U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

NHTSA

DOT HS 813 303B

June 2022

Risk Factors for Young Drivers in Fatal and Non-Fatal Crashes: Supplementary Report

DISCLAIMER

Suggested APA Format Citation:

Mastromatto, T., Quinones, T., Lan, B., Srinivasan, R., Lococo, K. H., & Staplin, L. (2022, June). *Risk factors for young drivers in fatal and non-fatal crashes: Supplementary report* (Report No. DOT HS 813 303B). National Highway Traffic Safety Administration.

Technical Report Documentation Page

1. Report No. DOT HS 813 303B	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Risk Factors for Young Drivers in Fatal and Non-Fatal Crashes: Supplementary Report		5. Report Date June 2022 6. Performing Organization Code
7. Authors Tia Mastromatto,[1] Tatiana Quinones, [1] Bo Lan,[2] Raghavan Srinivasan,[2] Kathy H. Lococo,[1] & Loren Staplin[1]		8. Performing Organization Report No.
9. Performing Organization Name and Address [1]TransAnalytics, LLC 336 West Broad Street Quakertown, PA 18951 [2]UNC Highway Safety Research Center 730 M.L.K., Jr. Blvd. #300 Chapel Hill, NC 27514		10. Work Unit No. (TRAIS) 11. Contract or Grant No. DTNH2216D00010/ DTNH2217F00170
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration 1200 New Jersey Avenue SE Washington, DC 20590		13. Type of Report and Period Covered Supplementary Report 14. Sponsoring Agency Code NPD-320
15. Supplementary Notes Dr. Kathy Sifrit was the NHTSA Task Order Manager on this project.		
16. Abstract This supplementary report gives the results of analyses of fatal and non-fatal crashes involving young drivers using data from the Fatality Analysis Reporting System (FARS) from 2013-2017 and the second Strategic Highway Research Program's Naturalistic Driving Study (SHRP2 NDS). The research team conducted quasi-induced exposure analyses by calculating crash involvement ratios (CIRs) for multi-vehicle crashes, each with only one driver with a contributing factor. For FARS data, CIR values for each young driver age cohort of 14 to 20 years old were compared to a reference group cohort of 35-year-old drivers using logistic regression. The SHRP2 NDS data permitted a comparison of trends across age versus the amount of early driving experience, for a similar range of variables as examined in the FARS analyses. The final technical report associated with this supplementary report, *Risk Factors for Young Drivers in Fatal and Non-Fatal Crashes*, presents a summary and conclusions drawn from these analyses as they relate to potential enhancements for graduated driver licensing and driver education programs. This supplementary report also contains descriptive statistics for single- and multi-vehicle crashes in the FARS dataset for a range of driver/occupant, roadway/environment, and crash characteristics.		
17. Key Words young driver, teen driver, novice driver, graduated driver licensing, GDL, driver education, quasi-induced exposure, safety, crash risk, SHRP2		18. Distribution Statement Document is available to the public from the DOT, BTS, National Transportation Library, Repository & Open Science Access Portal, rosap.ntl.bts.gov.

19 Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21 No. of Pages 190	22. Price

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

Table of Contents

List of Tables

Introduction

In 2019, there were 1,603 drivers 15 to 20 years old who were killed, and an estimated 205,000 who were injured in motor vehicle crashes (NCSA, 2021). Young drivers are overrepresented in fatal crashes: In 2019, drivers 15 to 20 made up 7.8% of drivers involved in fatal crashes but only 5.3% of licensed drivers. Graduated driver licensing (GDL) laws and programs have been shown to be effective in reducing young driver crash risk (Venkatraman et al., 2021). GDL reduces risks to young novice drivers through its protective elements, such as mandatory learner periods and night and passenger limits during intermediate license periods. These restrictions protect novices from the highest risk conditions as they transition from driving only under adult supervision to independent driving. However, although GDL has led to reduced crashes, injuries, and fatalities among 16- and 17-year-olds via its protective structure, it has been less successful in producing safe behavior once young drivers emerge from GDL requirements. In the past decade, research has shifted toward a search for ways in which GDL can be refined or augmented to improve the learning that takes place while novices remain under its restrictions.

