

# **An Overview of Rural Speed Crashes in North Carolina 1994-1999**

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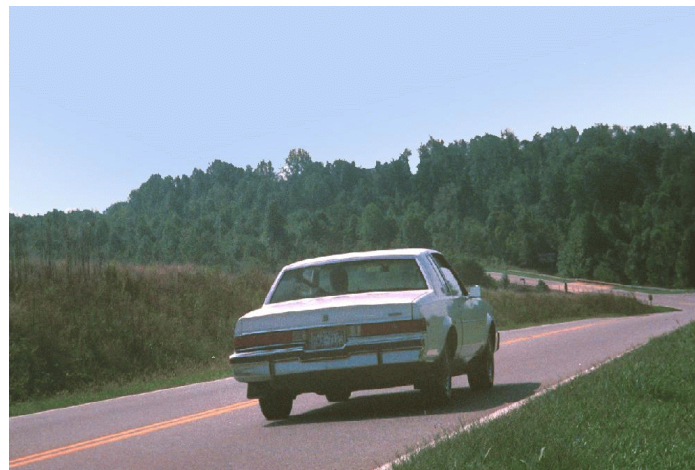
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# Rural Speed Crashes in North Carolina 1994-1999

## Summary of Findings

An analysis of speed-related crashes in rural areas of North Carolina resulted in these key findings:

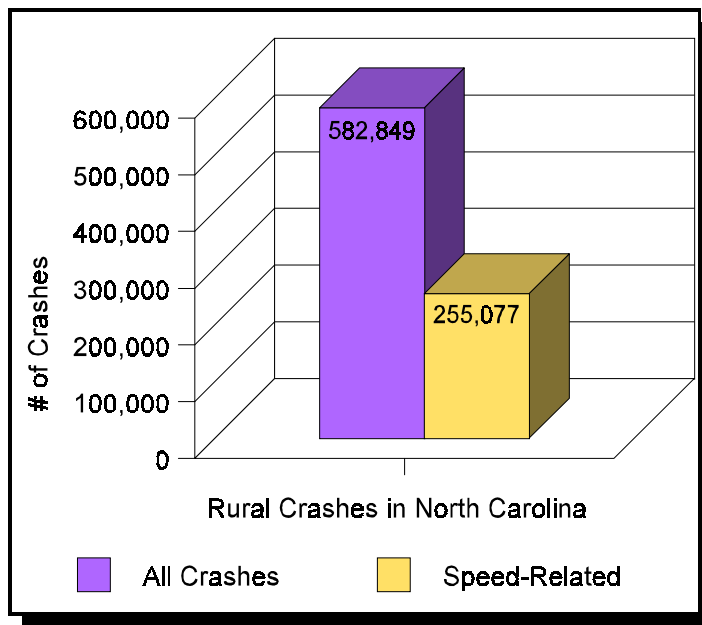
- 44% of speed-related crashes took place on secondary roads, where roadway design standards are lower than for other types of roadways.
- Speed-related crashes were overrepresented on curved sections of roadway.
- Two of the most frequent speed-related crash types were ran-off-road (48%) and rear-end (40%), together accounting for nearly 90% of the total.
- Compared to all rural crashes, speed-related crashes resulted in higher percentages of Type A (incapacitating injuries that will prevent normal activities for more than 24 hours), Type B (non-incapacitating injuries that will not prevent daily activities for more than 24 hours), and Type C (complaint of pain or momentary unconsciousness) injuries.
- Young male drivers, ages 16-25 years old, were more often charged with a speed-related violation in these crashes than any other male or female age group. Young females were also overrepresented as speeding drivers, but to a lesser extent.
- For crashes occurring on rural secondary roads, 36% of the speeding drivers were young males.
- Whereas 5% of all drivers in crashes were classified as having been drinking, this increased to 10% for speeding drivers.



## Introduction

There were 582,849 crashes reported in rural areas between 1994-1999 in North Carolina. Rural was based on the “locality” code used on the standard North Carolina crash report form and included both rural (< 30% developed) and mixed (30% to 70% developed) areas. Of those 582,849 crashes, 44 percent (255,077) were classified as speed-related, meaning that a speed-related violation was given for at least one of the drivers involved in the crash (Figure 1). These violations were exceeding the posted speed limit, exceeding a safe speed, and failing to reduce speed to fit the existing conditions.

