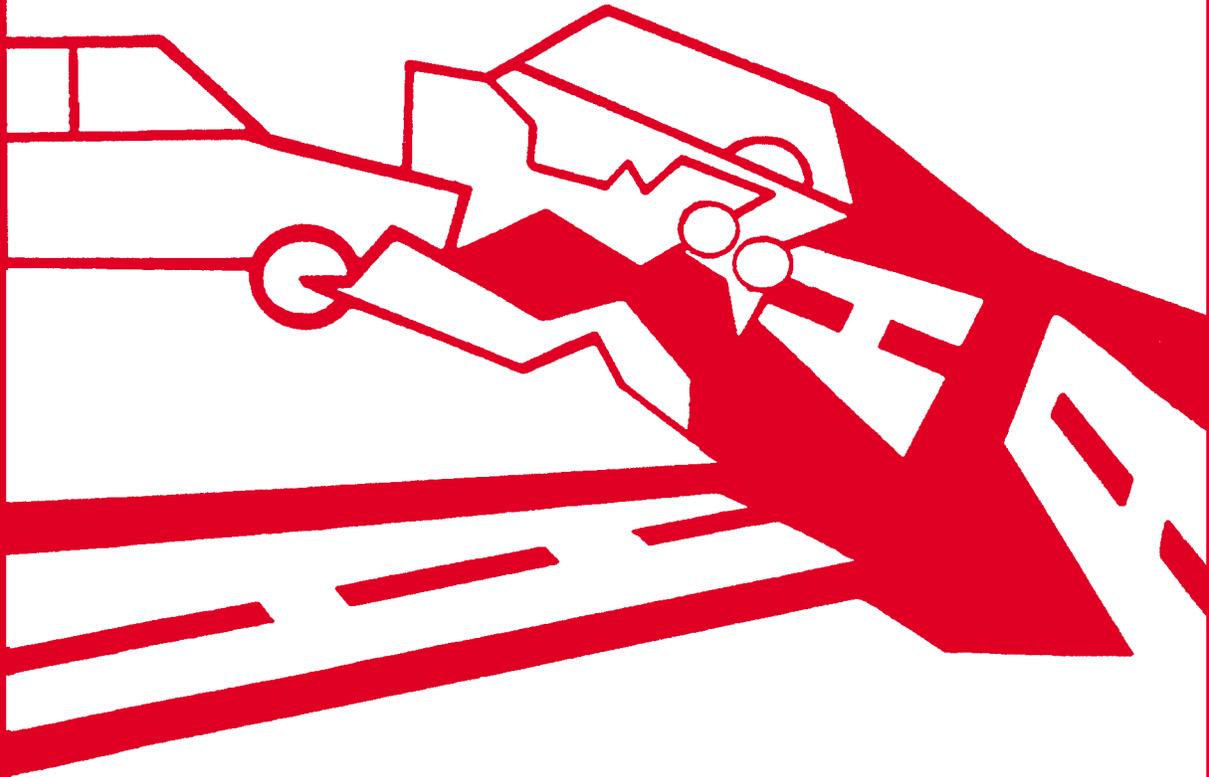


Virginia Crash Investigation Team



Special Report on Young Drivers Involved in Fatal Crashes



TRANSPORTATION SAFETY TRAINING CENTER

Virginia Commonwealth University

Virginia Crash Investigation Team

The Virginia Crash Investigation Team was formed in 1971 by the Highway Safety Division with the cooperation and support of the Virginia Departments of State Police and Transportation and Virginia Commonwealth University. Team members include a Virginia State Trooper, a Highway Engineer, and a Psychologist, with advisory assistance from medical, engineering, or other personnel when necessary. The Team has the responsibility for determining the circumstances and probable causes of various transportation crashes. This information and the subsequent interpretations are intended to assist in the understanding and prevention of similar tragedies.

In an effort to produce the most objective, unbiased product possible, the Team investigates the human, mechanical, and environmental factors using a variety of techniques. Such techniques include, but are not limited to, personal interviews, on-site examinations, and vehicle inspections. Upon completion of this data-gathering phase of the investigation, the Team then determines conclusions and makes appropriate recommendations. These conclusions and recommendations are forwarded to federal, state and/or local entities and to individuals who may be concerned with making, implementing, or influencing safety policies, laws, and standards. The primary emphasis of these reports is always placed on understanding the causes and specific characteristics of each case with an eye toward suggesting preventive measures.

We encourage the use of this report by the appropriate officials/individuals as a guide when evaluating the effectiveness of the existing transportation safety programs in their areas as well as when assessing the need for additional programs. In addition, we welcome your comments regarding this or any other Virginia Crash Investigation Team Report.

For information about available publications or for comments contact:

Crash Investigation Team
Transportation Safety Training Center
Virginia Commonwealth University
P.O. Box 843023
Richmond, VA 23284-3023

(804)828-6235

Fax: (804)828-1848

<http://www.vcu.edu/cppweb/tstc/tstc.html>

** The conclusions and recommendations contained in this report are the opinions of the Crash Investigation Team and are not necessarily those of Virginia Commonwealth University.

**Virginia Commonwealth University
Transportation Safety Training Center
Crash Investigation Team**

Special Report Number 14-January 2001

ABSTRACT

This Special Report focuses on younger, inexperienced drivers involved in fatal highway crashes in Virginia. Since a dramatic increase in the numbers of teen fatalities and teen-related fatal crashes has occurred between 1999 and 2000, a comparison of crash frequencies and causes were examined to explore the reasons why and what possible remedial actions can be taken to reduce these problems. The Report examines fatal crash data for 1998, 1999 and 2000 as well as other youth related statistics for the past decade. As a way of illustrating the tragic results of teen traffic crashes, six case studies are presented showing the various causal factors associated with these events. Drivers 16-20 years of age are over represented in fatal crashes and are more at risk than any other driver age group in Virginia. There are four major factors that contribute to increased risk: male drivers, teens accompanied by other teens, single vehicle/ run-off-the road crashes and infrequent belt use among teens. As in past Virginia studies and national trends, this report shows that young drivers more often engage in higher risk behavior than do older drivers and frequently crash because of driver inexperience and/or driver immaturity.

The purpose of the Report is to identify the underlying contributing factors and characteristics of teen-related fatal crashes. Data in this report was gleaned from accident reports provided by the Department of Motor Vehicles (DMV). This information can be used to assist driver education personnel, teen drivers, parents of teens, law enforcement and DMV authorities, the Virginia General Assembly and others in increasing awareness and taking appropriate countermeasures needed to better combat the problem of young people being overrepresented in fatal crashes.

TABLE OF CONTENTS

ABSTRACT.....	i
TABLE OF CONTENTS.....	ii
REPORT SUMMARY.....	1
HIGHWAY SAFETY RECOMMENDATIONS.....	3
CASE STUDY NUMBER 1 & DIAGRAM.....	5
CASE STUDY NUMBER 2 & DIAGRAM.....	9
CASE STUDY NUMBER 3 & DIAGRAM.....	14
CASE STUDY NUMBER 4 & DIAGRAM.....	18
CASE STUDY NUMBER 5 & DIAGRAM.....	22
CASE STUDY NUMBER 6 & DIAGRAM.....	26
APPENDIX: TABLES, CHARTS AND CRASH DATA.....	30

VIRGINIA FATAL CRASHES INVOLVING 15-20 YEAR OLDS*

SUMMARY INFORMATION

1. The number of 15-20-year-old highway fatalities occurring in 2000 have dramatically increased by 47.5% (177 vs. 120) as compared to 1999 and 60.9% (177 vs. 110) compared to 1998. However, when comparing year 2000 with the previous eight years (1990-1997), the increase is not as dramatic, 17.2% (177 vs. 151 average). This suggests that the years 1998 and 1999 were atypically lower than the average over the past 10 years. (i.e., "Regression to the mean" phenomenon).
2. The total numbers of highway fatalities (all age groups) likewise increased in 2000 about 4.9% over 1999, yet it decreased by 1.5% from 1998. While the total number of highway deaths for 1999 was the fourth lowest in the past ten years (877), the 920 highway deaths during 2000 is lower than the 921 yearly average over this decade. This suggests that the year 2000 is about average with the total number of highway deaths for the 1990's.
3. Of significance is the increase in the percentage of 15-20 year old fatalities as compared to the total number of fatalities occurring on Virginia's highways during the three most recent years: 1998, 1999 and 2000. At least 12% (110 of 934), 14% (120 of 877) and 19% (177 of 920) respectively, of those killed were in this age group. In the year 2000, 15-20-year-olds experienced their single highest reported percentage of total highway deaths occurring during the last decade.
4. A significant finding among the Virginia crash statistics relates to the ages of drivers involved in fatal crashes over the past decade. In the past ten years combined, drivers aged 21-25 years were most frequently involved, averaging 13.7% of all drivers in fatal crashes. The worst year was 1991, when 17% were in this age group, and the lowest years were 1996 through 1999, when 12% of the drivers were 21-25 years old. The next highest age group for the 10 years combined were drivers 15-20 years old, who averaged 13.3% of drivers in fatal crashes. Their highest year, when they accounted for 17% of the drivers, was 1990 and they were at their lowest in 1998 and 1999 at 13%. However, for the past five years, drivers aged 15-20 years have surpassed their 21-25-year-old counterparts and maintained the highest involvement in fatal crashes. This trend is projected to continue in 2000. (In each five-year increment age group above 21-25, the numbers of drivers involved in fatal crashes generally reduce until age 70 and above).
5. Although 16 to 20-year-old drivers account for only about 7% of all licensed drivers, 16-20-year-old drivers accounted for about 13% of all drivers involved in fatal crashes. By this measure, their risk is double what would be expected in the general population. This is assuming that their total miles driven are similar. However, if the age group 16-20 drives fewer miles than others drive, then for every mile driven their risk may be even higher.