This document reports the results of analyses performed in this project at greater level of detail than included in the final report. An interpretation and discussion of these analysis outcomes is deferred to that document. Results are reported in this document for data from the Fatality Analysis Reporting System (FARS). FARS is a nationwide dataset that provides yearly data regarding fatal injuries resulting from traffic crashes. Results are also reported for data extracted from the second Strategic Highway Research Program's Naturalistic Driving Study (SHRP2 NDS).

The FARS analyses in this project initially considered data from drivers 14 to 20 years old and a comparison group of 35-year-old drivers who drove passenger vehicles at the time of the crashes. However, due to small sample sizes for drivers 14 and 15, the accompanying final technical report only includes results for drivers 16 to 20. By contrast, this supplementary report also includes information about drivers 14 and 15, grouped together to increase the sample size and referred to as "< 16" in this report. Additionally, the final technical report only includes results for analyses conducted with a minimum sample of 20 drivers; this report additionally includes results for all analyses, including those with sample sizes less than 20. However, the reader should use caution when interpreting the results of analyses conducted with small sample sizes. Finally, while the final technical report focuses on results with the greatest potential to inform enhancements to GDL and driver education, this supplementary report includes the results of all analyses that were conducted under the current project.

A passenger vehicle was defined using the FARS Accident Auxiliary table as A_BODY <= 5, which included passenger cars, SUVs, light vans, pickups, and other light trucks. Both single-vehicle and multi-vehicle crashes were included in this analysis. A multi-vehicle crash had to meet the following criteria to qualify for inclusion: (1) at least one driver in the ages of interest; (2) less than six vehicles total; and (3) only one driver with a contributing factor, regardless of the age of that driver. Crashes in which *more than one driver* or *no driver* was listed as contributing to the crash were excluded from the multi-vehicle analysis, as were crashes where *any* entity was not a passenger vehicle -- a motorcycle, bicyclist, pedestrian, animal, etc.. For

FARS data, rules for determining contributing factors can be found in Appendix A. Definitions for all variables examined in the FARS analyses are found in Appendix B.

Several analytic approaches were undertaken. The first approach was to carry out separate descriptive analyses of fatal single-vehicle and multi-vehicle crashes for the FARS data. This approach relied on cross-tabulations of FARS data for the 5-year period 2013 to 2017.

As shown in Table 1, the total number of fatal crashes from the FARS data analyses was 12,998 (10,197 single-vehicle crashes and 2,801 multi-vehicle crashes where only one driver was identified as having a contributing factor for the crash). Bolding in Table 1 indicates qualifying crashes, i.e., all single-vehicle crashes with drivers 14 to 20 or 35 years old and multi-vehicle crashes (up to 5 vehicles) where at least one driver was of the required age and only one driver (regardless of age) had a contributing factor for the crash.

Quasi-induced exposure analyses were undertaken for the multi-vehicle crashes in the FARS and SHRP2 data sets to produce a crash involvement ratio (CIR) signifying the degree of over- or under-involvement of each group with respect to particular risk factors. The following technique compared the numbers of drivers with and without contributing factors across all ages.

