial increase, and this resulted in a 23 percent increase in total accidents (from 70 to 86) and a 9.5 percent increase in injury or

fatal accidents (from 21 to 23) for this category. This compares to locations where the speed limit was decreased by 10 mph where there was a 12 percent increase in total accidents (from 1,129 to 1,268) and a 2.9 percent increase in injury or fatal accidents (from 373 to 384).

3.3.4 Accident Rates for 65 mph versus 55 mph Interstates

As a method of determining the effect of different speed limits on similar types of highways, accident rates were calculated for adjacent sections of interstates with speed limits of 65 and 55 mph. These data are presented in Table 13. There are interstates in Fayette County, Jefferson County, and the northern Kentucky counties of Boone, Campbell, and Kenton where the speed limit changes from 65 to 55 mph. The location of the change is based on the estimated urban limits and, in some instances, a driver would not distinguish any difference in the character of the roadway when the speed limit changed. The moving speed data (Tables 1 and 2) showed that, while the speed limit decreased by 10 mph, the 85th percentile speed only decreased by about one-half that amount. A question was whether the lower speed limit had an effect on the accident rate.

The computer file containing all reported accidents was searched to obtain accident data for the sections of interstate listed in Table 13. A review of the records found that the milepoint was not given for a substantial number of accidents. Also, the computer file assigned most accidents on I 265 in Jefferson County to KY 841. In order to obtain accurate data, the location data on the records in question were manually checked with the proper location assigned.

When all of the routes in Table 13 are compared, it can be seen that the accident rates for the 65 mph sections were not higher than the 55 mph locations. Considering all locations, the total rate was 122 ACC/100MVM (accidents per 100 million vehicle miles) for 55 mph locations compared to 74 ACC/100MVM at 65 mph locations. The fatal accident rate was slightly higher for the 65 mph locations (0.44 compared to 0.39 ACC/100MVM) but the injury rate was lower (23 compared to 30 ACC/100MVM).

The adjacent sections of interstate with speed limits of 65 and 55 mph having the closest roadway geometric and traffic volume characteristics were on I 265 (Synder Freeway) in Jefferson County. For this roadway, the total rate was slightly lower for the 65 mph section while the injury rate was almost identical.

4.0 CONCLUSIONS

4.1 SPEED DATA

The data collected using the moving radar mode showed that travel speeds for most types of highways are substantially above the posted speed limit. Also, speeds of cars are slightly above those of trucks. The speed monitoring data also showed speeds above the posted speed limit. Using the 85th percentile speed as a standard, the operating speeds (as determined by the roadway environment and not as defined by AASHTO) for most highway types indicate that speed limits should be increased with different speed limits for cars and trucks.

Data taken before and after speed limit changes show that operating speeds are changed much less than the change in speed limit. The data support the conclusion that motorists will operate their vehicles at a speed they consider appropriate for the roadway geometrics and environment, regardless of the speed limit. Therefore, assuming drivers have an understanding of a reasonable speed, speed limits should reflect an appropriate operating speed.

Speeds in construction zones are lower than typical speeds for a specific type of highway. However, speed data show a disregard for a lowered regulatory speed limit. Operating speeds are more related to activity in the construction zone and a restriction in the work zone, such as reduced lane width, rather than reduced speed limits. This finding is consistent with the opinion that speed limit reductions and other traffic control devices should only be used where there is active construction.

4.2 ACCIDENT DATA

There are several differences in speed-related accidents when compared to all accidents. For example, compared to all accidents, speed-related accidents: a) are more severe, b) occur more often in rural areas, c) involve a higher percentage of single vehicle accidents, d) occur more often during darkness, e) occur more often during inclement weather conditions, f) more often involve a curve, g) involve a higher percentage of collisions with fixed objects such as a tree, and h) involve a higher percentage of males and drivers under the age of 30.

Accidents were compared before and after a change in speed limits and at adjacent sections of interstate with speed limits of 55 and 65 mph. The accident data did not show a large difference in the average change in number of accidents at locations where the speed limit was increased or decreased 10 mph. However, the percentage increase in accidents at locations where the speed limit was increased was higher as a result of an increase at one location. A comparison of accident rates at adjacent sections of interstate showed there was no increase in

either total, fatal, or injury rates at locations with a 65 mph speed limit as compared to those with a 55 mph speed limit.

5.0 RECOMMENDATIONS

5.1 ESTABLISH SPEED LIMIT

The 85th percentile speed should be used as the standard method used to establish speed limits. This speed reflects actual operating speeds as determined by the overall roadway environment. Other considerations include roadway design elements, roadside appurtenances and obstacles, and operational features. The speed limit should be posted in 5 mph increments and should be obtained by rounding the 85th percentile speed down to the nearest speed value in miles per hour that end in 5 or 0.

The posted speed limit may be set at a speed where the minimum design speed for the entire road may allow a design speed less than the speed limit. At these locations, advisory speed signs may be used as a supplemental traffic control device to warn drivers to reduce their speed to less than the posted speed limit.

The exception to using the 85th percentile speed would be for legislatively mandated speed limits. A state maximum speed limit should be established. Also, maximum speed limits considering roadside development are appropriate.

5.2 SPEED LIMITS

Maximum speed limits for various types of roads are given in Table 14. These speed limits represent optimum conditions. The speed limit for a specific location must be based on an engineering study. In many instances, the maximum speed limit is slightly higher than the existing limit. Also, there are different maximum speed limits for cars and trucks for some roadways. For example, the 65 mph speed limit on rural interstates and four lane parkways could be increased to a maximum of 70 mph for cars while remaining at 65 mph for trucks. The 55 mph speed limit for some urban interstates could be increased to 65 mph for cars and 60 mph for trucks. The 55 mph speed limit for rural, four-lane (non-interstates and parkways) and rural, two-lane roadways with full width shoulders could to be increased to 60 mph for cars while remaining at 55 mph for trucks.

Statewide maximum speed limits of 70 mph for cars and 65 mph for trucks are recommended. Also, the current KRS guidelines for 35 mph in a business or residential district should be maintained.

TABLE 1. MOVING SPEED DATA FOR VARIOUS HIGHWAY TYPES (CARS)

HIGHWAY TYPE AND SPEED LIMIT	SAMPLE SIZE	SPEED (MPH)				PERCENT IN 10 MPH PACE	PERCENT OVER SPEED LIMIT
		AVERAGE	50TH PERCENTILE	85TH PERCENTILE	10 MPH PACE		
Interstate 65 mph	11,780	68.0	67.9	72.9	63-72	70.8	70.1
Interstate 55 mph	3,885	61.4	61.1	66.7	56-65	66.7	86.0
Interstate 50 mph	163	55.8	55.8	60.8	52-61	65.0	84.0
Parkway Four Lane 65 mph	10,642	68.4	68.4	73.6	64-73	68.4	70.5
Parkway Two Lane 55 mph	1,589	62.8	61.9	68.5	58-67	63.1	90.5
Four Lane Non-Interstate or Parkway 55 mph	11,052	59.3	59.1	64.5	54-63	69.2	76.8
Two Lane Full Width Shoulder 55 mph	4,081	58.7	58.8	64.2	54-63	67.0	71.3
Two Lane Without Full Width Shoulder 55mph	5,385	55.9	56.0	61.6	51-60	63.7	54.2

TABLE 2. MOVING SPEED DATA FOR VARIOUS HIGHWAY TYPES (TRUCKS)

HIGHWAY TYPE AND SPEED LIMIT	SAMPLE SIZE	SPEED (MPH)				PERCENT IN 10 MPH PACE	PERCENT OVER SPEED LIMIT
		AVERAGE	50TH PERCENTILE	85TH PERCENTILE	10 MPH PACE		
Interstate 65 mph	5,029	64.2	64.4	68.7	60-69	74.7	37.3
Interstate 55 mph	1,533	59.4	59.4	64.6	53-62	72.2	75.4
Interstate 50 mph	99	55.4	54.7	59.8	51-60	74.7	87.9
Parkway Four Lane 65 mph	3,067	64.9	65.3	69.7	61-70	71.9	45.4
Parkway Two Lane 55 mph	213	58.3	58.5	64.1	54-63	63.8	70.9
Four Lane Non-Interstate or Parkway 55 mph	1,918	56.7	56.7	61.9	52-61	69.9	60.8
Two Lane Full Width Shoulder 55 mph	595	56.5	57.1	62.1	52-61	68.6	58.5
Two Lane Without Full Width Shoulder 55 mph	673	53.6	54.1	59.7	48-57	65.4	41.2

TABLE 3. EXAMPLE COMPARISONS OF SPEED LIMIT VERSUS OPERATING SPEED (CARS)

LOCATION	HIGHWAY TYPE	SPEED (MPH)			PERCENT OVER SPEED LIMIT
		SPEED LIMIT	AVERAGE	85TH PERCENTILE	
KY 9, Campbell County	4-lane, non-interstate	55	60.1	64.8	81.2
KY 9, Maysville - Alexandria	2-lane, full width shld.	55	60.1	65.5	82.1
US 23, Pikeville - Prestonsburg	4-lane, non-interstate	55	59.9	65.3	78.2
US 25E, Middlesboro - Corbin	4-lane, non-interstate	55	58.9	64.1	73.0
US 41A, Fort Campbell - Hopkinsville	4-lane, non-interstate	55	59.4	63.1	79.5
US 60B, Owensboro	4-lane, non-interstate	55	58.1	62.3	70.4
I 75, Boone/Kenton Counties	Interstate	55	62.5	67.8	89.9
KY 80, Somerset - London	2-lane, full width shld.	55	60.2	65.5	77.7
I 265, Jefferson County	Interstate	55	62.1	66.9	92.5
KY 461, Shopville - Mt. Vernon	2-lane, full width shld.	55	59.4	64.1	79.1
Bluegrass Parkway	4-lane parkway	65	68.6	73.3	72.5
Mountain Parkway, Campton - Salyersville	2-lane parkway	55	63.8	69.4	92.9

TABLE 4. SPEED MONITORING DATA BY TYPE OF HIGHWAY (1994 and 1995)*

HIGHWAY TYPE AND SPEED LIMIT	SAMPLE SIZE	SPEED (MPH)			PERCENT OVER SPEED LIMIT
		AVERAGE	50TH PERCENTILE	85TH PERCENTILE	
Interstate 65 mph	976,111	65.7	66.5	73.3	52.1
Interstate Four Lane 55 mph	461,649	61.0	61.4	67.8	82.8
Interstate Six Lane 55 mph	963,964	58.7	59.5	65.5	70.6
Parkway Four Lane 65 mph	73,762	65.1	65.7	72.3	48.4
Four Lane Non-Interstate or Parkway 55 mph	624,209	54.9	55.9	62.1	49.3
Two Lane Full Width Shoulder 55 mph	239,412	56.8	57.6	63.8	61.0
Two Lane Without Full Width Shoulder 55 mph	355,933	49.8	51.3	57.9	27.8

* Represents all vehicles. Cars and trucks were not separated.

TABLE 5. SPEEDS BEFORE AND AFTER SPEED LIMIT CHANGE

LOCATION			SPEED LIMIT (MPH)		85TH PERCENTILE SPEED (MPH)	
COUNTY	ROUTE	MILEPOINT	BEFORE	AFTER	BEFORE	AFTER
Anderson	KY 3359	0.0-1.1	45	35	40.5	41.5
					40.8	42.1
Barren	US 31E	12.1-12.8	55	45	50.6	52.0
Boone	KY 14	2.2-3.7	55	45	48.8	52.3
	KY 212	0.0-1.1	55	45	50.1	52.6
	KY 237	1.5-3.1	55	45	50.7	52.8
	KY 536	13.2-14.2	35	45	44.8	46.2
	KY 717	0.0-0.4	55	45	44.5	40.8
	KY 2846	0.0-1.3	55	45	42.1	45.1
					48.2	45.1
Bourbon	US 460	7.7-8.5	55	45	49.2	51.6
					47.0	50.6
Boyd	US 23	15.0-16.6	35	45	44.0	49.1
	KY 1012	0.0-2.4	55	45	48.4	48.6
Bracken	KY 10	20.7-20.8	35	25	25.2	34.1
	KY 10	13.5-13.8	25	35	39.3	38.7
	KY 10	14.2-14.6	25	35	36.7	41.0
Bullitt	KY 61	1.5-2.2	55	45	49.6	49.2
	KY 1319	0.0-2.9	55	45	48.4	50.4
					48.7	53.5
					47.5	52.8
	KY 1526	13.7-17.6	55	45	49.3	49.2
					49.5	44.8
Caldwell	US 62	5.2-5.3	55	45	45.3	46.3
		5.4-5.8	45	35	35.2	38.3
Calloway	KY 1550	4.9-6.4	55	45	46.8	51.0
Campbell	US 27	11.8-12.4	55	45	56.5	51.8
	KY 8	12.4-13.9	55	45	45.2	48.3
	KY 9	16.1-17.8	55	45	58.2	57.3
	KY 1998	2.9-3.4	55	45	48.7	51.7
Casey	US 127	13.5-14.0	55	45	44.4	50.5
Christian	US 41	14.6-15.0	55	45	47.0	47.8
	KY 91	0.0-0.2	55	45	50.6	50.8
	KY 115	0.0-2.1	55	45	47.7	44.7
	KY 272	9.1-9.3	55	45	49.4	44.7
	KY 695	10.4-10.9	55	45	49.2	43.2

TABLE 5. SPEEDS BEFORE AND AFTER SPEED LIMIT CHANGE (continued)

LOCATION			SPEED LIMIT (MPH)		85TH PERCENTILE SPEED (MPH)	
COUNTY	ROUTE	MILEPOINT	BEFORE	AFTER	BEFORE	AFTER
Daviess	KY 764	4.5-5.3	55	45	53.7	49.8
					49.4	45.6
	KY 1456	2.8-5.5	45	35	47.6	44.3
					50.5	43.5
Edmonson	KY 70	9.5-11.0	55	45	48.1	49.4
					49.7	49.7
	KY 259	12.1-12.5	55	45	46.8	49.8
Fayette	KY 1927	2.2-3.8	55	45	46.5	45.6
					47.4	45.6
					47.1	50.5
Fleming	KY 11	5.6-5.9	35	45	56.0	56.2
Floyd	KY 3	3.9-9.7	55	35	40.2	44.7
	KY 114	10.7-12.2	55	45	47.0	51.3
Franklin	US 460	0.5-1.8	55	45	56.1	53.0
					55.0	50.6
	KY 420	0.0-0.5	55	45	48.8	52.2
					53.5	51.8
Garrard	KY 52	5.9-7.1	55	45	38.7	41.0
					47.3	47.7
					51.8	51.6
Grant	US 25	11.2-12.0	35	25	24.7	26.9
Graves	US 45	11.0-12.0	55	45	53.7	52.9
	KY 121	11.0-12.1	55	45	43.9	45.9
					47.8	48.9
Grayson	US 62	22.3-22.7	55	45	51.3	46.3
					45.2	45.4
	KY 259	14.2-14.6	55	45	51.1	52.2
Hardin	KY 222	4.7-6.8	55	45	52.9	50.5
	KY 224	5.1-5.4	55	45	48.5	47.0
		5.5-6.0	45	35	38.7	41.9
	KY 447	0.7-2.1	55	45	49.0	49.2
					49.4	49.7
	KY 1136	2.8-3.4	55	45	45.5	50.6

TABLE 5. SPEEDS BEFORE AND AFTER SPEED LIMIT CHANGE (continued)