**Figure 1. Number of All Crashes and Speed-Related Crashes in North Carolina in Rural Areas from 1994-1999**



On the pages that follow, similar figures are used to examine further these rural crashes by the following variables:

- ! road type
- ! lighting condition
- ! road character
- ! crash type
- ! crash severity

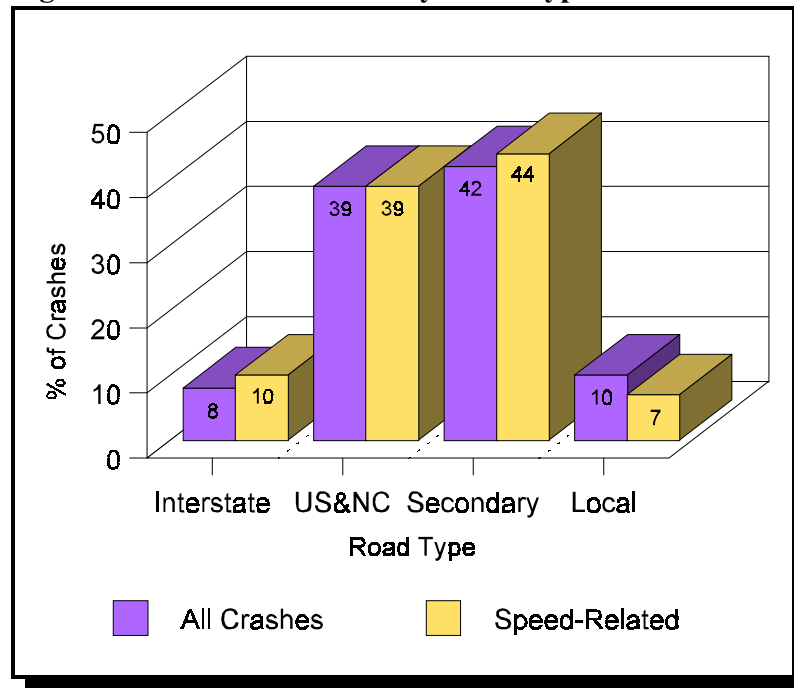
Other sections of the report pertain to crashes on secondary roads and information about the drivers in rural speed crashes.

## Information About Crashes

### Type of Road

Figure 2 examines all **rural crashes** and **speed-related crashes** by road type. Road types include Interstate, “US” and “NC” routes combined, secondary, and local roads. The majority of crashes occurred on “US” and “NC” and secondary roads, with fewer crashes taking place on Interstate and local roads. Comparing the percent of all crashes and speed-related crashes shows little variation by type of road.

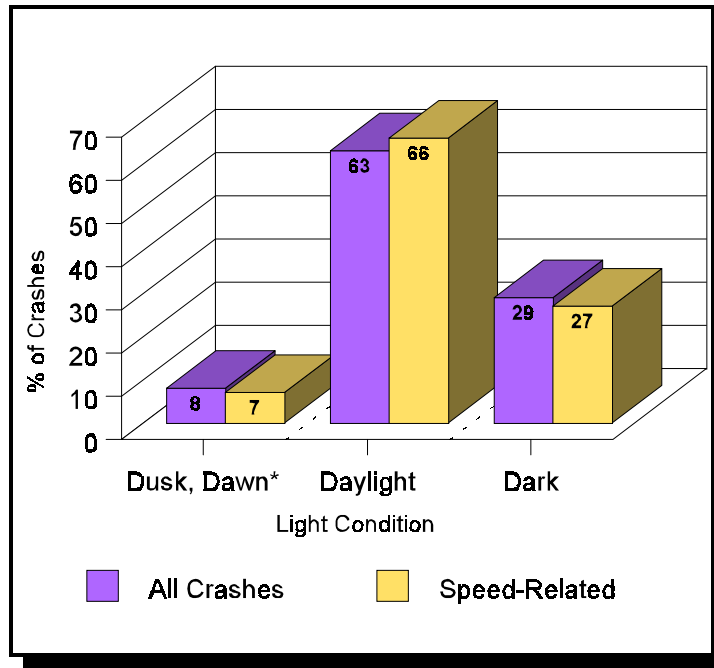
**Figure 2. Percent of Crashes by Road Type**



## Light Condition

The light condition of the area in which a crash occurred is represented in Figure 3. About two-thirds of all crashes took place during the daylight hours when traffic was heaviest. Speed-related crashes correlated closely to all crashes no matter what time of day. Crashes that took place at night in areas where street lights were the primary source of lighting were included with crashes occurring at dusk or dawn.