Table 1. Single- and Multi-Vehicle Crashes in FARS Study Files

Crash Type and Contributing Factor Status (where driver age equals <16–20 or 35)*	**2013 through 2017 FARS**
Single-vehicle	**10,197**
All two-vehicle	6,612
Two-vehicle, both drivers with contributing factors	101
Two-vehicle, neither driver with contributing factors	4,291
Two-vehicle, only one driver with contributing factor	**2,220**
Three-vehicle, only one driver with contributing factor	**436**
Four-vehicle, only one driver with contributing factor	**113**
Five-vehicle, only one driver with contributing factor	**32**
Total qualifying crashes	**12,998**

**Bolding indicates qualifying crashes*

$$\text{Crash Involvement Ratio (CIR)} = \frac{\text{Count of drivers with a contributing factor}}{\text{Count of drivers without a contributing factor}}$$

When a denominator of 0 was present, as a consequence of no drivers without contributing factors in the analysis age range, no CIR value was calculated; this is indicated as a missing value in the following graphs and corresponding tables. A CIR of zero indicates an absence of drivers with a contributing factor for a given analysis.

Finally, for FARS data, CIR values for each young driver age cohort were compared to those of the 35-year-old reference group using logistic regression to determine if there were significant differences in the likelihood of having a contributing factor for a fatal crash. Logistic regression estimates the natural log of the odds of a driver having a contributing factor for each age group. If p is the proportion of drivers with contributing factors for a fatal crash, and 1-p is the proportion of drivers without contributing factors, then:

$$\frac{p}{1-p} = \frac{Proportion\ of\ drivers\ with\ contributing\ factors}{Proportion\ of\ drivers\ without\ contributing\ factors}$$

The p values are based on the Wald chi-square test that compares the estimates with the reference level. Any CIR value for a young driver cohort that was found to be significantly different ($p < .05$) from the comparison group at a given variable level is bolded in the corresponding CIR tables.

The SHRP2 analyses were based on 1,113 multi-vehicle events in which the SHRP2 video reductionist determined that only one driver contributed to the crash. This determination is reflected in the variable "Fault" in the SHRP2 NDS Event Table. Events included both near crashes, and crashes in which the airbag was not deployed; researchers concluded that these event categories were qualitatively similar enough to be combined. Eight more severe crashes in which the airbags were deployed were excluded from these analyses according to the same criterion, i.e., these event categories were not qualitatively similar enough to be combined with near crashes and crashes in which the airbag was not deployed. Crashes in which *any* entity was not a passenger vehicle were excluded. Definitions for all variables examined in the SHRP2 NDS analyses are found in Appendix C.

In analyses with the SHRP2 NDS data, both age and experience at the time of an event are presented in half-year increments; this is the greatest level of precision permitted by this data source. Just as with the FARS data, the CIR values were calculated by dividing the number of drivers with contributing factors (i.e., the "Fault" variable) by the number of drivers without contributing factors for each level of each variable in a given analysis. When a denominator of 0 was present (as a consequence of no drivers without a contributing factor in the specified age range), no CIR value was calculated, as indicated by missing values in the following graphs and corresponding tables.

Statistical analyses testing for significant differences between calculated CIR values at the variable level were not performed because, first, unlike the FARS analyses, no data for drivers aged 35 were extracted that would permit a similar comparison. Second, looking only *within* the young driver cohorts for which CIR values were calculated, the available sample sizes were almost universally insufficient ($n < 20$) to support comparisons across all levels of a given

variable, as required to determine whether one (or more) was associated with a statistically significant higher (or lower) degree of risk.

In this supplementary report, FARS descriptive data are presented for single- and multi-vehicle crashes. Tables of calculated CIR values, the frequency counts of drivers with and without contributing factors upon which they are based, and associated statistical analyses are found in Appendix D (FARS). Similarly, tables of calculated CIR values and their underlying frequency counts for SHRP2 data are found in Appendix E.

Descriptive Data

FARS

Single-Vehicle Fatal Crashes

Driver and Occupant Characteristics: FARS Data, Single-Vehicle Fatal Crashes.