	LOCATION		SPEED LIMIT (MPH)		85TH PERCENTILE SPEED (MPH)	
COUNTY	ROUTE	MILEPOINT	BEFORE	AFTER	BEFORE	AFTER
Harrison	KY 32	9.3-10.8	45	35	41.7	45.6
	KY 36	13.0-13.6	55	45	49.7	53.0
	KY 1842	0.0-0.3	45	35	35.0	43.6
Hart	US 31W	10.8-12.4	35	45	44.7	47.0
					47.8	48.0
					44.1	40.7
					41.5	43.8
Jefferson	US 31E	3.7-4.4	55	50	55.2	52.5
	KY 146	8.7-8.8	55	45	47.5	49.2
	KY 155	10.6-11.4	50	45	48.5	48.4
					49.5	47.8
	KY 1447	5.2-6.2	55	45	50.2	48.8
Johnson	KY 40	11.7-13.3	40	35	36.0	42.4
Kenton	KY 16	9.4-10.1	45	35	47.6	46.5
	KY 17	0.0-3.6	55	45	46.5	48.3
	KY 17	18.9-20.4	40	45	50.4	50.9
	KY 177	13.3-14.2	55	45	48.4	48.9
	KY 536	0.0-0.5	45	35	36.4	39.3
	KY 2045	0.0-1.0	55	35	37.2	39.8
	KY 2045	1.0-1.3	45	35	40.2	41.7
Knott	KY 550	21.1-21.7	45	35	41.0	39.5
Laurel	KY 80	12.0-13.1	55	45	49.0	48.8
					54.6	51.6
	KY 192	18.0-19.3	55	45	47.0	44.4
					43.0	40.8
					47.0	43.6
					43.5	44.9
					39.9	44.7
Letcher	KY 7	11.2-11.5	55	45	45.6	44.9
Lincoln	KY 698	11.0-11.9	55	45	50.5	52.4
Livingston	US 60	27.9-28.4	55	45	46.0	50.6
McCracken	US 45	6.9-7.4	45	35	36.3	39.8
	US 60	9.6-13.3	55	45	45.8	46.7
					46.8	47.7
	US 60X	unknown	45	35	36.6	36.6
					39.9	43.4
					38.2	39.5
	US 60X	unknown	35	45	48.4	45.6
					38.7	42.0
	KY 999	0.0-4.2	55	45	48.4	51.5
	KY 1286	2.2-2.9	55	35	40.3	45.5
Marshall	KY 348	7.8- 8.1	55	45	37.4	40.8

TABLE 5. SPEEDS BEFORE AND AFTER SPEED LIMIT CHANGE (continued)

LOCATION			SPEED LIMIT (MPH)		85TH PERCENTILE SPEED (MPH)	
COUNTY	ROUTE	MILEPOINT	BEFORE	AFTER	BEFORE	AFTER
Mason	US 62	11.8-12.4	55	45	45.6	50.3
	KY 9	9.9-10.6	55	45	56.5	53.0
	KY 10	10.3-11.9	55	45	48.3	49.9
					50.1	48.9
	KY 1448	6.1-7.0	55	45	50.2	50.7
	KY 3170	0.0-0.8	55	45	47.7	48.2
Mercer	US 127	5.5-5.7	55	45	48.9	49.0
Muhlenberg	US 431	17.7-18.1	55	45	50.9	50.2
					52.4	50.9
Nelson	KY 245	3.3-4.0	55	45	45.3	42.2
					45.3	44.5
	KY 1430	0.7-1.0	55	45	44.2	47.3
Nicholas	KY 32	2.9-3.4	55	45	45.8	43.4
Ohio	US 231	11.8-12.4	55	45	46.4	45.8
Pendleton	US 27	16.8-17.4	55	45	48.7	48.6
Perry	KY 15	9.8-10.2	55	45	59.9	53.0
	KY 15	10.2-10.4	55	35	57.7	52.5
	KY 15	10.4-11.2	55	45	59.4	55.8
Pike	US 23	5.8-6.4	55	45	47.2	50.7
	US 23	31.2-31.9	55	45	56.9	55.8
	KY 3495	0.0-0.9	45	35	41.0	43.6
Pulaski	KY 39	0.8-1.4	55	45	45.1	45.8
	KY 90	3.1-4.2	55	45	47.2	51.3
	KY 1577	0.0-3.8	55	45	47.4	47.7
	KY 3260	0.0-3.2	55	45	44.8	48.4
					47.0	46.0
Rowan	KY 519	8.4-9.0	55	45	52.5	49.5
					50.0	50.4
Spencer	KY 1633	5.1-6.1	55	45	51.0	44.8
Trigg	KY 274	0.0-1.2	55	45	45.8	44.1
Washington	US 150	10.9-11.4	55	45	49.0	51.5
					54.5	54.1
Woodford	US 60	9.4-9.8	55	45	48.1	48.2
	US 62	5.4-5.9	55	45	49.4	51.2

TABLE 6. SPEED DATA IN CONSTRUCTION ZONES (CARS)

LOCATION		SPEED LIMIT (MPH)		SPEED (MPH)		PERCENT OVER SPEED LIMIT
COUNTY	ROUTE	TYPICAL	CONSTRUCTION	50TH PERCENTILE	85TH PERCENTILE	
Jefferson	I 265	65	45	56.0* 53.7**	63.0 60.2	97.7 90.2
Kenton	I 275	55	45	58.5*	64.5	97.4
Anderson	Bluegrass Parkway	65	55	67.7*	72.8	99.2
Hopkins	Western Kentucky Parkway	65	45	59.1**	63.4	96.8
Muhlenberg	Western Kentucky Parkway	65	45	63.5**	67.8	100.0
Christian	Pennyrile Parkway	65	45	55.0**	60.0	98.2
Hopkins	Pennyrile Parkway	65	45	55.9**	60.6	97.3
Perry	KY 80	55	45	54.8**	59.3	96.0
Fayette	I 75	65	55	61.8**	67.9	88.9
Barren	I 65	65	45	59.9**	64.4	97.8
Wolfe	Mountain Parkway	65	55	64.2**	69.2	93.9

* Data from moving radar.
** Data from stationary radar.

TABLE 7. SPEED DATA IN CONSTRUCTION ZONES (TRUCKS)

LOCATION		SPEED LIMIT (MPH)		SPEED (MPH)		PERCENT OVER SPEED LIMIT
COUNTY	ROUTE	TYPICAL	CONSTRUCTION	50TH PERCENTILE	85TH PERCENTILE	
Jefferson	I 265	65	45	57.4* 51.8**	60.4 56.3	98.6 92.0
Kenton	I 275	55	45	55.7*	62.2	94.4
Hopkins	Western Kentucky Parkway	65	45	55.4**	59.8	95.7
Hopkins	Western Kentucky Parkway	65	45	62.3**	67.9	82.1
Christian	Pennyrile Parkway	65	45	53.5**	57.3	96.0
Hopkins	Pennyrile Parkway	65	45	51.6**	57.5	84.6
Fayette	I 75	65	55	58.8**	62.0	77.9
Barren	I 65	65	45	58.2**	64.2	97.1
Wolfe	Mountain Parkway	65	55	62.3**	67.9	82.1

* Data from moving radar.
** Data from stationary radar.

TABLE 8. CHARACTERISTICS OF SPEED-RELATED ACCIDENTS (1993-1995)

VARIABLE	CATEGORY		PERCENT OF TOTAL ALL ACCIDENTS	PERCENT OF TOTAL SPEED-RELATED ACCIDENTS
Severity	Fatal		0.6	1.9
	Injury		27.4	44.0
Aid System	Rural:	Interstate	2.2	3.8
		Arterial	9.6	12.5
		Collector	17.1	29.1
		Local	9.3	17.4
		Off-Street	0.9	0.2
	Urban:	Interstate/Expressway	4.6	4.7
		Arterial	33.4	16.0
		Collector	5.2	4.2
		Local	15.3	11.3
		Parking Lot	2.4	0.5
Directional Analysis	Intersection:	Angle	16.5	6.4
		Rear End	9.3	5.0
		Opposing Left Turn	1.5	0.6
		Opposite Direction	0.9	1.1
		Fixed Object	1.2	2.8
		Same Direction Sideswipe	2.5	1.0
		All	34.1	18.6
	Non-Intersection:	Rear End	15.6	9.9
		Head On	0.6	1.5
		Same Direction Sideswipe	5.6	3.6
		Opposite Direction Sideswipe	7.9	11.7
		Driveway Related	1.8	0.8
		Parked Vehicle	6.5	3.8
		Pedestrian	0.7	0.3
		Fixed Object	9.9	25.9
		Ran Off Road	6.4	16.5
		Overturned in Road	0.9	2.9
		Parking Lot	3.2	0.7
		Bicycle	0.3	0.1
		Animal	2.8	0.2
		Bridge	0.2	0.3
		Interchange Ramp	0.2	0.2
		Train	0.1	0.0
		All	65.9	81.4
Driver Seat Belt Usage	Yes		77.4	67.1

TABLE 8. CHARACTERISTICS OF SPEED-RELATED ACCIDENTS (1993-1995) (continued)

VARIABLE	CATEGORY	PERCENT OF TOTAL ALL ACCIDENTS	PERCENT OF TOTAL SPEED-RELATED ACCIDENTS
Time of Day	Midnight - 5:59 am	7.6	13.1
	6:00 am - 11:59 am	25.1	22.1
	Noon - 5:59 pm	45.4	37.3
	6:00 pm - 11:59 pm	21.9	27.5
Day of Week	Sunday	9.9	13.3
	Monday	14.1	12.8
	Tuesday	14.1	12.8
	Wednesday	14.2	12.9
	Thursday	15.0	14.1
	Friday	18.3	17.0
	Saturday	14.4	17.6
Month	December-February	24.2	27.9
	March-May	25.3	23.9
	June-August	24.9	23.4
	September-November	25.6	24.7
Number of Vehicles	One	24.2	50.5
	Two	70.1	43.4
	More than Two	5.7	6.0
Land Use	Rural	29.2	55.9
	Business	33.5	13.9
	Industrial	0.7	0.6
	Residential	19.0	18.9
	School	1.6	1.1
	Park	0.2	0.3
	Private Property	1.0	0.4
	Limited Access	3.9	5.5
Road Surface Conditions	Dry	71.4	51.6
	Wet	22.8	34.4
	Snow/Ice	5.2	13.2
	Slush	0.2	0.5
	Muddy	0.1	0.2
Weather	Clear	58.7	45.2
	Raining	16.5	25.6
	Snowing	3.0	7.0
	Fog/Smog/Smoke	0.7	1.2
	Sleet/Hail	0.6	1.3
	Cloudy	20.1	19.6

TABLE 8. CHARACTERISTICS OF SPEED-RELATED ACCIDENTS (1993-1995) (continued)

CATEGORY		PERCENT OF TOTAL	
		ALL ACCIDENTS	SPEED-RELATED VARIABLE
Road Character	Straight and Level	60.3	34.0
	Straight and Grade	17.5	15.4
	Straight and Hillcrest	3.8	4.6
	Curve and Level	8.3	21.1
	Curve and Grade	8.2	21.1
	Curve and Hillcrest	1.6	3.6
Light Condition	Daylight	72.2	61.4
	Dawn	1.5	1.9
	Dusk	2.5	2.9
	Darkness-Lighted/On	11.2	10.1
	Darkness-Lighted/Off	0.8	1.1
	Darkness-Not Lighted	11.0	22.2
Speed Limit (mph)	25 or less	17.1	11.0
	30 to 35	32.7	22.7
	40 to 45	16.1	11.0
	50 to 55	27.0	46.3
	Over 55	3.4	6.0
Vehicle Type	Passenger Car	93.8	93.5
	Truck	4.3	4.0
	Bus	0.2	0.1
	School Bus	0.3	0.3
	Motorcycle	0.4	1.1
	Farm Tractor	0.1	0.1
	Emergency Vehicle	0.3	0.3
Driver's Sex*	Male	59.4	67.4
	Female	40.5	32.6
Driver's Age*	16-19	14.0	23.0
	20-29	28.0	32.6
	30-39	22.6	20.4
	40-49	15.1	12.3
	50-59	8.8	6.1
	60-69	6.2	3.3
	70 and over	5.3	2.3

* Based on 1992 through 1994 data.

TABLE 8. CHARACTERISTICS OF SPEED-RELATED ACCIDENTS (1993-1995) (continued)

VARIABLE	CATEGORY		PERCENT OF TOTAL ALL ACCIDENTS	PERCENT OF TOTAL SPEED-RELATED ACCIDENTS
Type Accident 1st Event	Non- Fixed Object:		75.6	49.1
		Other Vehicle	1.0	0.4
		Pedestrian	0.5	0.1
		Bicycle	0.5	0.1
		Animal (not deer)	0.5	0.1
		Train	0.1	0.0
		Deer	2.4	0.1
		Other Non-Fixed Object	0.7	0.6
	Fixed Object:			
		Utility Pole	1.8	4.3
		Guardrail	1.3	3.7
		Crash Cushion	0.0	0.1
		Sign Post	0.6	1.6
		Tree	2.1	6.7
		Building/Wall	0.5	0.8
		Curbing	0.4	1.1
		Fence	1.5	4.4
		Bridge	0.4	0.7
		Culvert/Headwall	0.0	1.4
		Median/Barrier	0.4	1.0
		Snow Embankment	0.0	0.1
		Earth Embankment/ Rock Cut/Ditch	4.6	13.6
		Fire Hydrant	0.1	0.2
		Guardrail End Treatment	0.2	0.5
		Other Fixed Object	1.1	2.0
	Non Collision:			
		Overturned	0.9	3.0
		Fire/Explosion	0.2	0.0
		Submersion	0.0	0.0
		Ran Off Roadway	1.6	3.2
		Other Non-Collision	0.7	0.8

TABLE 8. CHARACTERISTICS OF SPEED-RELATED ACCIDENTS (1993-1995) (continued)

VARIABLE	CATEGORY	PERCENT OF TOTAL ALL ACCIDENTS	PERCENT OF TOTAL SPEED-RELATED ACCIDENTS
Contributing Factors	Human:		
	Unsafe Speed	7.6	100.0
	Failure to Yield Right of Way	16.2	6.4
	Following Too Closely	5.5	2.1
	Improper Passing	1.2	1.1
	Disregard Traffic Control	3.2	1.7
	Improper Turn	2.5	0.7
	Alcohol Involvement	4.8	10.4
	Drug Involvement	0.3	0.5
	Sick	0.2	0.0
	Fell Asleep	1.2	0.5
	Lost Consciousness	0.3	0.1
	Driver Inattention	33.5	11.3
	Distraction	2.1	0.6
	Disability	0.2	0.1
	Vehicular:		
	Defective Brakes	1.5	1.7
	Lighting Defective	0.2	0.2
	Steering Defective	0.3	0.3
	Tire Problem	0.8	2.4
	Tow Hitch Defective	0.1	0.0
	Load Problem	0.3	0.3
	Environmental:		
	Animal Action	3.2	1.3
	Glare	0.8	0.3
	View Obstruction	3.6	3.2
	Debris in Roadway	0.6	0.5
	Improper/Non Working Traffic Control	0.1	0.1
	Defective Shoulder	0.2	0.3
	Hole/Bump	0.1	0.2
	Road Construction	0.5	0.5
	Improperly Parked Vehicle	0.3	0.2
	Fixed Object	0.2	0.1
	Slippery Surface	12.4	32.8
	Water Pooling	1.0	3.1

TABLE 9. CHARACTERISTICS OF FATAL SPEED-RELATED ACCIDENTS (1993-1995)