**Figure 3. Percent of Crashes by Certain Light Conditions**

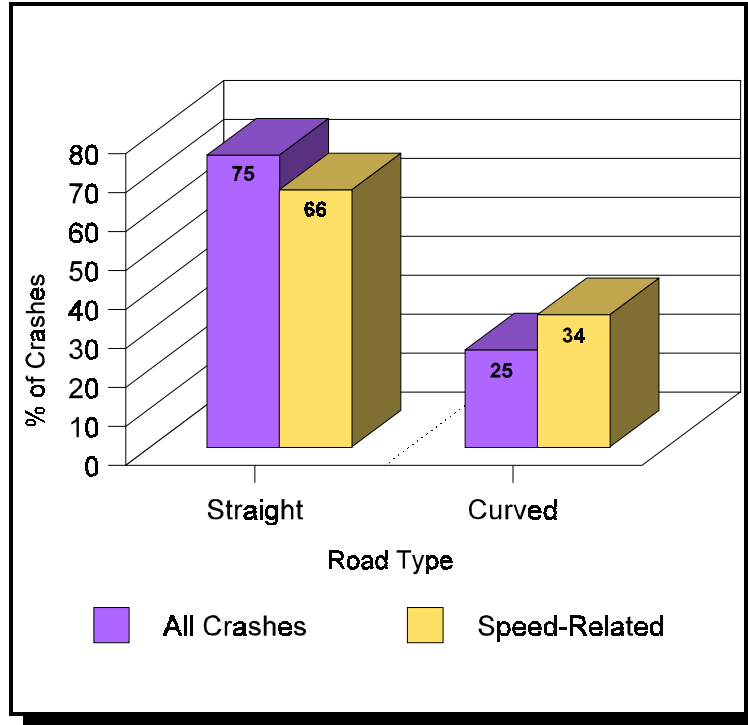


\* Street Lighting Factored in with Dusk and Dawn

## Straight Versus Curved Roadway Sections

The configuration of a road has a significant impact on speed-related crashes, with 34% of all speed-related crashes taking place on curved roadway sections, compared to only 25% of all crashes on curved sections (Figure 4). Individuals that speed on curvy roads put themselves at a higher risk for losing control of their vehicle and therefore being in a crash.

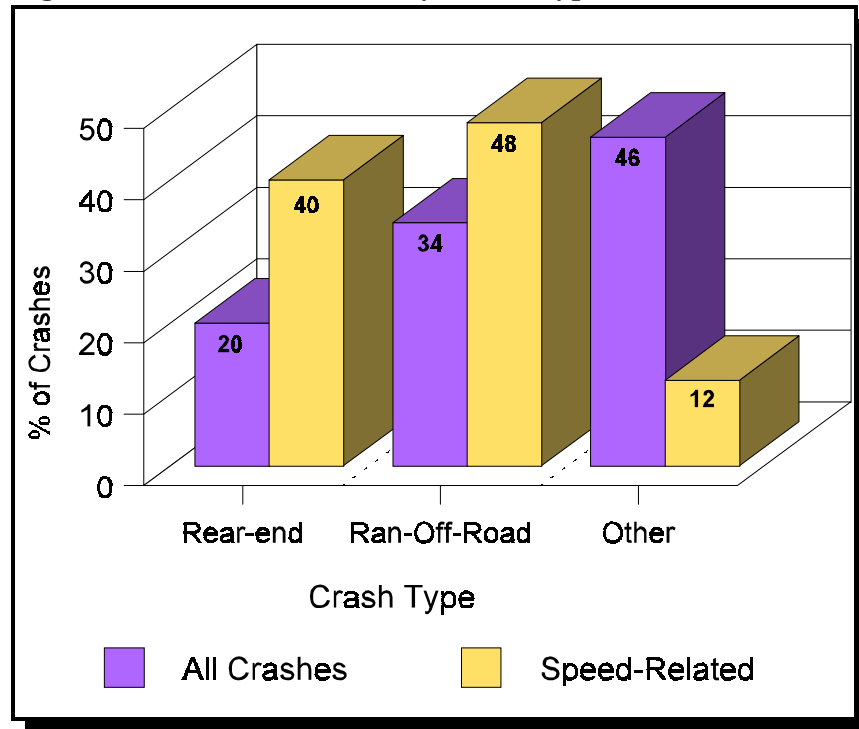
**Figure 4. Percent of Crashes by Straight Versus Curved Roadway Sections**