Key Findings

- Across age groups, approximately 3 out of 4 drivers were male.
- Police-reported alcohol use was unknown or not reported for 3 in 10 drivers across age groups. Six percent of 16-year-old drivers were reported by police to be alcohol-involved, and this proportion increased with age to just over a quarter for those 20 and older.[1]
- At the time of the fatal crashes, nearly half of young drivers, and most comparison group drivers were alone in the vehicles; however, half of drivers younger than 16 each had more than two passengers.
- Full licensure increased with age; about a fifth of the young drivers had intermediate licenses.
- Nearly all young drivers had valid licenses at the time of the fatal crashes.
- A quarter of young drivers had restrictions—unspecified in FARS—on their licenses, as did a fifth of comparison group drivers.
- Over half of the drivers (as opposed to passengers or others) were killed in the crashes.
- Nearly a third of the young drivers each had at least one young (14 to 20 years old) passenger.
- Just 15% of young drivers were carrying passengers 21 or older at the time of the fatal crash, as compared to nearly one quarter of comparison group drivers.
- Police reports indicated that one 1 of 10 drivers (all ages) were distracted at the time of the fatal crashes; however, as with police-reported alcohol involvement, no distraction data were available for about a third of the drivers.[2]
- Cell phone use was indicated in around 1% of all fatal crashes.[2]
- Fatigue was rarely indicated.[2]
- Similar proportions of young and comparison group drivers had each had one prior crash; 20-year-old drivers had the highest percentage.

[1] Based on the data element DRINKING, which reflects the judgment of law enforcement and may or may not be informed by a blood alcohol concentration (BAC) test result.

[2] Recognized limitations in the accuracy, completeness, and reliability of data of this nature derived from police reports should be considered when interpreting this analysis outcome.

- Twenty-year-old drivers were overrepresented for speed violations three (for crashes before 2015) or 5 (2015 crashes) years before the crash date, as compared to all young drivers and comparison group drivers.
- The likelihood that the drivers were the registered owners of the vehicles they were driving increased with driver age.
- Half of all drivers (all ages) used restraints.[3]
- Overcorrection/oversteering was negligible as a contributing factor for all driver groups.

Table 2. 2013-2017 FARS Single-Vehicle Descriptive Results – Driver and Occupant Characteristics

	Age <16	**Age 16**	**Age 17**	**Age 18**	**Age 19**	**Age 20**	**All young drivers**	**Age 35**	**Total**
Gender by Age Category									
Male	67.6%	66.4%	71.6%	72.4%	72.6%	73.0%	71.8%	74.7%	72.2%
Female	32.1%	33.5%	28.3%	27.6%	27.4%	27.0%	28.2%	25.3%	27.8%
Unknown/ Not Reported	0.4%	0.1%	0.1%	-	0.1%	-	0.1%	-	-
Police-Reported Alcohol Involvement of Driver by Age Category									
No alcohol	62.6%	62.9%	58.1%	53.1%	47.2%	44.1%	51.4%	42.2%	50.2%
Yes alcohol	8.4%	5.9%	11.7%	17.0%	21.8%	26.3%	18.4%	26.7%	19.5%
Unknown/ Not Reported	29.0%	31.2%	30.2%	29.9%	31.0%	29.6%	30.2%	31.1%	30.3%
Occupants by Age Category									
One	20.6%	40.1%	46.8%	47.1%	54.0%	54.7%	49.2%	69.0%	51.8%
Two	28.6%	26.3%	24.3%	26.2%	23.6%	24.8%	25.0%	17.8%	24.1%
Three+	50.4%	33.3%	28.7%	26.5%	22.0%	20.3%	25.5%	13.0%	23.9%
Unknown	0.4%	0.2%	0.1%	0.2%	0.4%	0.2%	0.3%	0.2%	0.3%
License Type by Age Category									
Full Driver License	3.4%	12.2%	24.8%	79.6%	83.2%	85.4%	65.0%	90.7%	68.4%
Intermediate Driver License	12.2%	60.4%	57.1%	7.6%	4.2%	3.0%	18.2%	0.1%	15.9%

[3] Recognized limitations in the accuracy, completeness, and reliability of data of this nature derived from police reports should be considered when interpreting this analysis outcome.