For 1998, 1999, and 2000:

6. The vast majority of crashes in which a 15 to 20-year-old was killed involved drivers in the same age range (88.7%, 88%, and 85.1% of fatal crashes for these years).
7. The majority of 15 to 20 year old drivers involved in these fatal crashes were male (72.1%, 74%, and 69.3%)
8. An overwhelming majority of 15 to 20-year-old drivers involved in fatal crashes with victims in the same age range were at fault (90.7%, 95.8%, and 91.2%). Drivers in this age range were less likely to have been at fault in fatal accidents in which the victims belonged to other age groups (41.2%, 55.8%, and 58.1%).
9. Most 15 to 20-year-old victims of fatal crashes were drivers (66.4%, 71.7% and 57.1%).
10. About half of the 15 to 20-year-old drivers in fatal crashes with victims in the same age range were accompanied by passengers (60.5%, 51.6% and 56.2%), and most (86.5%, 98%, and 88.3%) of their passengers in these years, respectively were under 21.
11. Running off the road was a very common first occurrence in fatal crashes involving 15 to 20-year-old drivers, especially in those crashes where they or their peers were killed (75.6%, 83.2% and 68.6%). Usually, between one-third to one half of these drivers then overcorrected. It is not surprising that single vehicle crashes were more common (64%, 75.8% and 63.5% of these fatal crashes) or that crossing left of the center line was a major factor in multiple collision fatal crashes for these drivers.
12. Consistent with past findings, most young victims were unbelted (61.8%, 65% and 62.1%). 34.5%, 22.5% and 31.1% respectively of 15 to 20-year-old fatal crash victims were ejected from the vehicles in which they were riding.
13. The most common casual factors in all fatal crashes involving 15 to 20-year-old drivers included:
 - Excessive speeds (51.9%, 52.5% and 52.4%)
 - Driver inattention/distraction (14.3%, 28.1% and 13.7%)
 - Driver left-of center on road (16.2%, 11.5%, and 9.5%)
 - Alcohol use (18.2%, 8.6% and 12.5%)

Highway Safety Recommendations

1. The following legislative, enforcement and judicial/administrative actions aimed at strengthening present state regulations for younger drivers may be warranted.
 - A. Increase the present six month time requirement between the issuance of a learner's permit and a driver's license for drivers under the age of 18 years. A three to six month increase in the required interval would give novice drivers more opportunity to obtain additional driving experience in the company of a licensed driver.
 - B. Establish a graduated and/or provisional type of license for drivers under the age of 18 years. These licenses could include limiting the number of (teen) passengers riding with a newly licensed driver, restricting the hours during which they may operate a vehicle, and/or other appropriate measures. Such actions could help reduce the exposure of younger, inexperienced drivers to high risk conditions.
 - C. Strengthen Virginia's present safety restraint statute by the enactment of a primary restraint use law for all vehicle occupants, front and rear seated positions.
 - D. Discontinue the practice of allowing driver education instructors to grant temporary driving privileges to learner's permit holders upon completion of driver education classes. Currently, teen drivers are given full driving privileges on a temporary basis until they can appear before a judge to receive their regular driver's license. Allowing permit holders to legally drive unsupervised only after attending the ceremony and formal instruction from the judge reinforces the responsibilities and serious consequences of driving.
 - E. Require those with learner's permits to complete a specified number of miles and/or hours of supervised vehicle operation during both night and day conditions before obtaining a driver's license. This measure gives novice drivers more time and experience behind the wheel before they are fully licensed.
 - F. Increasing driver education training beyond the current requirements of 50 periods classroom and behind-the-wheel training to allow for more behind-the-wheel training and simulation training.
 - G. Strict enforcement and adjudication of teen violators of the present "USE & LOSE" laws should continue.
2. Teenage drivers need to be made aware through public information and/or driver education training that they, as an age group, are the most dangerous drivers on the roads. Previous research done by the Crash Investigation Team and reports published by NHTSA and others have revealed that factors contributing to this problem include:
 - Driver inexperience-**
 - they are generally poor at identifying distant hazards along the roadway
 - they tend to exceed speed limits

- they often approach intersections at higher speeds than older drivers
- they tend to follow vehicles more closely than older drivers

Immaturity-

- teen drivers often use poor judgment
- they are more prone to peer pressures
- they are easily distracted by other teens inside the vehicle
- they often have an invincible attitude
- they may fail to think ahead of the consequences of their high risk driving behavior.

3. Continued informational and educational campaigns aimed at teens through school-based peer groups such as SADD, MADD, Youth in Action, PRIDE, DARE, and other similar programs to emphasize the importance of alcohol/drug free driving are encouraged.

4. Driver education instructors should continue to stress to students:

- the importance of devoting full attention to the driving task at all times
- the propensity of young males to drive recklessly and in a macho/high speed manner
- distractions caused by other teens inside the vehicles
- the necessity of all occupants to properly use safety belts
- the correct method of proper off-road recovery techniques,
- and the often different driving techniques and hazards associated with nighttime conditions.

5. Greater parental involvement is needed to ensure that parents understand the high risks associated with younger drivers and help reinforce safe driving attitudes and behaviors at home. Stressed should be parents knowledge of with whom their children are riding, where they are going, what times they will be on the highways and how responsible the teen driver is that will be operating the vehicle. If a parent sees an unsafe driving act or has reason to suspect that their child is driving hazardously, appropriate intervention by the parent is certainly needed and warranted. Periodic monitoring of their child's driving actions (i.e. through DMV records, first hand knowledge and/or inquiring of others who may be aware of their children's driving behavior) is strongly encouraged.

CASE STUDY NUMBER 1

Type of Crash:	Single vehicle run off the road
Day, Time, Season:	Tuesday, 9:58 PM, Fall
Vehicle Involved:	2000 Volkswagen Jetta VR-6
Roadway:	Rural, two lane undivided residential secondary highway, posted speed limit 35 mph
Occupants:	16-year-old male driver accompanied by three other teens (two of four were belted)
Severity:	Three fatalities, one minor injury & extensive property damage.
Causal Factors:	High speed, reckless driving and poor judgment on the part of the young, inexperienced driver.

SUMMARY:

On Halloween night, a 16-year-old male high school student had borrowed his stepfather's car and, with friends, had attended a seasonal party. The car was a new, high performance 2000 Volkswagen(VW) Jetta four-door hatchback, which was in excellent condition. It was equipped with front bucket seats and a rear bench type seat. After visiting with friends at the party, the driver allowed the car to be filled with a total of at least six passengers including the driver. These occupants were originally occupying the front and rear seats of the car, with two students in the trunk. After dropping off three passengers, the driver was enroute to take the remaining three passengers to their homes and then drive home himself. At this time, he was accompanied by a 15-year-old male in the right front, a 14-year-old female in the right rear and an 18-year-old female in the center rear. Because the car was equipped with an easy rear entry to the carpeted trunk area, the 18-year-old female was lying partially in the trunk and the back seat. Only the two front occupants were wearing their available lap and shoulder safety belts. In a residential part of a rural county, at a point when the northbound VW was only several miles away from its first intended stop, it met an oncoming car on a two lane undivided secondary highway. As the cars passed, an object was thrown from this car and struck the Volkswagen. Upon realizing that the object thrown was an egg and that the car appeared to be familiar, possibly one owned by a student at the high school the VW occupants attended, the driver decided to pursue the car. After turning around and giving chase, the two cars were traveling at high speeds along residential neighborhood streets and county secondary roads until the VW finally caught up with the suspected car while

approaching a highway curve. During the approximate three mile chase, the right front seated passenger was talking with Sheriff's authorities on a cell phone about the incident and was in the process of reading the license plate number and giving the dispatcher a vehicle description when the VW driver lost control of his vehicle. The dispatcher, after hearing the nature of the complaint, advised the caller to back off and discontinue the chase. However, the warning was given too late, as the dispatcher heard the ensuing crash over the cell phone in the VW.

Seconds prior to the crash the two cars were only about four feet apart. The VW driver allowed his right wheels to barely run-off-the right edge of the pavement. He then steered hard to his left, causing the car to yaw on the asphalt, cross the double solid yellow center lines and enter the opposite lane directly in front of a slowing southbound vehicle. The VW then ran off the road on the left side, vaulted a grassy ditchline and yard where it struck a large tree located about eight feet from the road's edge with its right side. This collision caused the car to tear nearly in half, the two right side doors to open and the rear axle to break. The car still possessed enough speed and momentum to spin off the tree and rollover beyond the tree at least one complete time. It came to rest on its wheels facing south in a yard about 50 feet north of the tree. One of the two ejected females lay on the yard beyond the VW. The other female came to rest near the base of the struck tree. Both these victims died instantly in the collision. The right-seated passenger died 3^{1/2} hours later at the hospital. The driver received only minor injuries in the collision and was able to unbuckle his safety belt and climb out of the wreckage. The driver survived this very hostile crash because he was belted. Regardless of belt use, the right front and right rear passengers would have died because of the direct impact with the tree. Had the 18-year-old female been belted in the left rear she likely would have survived this high speed collision.

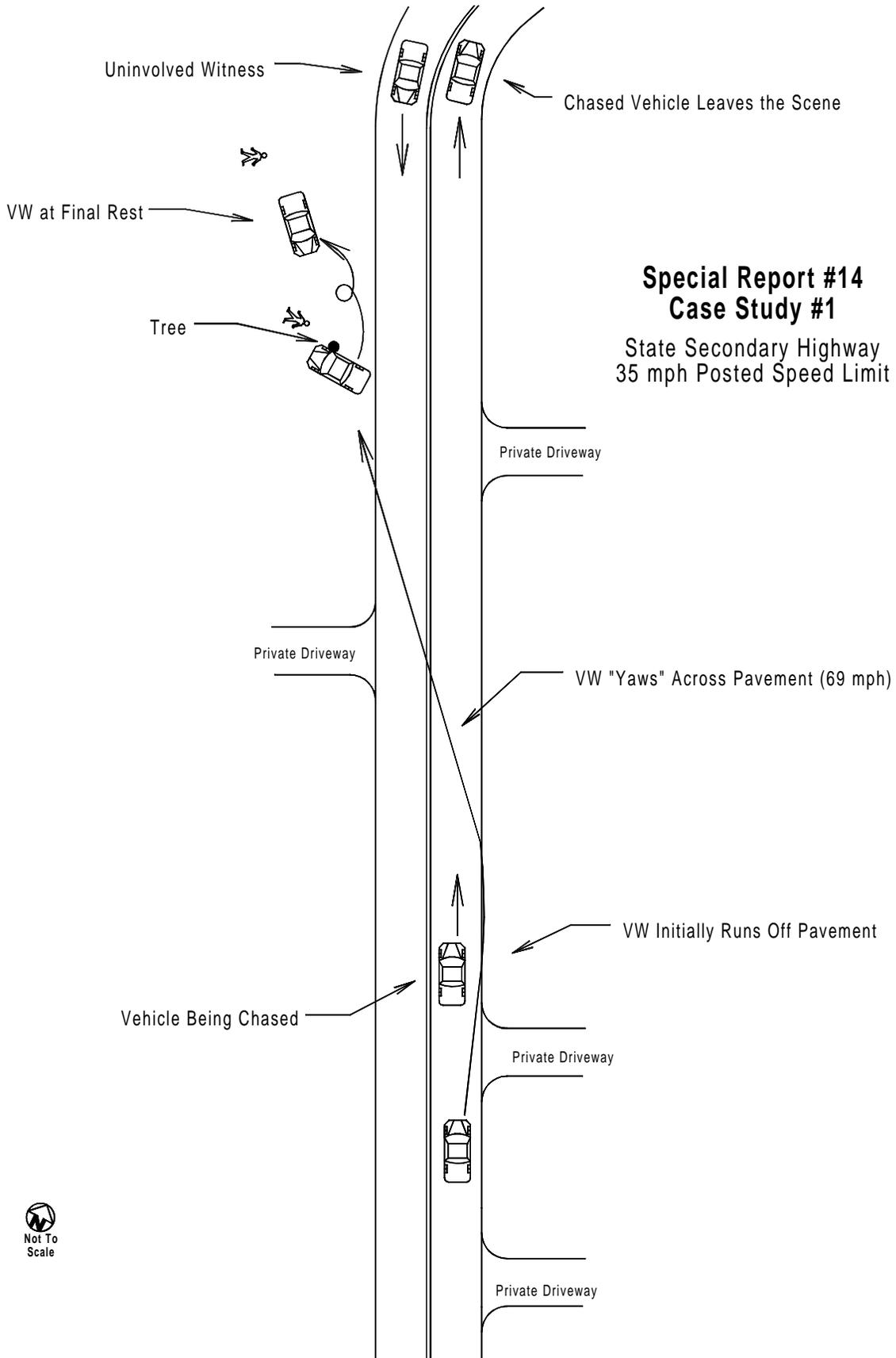
It was determined through accident reconstruction techniques and eyewitness statements that the VW was traveling at least 69 miles per hour when it was rendered out of control on this narrow, rural street posted for 35 mph. The surviving 16-year-old driver was later charged with driving under suspension, reckless driving and three counts of involuntary manslaughter. The 17-year-old driver of the car being pursued by the VW left the scene of the crash and was later apprehended at his high school the next day. After admitting to the events preceding the crash, he was charged with leaving the scene of an accident and his 16-year-old