## Crash Type

Two of the most frequent crash types were ran-off-road (48%) and rear-end (40%), together accounting for 88% of all rural speed-related crashes (Figure 5). Compared to all rural crashes, both events occurred substantially more often. In fact, rear-end crashes occurred twice as often in speed-related crashes (40% versus 20%).

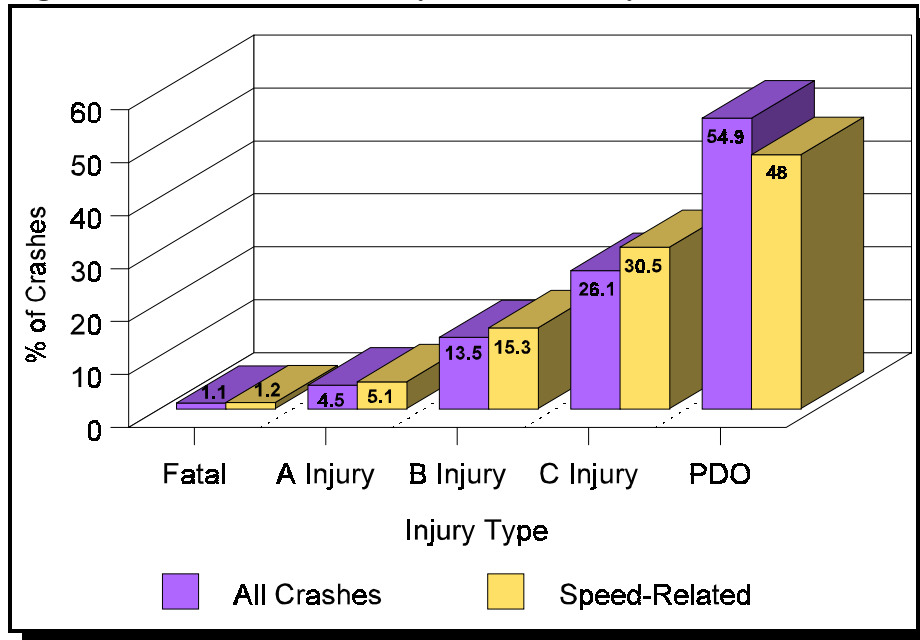
**Figure 5. Percent of Crashes by Crash Type**



## Crash Severity

Overall, there were slight differences in the crash severity distributions. Speed-related crashes resulted in slightly higher percentages of Type A (incapacitating injuries that will prevent normal activities for more than 24 hours), Type B (non-incapacitating injuries that will not prevent daily activities for more than 24 hours), and Type C (complaint of pain or momentary unconsciousness) injuries (Figure 6).

**Figure 6. Percent of Crashes by Crash Severity**





## Secondary Road Crash Information

The largest percent (44%) of speed-related crashes occurred on secondary roads, where design standards and sight distance are less than what would be found on Interstate, US, and NC routes. Highlights from an investigation of these **secondary road crashes** are as follows:

- 54% of the speed-related crashes occurred on curves, compared to 38% of all crashes.
- 68% of the speed-related crashes were ran-off-road (46% of all crashes) and another 22% were rear-end (11% of all crashes).
- Examining further, 86% of the speed-related crashes on secondary, curved roads resulted in a ran-off-road crash type, compared to 73% of all crashes on these types of roads.
- Compared to all crashes, speed-related crashes resulted in slightly larger percentages of fatal injuries (1.4% versus 1.1%), Type A injuries (6.1% versus 4.9%), Type B injuries (18% versus 15%), and Type C injuries (27% versus 24%).
- Alcohol use was present in 13% of the speed-related crashes compared to 9% of all crashes.