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Learners Permit	24.0%	8.1%	4.4%	2.7%	2.0%	1.4%	3.6%	0.7%	3.2%
Unknown License Type	60.3%	19.3%	13.7%	10.1%	10.6%	10.2%	13.1%	8.6%	12.5%
License Status by Age Category									
Not Licensed	57.6%	18.1%	12.8%	9.6%	9.6%	9.0%	12.1%	8.0%	11.6%
Suspended	0.4%	0.6%	1.1%	2.8%	4.5%	6.0%	3.5%	12.0%	4.6%
Revoked/ Expired/ Canceled or Denied	-	0.1%	0.3%	1.5%	1.0%	1.7%	1.0%	4.7%	1.5%
Valid	39.3%	80.2%	84.9%	85.8%	84.3%	82.6%	82.6%	74.6%	81.6%
Unknown License Status	2.7%	1.0%	1.0%	0.4%	0.6%	0.7%	0.7%	0.7%	0.7%
License Restrictions Compliance by Age Category									
No Restrictions or Not Applicable	70.2%	54.7%	60.9%	75.6%	75.9%	75.5%	71.3%	78.1%	72.2%
Restrictions Complied With	5.7%	10.3%	8.3%	3.7%	3.8%	3.3%	5.0%	3.0%	4.7%
Restrictions Not Complied With	13.0%	13.8%	10.4%	2.9%	1.4%	1.7%	4.7%	0.6%	4.2%
Restrictions, Compliance Unknown	7.6%	20.0%	19.3%	17.2%	18.0%	18.4%	18.0%	17.1%	17.9%
Unknown	3.4%	1.2%	1.1%	0.6%	1.0%	1.1%	1.0%	1.1%	1.0%
Injury Severity by Age Category									
O-No Apparent Injury	13.7%	20.2%	21.6%	24.0%	24.7%	27.6%	24.1%	31.7%	25.0%
C-Possible Injury	8.8%	5.7%	5.7%	6.2%	4.5%	4.8%	5.4%	2.7%	5.0%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
B-Suspected Minor Injury	19.5%	12.7%	10.6%	11.2%	9.8%	7.6%	10.3%	4.3%	9.5%
A-Suspected Serious Injury	11.5%	11.5%	9.4%	7.3%	6.5%	8.3%	8.2%	4.8%	7.7%
K-Fatal Injury	45.8%	49.0%	51.5%	50.0%	53.5%	50.6%	51.0%	55.3%	51.6%
Unknown/ Not Reported	0.8%	0.8%	1.2%	1.3%	1.1%	1.1%	1.1%	1.2%	1.1%
Number of Young Passengers (age 14-20) by Age Category									
None	37.4%	48.7%	52.7%	56.3%	66.0%	70.4%	60.4%	94.9%	64.9%
One	29.0%	25.9%	24.1%	24.4%	20.0%	19.3%	22.3%	4.0%	19.9%
Two	16.8%	13.1%	11.8%	9.8%	7.6%	6.4%	9.3%	0.6%	8.1%
Three+	16.8%	12.2%	11.4%	9.5%	6.4%	3.8%	8.1%	0.5%	7.1%
Presence of Older Passenger (age 21 or older) by Age Category									
No	80.5%	91.0%	91.6%	87.0%	83.1%	78.9%	84.9%	77.1%	83.9%
Yes	19.5%	9.0%	8.4%	13.0%	16.9%	21.1%	15.1%	22.9%	16.1%
Presence of Distraction by Age Category									
Not Distracted	50.0%	53.7%	55.1%	58.4%	56.6%	58.7%	56.8%	57.5%	56.9%
Distracted	13.4%	11.2%	11.6%	11.5%	8.6%	9.8%	10.4%	8.7%	10.2%
Not Reported	36.6%	35.2%	33.3%	30.2%	34.9%	31.6%	32.8%	33.8%	32.9%
Cell Phone Use by Age Category									
Use NOT Indicated	76.7%	79.0%	76.6%	78.0%	78.3%	76.1%	77.4%	79.3%	77.7%
Use Indicated	0.4%	0.7%	1.3%	0.8%	0.6%	0.8%	0.8%	0.5%	0.8%