student-passenger who threw the egg at the VW was charged with throwing a missile at an occupied vehicle.

This crash is a tragic example of a Halloween prank, which turned deadly. It illustrates the immature behavior of one high school student intentionally throwing an object at a moving car and the irresponsible, reckless behavior of the other driver giving chase. This crash emphasizes the lack of good decision making skills as well as poor judgment and driving skills associated with these two teenage drivers. Apparently these teens did not think ahead about the possible consequences of their irresponsible actions. In addition to the lives of three teens which were needlessly lost, the actions of the two young drivers also risked the lives of other innocent motorists they encountered that night.

Of primary importance in this case was the driving history of the 16-year-old driver. His DMV record revealed that he received his learner's permit one day after reaching his fifteenth birthday and had completed an approved driver education course. Sixteen days before receiving his full license, he was arrested for driving without a driver's license. He was later convicted of this and his driver's license was suspended 90 days and received 3 demerit points. He was also ordered by a court to attend a traffic safety seminar clinic and by DMV to attend a driver improvement clinic interview. He complied with both orders. However, 29 days later he was involved in this fatal, high-speed crash, even though he was still under suspension by the court.

The fact that he was illegally driving at the time of the crash and after he had attended a court hearing and clinic resulting from an earlier conviction indicates that he learned little from his past actions and this punishment. This is especially apparent considering the manner in which he drove just minutes before the crash. A major concern for The Crash Investigation Team was the apparent lack of involvement and/or guidance he received from his parents concerning his driving behavior. This incident clearly illustrates the absolute need for parents to be aware of and involved with their children's driving activities and to restrict their driving privileges when appropriate. This young driver was given permission by his stepfather to drive the family car on this fateful night, even though it was in direct violation of Virginia law. This incident clearly illustrates the absolute need for parents to be aware of and involved with their children's driving activities and to restrict their driving privileges when appropriate.



Special Report #14
Case Study #1
 State Secondary Highway
 35 mph Posted Speed Limit


 Not To
 Scale

Case Study Number 2

Type of Crash:	Single vehicle, run off the road
Day, Time, Season:	Thursday, 3:40 PM, Summer
Vehicle Involved:	1996 Ford Thunderbird, 2 door
Roadway:	Rural, two lane undivided primary highway, posted speed limit 55 mph
Occupants:	15-year-old female driver alone in car, unbelted
Severity:	One fatality and property damage
Causal Factors:	Driver inattention/distraction

SUMMARY:

On a Thursday afternoon about 3:40 PM, a lone 15-year-old female was driving her parents' 1996 Ford Thunderbird northbound on a rural, two lane undivided state primary road. She had just completed a normal school day while in the tenth grade of high school and was on her way home located about three miles away. She had driven about two miles prior to the crash.

On this afternoon, the driver was only one day short of her sixteenth birthday. As a result, she was illegally operating her car. She had a learner's permit, which had been issued eight months prior to this date, but she was not fully licensed. She had completed an approved driver education course given at a private driving school nearby. Upon completion of this course, she was given a certificate, which entitled her to legally drive upon reaching her sixteenth birthday without being accompanied by a licensed driver 21 years old or older. This certificate was tendered to her before the judge in this jurisdiction issued her a permanent driver's license, which usually occurs within weeks of successfully completing the driver education course and reaching age 16.

It was reported to the Crash Investigation Team that on the morning of the crash her parents had left home to go to work before she left for high school. Since this was the beginning of the new school year, it is speculated that she decided to drive her "new car" to school without them knowing of it, since it was only the day before her birthday. It was anticipated that she would be routinely driving the car to and from school when she became legal to do so. Because her high school started after her parents left home in the mornings and let out before her parents came home in the afternoons, the Team feels that she decided to go ahead and drive illegally for this short time period.

After the car had negotiated a series of slight curves and gentle hills with no apparent difficulty, it entered a relatively long straightaway leading into a moderately sharp curve to the right. While the car was negotiating the beginning of the curve, it gradually ran off the asphalt surface with its right side tires and entered the grassy shoulder. The car then traveled 95 feet parallel to the road with its right side in the grass until it was abruptly steered back into the roadway by its driver. The car re-entered the road at a sharp angle and, as it was beginning to cross the double solid yellow centerlines, it was again steered hard to the right in an obvious driver attempt to correct the vehicle's path of travel. After traveling across the northbound lane a distance of 118 feet, the car ran off the road on the right a second time and entered the shoulder, where it traveled over a slight ditchline and through a fenced area. As the car was running through the dense underbrush at a sharp angle away from the road, its left front and side struck a large tree directly at the driver's seat area. Because the 15-year-old driver was not belted, she was thrown away from the steering wheel and her head went partially out the side window opening where it struck the tree with which the car had just collided. The car traveled a total distance of 78 feet off the road, then striking with its right front corner a second large tree where it came to rest. The driver received extensive head injuries and was thrown to the right side of the car, where she came to rest in the floor area.

A motorist approaching from the opposite direction saw the car swerve across the centerlines in front of him and then witnessed through his rearview mirror the car run off the road as he drove by. This uninvolved motorist then turned around and drove back to the scene to assist the badly injured driver. Because the car was nearly hidden in the deep brush under the low lying branches of the trees, it would not have been readily detected had this motorist not stopped and alerted authorities. Within minutes, other motorists stopped at the scene, including the investigating Trooper and emergency medical personnel. The driver was flown via helicopter to a large hospital trauma center 40 miles away where she died without regaining consciousness about two hours later.

Tragically, one of the bystanders who arrived on the scene and stopped was the driver's mother, who was enroute home. Once she identified that the car was her daughter's, she had to be restrained from going closer to the vehicle.

Prior to the crash, the 15-year-old driver was reportedly in good health and good spirits, and she was not taking any medication and/or alcohol at the time of the crash. The involved car,

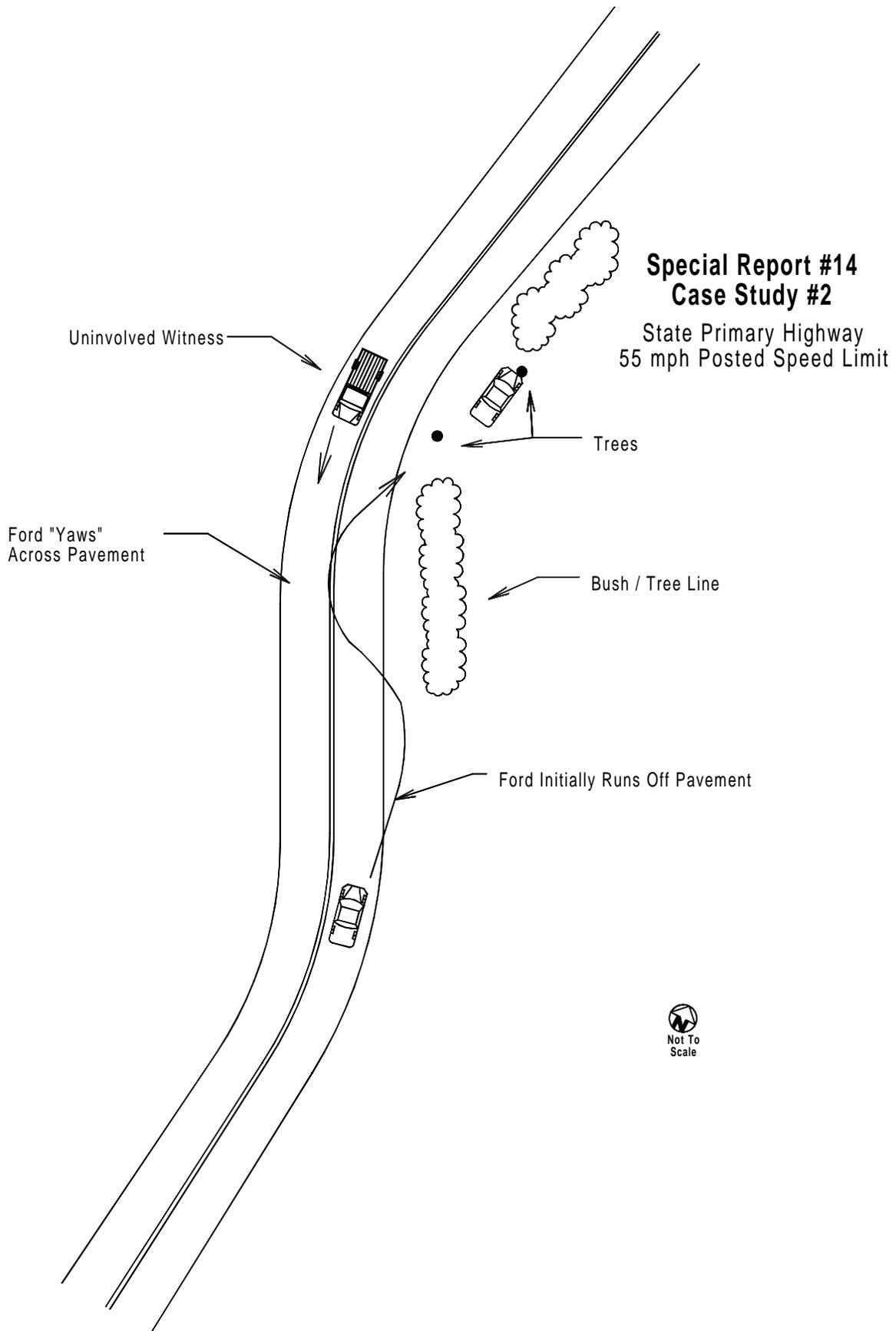
which was purchased only two weeks prior to the crash, was reported to be in excellent condition with no known defects.