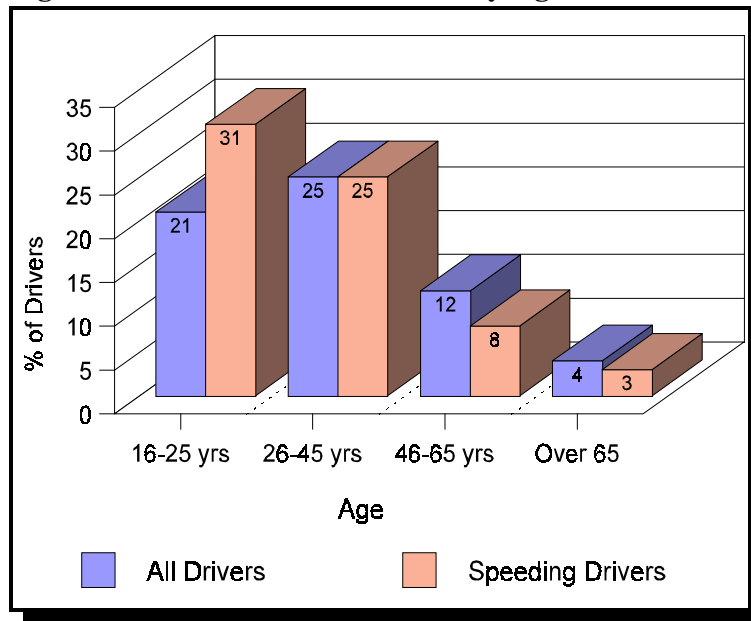
## Driver Information

More than 900,000 **drivers** were involved in the database of rural North Carolina crashes, with 28% of these drivers classified as having a speed-related violation (exceeding the posted speed limit, exceeding a safe speed, and failing to reduce speed to fit the existing conditions). More detail follows.

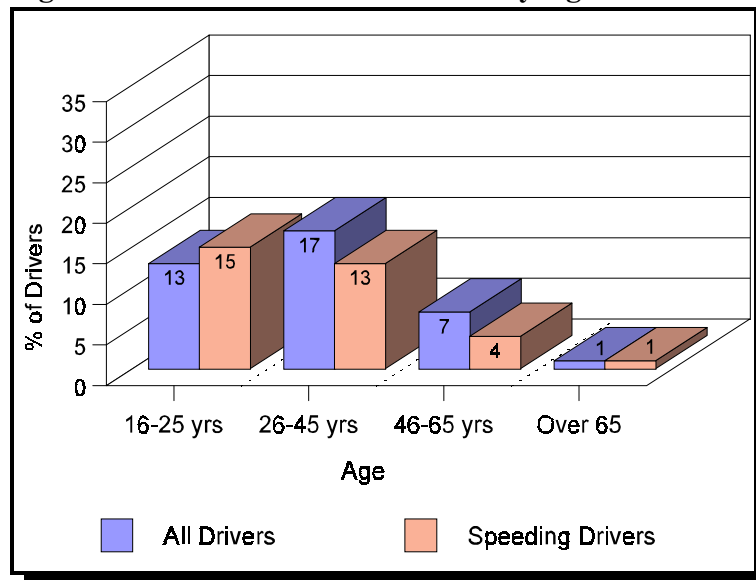
## Age and Sex Comparisons

Young male drivers, ages 16-25 years old, were more often charged with a speed-related violation than any other male or female age group (Figures 7 and 8). Some 31% of the speeding drivers in crashes were young males, while young males accounted for 21% of the drivers in all crashes. Young females, age 16-25, were also overrepresented as speeding drivers in crashes, but to a lesser extent (15% of the speeding drivers versus 13% of the drivers in all crashes). With increasing age, the percentage of speeding drivers (and all drivers) in crashes decreases.