VARIABLE	CATEGORY		PERCENT OF TOTAL ALL ACCIDENTS	PERCENT OF TOTAL SPEED-RELATED ACCIDENTS
Aid System	Rural:	Interstate	5.2	5.7
		Arterial	42.3	39.9
		Collector	23.4	27.9
		Local	8.8	10.6
		Off-Street	0.3	0.0
	Urban:	Interstate/Expressway	8.7	5.7
		Arterial	7.7	7.1
		Collector	0.5	0.2
		Local	3.0	3.0
		Parking Lot	0.2	0.0
Directional Analysis	Intersection:	Angle	10.7	3.7
		Rear End	0.8	0.7
		Opposing Left Turn	1.0	0.5
		Opposite Direction	0.4	0.4
		Fixed Object	0.5	0.9
		Same Direction Sideswipe	0.2	0.0
		All	15.2	7.6
	Non-Intersection:	Rear End	3.9	4.1
		Head On	10.0	8.8
		Same Direction Sideswipe	1.5	0.9
		Opposite Direction Sideswipe	9.3	9.0
		Driveway Related	2.3	1.2
		Parked Vehicle	0.9	0.5
		Pedestrian	7.2	0.5
		Fixed Object	24.0	34.3
		Ran Off Road	14.4	21.0
		Overturned in Road	3.4	4.6
		Parking Lot	0.2	0.0
		Bicycle	0.7	0.2
		Animal	0.2	0.4
		Bridge	0.0	0.0
		Interchange Ramp	0.0	0.0
		Train	0.7	0.0
		All	84.8	92.4
Driver Seat Belt Usage	Yes		42.2	34.0

TABLE 9. CHARACTERISTICS OF FATAL SPEED-RELATED ACCIDENTS (1993-1995) (continued)

VARIABLE	CATEGORY	PERCENT OF TOTAL	
		ALL ACCIDENTS	SPEED-RELATED ACCIDENTS
Time of Day	Midnight - 5:59 am	16.5	20.5
	6:00 am - 11:59 am	20.2	15.7
	Noon - 5:59 pm	33.9	27.0
	6:00 pm - 11:59 pm	29.3	36.7
Day of Week	Sunday	14.5	16.4
	Monday	12.5	13.8
	Tuesday	11.4	8.8
	Wednesday	13.1	10.6
	Thursday	12.9	11.3
	Friday	17.7	17.3
	Saturday	17.9	21.7
Month	December-February	21.4	22.1
	March-May	23.5	20.8
	June-August	26.9	27.4
	September-November	28.2	29.7
Number of Vehicles	One	52.6	62.4
	Two	40.7	31.8
	More than Two	6.7	5.8
Land Use	Rural	68.7	74.7
	Business	13.0	6.4
	Industrial	0.7	0.4
	Residential	9.9	11.3
	School	0.5	0.4
	Park	0.1	0.0
	Private Property	0.5	0.2
	Limited Access	6.2	6.5
Road Surface Conditions	Dry	77.7	72.8
	Wet	19.3	23.7
	Snow/Ice	2.6	3.2
	Slush	0.0	0.0
	Muddy	0.1	0.2
Weather	Clear	62.9	59.5
	Raining	12.3	14.3
	Snowing	1.5	2.3
	Fog/Smog/Smoke	2.1	2.1
	Sleet/Hail	0.6	0.5
	Cloudy	20.2	21.0

TABLE 9. CHARACTERISTICS OF FATAL SPEED-RELATED ACCIDENTS (1993-1995) (continued)

VARIABLE	CATEGORY	PERCENT OF TOTAL	
		ALL ACCIDENTS	SPEED-RELATED ACCIDENTS
Road Character	Straight and Level	38.3	25.4
	Straight and Grade	19.8	12.9
	Straight and Hillcrest	4.4	4.1
	Curve and Level	16.9	27.0
	Curve and Grade	17.1	26.0
	Curve and Hillcrest	3.1	4.4
Light Condition	Daylight	54.6	44.9
	Dawn	2.4	1.4
	Dusk	2.9	3.0
	Darkness-Lighted/On	7.5	7.8
	Darkness-Lighted/Off	1.0	1.2
	Darkness-Not Lighted	31.2	41.7
Speed Limit (mph)	25 or less	3.2	2.7
	30 to 35	10.8	11.0
	40 to 45	10.0	8.8
	50 to 55	65.5	69.1
	Over 55	8.5	8.0
Vehicle Type	Passenger Car	86.5	87.0
	Truck	9.2	6.7
	Bus	0.2	0.1
	School Bus	0.1	0.1
	Motorcycle	2.6	4.5
	Farm Tractor	0.4	0.4
	Emergency Vehicle	0.2	0.1
Driver's Sex*	Male	74.0	80.5
	Female	26.0	19.5
Driver's Age*	16-19	12.7	19.0
	20-29	27.9	34.9
	30-39	21.9	20.8
	40-49	14.6	13.0
	50-59	8.6	5.9
	60-69	6.3	3.6
	70 and over	8.0	2.9

* Based on 1992 through 1994 data.

TABLE 9. CHARACTERISTICS OF FATAL SPEED-RELATED ACCIDENTS (1993-1995) (continued)

VARIABLE	CATEGORY		PERCENT OF TOTAL ALL ACCIDENTS	PERCENT OF TOTAL SPEED-RELATED ACCIDENTS
Type Accident 1st Event	Non- Fixed Object:			
		Other Vehicle	46.4	36.9
		Pedestrian	8.3	1.2
		Bicycle	0.8	0.2
		Animal (not deer)	0.2	0.2
		Train	0.7	0.0
		Deer	0.0	0.2
		Other Non-Fixed Object	0.3	0.4
	Fixed Object:			
		Utility Pole	2.6	3.5
		Guardrail	2.0	2.5
		Crash Cushion	0.0	0.0
		Sign Post	1.1	1.9
		Tree	9.3	14.0
		Building/Wall	0.4	0.7
		Curbing	0.5	0.7
		Fence	1.4	2.7
		Bridge	1.5	0.7
		Culvert/Headwall	2.7	3.2
		Median/Barrier	0.5	0.7
		Snow Embankment	0.1	0.2
		Earth Embankment/ Rock Cut/Ditch	11.1	17.1
		Fire Hydrant	0.0	0.0
		Guardrail End Treatment	0.7	1.4
		Other Fixed Object	1.6	2.8
	Non Collision:			
		Overturned	3.2	4.1
		Fire/Explosion	0.0	0.0
		Submersion	0.2	0.4
		Ran Off Roadway	3.6	4.2
		Other Non-Collision	0.8	0.2

TABLE 9. CHARACTERISTICS OF FATAL SPEED-RELATED ACCIDENTS (1993-1995) (continued)

VARIABLE	CATEGORY	PERCENT OF TOTAL ALL ACCIDENTS	PERCENT OF TOTAL SPEED-RELATED ACCIDENTS
Contributing Factors	Human:		
	Unsafe Speed	25.7	100.0
	Failure to Yield Right of Way	19.5	8.0
	Following Too Closely	0.4	0.0
	Improper Passing	2.6	3.5
	Disregard Traffic Control	4.6	0.6
	Improper Turn	0.6	0.0
	Alcohol Involvement	21.9	33.7
	Drug Involvement	1.2	1.9
	Sick	0.3	0.2
	Fell Asleep	4.5	1.8
	Lost Consciousness	1.1	0.2
	Driver Inattention	18.9	5.8
	Distraction	1.6	0.7
	Disability	0.4	0.0
	Vehicular:		
	Defective Brakes	1.0	0.9
	Lighting Defective	0.5	0.4
	Steering Defective	0.4	0.2
	Tire Problem	2.5	4.1
	Tow Hitch Defective	0.1	0.2
	Load Problem	0.3	0.0
	Environmental:		
	Animal Action	0.5	0.5
	Glare	0.8	0.0
	View Obstruction	4.4	2.7
	Debris in Roadway	0.3	0.2
	Improper/Non Working Traffic Control	0.0	0.0
	Defective Shoulder	0.5	0.5
	Hole/Bump	0.4	0.2
	Road Construction	0.3	0.5
	Improperly Parked Vehicle	0.2	0.0
	Fixed Object	0.1	0.0
	Slippery Surface	10.1	16.4
	Water Pooling	1.7	1.9

TABLE 10. PERCENT OF SPEED-RELATED ACCIDENTS BY COUNTY (1993-1995)

COUNTY	PERCENT OF TOTAL ALL ACCIDENTS	PERCENT OF TOTAL FATAL ACCIDENTS
Adair	6.4	23.1
Allen	7.9	20.0
Anderson	8.5	23.1
Ballard	11.8	12.5
Barren	6.6	26.5
Bath	8.5	44.4
Bell	8.3	37.5
Boone	9.6	25.0
Bourbon	10.2	23.8
Boyd	8.1	46.7
Boyle	6.8	22.2
Bracken	5.9	33.3
Breathitt	8.3	35.7
Breckinridge	8.7	33.3
Bullitt	7.9	34.3
Butler	4.7	28.6
Caldwell	7.3	33.3
Calloway	5.9	18.2
Campbell	6.3	14.3
Carlisle	7.7	12.5
Carroll	12.8	21.1
Carter	11.3	35.0
Casey	13.2	16.7
Christian	9.7	33.3
Clark	8.8	16.7
Clay	8.9	18.2
Clinton	2.6	11.1
Crittenden	6.2	40.0
Cumberland	4.9	0.0
Daviess	5.7	10.0
Edmonson	19.0	37.5
Elliott	21.0	40.0
Estill	13.3	50.0
Fayette	4.9	15.7
Fleming	5.4	16.7
Floyd	16.1	21.6
Franklin	10.5	21.4
Fulton	6.6	16.7
Gallatin	22.9	55.6
Garrard	18.5	41.7

TABLE 10. PERCENT OF SPEED-RELATED ACCIDENTS BY COUNTY (1993-1995) (continued)

COUNTY	PERCENT OF TOTAL	
	ALL ACCIDENTS	FATAL ACCIDENTS
Grant	15.6	15.4
Graves	7.2	25.9
Grayson	9.9	22.7
Green	5.3	0.0
Greenup	9.1	38.5
Hancock	7.9	20.0
Hardin	6.8	11.1
Harlan	13.9	38.1
Harrison	6.1	50.0
Hart	4.4	31.6
Henderson	7.3	11.1
Henry	17.9	33.3
Hickman	12.0	40.0
Hopkins	10.1	52.6
Jackson	15.2	50.0
Jefferson	3.7	24.3
Jessamine	7.3	21.4
Johnson	9.2	25.0
Kenton	6.9	19.2
Knott	11.9	21.1
Knox	14.6	22.7
Larue	10.6	30.8
Laurel	11.1	28.2
Lawrence	10.7	20.0
Lee	10.6	20.0
Leslie	16.1	25.0
Letcher	12.8	15.8
Lewis	7.3	0.0
Lincoln	15.7	28.6
Livingston	8.3	12.5
Logan	7.0	18.8
Lyon	14.4	50.0
McCracken	5.4	15.6
McCreary	22.7	25.0
McLean	12.6	28.6
Madison	12.6	48.5
Magoffin	13.5	54.5
Marion	9.0	25.0
Marshall	6.4	9.1
Martin	15.5	25.0

TABLE 10. PERCENT OF SPEED-RELATED ACCIDENTS BY COUNTY (1993-1995)

COUNTY	PERCENT OF TOTAL	
	ALL ACCIDENTS	FATAL ACCIDENTS
Mason	4.9	18.2
Meade	10.8	33.3
Menifee	16.3	42.9
Mercer	10.0	42.9
Metcalfe	8.2	33.3
Monroe	9.2	50.0
Montgomery	6.0	25.0
Morgan	14.7	25.0
Muhlenberg	10.6	9.5
Nelson	9.0	27.8
Nicholas	11.6	25.0
Ohio	10.0	27.3
Oldham	6.2	60.0
Owen	21.4	0.0
Owsley	7.0	20.0
Pendleton	11.1	16.7
Perry	8.7	27.3
Pike	21.2	33.9
Powell	6.5	20.0
Pulaski	6.8	16.1
Robertson	10.3	0.0
Rockcastle	10.3	37.0
Rowan	10.4	27.3
Russell	4.8	30.0
Scott	8.9	26.9
Shelby	8.7	25.0
Simpson	5.7	21.4
Spencer	15.3	14.3
Taylor	4.9	5.6
Todd	11.9	36.4
Trigg	8.4	16.7
Trimble	13.0	66.7
Union	12.6	46.2
Warren	8.8	24.5
Washington	9.0	33.3
Wayne	9.5	25.0
Webster	6.8	10.0
Whitley	13.3	22.6
Wolfe	11.3	11.1
Woodford	11.9	16.7

TABLE 11. SPEED-RELATED ACCIDENTS BY HIGHWAY TYPE (1992-1994)

TYPE OF ROADWAY		LENGTH	NUMBER OF ACCIDENTS	CRITICAL NUMBER*	ACCIDENT RATE**
Rural					
	Two Lane	23,351	11,380	3	31.2
	Three Lane	33	40	5	16.9
	Four Lane, Divided				
	Non-Interstate/Parkway	388	523	5	11.7
	Four Lane, Undivided	24	42	6	9.5
	Interstate	528	939	6	6.5
	Parkway	567	392	5	8.9
Urban					
	Two Lane	1,863	2,659	6	20.2
	Three Lane	30	103	9	26.7
	Four Lane, Divided				
	Non-Interstate/Parkway	368	1,269	9	14.5
	Four Lane, Undivided	216	920	10	20.2
	Interstate	231	1,050	11	7.4
	Parkway	51	75	6	13.8

* Number of accidents in three-year period in one-mile length.

** Accidents/100 million vehicle miles.

TABLE 12. ACCIDENTS BEFORE AND AFTER SPEED LIMIT CHANGE

LOCATION			SPEED LIMIT (MPH)		DATE OF	TIME	NO. ACCIDENTS TOTAL/I-F**	
COUNTY	ROUTE	MILEPOINTS	BEFORE	AFTER	CHANGE	PERIOD*	BEFORE	AFTER
Anderson	KY 3359	0.0-1.1	45	35	3/93	3.0	5/1	8/2
Ballard	US 60	7.2-7.3	55	45	9/94	2.0	0/0	0/0
	KY 121	7.8-8.3	55	45	7/89	1.5	6/2	5/1
Barren	US 31E	12.1-12.8	55	45	6/94	2.0	10/3	15/2
Boone	KY 14	2.2-3.7	55	45	5/92	3.0	20/8	12/6
	KY 212	0.0-1.1	55	45	7/94	2.0	32/3	28/3
	KY 237	1.5-3.1	55	45	9/95	1.0	12/4	19/7
	KY 536	13.2-14.2	35	45	12/94	1.5	5/1	17/7
	KY 717	0.0-0.4	55	45	5/92	3.0	14/7	15/2
	KY 2846	0.0-1.3	55	45	5/90	2.0	2/1	2/0
Bourbon	US 460	7.7-8.5	55	45	11/92	3.0	5/1	6/1
Boyd	US 23	15.0-16.6	35	45	3/90	2.0	48/15	49/14
	KY 1012	0.0-2.4	55	45	3/90	2.0	29/10	26/7
Bracken	KY 10	20.7-20.8	35	25	12/90	2.5	3/0	1/0
	KY 10	13.5-13.8	25	35	2/92	3.0	1/0	0/0
	KY 10	14.2-14.6	25	35	2/92	3.0	8/3	7/0
Bullitt	KY 61	1.5-2.2	55	45	12/90	3.0	3/1	3/2
	KY 1319	0.0-2.9	55	45	12/91	3.0	22/9	20/11
	KY 1526	13.7-17.6	55	45	1/94	2.0	17/7	10/4
Caldwell	US 62	5.2-5.3	55	45	12/94	1.5	0/0	1/0
	US 62	5.4-5.8	45	35	12/94	1.5	4/1	3/2
Calloway	KY 1550	4.9- 6.4	55	45	4/95	1.5	1/1	7/2
Campbell	US 27	11.8-12.4	55	45	9/93	3.0	21/9	37/9
	KY 1998	2.9-3.4	55	45	12/94	1.5	2/1	2/0
Casey	US 127	13.5-14.0	55	45	4/92	3.0	10/5	1/0
Christian	KY 115	0.0-2.1	55	45	7/95	1.0	8/2	22/7
	KY 272	9.1-9.3	55	45	7/95	1.0	0/0	1/0
	KY 272	9.4-9.5	45	35	7/95	1.0	11/6	15/3
	KY 695	10.4-10.9	55	45	9/90	2.0	1/0	4/3
Daviess	KY 764	4.5-5.3	55	45	6/95	1.0	1/0	1/0
	KY 1456	2.8-5.5	45	35	7/93	3.0	19/5	20/8
Edmonson	KY 70	9.5-11.0	55	45	8/91	3.0	13/7	19/4
	KY 259	12.1-12.5	55	45	12/91	3.0	14/11	13/5
Fayette	KY 1927	2.2-3.8	55	45	5/94	2.5	4/3	4/2
Fleming	KY 11	5.6-5.9	35	45	1/93	3.0	2/0	3/0
Floyd	KY 3	3.9-9.7	55	35	12/90	2.0	16/7	8/2
	KY 114	10.7-12.2	55	45	8/95	1.0	22/9	17/8