The exact reason(s) the driver ran off the road are speculative. According to the eyewitness, no other vehicles or foreign objects were around the Ford when it “fish tailed” off the road. Interestingly, a pager clipped to the car’s front console was found inside the car after the crash. Whether or not the driver had received a page at the time of the crash could not be determined by the Team. It is possible, however, that she may have looked at the pager if it activated, causing her attention to be taken away from her driving task. The car’s radio was on and it was noted that her schoolbooks and purse were found lying in the car’s rear seat area after the crash. Physical evidence at the scene indicates the driver did not execute any emergency braking while she was initially off the road or when she regained the road the first time. Since her speed was not excessive (based on the amount of damage to her car and from the car’s tire-scuff marks on the pavement), the Crash Team estimates that she was likely driving at or below the posted 55 mph speed limit. This being the case, she would have had approximately three seconds in which to at least attempt some emergency braking action; however, there was no evidence of braking at the time. Had she braked during the 213 feet that she traveled before running off the road the second time, she may have stopped and/or slowed, sufficiently reducing the impact with the trees that proved fatal for her. The fact that an approaching motorist was in close proximity of her car when she was regaining the road may have influenced her sharp steer angle to the right just before she ran off the road the second time. She clearly could have seen the oncoming vehicle because of the good sight distance around the curve and thus may have over-steered in order to prevent a possible head on collision.

We do not know why she ran off the road, but like most teen drivers she was inexperienced which she demonstrated by her driving behaviors. She was operating a vehicle that was not very familiar to her and was not wearing her safety belt at the time of the crash. She initially ran off the road in a gradual manner, probably due to inattention and/or distraction, but once off the road she panicked and over corrected twice by steering excessively. No attempt to brake over this relatively long distance was undertaken by the driver.

Due to publicity generated by this tragic crash in this small, rural community, the investigating Trooper was contacted by local citizens seeking information and/or advice on strengthening safety for young drivers. Several were parents of teenagers at this driver’s high

school. According to the Trooper individuals in the community expressed interest in contacting members of the Virginia General Assembly in their area to recommend raising the legal driving age. He also said they discussed the need for strong enforcement of existing traffic laws for teens, the possibility of graduated or conditional licenses for teens, strong interaction of parents/schools with younger drivers and the need for all teens riding in vehicles to be belted. It is the Team's opinion that had the driver been properly wearing her safety belt, her chances of remaining upright behind the steering wheel and out of harm's way when the car hit the first tree would have increased. Therefore, her chances of not striking the tree and surviving this crash would have been maximized.



Not To
Scale

Case Study Number 3:

Type of Crash:	Single vehicle, Run-off-road
Day, Time, Season:	Tuesday, 3:23 PM, Fall
Vehicle Involved:	1995 Mitsubishi Montero, SUV
Roadway:	Rural, four lane divided Interstate highway, posted speed limit 65 mph
Occupants:	18-year-old female driver accompanied by a 20-year-old female
Severity:	One fatality, one minor injury and property damage
Causal Factors:	Driver distraction

SUMMARY:

On a sunny, Tuesday afternoon in September at about 3:20 PM, two college students driving through Virginia from New York and enroute to their homes in Texas were southbound on a rural Interstate highway. The driver was a belted 18-year-old female and she was driving her 20-year-old female passenger's parents' SUV. The two had been driving for several hours and had stopped several times for breaks and changing of drivers. Inside the 1995 Mitsubishi four wheel drive Montero were clothing and light furniture items being taken back home. At a point where a slight roadway curve to the right ended and began a gentle downgrade and straight section, the SUV gradually ran off the left side of the pavement. At a speed estimated at 70 mph by witnesses, the vehicle traveled with its left side tires along a straight line for nearly 100 feet while in the median and then it was abruptly steered back to the right. The Montero regained the pavement and was again steered hard to the left, causing it to run off the pavement a second time. While in the median, the vehicle was steered hard a third time, causing it to rotate until its front faced toward the pavement. Due to the soft grassy terrain and the sharp angle of the Montero, it began to rollover onto its left side. Because of its high speed, compounded by the SUV's higher than normal center of gravity design and the roadway construction, the vehicle continued to roll at least $2\frac{3}{4}$ times. It then came to a stop resting on its right passenger side approximately 150 feet from where it ran off the road. It was facing the pavement at a right angle with its front resting partially over the paved inside shoulder.

The properly belted 18-year-old driver was held inside the vehicle by her lap and shoulder safety belt and she rode down the collision with only minor injuries, primarily resulting

from items tossed about inside the vehicle. The 20-year-old passenger, however, was not so fortunate. Because she was not wearing her safety belt, she was thrown around inside the vehicle during the crash sequence and was eventually ejected through the passenger side window area as the Montero was rolling over. She came to rest about 50 feet beyond the vehicle and was found lying in the median. She sustained numerous massive chest and extremity injuries, which would later prove fatal. Because the crash was witnessed by several other southbound motorists, they were able to quickly call for emergency authorities who arrived within minutes. Both victims were attended to and the passenger was flown via helicopter to a major hospital trauma center located about 45 miles away. She died in the hospital emergency room of chest and abdominal injuries nearly 90 minutes after the crash occurred. She never regained consciousness from the time of the crash until her death. The investigating Trooper completed his investigation and later charged the driver with reckless driving. No other vehicles were involved in the crash.

According to the findings revealed in the investigation, it was determined that both the driver and vehicle were in good condition. No roadway defects existed that would have contributed to the crash circumstances. The driver advised the Trooper that, as they were proceeding through Virginia, she told her passenger and best friend who she had grown up with, that she had a headache. Instead of pulling off the road, she continued to drive and her passenger released her safety belt and reached into the backseat area for some ibuprofen. Upon securing the medication and turning around in her seat, the passenger handed the tablets to the driver. The driver turned toward the passenger, picked up the tablets in her right hand and began to take them simultaneously to the vehicle running off the pavement. Before the passenger could re-belt herself, the Montero was being over-steered several times just prior to overturning. The driver stated that she took her eyes and attention away from the road for “only a few short seconds” when she found herself in the median and the vehicle was out-of-control.

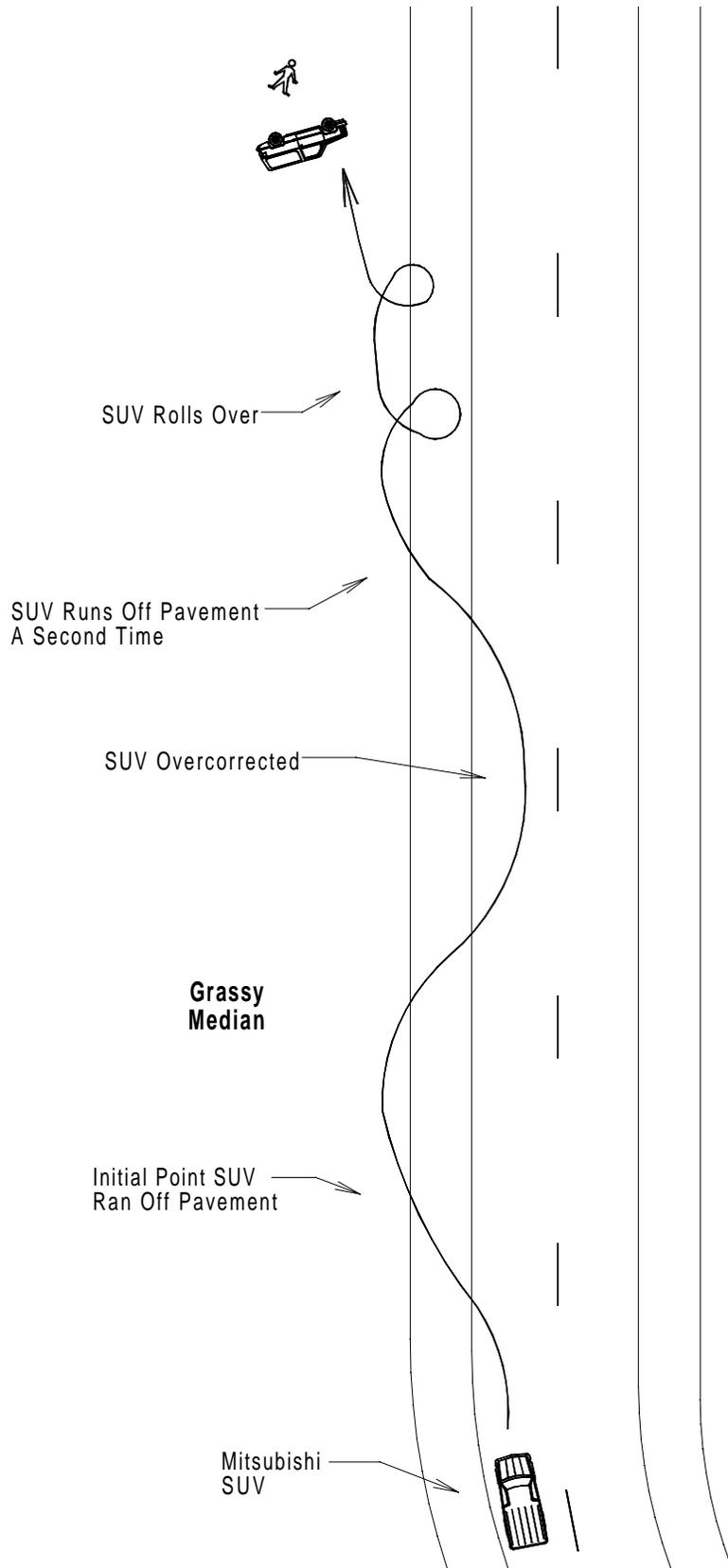
Based on the dynamics associated with the crash and the damage on the vehicle, had the passenger been properly belted, the Crash Investigation Team feels that she would have walked away from this collision with few or no injuries. It was during her ejection, the contact inside the vehicle and impacts with the ground that caused her fatal injuries.