Undefined	12.6%	9.1%	9.5%	11.4%	9.3%	11.5%	10.5%	9.6%	10.3%
Unknown/ Not Reported	10.3%	11.2%	12.6%	9.8%	11.8%	11.7%	11.3%	10.6%	11.2%
Fatigued by Age Category									
Fatigue NOT Indicated	57.6%	58.7%	56.4%	53.5%	46.9%	46.2%	51.1%	42.3%	50.0%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Fatigue Indicated	2.3%	3.2%	2.9%	4.2%	3.4%	3.7%	3.5%	3.0%	3.5%
Undefined	8.0%	7.8%	12.4%	16.3%	20.8%	24.4%	17.8%	25.1%	18.7%
Unknown/ Not Reported	32.1%	30.4%	28.4%	26.0%	28.9%	25.7%	27.6%	29.6%	27.8%
Following Too Closely by Age Category									
No Violation	83.2%	87.4%	86.0%	84.8%	86.7%	85.0%	85.7%	87.5%	85.9%
Violation	-	-	-	0.1%	-	-	-	-	-
Undefined	10.3%	9.6%	10.7%	13.3%	11.6%	13.3%	12.0%	10.9%	11.9%
Unknown/ Not Reported	6.5%	3.0%	3.2%	1.8%	1.7%	1.7%	2.2%	1.6%	2.1%
Prior Crash by Age Category									
No Prior Crash	76.0%	84.4%	79.8%	76.6%	74.3%	70.1%	75.6%	74.7%	75.5%
One Prior Crash	0.8%	3.2%	6.3%	9.6%	12.0%	15.2%	10.2%	12.8%	10.6%
More Than One Prior Crash	-	0.2%	0.7%	2.6%	3.4%	4.0%	2.6%	3.0%	2.6%
Unknown/ Not Reported	23.3%	12.2%	13.1%	11.1%	10.3%	10.7%	11.6%	9.6%	11.3%
Prior Speed Violation by Age Category									
No Prior Crash	87.8%	94.2%	91.6%	86.6%	78.7%	70.7%	82.2%	76.9%	81.5%
One Prior Crash	0.4%	1.8%	5.5%	9.7%	14.3%	19.1%	11.5%	14.2%	11.9%
More Than One Prior Crash	-	0.2%	0.9%	2.6%	5.5%	8.7%	4.3%	7.9%	4.7%
Unknown/ Not Reported	11.8%	3.8%	2.1%	1.1%	1.4%	1.5%	2.0%	1.0%	1.9%
Signal Error (failure to signal) by Age Category									
Signal Error NOT Indicated	28.2%	36.6%	43.4%	47.6%	49.4%	51.7%	46.8%	53.8%	47.7%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Undefined	69.5%	59.4%	53.8%	48.3%	45.7%	44.1%	49.1%	40.7%	48.0%
Unknown	2.3%	4.0%	2.9%	4.0%	4.9%	4.2%	4.1%	5.5%	4.3%
Owner of Vehicle by Age Category									
Not Registered Owner	92.4%	89.6%	84.5%	72.0%	65.9%	58.2%	71.2%	44.3%	67.7%
Registered Owner	6.9%	10.1%	15.0%	27.5%	33.7%	41.4%	28.3%	55.4%	31.8%
Unknown/ Not Reported	0.8%	0.4%	0.5%	0.4%	0.5%	0.5%	0.5%	0.2%	0.4%
Restraint Use by Age Category									
Restraint NOT Used	47.7%	35.8%	34.5%	34.3%	37.7%	36.3%	36.2%	40.5%	36.8%
Restraint Used	42.4%	57.2%	56.5%	56.2%	52.2%	53.1%	54.2%	47.6%	53.3%
Restraint Use Unknown	9.9%	7.0%	9.0%	9.6%	10.0%	10.6%	9.6%	11.9%	9.9%
Overcorrection by Age Category									
No	28.2%	36.6%	43.4%	47.6%	49.4%	51.7%	46.8%	53.8%	47.7%
Yes	0.4%	0.1%	-	-	-	-	-	0.2%	-
Undefined	71.4%	63.3%	56.6%	52.4%	50.6%	48.3%	53.1%	46.0%	52.2%