TABLE 12. ACCIDENTS BEFORE AND AFTER SPEED LIMIT CHANGE (continued)

LOCATION			SPEED LIMIT (MPH)		DATE OF CHANGE	TIME PERIOD*	NUMBER OF ACCIDENTS	
COUNTY	ROUTE	MILEPOINTS	BEFORE	AFTER			BEFORE	AFTER
Franklin	US 460	0.5-1.8	55	45	4/90	2.0	12/2	18/8
	KY 420	0.0-0.5	55	45	1/93	3.0	12/3	8/2
Garrard	KY 52	5.9-7.1	55	45	4/94	2.0	10/6	6/4
Grant	US 25	11.2-12.0	35	25	4/94	2.0	16/3	27/5
Graves	US 45	11.0-12.0	55	45	5/95	1.0	0/0	2/2
	KY 121	11.0-12.1	55	45	11/93	2.5	25/4	29/7
Grayson	US 62	22.3-22.7	55	45	12/94	1.5	6/3	4/2
	KY 259	14.2-14.6	55	45	12/94	1.5	0/0	0/0
Hardin	KY 222	4.7-6.8	55	45	8/92	3.0	22/10	12/1
	KY 224	5.1-5.4	55	45	11/90	2.0	2/0	1/0
	KY 224	5.5-6.0	45	35	11/90	2.5	4/0	4/2
	KY 447	0.7-2.1	55	45	12/94	1.5	10/4	8/6
	KY 1136	2.8-3.4	55	45	8/92	3.0	1/0	1/0
Harrison	KY 32	9.3-10.8	45	35	11/95	1.0	10/3	5/3
	KY 36	13.0-13.6	55	45	12/94	1.5	6/3	11/4
	KY 1842	0.0-0.3	45	35	6/95	1.0	1/0	1/0
Hart	US 31W	10.8-12.4	35	45	10/94	1.5	6/2	10/2
Jefferson	US 31E	3.7-4.4	55	50	7/94	2.0	37/9	37/11
	KY 146	8.7-8.8	55	45	4/93	3.0	6/4	4/0
	KY 155	10.6-11.4	50	45	1/92	1.0	34/14	45/16
	KY 1447	5.2-6.2	55	45	9/95	1.0	30/7	20/5
Johnson	KY 40	11.7-13.3	40	35	10/95	1.0	7/4	4/2
Kenton	KY 16	9.4-10.1	45	35	11/91	3.0	45/19	48/18
	KY 17	0.0-3.6	55	45	10/95	1.0	14/4	13/5
	KY 177	13.3-14.2	55	45	4/94	2.0	6/1	10/5
	KY 2045	0.0-1.0	55	35	8/94	2.0	1/0	3/2
	KY 2045	1.0-1.3	45	35	8/94	2.0	3/1	2/0
Knott	KY 550	21.1-21.7	45	35	4/90	2.0	6/2	4/1
Laurel	KY 80	12.0-13.1	55	45	3/95	1.5	8/4	9/5
	KY 192	18.0-19.3	55	45	3/95	1.5	65/13	83/22
Letcher	KY 7	11.2-11.5	55	45	9/92	3.0	3/1	0/0
Lincoln	KY 698	11.0-11.9	55	45	2/95	1.5	0/0	2/0
Livingston	US 60	27.9-28.4	55	45	7/95	1.0	0/0	1/0
McCracken	US 45	6.9-7.4	45	35	4/95	1.0	41/13	74/14
	US 60	9.6-13.3	55	45	4/95	1.0	210/45	205/52
	KY 999	0.0-4.2	55	45	2/92	3.0	8/1	8/4
	KY 1286	0.0-2.2	55	45	1/95	1.5	4/1	2/1
	KY 1286	2.2-2.9	55	35	1/95	1.5	3/0	5/1

TABLE 12. ACCIDENTS BEFORE AND AFTER SPEED LIMIT CHANGE (continued)

LOCATION			SPEED LIMIT (MPH)		DATE OF CHANGE	TIME PERIOD*	NUMBER OF ACCIDENTS	
COUNTY	ROUTE	MILEPOINTS	BEFORE	AFTER			BEFORE	AFTER
Marshall	KY 58	14.2-14.8	55	45	4/92	3.0	1/0	1/0
	KY 348	7.8- 8.1	55	45	5/95	1.0	2/2	1/0
Mason	US 62	11.8-12.4	55	45	10/94	1.5	0/0	3/1
	KY 10	0.0-0.3	35	25	12/90	2.5	5/1	6/1
	KY 10	10.3-11.9	55	45	9/93	2.5	7/6	7/2
	KY 1448	6.1-7.0	55	45	2/92	3.0	2/0	9/1
	KY 3170	0.0-0.8	55	45	2/94	2.5	0/0	1/1
Mercer	US 127	5.5-5.7	55	45	8/91	3.0	9/3	14/9
Muhlenberg	US 431	17.7-18.1	55	45	4/95	1.0	2/2	4/0
Nelson	KY 245	3.3-4.0	55	45	8/93	3.0	17/3	21/4
	KY 1430	0.7-1.0	55	45	3/92	3.0	0/0	2/1
Ohio	US 231	11.8-12.4	55	45	5/91	3.0	11/7	26/12
Pendleton	US 27	16.8-17.4	55	45	1/94	3.0	24/9	13/6
Perry	KY 15	9.8-10.2	55	45	12/94	1.5	0/0	0/0
	KY 15	10.2-10.4	55	35	12/94	1.5	2/0	0/0
	KY 15	10.4-11.2	55	45	12/94	1.5	22/7	13/9
Pike	US 23	5.8-6.4	55	45	8/94	2.0	8/5	7/1
	US 23	31.2-31.9	55	45	2/94	2.5	34/17	42/10
	KY 122	10.4-11.0	55	45	8/93	3.0	6/3	14/8
	KY 3495	0.0-0.9	45	35	7/94	2.0	2/0	5/0
Pulaski	KY 39	0.8-1.4	55	45	11/94	2.0	13/5	9/4
	KY 90	3.1-4.2	55	45	5/95	1.0	4/2	2/1
	KY 1577	0.0-3.8	55	45	4/93	3.0	24/12	46/19
	KY 3260	0.0-3.2	55	45	6/95	1.0	1/0	3/0
Rowan	KY 519	8.4-9.0	55	45	12/95	1.0	5/2	3/2
Trigg	KY 274	0.0-1.2	55	45	4/94	2.5	5/2	10/2
Washington	US 150	10.9-11.4	55	45	8/92	3.0	1/0	0/0
Woodford	US 60	9.4-9.8	55	45	4/94	2.0	20/9	43/7
	US 62	5.4-5.9	55	45	4/94	2.0	7/2	4/3

* Number of years of before and after data.

** Number of total accidents on the route between the milepoints in the given time period before and after the date of change/number of total accidents that involved an injury or fatality.

TABLE 13. COMPARISON OF ACCIDENT DATA FOR ADJACENT SECTIONS OF INTERSTATES WITH 65 MPH AND 55 MPH SPEED LIMITS

COUNTY	ROUTE	MILEPOINTS	SPEED LIMIT (MPH)	AVERAGE DAILY TRAFFIC	ACCIDENT RATE*		
					ALL	FATAL	INJURY
Fayette	I 75	97.5-104.6 and 118.0-120.792	65	45,300	72	0.44	22
		104.6-118.0	55	60,200	56	0.48	14
	I 64	71.0-74.729 and 81.5-89.48	65	26,600	44	0.62	17
Jefferson	I 64	0.0-0.852	50	62,000	224	6.93	62
		0.852-17.4	55	77,900	150	0.57	33
		17.4-23.974	65	43,100	53	0.97	16
	I 65	123.115-124.0	65	61,100	38	0	15
		124.0-135.24	55	117,100	118	0.35	28
		135.24-137.133	50	118,400	352	0	77
	I 71	0.0-6.0	55	52,400	99	0.29	24
		6.0-11.315	65	34,900	63	0.49	18
	I 264	0.0-23.055	55	83,200	137	0.38	32
	KY 841	0.0-10.24	55	36,900	136	0.48	34
	I 265	10.24-14.0	55	60,500	100	1.20	34
		14.0-34.758	65	42,800	104	0.31	33
Boone	I 75	172.544-175.364	65	64,700	82	1.00	21
		175.364-183.312	55	89,000	107	0.39	30
	I 275	1.582-13.895	65	29,400	50	0	16
Campbell	I 275	73.0-77.579	55	66,800	64	0.30	21
	I 471	0.0-5.099	55	93,800	78	0.19	20
Kenton	I 75	183.312-191.777	55	118,200	191	0.18	47
	I 275	0.0-1.0	55	50,700	214	0	45
		1.0-1.583	65	50,700	74	0	31
		77.579-83.78	55	82,300	136	0.18	43

* Accidents per 100 million vehicle miles.

TABLE 14. MAXIMUM SPEED LIMITS (OPTIMUM CONDITIONS BASED ON ENGINEERING STUDY*)

ROAD DESCRIPTION	SPEED LIMIT (MPH)		
		MAXIMUM	
	EXISTING	CARS	TRUCKS
Rural Interstate	65	70	65
Urban Interstate	55	65	60
Urban Interstate	50	55	50
Parkway; Four Lane	65	70	65
Parkway; Two Lane	55	60	55
Rural Four Lane Non-Interstate or Parkway	55	60	55
Rural Two Lane Full Width Shoulder (Minimum 10-foot Paved)	55	60	55
Rural Two Lane Without Full Width Shoulder	55	55	55

* These speed limits represent maximum limits, based on operating speeds, for the various roadway types for the optimum conditions. The speed limit for a specific location should be based on an engineering study. This study would include an analysis of the following factors: roadway design elements such as design speed, sight distance, curvature and superelevation, gradients, access control, and passing sight distance; roadside appurtenances and obstacles including clear zones; operational features such as sign location, pavement markings, and traffic signals; and an analysis of the accident history.

APPENDIX A

REVIEW OF LITERATURE

1. Castle, Gilbert H. III, "The 55 mph Speed Limit: A Cost/Benefit Analysis," Traffic Engineering, January 1976.

A system of equations was used to analyze the 55 mph speed limit using 70 mph as the comparison speed. The cost of lost time was compared to the value of gas, injuries, and lives saved by the lower speed. The study showed that the 55 mph limit was not feasible based on a cost/benefit analysis.

2. Chowdhury, Mashrur A.; Warren, Davey L.; and Bissell, Howard, "Analysis of Advisory Speed Setting Criteria," Public Roads, Vol. 55, No. 3, December 1991.

Curve geometry, spot speeds, and ball-bank readings were measured at 28 curves in Maryland, Virginia, and West Virginia. It was noted that the absence of adequate criteria for determining advisory speeds leads to nonuniform and subjective application which is a threat to unfamiliar drivers. At most curves, the advisory speeds were well below the traffic speed. There was a noticeable variation in the application of the ball-bank criteria from state to state, and in most cases, the ball-bank criteria resulted in low, unrealistic advisory speeds. The nomograph and design speed formula were only slightly better than the ball-bank indicator. The use of sample vehicular speeds was suggested as an alternative approach.

3. Cirillo, Julie Anna, "Interstate System Accident Research, Study II, Interim Report II," Public Roads, August 1968, Vol.35, No. 3.

This report studied the effects of speed variance, level of enforcement, and the presence of interchanges on accident involvement rates. The data used for this analysis were collected on interstate highways by twenty state highway departments. The following conclusions were drawn from this study:

a. As the speed of a vehicle varies from the mean speed of traffic, the chance of the vehicle being involved in an accident increases.
b. The level of enforcement has little or no effect on the mean speed or on accident rates.
c. Proximity to interchanges, especially in urban areas, significantly increases accident rates.
d. The accident involvement rate is lowest at speeds 10 mph above the average, which is around the 85th percentile speed.

4. Dawson, Carl, "Effectiveness of Speed Limits at Controlling Driving Speeds Along Residential Collector Streets," News of the South, Fall 1995.

Before and after speed studies were conducted on five residential collector streets in North Carolina municipalities. The speed limits were changed from an unposted statutory 35 mph limit to a posted lower limit. The study found that posting lower speed limits failed to cause a reduction in driving speeds.

5. "Design Speed, Operating Speed, and Posted Speed Survey," Texas Transportation Institute, Texas A&M University, May 1995.

This report was a summary of surveys that were sent to each TxDOT district, state DOT, and various counties and cities across the country. The results of the survey included the following:

a. Less than 35 percent of the states have procedures in the design process to review the design speed after a roadway is completed.
b. Approximately one half said that a change over time from a high functional class to a lower functional class influences the selection of a design speed.
c. Only two of 38 design engineers knew of a lawsuit in their state that related to a posted speed limit exceeding the design speed.
d. Approximately 65 percent of the states have a facility where the operating speed or posted speed exceeded the design speed. Of those, 85 percent said actions were taken to reduce speeds or warn drivers.
e. The predominate method used to determine speed limits is the 85th percentile speed. Other significant factors are state mandatory maximum limits, roadside development, accident experience, and roadway geometry.

6. Elmberg, Curt M. and Michael, Harold L., "Effect of Speed Limit Signs on Speed on Suburban Arterial Streets," Bulletin 303, Highway Research Board, 1961.

Speed studies were conducted on five suburban streets in Indiana, one of which did not have a posted speed limit. It was noted that when speed limits are determined from the 85th percentile, travel speeds are not effected. The report concluded that most drivers select a speed which they consider reasonable and safe, regardless of regulations.

7. Enustun, N. and Yang, A. H., "The 55 mph Limit: Effect on Accidents," Traffic Engineering, August 1975.

The study suggested that the decrease in speeds and accident rates was not directly caused by the 55 mph speed limit. It was noted that the trends started the same time as the 1973 oil embargo, and this was before the speed limit change. The conclusion was that the judgement of the driver is the most important factor in highway speeds.

8. Esterlitz, Joy R.; Baum, Herbert M.; Zador, Paul; and Penny, Maria, "Different Speed Limits For Cars And Trucks: Do They Affect Vehicle Speeds?" Transportation Research Record No. 318, 1991.

A speed study was conducted for cars and trucks on rural interstates in four states. California and Illinois were two states where the speed limit was 65 mph for cars and 55 mph for trucks. The locations with 65 mph speed limits for all vehicles were in Arizona and Iowa. The study indicated that the average truck speeds were one to three mph lower in states with the differential speed limit. There was no significant difference in speed variance between states.

9. Ferguson, W. S., "Truck Speeds in Virginia - A Study to Evaluate the Adequacy and Advisability of Differential Truck-Car Speed Limits," Virginia Highway Research Council, Charlottesville, VA, 1968.

This report examined car and truck speeds collected in Virginia where the speed limit was 65 mph for cars and 50 mph for trucks. The observed speed differential ranged between eight and ten mph as opposed to the posted differential of 15 mph. The compliance of cars and trucks to their respective limits was very low.