This tragic crash is as a result of a driver being distracted from her driving task. Since she was traveling 70 mph or about 103 feet per second and she looked away from driving for about two seconds, the vehicle would have traveled almost 206 feet (over two-thirds the length of a

football field). Likewise, the vehicle had traveled to its left only a few feet during this short time period, but enough for it to be off the pavement before the driver was aware of her hazardous predicament. Instead of allowing the vehicle to slow down on its own before gradually steering, she made matters worse by oversteering repeatedly, causing her to lose control of the vehicle. While this type of instinctive adverse driving behavior can be executed by a driver of any age, it is especially common with younger, inexperienced drivers like this 18-year-old. She had been driving nearly two years, and she had a valid Texas driver's license with no restrictions. A Virginia DMV check revealed that she had accumulated no infractions within the Commonwealth. She advised the Trooper that she had driven this vehicle only several times before the crash date and was, therefore, not as experienced with its operation and handling characteristics as her passenger. While this young driver committed at least three unsafe driving acts (exceeding the posted speed limit, driver distraction, and panic/over correction), perhaps had she had more driving experience, she may have made better decisions in the pre-crash and crash phases of this traumatic event.

The investigating Trooper advised the Team that he and his fellow Troopers have worked many run-off-the road crashes similar to this one. In most cases, the at-fault drivers were young, inexperienced drivers who do not know how to properly correct a vehicle that has run-off-the road. In almost every case, these drivers panicked and oversteered, which resulted in a crash. It was strongly recommended that driver education classes, DMV licensing services and others associated with highway safety emphasize more to younger drivers how to properly regain the pavement when they inadvertently run-off-the road. Additional hands-on experience and/or driver simulation exercises are needed at low speeds to show inexperienced drivers what happens when a vehicle gradually runs off the pavement edge and then how to properly regain the road. The Trooper also questions the wisdom of parents purchasing SUV's for their children to drive, due to their higher chances of rolling over when steered abruptly. These vehicles are less forgiving than lower-designed automobiles. This problem is exaggerated when driven by younger, less experienced drivers. The Crash Team has investigated many such cases and concurs that more awareness and training are needed for younger/inexperienced drivers and also questions the wide use of SUV's for teen drivers.

Special Report #14
Case Study #3
Interstate Highway
65 mph Posted Speed Limit




Not To
Scale

Case Study Number 4

Type of Crash:	Single vehicle, run off the road
Day, Time, Season:	Saturday, 9:30 PM, Fall
Vehicle Involved:	1988 Honda Accord, four door sedan
Roadway:	Rural, four lane divided state primary/limited access highway. Posted speed limit 65 mph
Occupants:	16-year-old belted male driver accompanied by an unbelted 15-year-old passenger
Severity:	One fatality and property damage
Causal Factors:	Driver distraction

SUMMARY:

On a Saturday night in October at about 9:30 PM, a 1988 Honda Accord driven by a 16-year-old male was northbound on a four lane divided primary highway. Accompanying the driver was his 15-year-old male cousin, seated in the right front. The driver was properly wearing the car's combination lap/shoulder belt and the passenger was unbelted. The weather was cool and dry and no roadway or mechanical defects on the car were suspected. The driver was a student at a nearby high school, as was his passenger. The driver owned the car and was familiar with the vehicle. He was also familiar with the highway, since he lived in the area near the crash site. His DMV record indicated that he had received his driver's license only about 6 weeks prior to this night. He had completed an approved driver education course and had received a learner's permit just over nine months earlier. He had received no driving convictions and he had a zero driver point balance at the time of the crash.

At a point where the highway is constructed on a slight downgrade and long straight section of road preceding a curve to the right, the Honda veered right from the right outside lane and onto the paved emergency shoulder. It then diagonally crossed the shoulder and entered a grassy berm paralleling the road. Apparently startled, the driver steered hard to his left in an attempt to regain the road, thus causing the Honda to abruptly change its direction of travel and head back toward the roadway. The driver, sensing that the car was headed back onto the road sharper than intended, steered hard again, this time to the right. This action caused the Honda's left side tires to yaw on the asphalt-paved shoulder before it ran off the road a second time. With this steering action, the car was rendered out-of-control sliding, broadside across the grassy berm

and a paved drainage ditch. The car then struck and began to climb a steep, raised embankment. The car had sufficient speed and momentum to travel up the embankment for about 30 feet while simultaneously beginning to rollover onto its left side. It then traveled down the embankment while continuing to roll until it reached the concrete drainage ditch at the embankment's foot where it stopped on its roof. It had rolled over at least $1\frac{1}{2}$ times.

The Honda had also rotated nearly 180 degrees and was facing south toward the direction from which the car was originally traveling. Physical evidence at the scene indicated that the Honda had traveled out of control about 425 feet from the point where it first ran off the road. Speed calculations from the car's tire-yaw marks indicate that it was traveling about 70 mph during the first overcorrection.

During the rollover, the unbelted passenger was thrown from his seat and initially struck the inside of the car and then was ejected through the right side window onto the ground beside the car. He sustained multiple body and head injuries and died at the hospital nearly six hours later of a blunt head trauma. The belted driver was held in his seat during the crash and rollover and came to rest inside the car behind the steering wheel but upside down. Because he was belted, he rode down the hostile forces, remained inside the car and was uninjured in the crash. Moments later, northbound motorists stopped at the scene to offer assistance and called medical/police authorities, which responded within 15 minutes.

The surviving driver told the investigating Trooper that he and his passenger had left his cousin's house located about ten miles away and were en route to his home when the crash occurred. They were about seven miles away from their destination when he lost control of the car. When asked what happened, the driver stated that he reached over and started adjusting the car's radio/CD player. In the time it took him to reach for and find the CD that he wanted, his car had already run off the road. He then quickly and abruptly turned the steering wheel in an attempt to regain the road and subsequently lost control of the vehicle. A new CD player and several CD's were found in the car after the crash. The driver was later charged with reckless driving.

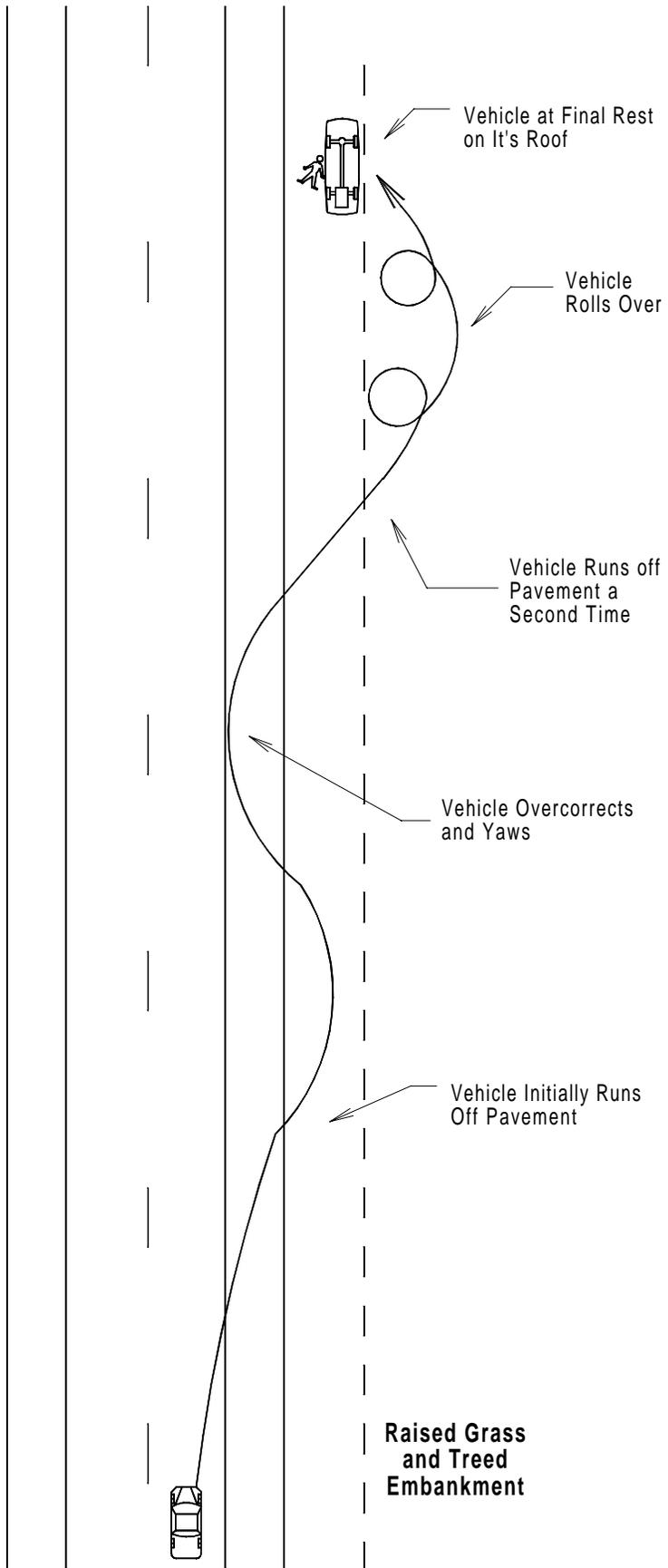
This tragic crash illustrates the dangers of drivers diverting their attention away from their driving task, even for a short while. This young, inexperienced driver failed to consider the consequences and high risks of this seemingly innocent action. He should have had his passenger operate the radio/CD player. Once he realized what was happening, instead of gradually steering

the vehicle back onto the road. He oversteered in a panicked reaction, which made matters worse. Considering the wide and safe roadway/shoulder design, had he gradually slowed and steered in a less abrupt manner, he could have easily regained the road without a mishap.

This was a tragic crash resulting in the death of a 15-year-old who was not belted and was ejected. It was also a success story in that the driver was belted and incurred no injuries. Without a doubt, considering the car's high speed and vehicle impact/rollover dynamics, had the 16-year-old driver not been belted, he most likely would have been ejected and incurred serious or fatal injuries

Special Report #14
Case Study #4
State Primary Highway
65 mph Posted Speed Limit

**Grassy
Median**



CASE STUDY NUMBER 5

Type of Crash:	Multiple vehicle, angle collision
Day, Time, Season:	Wednesday, 4:15 PM, Fall
Vehicles Involved:	1992 Saab 900, four door sedan 1989 Full size International school bus
Roadway:	County maintained primary highway intersection between a four lane divided roadway and a two lane road. Speed limit 45 mph
Occupants:	16-year-old male driver, 15-year-old male passenger and 15-year-old female passenger in the Saab. 62-year-old male driver and 15-year-old female in bus.
Severity:	Two fatalities, two minor injuries and extensive property damage.