Vehicle Characteristics: FARS Data, Single-Vehicle Fatal Crashes.

Key Findings

- Over two-thirds of vehicles involved in single-vehicle fatal crashes were 10 or more years old.
- Overall, around half of the vehicles were passenger cars.

Table 3. 2013-2017 FARS Single-Vehicle Descriptive Results – Vehicle Characteristics

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Vehicle Age by Age Category									
< 5 Years	7.3%	8.5%	8.8%	10.0%	11.4%	11.5%	10.3%	15.1%	10.9%
5-9 Years	17.9%	21.7%	21.0%	18.1%	19.5%	22.7%	20.4%	22.9%	20.7%
10+ Years	74.8%	69.8%	70.2%	71.9%	69.1%	65.8%	69.3%	62.0%	68.4%
Body Type by Age Category									
Passenger Car	38.5%	52.2%	56.8%	59.9%	60.5%	61.8%	58.7%	46.1%	57.1%
Light Truck-Pickup	23.3%	23.8%	20.0%	19.7%	20.0%	18.8%	20.1%	22.9%	20.4%
Light Truck-Utility	32.4%	21.6%	21.3%	18.5%	17.4%	17.6%	19.1%	25.4%	19.9%
Light Truck-Van	5.0%	2.2%	1.8%	1.7%	1.7%	1.6%	1.8%	5.5%	2.3%
Light Truck-Other	0.8%	0.2%	0.1%	0.2%	0.5%	0.2%	0.3%	0.2%	0.3%

Roadway/Environmental Characteristics of Single-Vehicle Fatal Crashes.

Key Findings

- The distribution of roadway/environmental characteristics was similar across driver age groups.
- For young drivers, almost half of fatal crashes occurred on local/collector roads, while the most involving comparison group drivers occurred on arterial roads.
- The distribution of single-vehicle fatal crashes occurring on urban versus rural roads was similar across age groups.
- Most fatal crashes occurred on two-lane roads for all ages.
- About a third occurred on roads with posted speed limits of 50 to 60 mph for drivers of all ages.
- Over two-thirds occurred on straight roads.
- Very few fatal crashes occurred at intersections.
- Nearly 3 in 10 occurred between midnight and 6 a.m., and this proportion numerically increased with increasing young driver age.

- Slightly more than half occurred on weekdays.
- Seven in 10 occurred under clear and dry weather conditions.
- Four in 10 occurred in dark, unlit conditions except among drivers 16 and younger, who were more likely to crash during daylight.
- These fatal crashes rarely occurred in the presence of traffic control.

Table 4. 2013-2017 FARS Single-Vehicle Descriptive Results – Roadway/Environmental Characteristics