10. Fitzpatrick, Kay; Krammes, Raymond A.; and Fambro, Daniel B., "Design Speed, Operating Speed, and Posted Speed Relationships," ITE Journal, 1997.

The data were collected for this report through mail-out surveys, personal interviews, and field studies. The following guidelines were developed based on this study.

a. Speed limits should be set by an engineer based on spot speed studies and the 85th percentile operating speeds.

b. The 85th percentile speed is the appropriate posted speed limit for roadway sections that have an inferred design speed less than the 85th percentile speed.
c. Arbitrarily setting lower speed limits due to a lower inferred design speed is not effective.
d. If a section of roadway has a posted speed greater than the inferred design speed and there is a safety concern at a location, warning signs should be installed.
e. New or reconstructed roadways should be designed for speeds consistent with the highest anticipated posted speed limit.

11. Freedman, Mark, and Williams, Allan F., "Speeds Associated With 55 mph and 65 mph Speed Limits In Northeastern States," ITE Journal, February 1992.

Speed data for cars and tractor-semitrailers were collected on rural interstate highways in eleven northeastern states. Mean speeds for cars were two to five mph higher and 85th percentile speeds in the states with 65 mph speed limits were one to six mph higher than in states with 55 mph speed limits. Mean and 85th percentile speeds for trucks in states with 65 mph speeds were three to seven mph higher than in states with a uniform 55 mph limit. The truck speeds in states with a differential speed limit were similar to those in states with a uniform 55 mph speed limit. It was noted that 55 mph speed limits lower speeds, even when neighboring states have 65 mph limits.

12. Garber, Nicholas J. and Gadiraju, Ravi, "Impact of Differential Speed Limits on the Speed of Traffic and the Rate of Accidents," Transportation Research Record 1375, 1992.

This report examined the effects of differential speed limits (65 mph for cars and 55 mph for trucks) on vehicle speeds and accident patterns. The study was conducted on test and control sites in California, Maryland, Virginia, and West Virginia. Speed and accident data were collected before and after the speed limit change. The report concluded that:

a. There is no evidence that the increase in speed limit for passenger cars resulted in a significant increase in injury, fatal, and overall accident rates.
b. There is no evidence that the increase in speed limit for passenger cars resulted in a significant increase in the mean speed of trucks.

c. There is no evidence that the differential speed limit is more effective than the uniform speed limit in reducing the safety impact of increasing the maximum speed limit.
d. There is evidence indicating that the differential speed limit increases the interaction among vehicles in a traffic stream as a result of the increase in speed variance.

13. Garber, Nicholas J., "Speed Variance and Its Influence on Accidents," School of Engineering and Applied Science, University of Virginia, July 1988.

A study was conducted to determine how speed variance is related to traffic and geometric characteristics and its effect on accident rates. Data were collected on interstates and other arterials in Virginia over a four year period. This study led to the following conclusions:

a. The difference between the speed limit and the design speed has a significant effect on speed variance, which tends to be a minimum when the speed limit is within 5 to 10 mph of the design speed.
b. Speed variance decreases with increasing average speed.
c. Average speed increases when design speed increases regardless of the posted speed limit.
d. Accident rates increase with increasing speed variance.
e. Accident rates do not always increase with increasing average speed.

14. Graham, Sandy, "Will Higher Speed Limits Kill?" Traffic Safety, May/June 1996.

This article discussed issues concerning states having the authority to set speed limits. There are two sides to the speed limit debate that take opposite views. The National Safety Council favors lower limits, and urges states raising speed limits to adopt additional measures which include the following.

a. Primary enforcement of safety belt laws.
b. A 0.08 blood alcohol standard for intoxication.
c. Zero alcohol tolerance laws for drivers under age 21.
d. Tougher enforcement of impaired driving laws.
e. Graduated licensing for beginning drivers.
f. Bans on radar detectors.

15. **"Guidelines for Determining Where the 55 mph Speed Limit Could be Raised," Special Technical Council Task Force, ITE Journal, January 1987.**

A task force was formed to develop guidelines to be used in selecting highway segments where the 55 mph speed limit could be raised. The criterion was that the changes would not cause a change in the number of highway accidents or an increase in accident severity. The task force recommended the following requirements for highway segments where the speed limit may be changed:

a. Freeway segments only with full control of access and complying with freeway design standards and a design speed equal to or greater than the proposed speed limit.
b. Level of service C or higher with a traffic density less than 30 passenger car equivalents per mile per lane in the peak hour.
c. A minimum segment length of 10 miles.
d. An engineering and traffic study including analysis of compliance with freeway design standards, accident analysis, capacity and level of service calculations, roadway features, traffic characteristics, enforcement status, and any need to exclude specific vehicles.
e. A monitoring study and analysis.

16. Hall, J. W. and Dickinson, L. V., "An Operational Evaluation of Truck Speeds on Interstate Highways," University of Maryland, College Park, MD, 1974.

This study determined the effectiveness, desirability, and operational implications of differential speed limits on interstates in Maryland. The report made the following observations.

a. In general, the difference between car and truck speeds was less than the posted 10 mph differential.
b. Locations with differential speed limits had a higher car compliance and a lower truck compliance than locations with uniform speed limits.
c. The truck accident rate decreased as truck speeds increased.
d. There was no relationship between truck accidents and the posted differential speed limit.

17. **Harkey, David L. and Mera, Ruben, "Safety Impacts of Different Speed Limits on Cars and Trucks," Federal Highway Administration, Report No. FHWA-RD-93-161, May 1994.**

This report compared the effects of uniform and differential speed limits on safety and traffic operations on Interstate highways. Speed and accident data were collected at locations representative of all rural speed limits that were in use during the study period (65/65 mph, 65/60 mph, and 65/55 mph). The report made the following conclusions:

a. Mean travel speeds of cars are not affected by the type of speed limit.
b. Mean travel speeds of trucks are the same with the 65/65 mph and 65/60 mph speed limits, but lower with the 65/55 mph limits.
c. Speed variance for trucks increased with higher truck limits (65/65 mph), but the variance of the total traffic stream increased at locations with differential speed limits (65/60 mph and 65/55 mph).
d. Locations with uniform speed limits had higher proportions of truck striking car accidents, while locations with differential limits had a higher proportion of car striking truck accidents for rear-end collisions.
e. There was no difference in fatal accident proportions, and little difference in overall accidents or accident severity between the different types of speed limits.

18. Harkey, David L., Robertson, H. Douglas, and Davis, Scott E., "Assessment of Current Speed Zoning Criteria," Transportation Research Record 1281, 1990.

A study of speed zoning criteria was sponsored by FHWA. Data were collected at 50 locations in the states of North Carolina, Delaware, Colorado, and Arizona. The sites included both rural and urban roadways with posted speed limits ranging from 25 to 55 mph. The data were analyzed to determine compliance with posted limits, travel speed characteristics, and the point of minimum accident risk. The findings of this study include the following:

a. Mean speeds exceeded the posted speed limit by one to eight mph.
b. 85th percentile speeds were six to 14 mph over the posted limits.
c. Cars travel one to five mph faster than trucks in all of the speed zones studied.
d. Over 70 percent of free-flow drivers were traveling over the speed limit.
e. The speed at which accident risk was minimized was at the 90th percentile of the observed travel speeds.

19. "Implications of the Mandatory 55 mph National Speed Limit," ITE Metropolitan Section of New York and New Jersey Subcommittee on 55 mph Speed Limit, Traffic Engineering, February 1977.

The committee was established to study the 55 mph speed limit in response to an effort by Congress to make the limit permanent. The study determined that a combination of speed reduction, change in public driving attitude, and an emphasis on highway safety had caused a reduction in accidents. The primary factor was speed reduction. It was noted that a reduction in speed occurred on all highways, including those where the speed limit was not lowered. The committee recommended that an agency be mandated to raise and evaluate the 55 mph speed on selected highways.

20. Jondrow, James M.; Bowes, Marianne; and Levy, Robert A., "Optimal Speed Limit: A New Approach," Transportation Research Record 887, 1982.

This paper describes a method of determining an optimum speed limit. This method considers the travel speeds in the absence of speed limits and a ratio of the driver costs of high speed to the public costs of high speed. These values are combined to determine the optimum speed limit.

21. Labrum, Willard D., "The 55 mph Speed Limit and Fatality Reduction in Utah," Traffic Engineering, September 1976.

The analysis of variance technique was used to study the effects of the 55 mph speed limit in Utah. The conclusion of the analysis that the 55 mph limit and other factors caused a significant reduction in fatalities on highways where the speed limit was lowered.

22. Lave, Charles, "Higher Speed Limits May Save Lives," Access, Number 7, Fall 1995.

A study was conducted to determine how the 65 mph speed limit affected the statewide fatality rates. It was found that the average fatality rates in states with the 65 mph limit dropped 3.6 percent more than those in the states that retained the 55 mph limit. The conclusion was that the higher speed limit made the safer interstate highways more attractive causing a reallocation of traffic and highway patrol resources. The positive effects of this reallocation were greater than any negative effects of the higher speeds.

23. "Manual on Uniform Traffic Control Devices," Federal Highway Administration, 1988.

The manual states that speed limits should be based on an engineering and traffic investigation which considers the following factors:

a. Road surface characteristics, shoulder condition, grade, alignment, and sight distance.
b. The 85th percentile speed and pace speed.
c. Roadside development and culture, and roadside friction.
d. Safe speed for curves or hazardous locations within the zone.
e. Parking practices and pedestrian activity.
f. Reported accident experience for a recent twelve month period.

24. Matyas, C. A. and Henberger, J. C., American City, January 1950.

This study evaluated the effectiveness of speed limits in controlling driving speeds. It was found that drivers consistently ignore the posted speed limits and drive at speeds which they consider reasonable, convenient, and safe under existing conditions.

25. "Maximum Speed Limits," Indiana University, October 1970.

This study was conducted to identify and evaluate methods used to set speed limits. The report recommended that speed limits be based on the 85th percentile speed. A survey of cities and states revealed that the following items were most frequently considered when setting speed limits.

a. 85th percentile speed,
b. ball bank indicator data,
c. accident experience,
d. length of zone and adjacent zone,
e. design speed,
f. pace,
g. spacing of intersections and driveways,
h. traffic volume,
i. presence and condition of shoulders,
j. average test run speed,
k. presence of pedestrians,
l. traffic signals and controls.

26. **McKnight, A. James and Klein, Terry M., "Relationship of 65-mph Speed Limit to Speeds and Fatal Accidents," Transportation Research Record No. 1281, Transportation Research Board, 1990.**

Accident and speed data were collected for the five years before the speed limit changed to 65 mph and for the following year. The study included nine states that had raised speed limits and seven that had retained the 55 mph limit. The report made the following conclusions.

a. Increasing the speed limits to 65 mph coincided with a 48 percent increase in the number of speeders on rural interstates and a 22 percent increase in fatal accidents.
b. There was no increase in the number of speeders or fatal accidents on 55 mph highways in 65 mph states.
c. In the 55 mph states, fatal accidents increased by 10 percent on rural interstates and by 13 percent on other 55 mph highways.
d. Raising the speed limit on rural interstates may benefit safety by diverting speeders to the highways best able to accommodate them.

27. "Municipal Speed Enforcement Programs Evaluated," National Highway Traffic Safety Administration, Traffic Tech, Number 109, November 1995.

A six month study was conducted in three California communities to determine the effect of speed enforcement. Special programs, which included public awareness campaigns and extra enforcement, were conducted in Modesto and San Bernadino. The third community did not implement special enforcement and served as a comparison site. The speed enforcement programs had the following benefits.

a. Public awareness and support for enforcement was increased.
b. Speed and speed-related crashes were reduced.
c. Individuals wanted for other offenses were apprehended as a result of enforcement stops.
d. Crimes in the area of the enforcement effort were deterred.

28. Ogawa, T.; Fisher, E. S.; and Oppenlander, J. C., "Driver Behavior Study - Influence of Speed Limits on Spot Speed Characteristics on Contiguous Rural and Urban Areas," Bulletin 341, Highway Research Board, 1962.

Speed studies were conducted on urban and rural sections of US 150 in Illinois. Analyses showed that speed limit signs had little effect in regulating the tendency or variability of vehicle speeds.

29. Pant, Prahlad D.; Adhami, Jamal A.; and Niehaus, John C., "Effects of the 65 mph Speed Limit on Traffic Accidents in Ohio," Transportation Research Record 1375, 1992.

A study was conducted to determine the effects of the 65 mph speed limit in Ohio. The study included 65 mph rural interstates, 55 mph rural interstates, and 55 mph rural non-interstate highways. A "before" period was defined as the 36 months before July 1987, and the "after" period consisted of the 36 months after July 1987. The statistical analysis showed that the mean fatal accident rate on the highways posted at 65 mph was not adversely affected by the 65 mph speed limit.

30. Parker, M. R., Jr., "Effects of Raising and Lowering Speed Limits," Federal Highway Administration, Report No. FHWA-RD-92-084, October 1992.

A study was conducted to determine the effects of raising and lowering speed limits. Speed and accident data were collected in 22 states at 100 sites before and after speed limits were changed. Before and after data were simultaneously collected at comparison sites where the speed limits were not changed. All of the sites were on nonlimited access rural and urban highways. The study's findings included the following:

a. Posted speed limits were set on the average at the 45th percentile speed or below the average speed of traffic.
b. Speed limits were posted on the average between five and 16 mph below the 85th percentile.
c. Lowering speed limits by 5, 10, 15, or 20 mph at the study sites had a minor effect on vehicle speeds.
d. Posting lower speed limits does not decrease motorist's speeds.
e. An increase in the posted limit did not create a corresponding increase in travel speeds.
f. The average change in speeds at all locations was less than 1.5 mph.
g. Raising speed limits in the area of the 85th percentile has a beneficial effect on the percentage of drivers complying with the posted limits.
h. Lowering speed limits to the 33rd percentile speed gives a noncompliance rate of approximately 67 percent.
i. Accidents at the 59 sites where speed limits were lowered increased by 5.4 percent.
j. Accidents at the 41 sites where limits were raised decreased by 6.7 percent.

k. **Lowering speed limits by more than five mph below the 85th percentile speed did not reduce accidents.**
l. **Most motorists did not increase or decrease their speed as a result of either raising or lowering the speed limit.**

31. Parker, M. R., Jr, "Synthesis of Speed Zoning Practice," Federal Highway Administration, Report No. FHWA/RD-85/096, July 1985.

This report reviewed the basic practices used to set speed limits. It was found that the speed limit should be set at the speed driven by 85 to 90 percent of free moving vehicles rounded up to the next 5 mph increment. Speeds set using this method would fall within the speed range where accident risk is lowest.

32. "Procedure for Determining Work Zone Speed Limits," National Cooperative Highway Research Program, Research Results Digest, Number 192, September 1996.

This study developed a uniform procedure for determining work zone speed limits. It was noted that work zones with advisory and regulatory speed limits had higher accident increases than those without speed reductions. A survey of states showed that 29 states consider certain factors to determine work zone speed limit reductions, five states always reduce speed limits, and the remaining states avoid reducing speed limits. The report made the following recommendations.

a. Work zone speed limit reductions should be avoided when possible, particularly where all work activities are located in shoulder or roadside areas and when no work activities are underway.
b. A 10 mph reduction is desirable when work takes place on or near the traveled way, particularly on rural freeways, or when personnel are required to work for extended periods in an unprotected position within 10 feet of the traveled way.
c. Speed limit reductions larger than 10 mph are undesirable.
d. A procedure for determining work zone speed limits should include: determine the existing speed limit, determine work zone conditions, determine which relevant factors apply to the specific site, and select the work zone speed limit. The factors considered should include: unprotected workers near the traveled way, horizontal curvature that might increase the vehicle encroachment rate, reduced design speed, traffic congestion, or unexpected conditions.