**Figure 7. Percent of Male Drivers by Age**

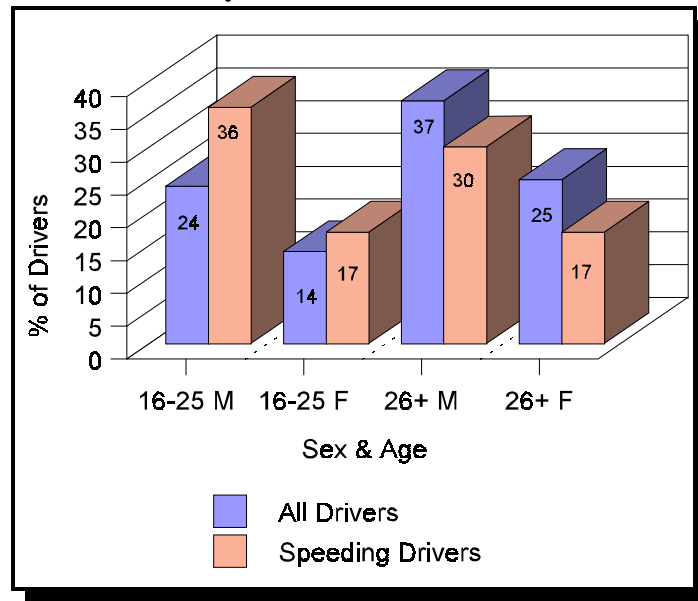


**Figure 8. Percent of Female Drivers by Age**

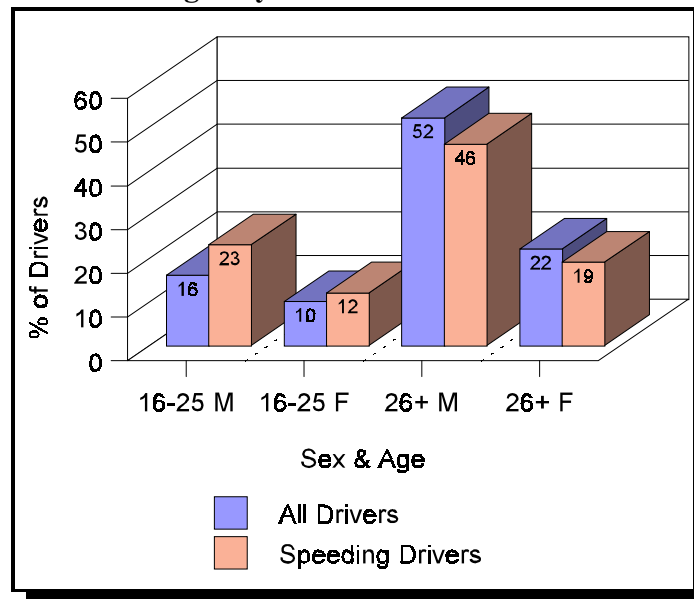


Since only the youngest male and female drivers were overrepresented as speeding drivers in crashes, the following comparisons consider only young (16-25) males and females versus all older (26+) males and females. For crashes occurring on rural secondary roads, 36% of the speeding drivers in crashes were young males, while this group accounted for 24% of the drivers in all crashes (Figure 9). Young females were also over represented as speeding drivers in crashes on rural secondary roads, but to a lesser extent (17% versus 14%). The same tendencies were present on Interstate Highways (Figure 10).