SUMMARY:

On a clear, sunny Wednesday afternoon at about 4:15 PM a full size public school bus was stopped at a stop sign on a major, four leg crossroad intersection. The bus was being driven by a 62-year-old male who was belted and was accompanied by one student, a 15-year-old passenger. The bus driver was completing his normal afternoon route and was anticipating going straight across the large intersection. From the stop sign location, the westbound bus driver could see traffic approaching from his right only about 500 feet away. His view was obstructed by trees located in the median and compounded by his relatively high seating position above the ground, which prevented him from seeing underneath the tree limbs. Although the season was autumn, the trees located in the median separating the north and southbound lanes of travel still retained their foliage. According to the bus driver, once traffic had cleared on the main road, he pulled out in a normal fashion and began to cross the northbound lanes and the median crossover. As he continued to accelerate, he then passed the left inside southbound lane and, as he was crossing the right outside lane, his bus was struck violently in its right rear side. He advised police authorities that he never saw the approaching car that struck him.

The southbound vehicle that collided with the bus was a 1992 Saab 900, four door sedan operated by a 16-year-old driver. Accompanying the driver were two of his high school classmates, a 15-year-old female in the right front and a 15-year-old male in the right rear. Both male occupants were wearing their available lap and shoulder belts and the female in all

probability was unbelted. Both airbags in the Saab deployed on impact. The school bus was struck in its right side just in front of its rear wheel by the car's full front. Due to the height difference between the two vehicles, the lower Saab traveled partially underneath the bus where it collided with the undercarriage, drive train and frame. The car sustained major front end damage above its bumper, including its hood, fenders, windshield, roof, A-Posts, doors and left side. Its left front axle/wheel area was also fractured and the frame was bent and dug into the asphalt pavement. The car's body was warped toward the left side. Due to the car's speed and momentum, it forced the bus to rotate clockwise while pushing it about 35 feet from the point of impact. The car traveled about 25 feet beyond the point of impact. At final rest, the bus and car had separated and the bus was facing northwest while the car faced southwest.

All three car occupants remained inside the vehicle at final rest. When the car underrode the bus, the driver and female passenger struck the collapsing car's interior roof area and possibly the bus. Both sustained major head and face trauma and the driver died at the hospital about four hours after the crash. The female passenger died at the hospital also of blunt head trauma about one hour later. The rear seated passenger received minor injuries and was released from the hospital the day after the crash. His lack of injuries was due to his being belted and being located further back from the colliding forces. The school bus driver was not injured and his passenger only received minor injuries and was released from the hospital after initial observation. The school bus driver was later charged with reckless driving.

The investigating officers advised the Crash Team that the three students had left their high school located about six miles away and were en route to their respective homes when the crash occurred. According to the surviving passenger, they were not in a rush and did not have to be at a particular location at a certain time. This passenger could not estimate the car's speed but stated nothing erratic or unusual occurred before impact. The radio was on and they were listening to their normal rock station. He doesn't believe that the driver was adjusting the radio at the time. He said he did not see the school bus because he was looking down momentarily at the floor area. Upon hearing the female cry out, he looked up as the car was colliding with the bus.

From physical evidence at the scene and on the vehicles, it appears that the car driver never attempted any evasive action before impact, such as swerving or braking. The school bus driver also attempted no evasive action, since he never saw the approaching car. The probable speed of the bus was estimated at between 15-20 mph by the Crash Team. The speed of the car at

impact was estimated by the investigating officers at between 54 and 58 mph on this road posted for 45 mph. A “time-distance” analysis, which utilizes the average acceleration rate of the bus to the point of impact, the available sight distance, and the approximate speed of the Saab, suggests that the car was beyond the available sight line for the bus driver when he first pulled out. However, as he neared the center of the intersection within the median crossover, both drivers should have been able to see each vehicle well before impact. Since the bus driver said he never saw the Saab, this would indicate that he never turned his head to his right again to search for approaching traffic. The Saab driver, however, would have been able to detect the approach of the bus since his head should have normally been facing forward, unless he momentarily turned his attention away from his driving task. The fact that no evasive action was taken by this young driver when the bus was clearly in front of him, at least for the last few seconds before impact, might suggest that he was not paying attention and/or was distracted just prior to the collision. Past crash studies have revealed when teen drivers are accompanied by other teens, their crash rates significantly increase. Likewise, when these drivers are involved in crashes in similar circumstances, the younger drivers are more often at fault than during times when they are alone and/or as compared to older drivers.

This tragic crash is another case of a young, inexperienced driver being involved in a serious crash. The 16-year-old driver had received his driver’s license only 3^{1/2} months earlier. He had completed an approved driver education course and was awarded his learner’s permit 15 months prior to the crash. His driving history was good in that he had no other reported accidents and/or driving infractions. The amount of driving time that he had with the Saab and/or over this heavily traveled roadway is unknown to the Team.

The site of this crash was the same location of another teen-involved fatal crash that occurred 2^{1/2} months earlier. In that particular instance, a 17-year-old driver was operating his car at a high speed, while intoxicated, and swung wide in the curve/intersection, striking the median. The car struck several trees, resulting in the death of the 17-year-old passenger. As a result of their two crashes and the publicity surrounding them, the intersection is now scheduled to have a fully actuated traffic signal installed.

CASE STUDY NUMBER 6

Type of Crash:	Single vehicle, run off the road
Day, Time, Season:	Wednesday, 5:00 AM, fall
Vehicles Involved:	2000 Chevrolet Cavalier, 4 door
Roadway:	Rural, four lane divided state primary road, posted speed limit 55 mph
Occupants:	18-year-old female accompanied by a 21-year-old female in the right front, both belted
Severity:	Two fatalities and property damage
Causal Factors:	High speed, driver intoxication and inattention

SUMMARY:

On a Wednesday morning at 5:00 AM, an 18-year-old female was driving her 2000 Chevrolet Cavalier at a high rate of speed eastbound on a four lane divided state primary highway. She was accompanied by her 21-year-old female friend seated in the right front. Both occupants were intoxicated and wearing their available lap and shoulder safety belts. The weather was clear and dry, the ambient light was dark and the vehicle and roadway were in excellent condition.

At a point where the asphalt-paved roadway is constructed on a long, level straightaway, the car drifted off the left inside lane and entered the depressed grassy median. After traveling for about 43 feet along the edge of the median with the car's right side tires on the pavement, the car was abruptly steered hard to its right in a driver attempt to regain the road. The vehicle re-entered the road and began to sharply cross both lanes of travel while yawing 120 feet across the pavement. This clockwise rotation sent the car into a partial broadside skid as it ran off the road on the right. The Cavalier then crossed a gravel/sod shoulder and entered a grassy berm that sloped away from the road. While crossing the shoulder, the car struck and knocked down a highway sign. After traveling about 100 feet, the car slammed into a tree with its left side, causing over three feet of penetration damage directly into the driver's seated position. The car, still possessing a high amount of speed and momentum, spun off from this tree and continued eastward where it began to rollover onto its right side. After traveling an additional 34 feet, it struck a second tree with its roof, which caused the car to stop on its right side. The total distance that the Cavalier traveled from the first time it ran off the road to final rest was about 300 feet.

Due to both occupants being belted, they stayed inside the car until final rest. However, because of the high-energy forces involved with the struck trees, both occupants received massive injuries in the crash. Both died instantly of blunt trauma to the chest and abdomen.

The wrecked car was spotted by uninvolved motorists and emergency authorities were called. The investigating Trooper completed his on-scene investigation, utilizing proper accident reconstruction techniques that yielded the car's probable speed and dynamics associated with the crash. Physical evidence indicated that the car, when it yawed across the road before running off the pavement the second time, was traveling above 70 mph on this road posted for 55 mph. Considering the crash occurred in the early morning hours, little traffic was expected to be on the highways at the time, and no witnesses could be found. Despite the use of safety belts, this crash was so severe that it was not survivable.

According to the investigating Trooper, both girls on the night of the crash had worked till about 10 PM They then visited with the driver's boyfriend. Sometime during the morning hours, the two decided for undetermined reasons to drive to a nearby city located about 40 miles away. At the time of the crash, they were about 20 miles from their destination.

Both victims were under the influence of alcohol at the time of the crash; each had blood alcohol concentration levels measured at .15%. The 18-year-old driver had been arrested for driving while intoxicated two months prior to the fatal crash with a BAC greater than .08%. She had been convicted of speeding 10-19 mph above the speed limit in her hometown less than three months before the fatal crash. Her driving record indicated that, at the time of the time of the crash, she had a balance if minus 3 points. On an earlier occasion, for an unknown reason, she lost her driving privileges for six months.

She received her learners permit on her fifteenth birthday. Eight months later she received a duplicate learner's permit because she lost her earlier one. On about her seventeenth birthday, she obtained her first driver's license and four months later she received a duplicate because she told DMV that she had lost that one too.

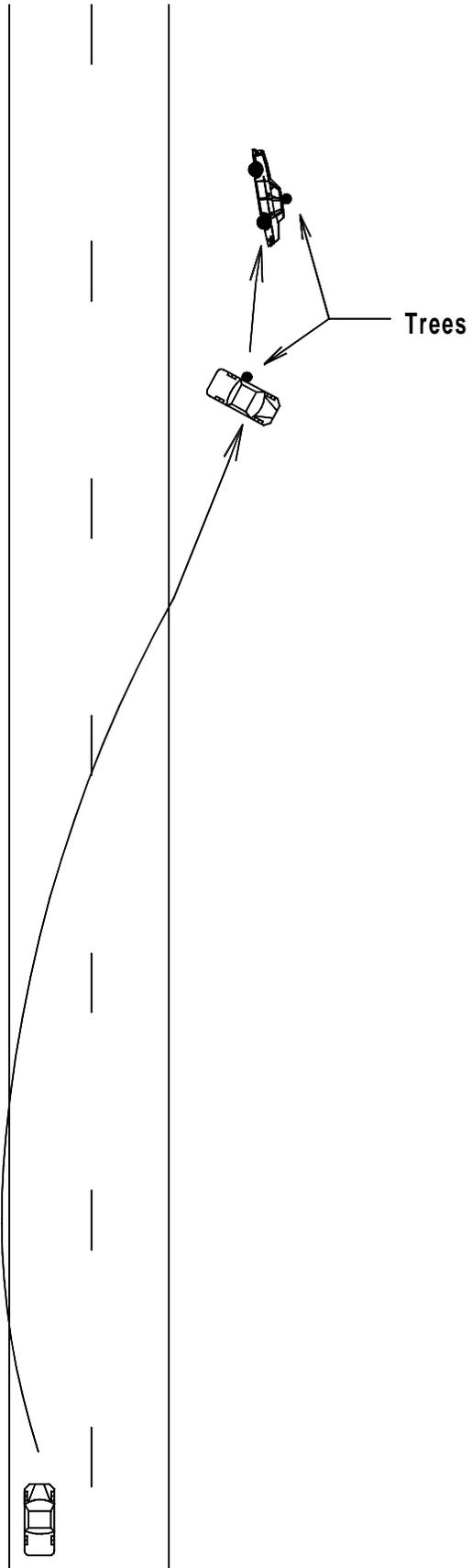
This 18-year-old driver was showing signs of becoming a problem driver in the short sixteen month time period that she was legally able to drive. On the night of the crash, she exhibited the same type of reckless driving behavior for which she had been convicted in the past. She was speeding, driving while intoxicated and probably driving in an inattentive manner. The reason(s) she ran off the road initially was likely a combination of these three factors. The