33. **"Ramifications of the 55 mph Speed Limit," ITE Technical Council Committee 4M-2, Transportation Engineering, August 1996.**

The committee recommended that studies be conducted to evaluate the 55 mph speed limit. The resulting research showed that the 55 mph speed limit reduced deaths and injuries. The reasons for the reductions in 1975 were ranked by percentage of influence as follows:

Amount of Travel:	3 percent
Safety Efforts:	42 percent
Speed Characteristics:	22 percent
Other Factors:	33 percent

34. Retting, Richard A. and Greene, Michael A., "Traffic Speeds Following Repeal of the National Maximum Speed Limit: Preliminary Results," Insurance Institute for Highway Safety, September 1996.

Before and after speed studies were conducted in California, Texas, and New Mexico where speed limits were raised after the national speed limit was repealed in 1995. Speeds were also studied in Montana and Nevada after speed limits were changed. The data were collected with photo radar and nondetectable K-band radar. The results of this study include the following.

a. California: Speed limit changed from 55 to 65 mph for cars.

	Mean Speed (mph)	85th Percentile(mph)
Before	67	73
Three months after	69	75
Six months after	68	74

b. Texas: Speed limit changed from 55 to 70 mph for cars.

	Mean Speed (mph)	85th Percentile(mph)
Before	65	71
Three months after	68	74
Six months after	69	75

c. New Mexico: Speed limit for cars and trucks changed from 65 to 75 mph in May 1996, and had previously been increased from 55 to 65 mph in 1987.

	Mean Speed (mph)		85th Percentile(mph)	
	cars	trucks	cars	trucks
April 1987	64	63	67	67
April 1989	67	65	71	69
April 1991	67	65	71	70
April 1993	68	65	74	69
April 1996	69	65	74	69
June 1996	72	68	76	73
August 1996	72	67	77	72

d. Montana: Speed limit changed from 65 mph to no daytime limit for cars.

Mean speed: 74 mph 85th percentile: 81 mph

e. Nevada: Speed limit changed from 65 to 75 mph for cars.

	Cars	Trucks
Mean speed:	74 mph	67 mph
85th percentile:	80 mph	74 mph

35. Richards, Stephen H. and Dudek, Conrad L., "Implementation of Work-Zone Speed Control Measures," Transportation Research Record 1086, 1986.

This report is a summary of research conducted on work zones in Texas. It was recommended that existing speeds, work-zone design speed, and work-zone conditions be considered when selecting the speed limit. Since drivers only slow down to a certain level regardless of speed control, the following maximum speed reductions by roadway type were recommended.

Rural two-lane	10 - 15 mph
Rural freeway	5 - 15 mph
Urban freeway	5 - 10 mph
Urban arterial	10 - 15 mph

36. Rowan, Nielon J. and Keese, Charles J., "A Study of Factors Influencing Traffic Speeds," Bulletin 341, Highway Research Board, 1962.

This study evaluated the effectiveness of speed limits established by current practices, and developed criteria for establishing speed limits. It was noted that roadside development had a significant influence on traffic speeds. The report recommended that speed limits be based on observed traffic speed characteristics.

37. "Setting Speed Limits: A Guide for Vermont Towns," Vermont Local Roads Program, Saint Michael's College, Colchester, VT, 1995.

This handbook was written to guide Vermont officials in setting speed limits on town roads and streets. It was recommended that speed limits should be based on a traffic study that includes the following:

a. roadway characteristics,
b. vehicle speeds,
c. roadside development and culture,
d. the safe speed for curves and other hazardous locations,
e. parking practices and pedestrian activity, and
f. the accident experience for a recent twelve month period.

38. Solomon, D., "Accidents on Main Rural Highways Related to Speed, Driver, and Vehicle," Federal Highway Administration, 1964.

A speed study was conducted on two-lane and four-lane rural roads. It was found that the relationship between accident involvement and deviation from the mean speed is a u-shape function and that involvement rates were lowest at approximately eight mph above the mean speed.

39. "Speed Regulation," National Safety Council, 1941.

This report concluded that the speed at or below which 80 or 90 percent of drivers are traveling under normal conditions may be taken as the maximum safe speed at that point. It was noted that the speed limit should fit conditions existing during light traffic rather than heavy traffic.

40. "Speed: Understanding Design, Operating, and Posted Speed," Texas Department of Transportation, Report No. 1465-1, March 1996.

This report explains speed related concepts. Design speed, operating speed, and posted speed were defined and discussed. It was noted that the design speed of a highway incorporates considerable safety margins. Posted limits that correspond to the 85th percentile speed are appropriate even where they are higher than the design speed because they promote uniformity of speeds which has safety benefits.

41. Spitz, S., "Speed vs. Speed Limits in California Cities," ITE Journal, May 1984.

In 1973, the State of California passed a law requiring that all speed limits be justified by an engineering traffic survey based on the 85th percentile speeds. Questionnaires were sent to the traffic engineers in California cities concerning before and after speeds and the corresponding speed data. The samples were divided into three groups (no change, speed limit raised, and speed limit lowered). All groups showed a small increase in observed speeds. Raising the speed limit yielded increased speeds at five percent of the locations while speeds were reduced at 20 percent of the locations with no effect at the remaining 75 percent. The same percentages were observed at locations where the speed limits did not change. The study concluded that most drivers operate at speeds that they consider to be safe and reasonable, and that posting different speed limits has little or no effect on operating speeds.

42. "Status Report," Insurance Institute of Highway Safety, Vol. 29, No. 10, September 10, 1994.

The report studied speeds in Maryland, New Mexico, and Virginia. Since Virginia raised the speed limit for cars to 65 mph in 1988, the percentage of cars traveling over 70 mph has increased from between six and eight percent to 39 percent. In neighboring Maryland, where the speed limit is still 55 mph, there was a rise from between six and eight percent to 15 percent. When Virginia raised the truck speed limit to 65 mph in 1994, the proportion of trucks exceeding 70 mph rose from two to six percent, but this percentage did not change in Maryland. Similar trends were observed when the speed limits were raised in New Mexico. In the 40 states where speed limits were raised to 65 mph, the number of deaths on rural interstates was 24 percent higher in 1993 than on the same roads during 1982 to 1986.

43. "Status Report: Lower Speed Limits for Trucks Than Cars," Insurance Institute of Highwat Safety, Vol. 25, No. 2, February 3, 1990.

This study measured speeds in Arizona and Iowa which have uniform 65 mph speed limits, and in California and Illinois which have differential 65/55 mph speed limits. It was found that speeds were slighty less variable in states with differential speed limits.

44. "Technical Council Report Summary," ITE Technical Council Committee 4M-25, ITE Journal, Novermber 1993.

This is a summary of the Proposed Recommended Practice of the Institute of Transportation Engineers. A speed zone is defined as a section of street or highway where a speed limit different than the statutory speed limit has been established, the purpose of which is to establish a speed limit that is safe and reasonable for that section. Inconsistencies in speed zoning practice, such as the location of speed zones and the posted speed limits, make it difficult to justify speed zoning as a safety measure or a means of communicating reasonable speeds to motorists. The posted speed limit should reflect the maximum speed considered safe and reasonable, which is the 85th percentile speed. The report made the following recommendations.

a. Speed zones should only be established on the basis of an engineering study, and should be periodically restudied.
b. The engineering study must include an analysis of the current speed distribution of free flowing vehicles, and the speed limit should be set at the nearest five mph increment to the 85th percentile speed or the upper limit of the 10 mph pace.
c. No speed zone should be established where the 85th percentile speed is within three mph of the statutory speed limit.
d. The engineering study may include other factors such as geometric design features, speed limits on adjacent highway segments, and accident experience.
e. Speed zones should not be used to warn drivers of hazardous locations.
f. Enforcement of speed limits within speed zones should be uniform.

45. Warren, Davey L., "Synthesis of Safety Research Related to Traffic Control and Roadway Elements," Federal Highway Administration, December 1982.

The report summarizes many different research projects. The results of several studies were noted, and the following generalizations were made.

a. Accident severity increases with increasing speed, with the sharpest increase at speeds above 70 mph.
b. Accident frequency tends to increase when speeds increase.
c. Accident frequency increases with increasing speed variance.
d. The driver is the main factor influencing vehicle speeds.
e. The purpose of a speed zone is to identify a safe and reasonable limit.
f. Speed limits often have little or no effect on traffic speeds.
g. Where differential speed limits are used, the actual difference between car and truck speeds is less than the posted differential.

46. West, Leonard B., Jr. and Dunn, J. W., "Accidents, Speed Deviation and Speed Limits," Traffic Engineering, July 1971.

A study was done on Indiana Highway 37 near Bloomington which compared speed deviation to accident involvement. When accidents involving turning movements were removed from the sample, it was found that 96 percent of drivers operate with low involvement rates (plus or minus 15.5 mph from the mean speed). The remaining four percent had an accident involvement rate six times that of the 96 percent group. Vehicles traveling at very slow speeds were more likely to be involved in an accident than those traveling at high speeds. The report recommends a maximum speed limit set at the 85th percentile speed and enforced at the 95th percentile, as well as a minimum speed limit to be set at the 15th percentile and enforced at the 5th percentile.

47. Zaremba, Loren A. and Ginsburg, Marvin J., "The 55 mph Limits and Front-to-Rear Collisions Involving Autos and Large Trucks," Insurance Institute for highway Safety, July 1977.

The effects of implementing the 55 mph speed limit on front-to-rear collisions was studied on high speed roads in the states of North Carolina, Maryland, Pennsylvania, and Texas. The types of front-to-rear collisions studied were car-with-car, car-with-tractor trailer, and car-with-single body truck. The 55 mph speed limit reduced the average speeds of cars and trucks and reduced the speed variance between cars and trucks. The result was a reduction in the number of front-to-rear accidents in each type. The type of accident most dramatically reduced (by 34 percent) was tractor trailers struck in the rear by cars.

APPENDIX B

MOVING SPEED DATA FOR SPECIFIC HIGHWAYS

TABLE B-1. MOVING SPEED DATA FOR SPECIFIC HIGHWAYS (CARS)

HIGHWAY TYPE AND SPEED LIMIT	LOCATION	SAMPLE SIZE	SPEED (MPH)	
			AVERAGE	85TH PERCENTILE
Interstate 65 mph	I 24	1,169	68.5	72.0
	I 64	3,052	68.4	72.7
	I 65, 6-lane	622	68.5	72.5
	I 65, 4-lane	1,495	68.3	72.7
	I 71	480	68.3	74.9
	I 75, 6-lane	688	68.5	73.4
	I 75, 4-lane	2,402	68.7	73.0
	I 265	1,370	65.6	70.3
	I 275	502	64.7	70.0
Interstate 55 mph	I 64, Jefferson County	247	61.2	66.9
	I 65, Jefferson County	340	59.8	64.8
	I 71, Jefferson County	305	63.1	67.8
	I 75, Boone/Kenton Counties	388	62.5	67.8
	I 75, Fayette County	694	62.1	66.9
	I 264, 6-lane, Jefferson County	666	61.0	66.5
	I 264, 4-lane, Jefferson County	443	60.4	65.4
	I 265, Jefferson County	345	62.1	66.9
	I 275, Kenton County	244	61.6	65.5
	I 471, Campbell County	213	59.6	64.6
Interstate 50 mph	I 65, Jefferson County	163	55.8	60.8
Parkway Four Lane 65 mph	Audubon	463	66.7	71.1
	Bluegrass	3,294	68.6	73.3
	Cumberland	542	67.6	72.8
	Mountain	2,406	68.3	73.4
	Natcher	757	68.9	73.2
	Pennyrile	1,193	67.9	71.9
	Purchase	423	67.0	71.4
	Western Kentucky	1,564	69.2	73.3
Parkway Two Lane 55 mph	Daniel Boone	580	61.0	66.0
	Mountain	1,009	63.8	69.4

TABLE B-1. MOVING SPEED DATA FOR SPECIFIC HIGHWAYS (CARS) (continued)

HIGHWAY TYPE AND SPEED LIMIT	LOCATION	SAMPLE SIZE	SPEED (MPH)	
			AVERAGE	85TH PERCENTILE
Four Lane Non-Interstate or Parkway 55 mph	US 23, South of Pikeville	209	57.6	62.4
	US 23, Pikeville-Prestonsburg	887	59.9	65.3
	US 23, Prestonsburg-Ashland	631	58.8	64.2
	US 23, Ashland-South Shore	184	56.9	61.5
	US 25E, Middlesboro-Corbin	1,020	58.9	64.1
	US 27, Nicholasville-Lexington	668	57.9	62.4
	US 31W, Elizabethtown-Louisville	476	57.7	62.7
	US 41A, Fort Campbell-Hopkinsville	176	59.4	63.1
	US 45, Mayfield-Paducah	370	60.2	63.8
	US 60, Frankfort-Versailles	854	58.9	63.2
	US 60, Versailles-Lexington	900	59.1	63.8
	US 60, Owensboro-Hawesville	118	57.2	62.9
	US 60B, Owensboro	614	58.1	62.3
	US 127, Danville-Frankfort	927	59.5	63.6
	US 150, Danville-Stanford	105	58.7	64.0
	US 641, Murray-Benton	350	59.7	64.8
	KY 4, Lexington	603	59.8	63.9
	KY 9, Campbell County	362	60.1	64.8
	KY 61, Hodgenville-Elizabethtown	187	60.7	65.6
	KY 80, Somerset-London	447	59.6	64.7
	KY 80, Hazard-Prestonsburg	333	60.3	65.3
	KY 645, Inez-Ulysses	72	58.3	64.1
	KY 841, Louisville	559	62.4	66.8
Two Lane Full Width Shoulder 55 mph	US 27, Paris-Alexandria	95	55.1	61.4
	US 60, Hawesville-Muldraugh	519	58.5	63.0
	US 60, Grayson-Ashland	114	54.7	59.6
	US 127, Russell Springs-Danville	161	59.2	64.8
	US 150, Bardstown-Danville	97	59.0	62.7
	US 460, Salyersville-Paintsville	256	60.0	64.3
	KY 9, Alexandria-Maysville	246	60.1	65.5
	KY 9, Maysville-Vanceburg	67	57.3	61.6
	KY 10, Vanceburg-US 23	62	57.6	61.9
	KY 15, Whitesburg-Campton	1,231	58.5	63.7
	KY 34, Danville-US 27	88	58.9	63.0
	KY 55, Lebanon-Springfield	79	58.1	62.4
	KY 80, Somerset-London	202	60.2	65.5
	KY 80, Hopkinsville-Bowling Green	71	58.3	62.5
	KY 114, Salyersville-Prestonsburg	360	60.2	65.7
	KY 461, Shopville-Mt. Vernon	211	59.4	64.1
	KY 555, Springfield-Bluegrass Pkwy	222	59.2	63.8

TABLE B-1. MOVING SPEED DATA FOR SPECIFIC HIGHWAYS (CARS) (continued)

HIGHWAY TYPE AND SPEED LIMIT	LOCATION	SAMPLE SIZE	SPEED (MPH)	
			AVERAGE	85TH PERCENTILE
Two Lane Without Full Width Shoulder 55 mph	US 25, Corbin-Lexington	463	54.5	60.5
	US 27, Somerset- Nicholasville	762	57.7	62.9
	US 27, Paris-Alexandria	390	55.7	60.9
	US 31E, Scottsville-Glasgow	187	57.3	61.6
	US 51, Fulton-Wickliffe	94	56.5	61.0
	US 60, Paducah-Owensboro	143	58.4	63.1
	US 60, Hawesville-Muldraugh	447	57.0	62.6
	US 60, Louisville-Frankfort	480	56.6	61.5
	US 60, Lexington-Mt. Sterling	613	55.4	60.5
	US 60, Morehead-Grayson	81	51.0	56.4
	US 62, Elizabethtown-Bardstown	247	54.7	60.0
	US 150, Danville-Bardstown	265	57.6	62.6
	US 231, Scottsville-Bowling Green	138	52.2	58.0
	US 421, Lexington-Frankfort	187	58.1	62.8
	KY 15, Campton-Winchester	151	50.8	65.5
	KY 11, Mount Sterling-Flemingsburg	422	55.0	61.5
	KY 32, Morehead-Flemingsburg	93	56.3	62.0
	KY 80, Hopkinsville-Bowling Green	64	55.7	60.1
	KY 80, London-Hazard	84	50.8	56.7
	KY 185, Bowling Green-Caneyville	121	54.4	59.9