**Figure 9. Percent of Drivers by Age and Sex on Rural Secondary Roads**

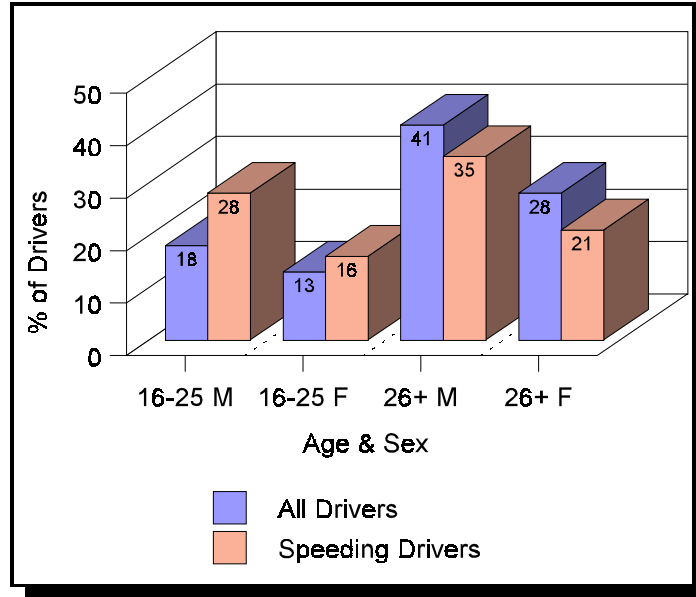


**Figure 10. Percent of Drivers by Age and Sex on Interstate Highways**

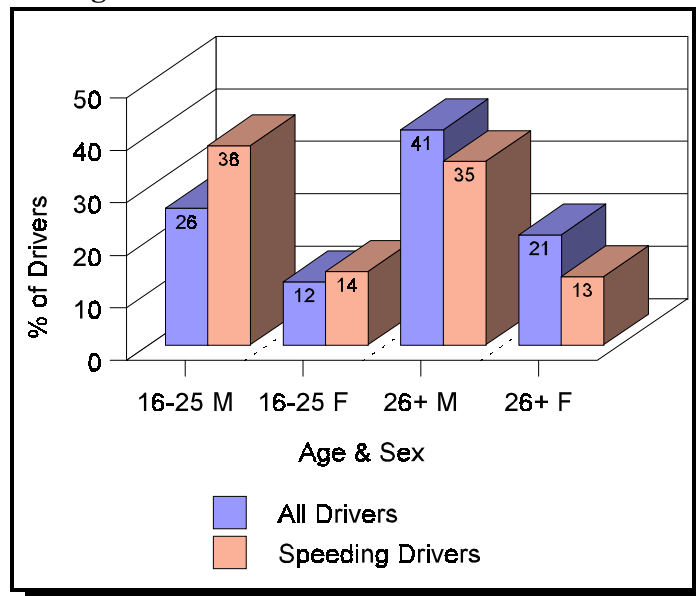


The results were similar when conditions of both daylight and darkness were examined (Figures 11 and 12) with young males, and to a lesser extent young females, overrepresented in speed-related crashes.

**Figure 11. Percent of Drivers by Age and Sex During Daylight**

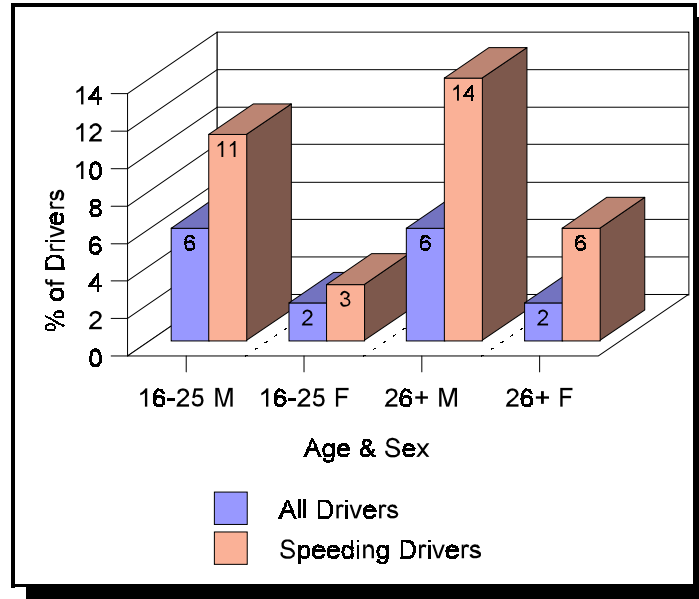


**Figure 12. Percent of Drivers by Age and Sex During Darkness**



Of all drivers in crashes 5% were classified as having been drinking, and this increased to 10% for speeding drivers in crashes. The percentages of drinking drivers within age and sex categories are shown in Figure 13. Both young (16-25) and older (26+) male speeding drivers were more likely to be drinking when compared to all drivers. Road type information (Figure 14) showed that 14% of the speeding drivers on secondary roads had been drinking, as compared to 7% of all drivers on secondary roads.

**Figure 13. Percent of Drinking Drivers by Age and Sex Categories**



**Figure 14. Percent of Drinking Drivers by Road Type**