fact that she had such a high BAC level (nearly twice the legal presumption level for adult drivers) is also alarming. Virginia's alcohol use laws prohibit persons under the age of 21 from using or even possessing alcohol. According to Virginia crash statistics involving all fatal crashes during 1998, 1999 and 2000, the alcohol use for 15-20-year-old drivers involved in these crashes was at least 18.2%, 8.6%, and 12.4% respectively. While the figures may be lower for this age group than that of their older driver counterparts involved in fatal crashes, they are still too high and unacceptable. What makes young drivers doubly hazardous when they have been drinking is that they are inexperienced both at using alcohol and driving a motor vehicle. Compounding this situation is their often immature behavior and lack of judgment and motor skills, which worsens an already less-than-optimum condition on our highways. This tragic crash illustrates the need for all drivers, and particularly younger drivers, to not drink and drive, not speed and to know how to execute the correct off-road recovery procedures.

**Special Report #14
Case Study #6**

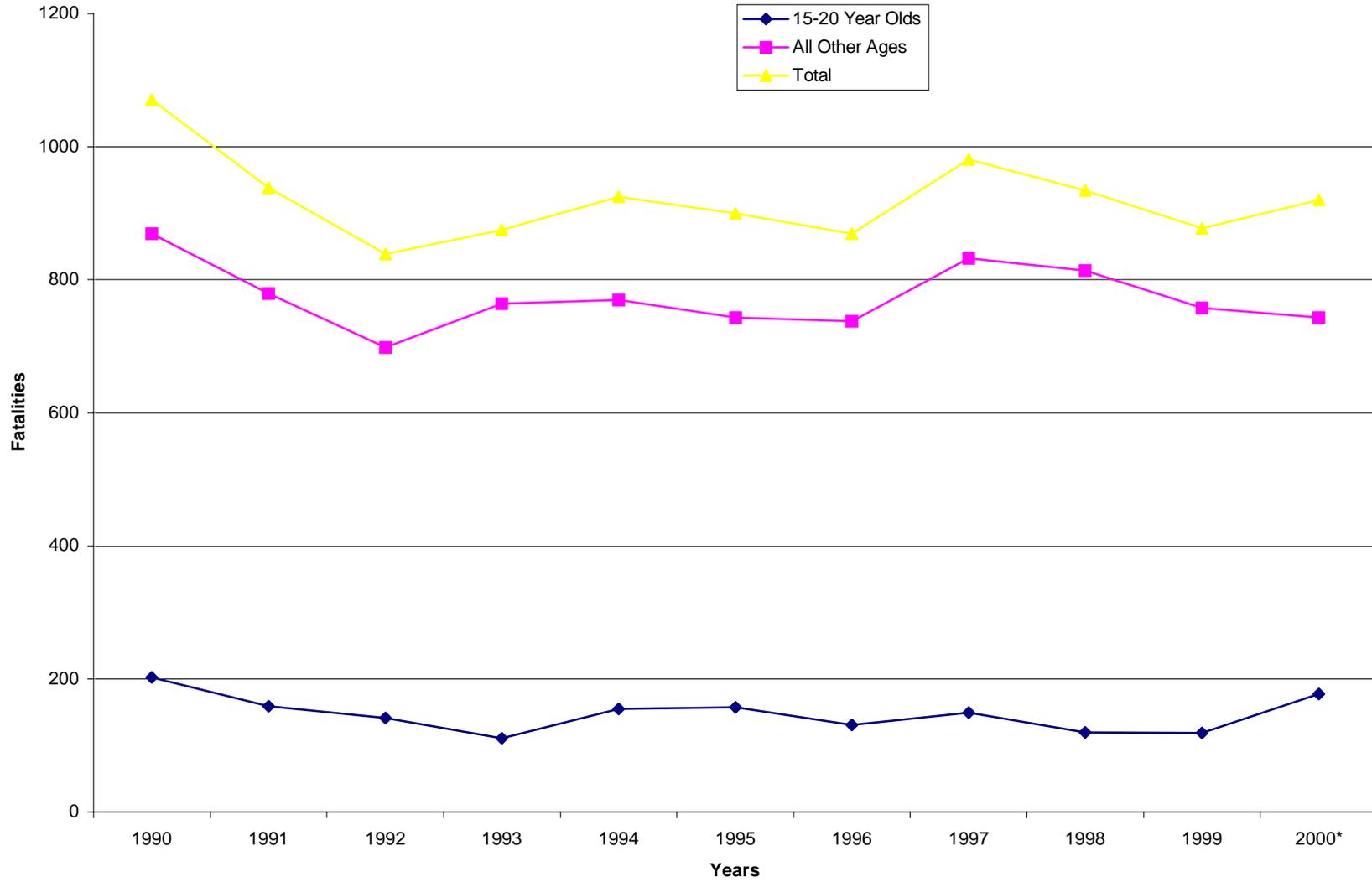
State Primary Highway
55 mph Posted Speed Limit

Grassy
Median



**APPENDIX:
TABLES, CHARTS AND CRASH DATA**

Virginia Fatalities (1990-2000)



* 2000 is Preliminary Data Only

All Drivers Involved in Virginia Fatal Crashes by Driver Age (and % of Total)

<u>Ages</u>	'99	'98	'97	'96	'95	'94	'93	'92	'91	'90
15-20	154 (13%)	162 (13%)	189 (14%)	183 (15%)	192 (16%)	163 (14%)	163 (14%)	175 (15%)	192 (16%)	233 (17%)
21-25	140 (12%)	141 (12%)	165 (12%)	143 (12%)	162 (13%)	186 (15%)	185 (16%)	167 (14%)	210 (17%)	206 (14%)
26-30	119 (10%)	121 (10%)	139 (10%)	121 (10%)	140 (12%)	139 (12%)	155 (13%)	144 (12%)	151 (12%)	201 (14%)
31-35	106 (9%)	136 (11%)	146 (11%)	156 (13%)	114 (10%)	138 (12%)	140 (12%)	114 (10%)	133 (11%)	182 (13%)
36-40	125 (11%)	130 (11%)	141 (11%)	141 (12%)	126 (11%)	115 (10%)	103 (9%)	111 (10%)	112 (9%)	143 (10%)
41-45	111 (10%)	119 (10%)	123 (10%)	90 (8%)	113 (10%)	111 (9%)	100 (9%)	102 (9%)	84 (7%)	110 (8%)
46-50	91 (8%)	89 (7%)	115 (9%)	92 (8%)	79 (7%)	78 (7%)	79 (7%)	84 (7%)	67 (6%)	68 (5%)
51-55	70 (6%)	65 (5%)	82 (6%)	64 (5%)	73 (6%)	60 (5%)	50 (4%)	57 (5%)	44 (4%)	54 (4%)
56-60	71 (6%)	69 (6%)	65 (5%)	53 (4%)	47 (4%)	48 (4%)	46 (4%)	32 (3%)	56 (5%)	51 (4%)
61-65	47 (4%)	41 (3%)	43 (3%)	38 (3%)	44 (4%)	43 (4%)	39 (4%)	43 (4%)	41 (3%)	47 (3%)
66-70	35 (3%)	35 (3%)	49(4%)	30 (3%)	30 (3%)	29 (2%)	32 (3%)	33 (3%)	39 (3%)	35 (2%)
>70	95 (8%)	114 (9%)	92 (7%)	83 (7%)	81 (7%)	79 (7%)	82 (7%)	83 (7%)	83 (7%)	73 (1%)
Totals	1164	1222	1349	1194	1201	1189	1174	1145	1212	1403

***Source: Virginia Crash Facts and Department of Motor Vehicles data**

Virginia Traffic Fatalities (1990-2000)

<u>Year</u>	<u>15-20 year olds</u>	<u>All other Ages</u>	<u>Totals</u>	<u>(% 15-20 year olds)</u>
1990	202	869	1071	(18.9%)
1991	159	779	938	(17%)
1992	141	698	839	(16.8%)
1993	111	764	875	(12.7%)
1994	155	770	925	(16.8%)
1995	157	743	900	(17.4%)
1996	131	738	869	(15.1%)
1997	149	832	981	(15.2%)
1998	120	814	934	(12.8%)
1999	119	758	877	(13.6%)
2000	177	743	920	(19.2%)

***Source: VA. Traffic Crash Facts and Department of Motor Vehicles data**

Comparison of Virginia Licensed Drivers by ages involved in Fatal Crashes

1998		
	<u>No.(%) Licensed Drivers</u>	<u>No.(%) in fatal crashes</u>
16-20:	345,718 (6.99%)	160 (13.18%)
21-25:	442,947 (8.97%)	141 (11.61%)
26-30:	548,444 (11.10%)	121 (9.97%)
31-35:	574,309 (11.62%)	136 (11.20%)
36-40:	595,125 (12.05%)	130 (10.71%)
41-45:	555,437 (11.24%)	119 (9.80%)
46-50:	493,902 (9.99%)	89 (7.33%)
51-55:	317,610 (6.43%)	65 (5.35%)
56-60:	305,191 (6.18%)	69 (5.68%)
61-65:	229,640 (4.65%)	41 (3.38%)
66-70:	194,002 (3.93%)	35 (2.88%)
>70:	337,978 (6.87%)	114 (9.39%)
Totals	4,940,303	1,214 of known ages
1999		
	<u>No.(%) Licensed Drivers</u>	<u>No.(%) in fatal crashes</u>
16-20:	370,368 (7.12%)	149 (12.86%)
21-25:	457,158 (8.79%)	140 (12.08%)
26-30:	552,286 (10.62%)	119 (10.27%)
31-35:	569,681 (10.95%)	106 (9.15%)
36-40:	606,535 (11.66%)	125 (10.78%)
41-45:	571,384 (10.99%)	111 (9.58%)
46-50:	504,371 (9.70%)	91 (7.85%)
51-55:	437,365 (8.41%)	70 (6.04%)
56-60:	326,857 (6.29%)	71 (6.13%)
61-65:	241,843 (4.65%)	47 (4.06%)
66-70:	197,674 (3.80%)	35 (3.10%)
>70:	364,954 (7.02%)	95 (8.20%)
Totals	5,200,476	1,159 of known ages
2000		
	<u>No.(%) Licensed Drivers</u>	<u>No.(%) in fatal crashes</u>
16-20:	381,223 (7.12%)	163 (13.36%)*
21-25:	474,780 (8.87%)	Not Available (N/A)
26-30:	553,209 (10.33%)	N/A
31-35:	568,388 (10.62%)	N/A
36-40:	617,268 (11.53%)	N/A
41-45:	586,118 (10.95%)	N/A
46-50:	519,374 (9.70%)	N/A
51-55:	461,195 (8.61%)	N/A
56-60:	345,574 (6.45%)	N/A
61-65:	252,974 (4.72%)	N/A
66-70:	202,797 (3.79%)	N/A
>70:	391,352 (7.31%)	N/A
Totals	5,354,252	1,220 of known ages**

Note the overrepresentation of 16-20 year old drivers involved in fatal crashes based upon their percentages of licensed drivers in these age ranges.