TABLE B-1. MOVING SPEED DATA FOR SPECIFIC HIGHWAYS (TRUCKS)

HIGHWAY TYPE AND SPEED LIMIT	LOCATION	SAMPLE SIZE	SPEED (MPH)	
			AVERAGE	85TH PERCENTILE
Interstate 65 mph	I 24	543	64.6	68.3
	I 64	1419	64.6	68.7
	I 65, 6-lane	250	64.8	68.4
	I 65, 4-lane	742	64.1	67.9
	I 71	247	63.2	67.8
	I 75, 6-lane	220	63.2	67.9
	I 75, 4-lane	1134	64.7	68.6
	I 265	318	62.1	67.2
	I 275	156	63.2	67.3
Interstate 55 mph	I 64, Jefferson County	45	55.5	58.4
	I 65, Jefferson County	197	59.1	63.6
	I 71, Jefferson County	132	61.8	66.7
	I 75, Boone/Kenton Counties	320	61.1	65.6
	I 75, Fayette County	448	60.1	64.0
	I 264, 6-lane, Jefferson County	124	57.0	62.4
	I 264, 4-lane, Jefferson County	120	57.4	62.0
	I 265, Jefferson County	64	58.5	62.5
	I 275, Kenton County	40	56.4	63.0
	I 471, Campbell County	43	55.4	60.3
Interstate 50 mph	I 65, Jefferson County	99	55.4	59.8
Parkway Four Lane 65 mph	Audubon	143	63.5	67.8
	Bluegrass	768	64.3	68.6
	Cumberland	197	65.4	70.8
	Mountain	205	63.8	68.2
	Natcher	309	65.2	69.4
	Pennyrile	517	64.5	68.5
	Purchase	191	65.0	68.9
	Western Kentucky	737	66.1	70.3
Parkway Two Lane 55 mph	Daniel Boone	115	58.5	64.1
	Mountain	98	58.1	62.9

TABLE B-1. MOVING SPEED DATA FOR SPECIFIC HIGHWAYS (TRUCKS) (continued)

HIGHWAY TYPE AND SPEED LIMIT PERCENTILE	LOCATION	SAMPLE SIZE	SPEED (MPH) AVERAGE	SPEED (MPH) 85TH
Four Lane Non-Interstate or Parkway 55 mph	US 23, South of Pikeville	40	53.6	58.0
	US 23, Pikeville-Prestonsburg	304	58.3	63.7
	US 23, Prestonsburg-Ashland	294	55.6	60.6
	US 23, Ashland-South Shore	17	57.3	61.9
	US 25E, Middlesboro-Corbin	123	56.7	61.4
	US 27, south Nicholasville-Lexington	95	53.6	58.0
	US 31W, Elizabethtown-Louisville	30	54.4	58.9
	US 41A, Fort Campbell-Hopkinsville	27	56.8	60.5
	US 45, Mayfield-Paducah	31	59.1	61.8
	US 60, Owensboro-Hawesville	30	56.5	62.2
	US 60, Frankfort-Versailles	60	57.3	61.9
	US 60, Versailles-Lexington	125	54.4	59.8
	US 60B, Owensboro	109	56.2	60.0
	US 127, Danville-Frankfort	134	58.1	61.8
	US 641, Murray-Benton	54	57.5	61.5
	KY 4, Lexington	80	57.5	63.0
	KY 9, Campbell County	82	60.0	64.9
	KY 61, Hodgenville-Elizabethtown	14	57.0	61.9
	KY 80, Somerset-London	106	56.2	61.3
	KY 80, Hazard-Prestonsburg	47	55.2	60.2
	KY 645, Inez-Ulysses	11	54.7	61.4
	KY 841, Louisville	96	57.9	62.8
Two Lane Full Width Shoulder 55 mph	US 27, Paris-Alexandria	24	54.8	55.9
	US 60, Hawesville-Muldraugh	75	56.8	62.2
	US 60, Grayson-Ashland	15	50.5	53.9
	US 127, Russell Springs-Danville	25	55.3	60.8
	US 150, Bardstown-Danville	24	57.9	62.7
	US 460, Salyersville-Paintsville	26	54.2	59.1
	KY 9, Alexandria-Maysville	79	58.5	63.5
	KY 9, Maysville-Vanceburg	18	58.4	62.2
	KY 10, Vanceburg-US 23	12	57.3	61.7
	KY 11, Flemingsburg-Maysville	19	52.8	58.7
	KY 15, Whitesburg-Campton	86	55.4	60.0
	KY 80, Hopkinsville-Bowling Green	14	60.2	62.0
	KY 80, Somerset-London	73	57.9	63.0
	KY 114, Salyersville-Prestonsburg	44	56.3	61.5
	KY 461, Shopville-Mt. Vernon	36	55.7	61.3
	KY 555, Springfield-Bluegrass Parkway	25	57.5	62.1

TABLE B-1. MOVING SPEED DATA FOR SPECIFIC HIGHWAYS (TRUCKS) (continued)

HIGHWAY TYPE AND SPEED LIMIT	LOCATION	SAMPLE SIZE	SPEED (MPH) AVERAGE	SPEED (MPH) 85TH PERCENTILE
Two Lane Without Full Width Shoulder 55 mph	US 25, Corbin-Lexington	40	53.7	56.5
	US 27, Somerset- Nicholasville	102	55.4	60.7
	US 27, Paris-Alexandria	105	53.8	59.7
	US 31E, Scottsville-Glasgow	56	55.6	59.3
	US 51, Fulton-Wickliffe	19	57.1	64.2
	US 60, Paducah-Owensboro	17	54.4	57.2
	US 60, Hawesville-Muldraugh	45	54.2	61.1
	US 60, Louisville-Frankfort	39	55.6	62.1
	US 60, Lexington-Mt. Sterling	63	49.7	55.9
	US 62, Elizabethtown-Bardstown	18	51.2	56.1
	US 150, Danville-Bardstown	43	53.8	60.0
	US 231, Scottsville-Bowling Green	19	47.1	53.3
	US 421, Frankfort-Lexington	17	55.7	58.8
	KY 11, Mount Sterling-Flemingsburg	56	52.1	58.9
	KY 80, Hopkinsville-Bowling Green	14	55.1	59.9
	KY 80, London-Hazard	10	50.0	52.5
	KY 185, Bowling Green-Caneyville	10	52.9	60.5

APPENDIX C

SPEED MONITORING DATA FOR SPECIFIC LOCATIONS

TABLE C-1. SPEED MONITORING DATA FOR SPECIFIC LOCATIONS (1994 and 1995)

HIGHWAY TYPE AND SPEED LIMIT	LOCATION			YEAR	SAMPLE SIZE	SPEED PERCENTILE (MPH)		PERCENT OVER SPEED LIMIT
	COUNTY	ROUTE	MILEPOINT			50TH	85TH	
Interstate 65 mph	McCracken	I 24	1.8	1995	147,425	66.8	72.8	55
				1994	36,262	63.4	69.6	31
	Shelby	I 64	45.3	1995	116,801	68.3	74.5	65
	Henry	I 71	27.1	1995	259,051	70.7	77.6	74
				1994	56,272	63.7	73.2	38
	Rockcastle	I 75	59.4	1995	164,480	64.5	72.0	43
				1994	195,820	62.6	69.2	29
	All				976,111	66.5	73.3	52
Interstate Four Lane 55 mph	Fayette	I 75	107.1	1994	43,729	62.7	69.9	84
	Jefferson	I71	7.9	1995	207,233	60.4	66.1	78
				1994	210,687	62.2	69.0	87
	All				461,649	61.4	67.8	83
Interstate Six Lane 55 mph	Jefferson	I 64	13.4	1995	287,602	60.6	67.1	75
				1994	291,336	56.2	61.5	53
	Campbell	I 275	76.0	1994	385,026	61.3	67.3	81
	All				963,964	59.5	65.5	71
Parkway	Metcalf	Cumberland	29.3	1995	12,725	66.5	73.3	53
				1994	3,094	64.0	70.9	39
	Powell	Mountain	13.4	1995	30,843	64.9	71.6	43
				1994	27,100	66.5	72.9	53
	All				73,762	65.7	72.3	48

TABLE C-1. SPEED MONITORING DATA FOR SPECIFIC LOCATIONS (1994 and 1995) (continued)

HIGHWAY TYPE AND SPEED LIMIT	LOCATION			YEAR	SAMPLE SIZE	SPEED PERCENTILE (MPH)		PERCENT OVER SPEED LIMIT
	COUNTY	ROUTE	MILEPOINT			50TH	85TH	
Four Lane Non-Interstate or Parkway 55 mph	Boyd	US 23	0.5	1995	14,022	52.8	59.5	30
				1994	40,509	56.1	62.3	51
	Boyd	US 60	6.3	1995	14,115	58.0	64.3	64
	Daviess	US 60B	2.4	1995	57,118	58.9	64.0	70
				1994	42,604	57.2	62.4	59
	Fayette	KY 4	3.0	1995	45,860	56.9	64.3	55
				1994	63,281	59.6	65.2	74
	Floyd	KY 80	6.6	1995	36,993	61.6	68.6	83
	Hardin	US 31W	24.6	1995	84,517	53.8	59.5	34
				1994	102,128	52.8	59.5	31
	Mercer	US 127	2.0	1995	80,200	54.6	60.7	40
				1994	42.862	53.3	60.2	32
	All				624,209	55.9	62.1	49
Two Lane Full Width Shoulder 55 mph	Barren	KY 90	8.5	1994	53,999	54.5	60.7	41
	Harlan	US 119	5.0	1995	22,557	55.9	61.3	49
				1994	35,036	56.8	62.8	56
	Johnson	US 460	4.0	1995	16,040	61.2	68.1	81
				1994	14,099	59.4	65.7	75
	Lincoln	US 127	10.0	1995	37,492	59.2	65.3	72
	Magoffin	KY 114	4.1	1995	23,894	59.6	65.9	72
				1994	6,881	59.8	65.7	76
	Owen	KY 227	24.4	1995	3,288	54.2	61.1	39
				1994	3,328	55.9	62.9	50
	Pulaski	KY 80	31.6	1995	17,872	59.7	65.6	75
				1994	4,926	59.9	66.2	78
	All				239,412	57.6	63.8	61

TABLE C-1. SPEED MONITORING DATA FOR SPECIFIC LOCATIONS (1994 and 1995) (continued)

HIGHWAY TYPE AND SPEED LIMIT	LOCATION			YEAR	SAMPLE SIZE	SPEED PERCENTILE (MPH)		PERCENT OVER SPEED LIMIT
	COUNTY	ROUTE	MILEPOINT			50TH	85TH	
Two Lane Without Full Width Shoulder 55 mph	Adair	KY 206	11.6	1995	1,119	55.0	63.5	45
				1994	692	56.7	65.1	54
	Caldwell	KY 293	4.6	1995	11,856	49.8	58.4	22
				1994	4,146	47.5	54.9	10
	Calloway	KY 94	6.8	1995	29,608	53.4	60.2	36
	Franklin	KY 420	2.7	1995	5,840	52.8	59.0	28
				1994	4,593	49.4	55.5	12
	Graves	KY 121	4.3	1995	22,777	58.4	64.5	67
				1994	8,315	54.1	59.6	36
	Henderson	KY 812	6.3	1995	11,350	49.4	56.9	17
				1994	8,893	50.8	58.4	24
	Jefferson	KY 155	9.3	1995	29,540	48.4	54.3	11
				1994	65,598	47.2	52.9	7
	Knox	KY 11	11.5	1995	17,914	43.9	51.5	5
	Lincoln	US 150	10.9	1995	12,871	56.2	63.0	52
				1994	3,162	57.4	64.5	58
	Madison	KY 52	4.7	1995	1,160	47.7	53.6	5
				1994	9,025	48.9	55.6	14
	Madison	KY 21	8.0	1995	11,349	44.8	52.4	7
				1994	5,557	47.8	55.5	13
	Mason	US 62	5.3	1995	2,951	49.5	56.1	16
				1994	1,457	50.6	58.2	21
	Meade	US 60	7.9	1995	17,875	56.8	62.7	55
				1994	22,659	54.2	59.9	36
	Mercer	KY 33	5.0	1995	4,735	52.8	61.3	35
				1994	3,998	52.0	60.1	31
	Pike	KY 194	41.1	1994	931	44.4	52.5	8
	Trigg	KY 139	18.9	1995	15,022	56.2	63.3	51
				1994	7,217	54.0	61.6	43
	Warren	KY 185	1.9	1995	4,889	59.2	67.6	69
				1994	8,834	55.3	60.6	45
	All				355,933	51.3	57.9	28

APPENDIX D

LOCATIONS WITH HIGH NUMBER OF SPEED-RELATED ACCIDENTS

TABLE D-1. ONE-MILE SECTIONS WITH HIGHEST CRITICAL RATE FACTOR FOR SPEED-RELATED ACCIDENTS (1992-1994 ACCIDENTS)

HIGHWAY TYPE	LOCATION			NUMBER OF SPEED-RELATED ACCIDENTS	ACCIDENT RATE*	CRITICAL RATE FACTOR
	COUNTY	ROUTE	MILEPOINT RANGE			
Rural, Two Lane	Henderson	US 60	22.9 - 23.1	20	784	5.6
	Madison	KY 1295	2.3 - 3.3	18	787	5.3
	Franklin	KY 1665	0.0 - 1.0	16	844	5.2
	Pike	KY 1441	1.4 - 2.2	9	1,491	5.0
	Franklin	KY 2820	1.0 - 1.6	9	1,309	4.7
	Boone	KY 18	5.3 - 6.2	14	735	4.5
	Lincoln	KY 501	3.2 - 2.2	10	1,041	4.5
	Franklin	KY 2817	0.8 - 1.8	13	725	4.4
	Harlan	KY 987	14.5 - 15.5	10	950	4.3
	Metcalfe	US 68	17.5 - 18.5	16	594	4.3
	Mercer	KY 390	10.2 - 11.2	10	808	4.0
	Bourbon	KY 353	0.0 - 0.8	15	541	4.0
	Franklin	KY 1665	1.3 - 2.1	12	633	3.9
	Boone	KY 338	28.5 - 29.3	7	1,169	3.9
	Madison	KY 1983	1.6 - 2.5	6	1,465	3.9
	Edmonson	KY 259	9.0 - 9.7	7	1,120	3.8
	Marion	KY 84	5.0 - 6.0	6	1,280	3.7
	Pike	KY 122	9.2 - 10.2	14	492	3.7
	Pike	KY 611	2.1 - 3.0	8	772	3.5
	Floyd	KY 2030	6.2 - 7.0	8	740	3.4
	Floyd	KY 122	27.2 - 28.0	12	428	3.2
	Pike	KY 1469	11.5 - 12.4	12	393	3.0
	Bath	KY 211	5.1 - 6.0	8	559	3.0
	Pike	KY 3227	3.2 - 4.1	4	1,400	2.9
	Madison	KY 1986	3.1 - 3.8	7	609	2.9
	Pike	KY 1384	0.5 - 1.5	8	511	2.9
	Madison	KY 2878	0.2 - 0.9	9	437	2.8
	Mercer	US 68	18.6 - 19.6	11	367	2.8
	Christian	KY 287	4.6 - 5.6	3	2,140	2.8
	Henry	KY 573	2.9 3.2	6	655	2.8
	Madison	KY 595	9.6 - 10.6	5	814	2.8
	Greenup	KY 1458	0.7 - 1.7	10	382	2.7
	Knox	KY 459	9.1 - 9.9	5	791	2.7
	Pike	KY 194	14.3 - 15.3	6	616	2.7
	Pike	KY 194	16.8 - 17.8	6	616	2.7
	Grant	KY 489	3.8 - 3.9	5	777	2.7
	Pike	US 460	2.4 - 3.1	26	198	2.7
	Bell	KY 72	0.6 - 1.1	8	435	2.6
	Oldham	KY 1818	0.6 - 1.5	5	700	2.6
	Pike	KY 1441	4.2 5.1	4	918	2.5
	Hopkins	KY 260	0.6 - 1.6	5	651	2.5
	Fulton	KY 116	12.8 - 13.5	4	889	2.5

TABLE D-1. ONE-MILE SECTIONS WITH HIGHEST CRITICAL RATE FACTOR INVOLVING OF SPEED-RELATED ACCIDENTS (1992-1994 ACCIDENTS) (cont'd)

HIGHWAY TYPE	LOCATION			NUMBER OF SPEED-RELATED ACCIDENTS	ACCIDENT RATE*	CRITICAL RATE FACTOR
	COUNTY	ROUTE	MILEPOINT RANGE			
Rural, Two Lane	Bourbon	KY 1893	1.4 - 1.8	4	874	2.5
	Pike	KY 2061	0.1 - 0.9	6	500	2.5
	Pike	KY 2061	1.3 - 2.1	6	500	2.5
	Grant	KY 1942	6.8 - 7.8	3	1,377	2.4
	Owen	KY 355	2.4 - 2.9	5	606	2.4
	Leslie	KY 1780	9.6 - 10.2	4	819	2.4
	Woodford	KY 1681	10.6 - 11.5	6	482	2.4
	Woodford	KY 1681	11.6 - 12.0	6	482	2.4
	Pike	KY 119	13.0 - 14.0	15	228	2.4
	Grant	KY 22	6.6 - 6.8	7	404	2.4
	Harlan	KY 840	2.8 - 3.4	3	1,317	2.4
	Madison	KY 21	6.1 - 7.0	7	397	2.4
	Owen	KY22	5.6 - 6.4	5	538	2.3
	Boyle	US 68	1.4 - 2.3	6	432	2.3
	Jessamine	KY 29	1.7 - 2.7	4	697	2.3
	Martin	KY 40	11.9 - 12.9	11	251	2.3
	Edmonson	KY 259	11.2 - 12.2	12	229	2.2
	Pike	KY 3227	6.4 - 7.2	3	1,050	2.2
	Madison	KY 595	10.7 - 11.5	4	651	2.2
	Knott	KY 3391	1.6 - 2.0	3	1,019	2.2
	Pike	KY 3415	0.6 - 1.5	7	342	2.2
	Pike	KY 194	23.0 - 24.0	9	274	2.2
	Meade	KY 710	7.1 - 8.1	5	478	2.2
	Franklin	KY 1262	8.1 - 8.8	4	627	2.2
	Floyd	KY 2030	4.6 - 5.3	5	467	2.1
	Boone	KY 16	0.5 - 1.2	6	375	2.1
	Laurel	KY 80	15.9 - 16.7	8	289	2.1
	Spencer	KY 1633	1.6 - 1.7	3	942	2.1
	Pike	KY 610	7.2 - 8.1	7	323	2.1
	Pike	KY 122	3.0 - 3.8	8	281	2.1
	Franklin	KY 1685	0.9 - 1.0	4	580	2.1
	Madison	KY 169	6.5 - 7.3	5	439	2.1
	Floyd	KY 466	2.7 - 3.6	5	435	2.1
	Breathitt	KY 3094	0.0 - 0.9	4	566	2.1
	McCreary	KY 927	8.0 - 8.2	3	875	2.1
	Muhlenberg	KY 172	4.0 - 4.8	5	419	2.1
	Rockcastle	KY 70	4.1 - 4.5	6	347	2.1
	Pike	KY 2061	2.5 - 3.2	5	417	2.0
	Rowan	KY 1167	0.8 - 1.7	4	545	2.0
	Rowan	KY 1167	2.0 - 2.3	4	545	2.0
	Madison	KY 421	10.2 - 11.1	9	238	2.0
	Rowan	KY 1441	6.9 - 7.8	8	260	2.0
	Warren	KY 185	9.7 - 10.4	6	330	2.0

TABLE D-1. ONE-MILE SECTIONS WITH HIGHEST CRITICAL RATE FACTOR FOR SPEED-RELATED ACCIDENTS (1992-1994 ACCIDENTS) (cont'd)

HIGHWAY TYPE	LOCATION			NUMBER OF SPEED-RELATED ACCIDENTS	ACCIDENT RATE*	CRITICAL RATE FACTOR
	COUNTY	ROUTE	MILEPOINT RANGE			
Rural 4-lane divided, non I & P	Pike	US 23	30.7 - 31.7	26	89	3.0
	Pike	US 23	28.1 - 28.7	20	67	2.3
	Pike	US 23	29.2 - 29.8	16	53	1.8
	Floyd	US 23	10.5 - 11.5	9	48	1.4
	Greenup	US 23	26.2 - 26.9	6	63	1.4
	Pike	US 23	31.7 - 32.1	10	44	1.4
	Franklin	US 60	13.3 - 14.0	8	40	1.2
	Chrisitian	US 41A	10.2 - 11.2	7	42	1.2
	Floyd	KY 80	5.9 - 6.7	6	46	1.2
	Floyd	KY 80	7.4 - 8.0	6	46	1.2
	Garrard	US 27	15.7 - 16.4	6	45	1.1
	Pike	US 23	17.3 - 18.1	6	42	1.1
	Pike	US 23	32.7 - 33.6	8	36	1.1
	Franklin	US 127	2.7 - 3.7	6	41	1.1
	Chrisitian	US 41A	8.7 - 9.3	6	38	1.0
Rural Interstate	Henry	I 71	32.4 - 33.1	14	61	2.7
	Whitley	I 75	13.8 - 14.8	14	48	2.4
	Shelby	I 64	41.6 - 42.5	14	43	2.2
	Woodford	I 64	64.5 - 65.4	11	48	2.2
	Shelby	I 64	43.2 - 44.2	13	39	2.0
	Franklin	I 64	52.9 - 53.9	10	40	1.9
	Henry	I 71	30.0 - 30.3	9	39	1.8
	Madison	I 75	97.0 - 97.5	12	26	1.5
	Carroll	I 71	43.9 - 44.7	7	33	1.4
	Carroll	I 71	51.3 - 52.1	7	33	1.4
	Hart	I 65	64.1 - 64.8	8	28	1.4
	Madison	I 75	81.0 - 81.9	9	24	1.3
	Franklin	I 64	54.5 - 55.5	7	26	1.3
	Gallatin	I 71	61.8 - 62.4	6	29	1.3
	Grant	I 75	144.4 - 145.1	7	27	1.3
	Carroll	I 71	50.0 - 51.0	6	28	1.2
	Madison	I 75	84.5 - 85.2	8	22	1.2
	Franklin	I 64	46.9 - 47.7	7	22	1.1
	Boone	I 75	174.9 - 175.6	12	17	1.1
	Rockcastle	I 75	63.5 - 64.5	6	22	1.1
	Boone	I 75	172.2 - 173.2	8	18	1.1
	Henry	I 71	25.1 - 25.8	6	22	1.0
	Boone	I 75	173.5 - 174.5	11	16	1.0
	Madison	I 75	90.9 - 91.8	8	18	1.0
	Madison	I 75	95.9 - 96.8	8	17	1.0

TABLE D-1. ONE-MILE SECTIONS WITH HIGHEST CRITICAL RATE FACTOR FOR SPEED-RELATED ACCIDENTS (1992-1994 ACCIDENTS) (cont'd)

HIGHWAY TYPE	LOCATION			NUMBER OF SPEED-RELATED ACCIDENTS	ACCIDENT RATE*	CRITICAL RATE FACTOR
	COUNTY	ROUTE	MILEPOINT RANGE			
Rural Parkway	Warren	Green River	0.0 - 0.2	11	111	2.9
	Hopkins	Western KY	38.2 - 39.1	9	107	2.6
	Hopkins	Pennyrile	37.0 - 37.6	8	43	1.5
	Hopkins	Western KY	36.9 - 37.2	5	59	1.4
	Woodford	Bluegrass	70.6 - 71.1	7	43	1.4
	Anderson	Bluegrass	58.8 - 58.8	5	50	1.3
	Powell	Mountain	35.1 - 35.5	5	52	1.3
	Hopkins	Pennyrile	34.1 - 34.6	5	43	1.2
Urban Two Lane	Boyle	KY 52	0.0 - 0.6	16	352	4.1
	Kenton	KY 1501	0.0 - 0.3	16	272	3.6
	Hopkins	KY 1069	0.0 - 0.6	10	395	3.5
	Laurel	KY 363	9.7 - 10.6	13	293	3.4
	Franklin	KY 420	1.4 - 2.2	14	240	3.1
	Jefferson	KY 1065	12.8 - 13.7	7	392	2.9
	Franklin	KY 420	2.7 - 3.6	11	241	2.8
	Franklin	KY 2261	0.2 - 1.1	9	224	2.5
	Scott	US 460	7.7 - 8.7	13	144	2.2
	McCracken	KY 994	8.5 - 9.3	12	144	2.2
	Boyd	KY 168	3.0 - 4.0	7	199	2.1
	Whitley	KY 92	11.0 - 11.6	7	189	2.0
	Boyd	KY 1012	0.7 - 1.7	6	208	2.0
	Jefferson	KY 1819	12.1 - 13.0	9	148	2.0
	Christian	KY 507	0.4 - 1.1	6	202	1.9
	Kenton	KY 17	23.6 - 24.4	12	118	1.9
	Kenton	KY 236	0.0 - 1.0	11	115	1.8
	Kenton	KY 17	22.5 - 23.4	11	108	1.8
	Christian	KY 911	1.1 - 1.5	10	109	1.7
	Christian	KY 107	19.0 - 19.7	7	137	1.7
	Kenton	KY 371	1.4 - 2.3	8	125	1.7
	Nelson	US 62	13.3 - 13.6	8	123	1.7
	Boone	KY 842	3.4 - 4.1	13	91	1.7
	Campbell	US 27	21.5 - 22.1	10	102	1.6
	Christian	US 68	10.4 - 11.0	12	89	1.6
	Pulaski	KY 1247	6.5 - 7.5	6	139	1.6
	Jefferson	KY 2049	0.7 - 1.6	13	82	1.6
	Jefferson	US 31W	19.6 - 20.0	7	118	1.6
	Whitley	KY 312	2.1 - 2.5	7	118	1.6

TABLE D-1. ONE-MILE SECTIONS WITH HIGHEST CRITICAL RATE FACTOR FOR SPEED-RELATED ACCIDENTS (1992-1994 ACCIDENTS) (cont'd)

HIGHWAY TYPE	LOCATION			NUMBER OF SPEED-RELATED ACCIDENTS	ACCIDENT RATE*	CRITICAL RATE FACTOR
	COUNTY	ROUTE	MILEPOINT RANGE			
Urban Four Lane Divided, Non I&P	Franklin	KY 676	3.7 - 4.6	19	118	2.8
	Henderson	US 41	15.5 - 16.5	20	66	2.0
	Jefferson	US 60	11.9 - 12.4	12	86	1.9
	Warren	US 231	11.0 - 11.9	19	62	1.8
	Warren	US 231	8.9 - 9.9	12	68	1.7
	Fayette	KY 1974	12.2 - 12.8	10	66	1.5
	Fayette	US 60	4.7 - 5.6	17	48	1.5
	Christian	US 41A	4.0 - 4.5	10	60	1.5
	Kenton	KY 17	21.6 - 21.7	12	54	1.4
	Christian	US 41A	1.5 - 2.5	13	51	1.4
	Fayette	US 68	2.3 - 3.2	14	47	1.4
	Boyd	US 60	7.5 - 8.4	12	48	1.3
	Christian	US 41A	13.5 - 14.4	9	54	1.3
	Daviess	US 60B	4.2 - 5.2	9	53	1.3
	Jefferson	KY 61	0.2 - 0.9	16	40	1.3
	Fayette	KY 4	13.4 - 14.3	16	38	1.2
	Henderson	US 41	20.3 - 21.1	15	39	1.2
	Fayette	US 25	10.4 - 11.2	12	37	1.1
	Pulaski	US 27	15.4 - 16.4	13	35	1.1
	Jefferson	KY 1065	3.9 - 4.9	11	36	1.1
	Warren	US 231	10.0 - 10.6	11	36	1.1
	Jefferson	US 31E	9.4 - 10.0	15	31	1.0
	Jefferson	KY 61	1.4 - 2.4	13	32	1.0
	Fayette	US 27	9.4 - 9.6	9	37	1.0
Urban Four Lane, Undivided	Jefferson	KY 2860	0.1 - 1.0	11	291	3.1
	Fayette	US 27	6.3 - 7.2	21	69	1.6
	Campbell	US 27	20.5 - 21.4	12	81	1.5
	Daviess	KY 431	11.9 - 12.8	15	52	1.2
	Boone	US 42	13.2 - 13.9	12	57	1.2
	Warren	US 31W	11.8 - 12.8	11	58	1.2
	Jefferson	US 31W	9.6 - 10.6	19	43	1.1
	Jefferson	US 31W	7.4 - 8.3	13	48	1.1
	Fayette	US 27	7.3 - 8.2	13	46	1.1
	Kenton	US25	8.1 - 8.4	12	44	1.0

TABLE D-1. ONE-MILE SECTIONS WITH HIGHEST CRITICAL RATE FACTOR FOR SPEED-RELATED ACCIDENTS (1992-1994 ACCIDENTS) (cont'd)

HIGHWAY TYPE	LOCATION			NUMBER OF SPEED-RELATED ACCIDENTS	ACCIDENT RATE*	CRITICAL RATE FACTOR
	COUNTY	ROUTE	MILEPOINT RANGE			
Urban Interstate	Jefferson	I 264	7.4 - 8.2	32	59	3.3
	Kenton	I 275	82.0 - 83.0	38	42	2.7
	Madison	I 75	86.5 - 87.3	20	54	2.7
	Chrisitian	I 24	85.5 - 85.7	11	53	2.1
	Boone	I 75	180.0 - 181.0	33	30	2.1
	Hardin	I 65	90.8 - 91.3	15	41	2.0
	Jefferson	I 64	11.8 - 12.5	25	29	1.9
	Kenton	I 75	183.6 - 184.5	30	23	1.7
	Jefferson	I 65	135.7 - 136.6	28	21	1.5
	Kenton	I 75	188.0 - 189.0	25	21	1.5
	Jefferson	I 64	3.9 - 4.6	14	21	1.3
	Boone	I 75	182.1 - 183.1	18	16	1.1
	Kenton	I 275	83.0 - 83.8	15	17	1.1
	Jefferson	I 71	4.8 - 5.5	11	19	1.1
	Kenton	I 75	187.0 - 188.0	19	15	1.1
	Jefferson	I 264	19.0 - 20.0	16	15	1.0
	Jefferson	I 264	11.8 - 12.4	19	14	1.0
Urban Parkway	Hardin	Western KY	136.6 - 136.6	13	92	2.2
	Laurel	Daniel Boone	0.1 - 1.1	6	49	1.1

* Speed-related accidents per 100 million vehicle miles.