*2000 incomplete data

**Estimated number

Source: Virginia Department of Motor Vehicles

VIRGINIA FATAL CRASHES INVOLVING 15-20 YEAR OLDS

	1998	1999	2000
1. # of <u>crashes</u> in which a 15-20 year old was killed	97	108	161
a. # of these crashes in which a 15-20 year old driver was involved	86	95	137
2. # of 15-20 year old fatalities	110	120	177
3. # of 15-20 year old <u>drivers</u> involved in fatal crashes with:			
a. 15-20 year old victims	86	96	137
b. victims of other ages*	68	43	31
c. Total victims	154	139	168
4. # of 15-20 year old <u>male drivers</u> in fatal crashes with:			
a. 15-20 year old victims	62	71	95
b. victims of other ages*	53	24	19
c. TOTAL victims	115	95	114
5. # of 15-20 year old drivers who were <u>at fault</u> in fatal crashes with:			
a. 15-20 year old victims	78	92	125
b. victims of other ages*	28	24	18
c. TOTAL victims	106	116	143

	1998	1999	2000
6. # of 15-20 year old <u>male drivers</u> who were <u>at fault</u> in fatal crashes with:			
a. 15-20 year old victims	57	70	88
b. victims of other ages*	24	14	14
c. Total victims	81	84	102
7a. <u>Ages</u> of all 15-20 year old drivers Involved in fatal crashes with 15-20 year old victims:			
# 15 year old drivers	1	4	5
# 16 year old drivers	20	12	21
# 17 year old drivers	14	27	19
# 18 year old drivers	19	14	37
# 19 year old drivers	15	22	29
# 20 year old drivers	17	17	26
7b. <u>Ages</u> of all 15-20 year old drivers Involved in fatal crashes with Victims of other ages:*			
# 15 year old drivers	1	1	0
# 16 year old drivers	11	5	2
# 17 year old drivers	13	9	6
# 18 year old drivers	14	6	9
# 19 year old drivers	17	6	8
# 20 year old drivers	12	16	6
7c. <u>Ages</u> of all 15-20 year old drivers Involved in all fatal crashes (TOTAL)			
# 15 year old drivers	2	5	5
# 16 year old drivers	31	17	23
# 17 year old drivers	27	36	25
# 18 year old drivers	33	20	46
# 19 year old drivers	32	28	37
# 20 year old drivers	29	33	32

	1998	1999	2000
8. # of fatal crashes in which 15-20 year old driver was accompanied by <u>passengers</u> with:			
a. 15-20 year old victims	52	49	77
b. victims of other ages*	18	20	12
c. all victims included	70	69	89
9. # of fatal crashes in which 15-20 year old driver was accompanied by <u>passengers</u> under the age of 21, with:			
a. 15-20 year old victims	45	48	68
b. victims of other ages*	13	14	2
c. all victims included	58	62	70
10. # of fatal crashes with 15-20 year old Drivers by crash type and victim age:			
a. 15-20 year old victims			
Multiple vehicle crashes	31	23	50
Single vehicle crashes	55	72	87
b. victims of other ages*			
Multiple vehicle crashes	44	28	21
Single vehicle crashes	21	15	9
c. all victims included			
Multiple vehicle crashes	75	51	71
Single vehicle crashes	76	87	96

	1998	1999	2000
11. # of fatal crashes with 15-20 year old drivers by road type and victim age:			
a. 15-20 year old victims			
Interstate roads	12	9	18
Primary roads	26	36	41
Secondary roads	33	41	47
Urban streets	15	10	31
b. victims of other ages*			
Interstate roads	3	7	4
primary roads	21	18	10
Secondary roads	22	7	7
urban streets	19	11	10
c. all victims included (total)			
Interstate roads	15	16	22
primary roads	47	54	51
Secondary roads	55	48	54
urban streets	34	21	41
12. # of fatal crashes where 15-20 year old driver <u>ran off the road</u> with:			
a. 15-20 year old victims	65	79	94
b. victims of other ages*	12	15	7
c. all victims included (total)	77	94	101
13. # of these run-off-road crashes where driver <u>overcorrected</u> , with:			
a. 15-20 year old victims	24	37	38
b. victims of other ages*	3	8	2
c. all victims included (total)	27	45	40

	1998	1999	2000
14. Vehicle <u>types</u> driven by 15-20 year old drivers in fatal crashes with:			
a. 15-20 year old victims			
Cars	55	75	108
SUV/Pickup trucks	27	18	19
Others	4	3	10
b. victims of other ages*			
Cars	43	36	19
SUV/Pickup trucks	16	6	11
Others	9	1	1
c. all victims included (totals)			
Cars	98	119	127
SUV/Pickup trucks	43	28	30
Others	13	7	11
15. # of fatal crashes with 15-20 year old drivers involving <u>rollovers</u> with:			
a. 15-20 year old victims	34	30	48
b. victims of other ages*	7	3	5
c. all victims included (totals)	41	33	53
16. Vehicle <u>types</u> involved in these <u>rollover</u> crashes by victim age:			
a. 15-20 year old victims			
Car	15	20	39
SUV/Pickup truck	18	9	8
Other	1	1	1
b. victims of other ages*			
Car	5	0	4
SUV/Pickup truck	2	3	1
Other	0	0	0
c. all victims included (totals)			
Car	20	20	43
SUV/Pickup truck	20	12	9
Other	1	1	1

	1998	1999	2000
17. # of fatal ejections, 15-20 year old victims	38	27	55
18. # of 15-20 year old fatal victims <u>Restrained:</u>			
a. <u>Not</u> belted	68	78	110
b. belted	29	38	44
c. Unknown/Not applicable	13	4	23
19. # of 15-20 year old fatal victims by <u>Seated Position:</u>			
a. Driver	73	86	101
b. Passenger	36	34	68
c. Pedestrian	1	0	8
20. Most common <u>Causal Factors</u> in fatal crashes Involving 15-20 year old drivers by victim age:			
a. 15-20 year old victims			
Excessive speed	56	58	80
Driver inattention/distraction	18	29	19
Driving left-of-center on road	15	13	11
Alcohol use	20	7	19
Failure to yield	5	2	12
Other	7	10	9
b. victims of other ages*			
Excessive speeds	24	15	8
Driver inattention/distraction	4	10	4
Driving left-of-center on road	10	3	5
Alcohol use	8	5	2
Failure to yield	5	3	4
Other	7	8	1
c. all victims included (totals)			
Excessive speed	80	73	88
Driver inattention/distraction	22	39	23
Driving left-of-center on road	25	16	16
Alcohol use	28	12	21
Failure to yield	10	5	16
Other	14	18	10

	1998	1999	2000
21. Months that fatal crashes occurred			
Involving 15-20 year old drivers with:			
a. 15-20 year old victims			
January	6	5	10
February	8	6	7
March	5	5	14
April	5	8	14
May	5	8	16
June	7	7	20
July	6	10	14
August	14	13	13
September	14	7	13
October	7	11	16
November	5	8	16
December	4	8	8
b. victims of other ages*			
January	5	1	2
February	6	4	3
March	8	1	2
April	3	2	2
May	3	3	6
June	9	4	4
July	4	2	3
August	6	6	3
September	5	4	1
October	7	3	5
November	6	7	N/A
December	3	6	N/A
c. victims of all ages (totals)			
January	11	6	12
February	14	10	10
March	13	6	16
April	8	10	16
May	8	11	22
June	16	11	24
July	10	12	17
August	20	19	16
September	19	11	14
October	14	14	21
November	11	15	N/A
December	7	14	N/A

	1998	1999	2000
22. Days on which crashes occurred by age of victims:			
a. 15-20 year old victims			
Monday	9	11	21
Tuesday	8	6	30
Wednesday	8	11	19
Thursday	14	13	13
Friday	17	13	22
Saturday	15	19	28
Sunday	15	23	28
b. victims of other ages*			
Monday	11	6	6
Tuesday	12	2	0
Wednesday	3	4	0
Thursday	9	4	6
Friday	13	11	3
Saturday	13	6	8
Sunday	4	10	8
c. all victims included (totals)			
Monday	20	17	27
Tuesday	20	8	30
Wednesday	11	15	19
Thursday	23	17	19
Friday	30	24	25
Saturday	28	25	36
Sunday	19	33	36

	1998	1999	2000
23. Times of day crashes occurred by age of victim:			
a. 15-20 year old victims			
6:01 PM - 12 Midnight	29	29	43
12:01 AM - 6:00 AM	17	39	46
6:01 AM - 12 Noon	18	14	22
12:01 PM - 6:00 PM	21	14	60
b. victims of other ages*			
6:01 PM - 12 Midnight	16	4	9
12:01 AM - 6:00 AM	6	9	7
6:01 AM - 12 Noon	15	10	3
12:01 PM - 6:00 PM	27	20	12
c. all victims included (totals)			
6:01 PM - 12 Midnight	45	33	52
12:01 AM - 6:00 AM	23	48	53
6:01 AM - 12 Noon	33	24	25
12:01 PM - 6:00 PM	48	34	62

24. Light conditions at time of crash
By age of victim:

a. 15-20 year old victims			
Daylight	42	30	69
Night time	41	62	83
Dawn/dusk	3	4	9
b. victims of other ages*			
Daylight	40	28	13
Night time	22	13	15
Dawn/dusk	3	2	3
c. all victims included (totals)			
Daylight	82	58	82
Night time	63	75	98
Dawn/dusk	6	6	12

*Data for year 2000 does not reflect a full year.

Source: Police Accident Report (FR-300's)