	Age <16	**Age 16**	**Age 17**	**Age 18**	**Age 19**	**Age 20**	**All young drivers**	**Age 35**	**Total**
Road Type by Age Category									
Limited Access Highway	9.2%	6.9%	9.4%	12.9%	15.5%	16.1%	13.1%	16.2%	13.5%
Arterial	26.7%	30.9%	36.4%	37.0%	40.2%	39.9%	37.5%	44.6%	38.5%
Local/ Collector	63.4%	60.7%	53.0%	49.0%	43.3%	42.9%	48.2%	38.6%	47.0%
Unknown	0.8%	1.5%	1.3%	1.1%	1.0%	1.1%	1.1%	0.6%	1.1%
Rural/Urban Roadway by Age Category									
Urban	51.5%	52.2%	49.3%	50.4%	47.8%	46.7%	48.9%	47.9%	48.8%
Rural	48.1%	47.3%	50.4%	49.0%	51.7%	52.8%	50.6%	51.7%	50.8%
Unknown	0.4%	0.5%	0.4%	0.6%	0.5%	0.5%	0.5%	0.4%	0.5%
Number of Lanes by Age Category									
1 Lane	1.1%	1.3%	1.5%	1.6%	1.9%	1.1%	1.5%	2.1%	1.6%
2 Lanes	86.3%	87.0%	80.1%	77.1%	75.2%	73.5%	77.4%	69.3%	76.4%
3 or More Lanes	10.7%	10.4%	17.7%	20.6%	22.4%	24.6%	20.4%	27.8%	21.3%
Non-Trafficway/ Unknown/ Not Reported	1.9%	1.2%	0.7%	0.7%	0.5%	0.7%	0.7%	0.8%	0.7%
Posted Speed Limit by Age Category									
No Statutory Limit/Non-Trafficway or Driveway Access	1.5%	0.7%	0.4%	0.3%	0.2%	0.5%	0.4%	0.6%	0.4%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
5-35 mph	29.4%	25.3%	28.0%	24.5%	24.2%	24.4%	25.2%	25.2%	25.2%
40-45 mph	16.8%	22.9%	25.8%	25.0%	23.5%	23.9%	24.1%	22.4%	23.8%
50-60 mph	32.4%	38.7%	32.6%	33.3%	32.3%	33.5%	33.5%	33.9%	33.5%
65-95 mph	15.6%	11.2%	10.9%	14.1%	16.9%	15.3%	14.4%	15.9%	14.6%
Unknown/ Not Reported	4.2%	1.2%	2.4%	2.7%	2.8%	2.4%	2.5%	2.0%	2.5%
Roadway Alignment by Age Category									
Straight	66.8%	67.8%	63.5%	67.4%	68.1%	68.4%	67.2%	69.7%	67.6%
Curves	31.3%	31.7%	35.2%	31.6%	29.7%	29.8%	31.2%	28.9%	30.9%
Unknown/ Not Reported	1.9%	0.5%	1.3%	1.0%	2.2%	1.8%	1.5%	1.4%	1.5%
Intersection Type by Age Category									
Not an Intersection	92.4%	92.1%	90.0%	89.7%	88.7%	88.4%	89.5%	86.7%	89.1%
Four-Way Intersection	3.4%	3.3%	4.4%	5.9%	5.6%	6.4%	5.4%	7.5%	5.7%
T-Intersection	3.8%	3.9%	4.7%	3.6%	5.0%	4.6%	4.4%	4.9%	4.5%
Y-Intersection	-	0.4%	0.7%	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%
Traffic Circle	-	-	-	-	-	-	-	0.1%	-
Roundabout	-	0.1%	-	-	-	0.1%	0.1%	0.1%	0.1%
Five-Point, or More	-	0.1%	0.1%	0.1%	0.1%	-	0.1%	0.2%	0.1%
L-Intersection	0.4%	-	0.1%	0.1%	0.2%	-	0.1%	-	0.1%
Unknown/ Not Reported	-	0.1%	0.1%	-	-	-	0.1%	0.2%	0.1%
Time of Day by Age Category									
6 a.m. to 3 p.m.	19.5%	27.6%	23.2%	24.5%	22.3%	21.9%	23.3%	22.1%	23.1%
3 p.m. to 6 a.m.	19.8%	18.3%	14.5%	11.0%	9.7%	8.7%	11.6%	11.0%	11.5%
6 p.m. to 9 p.m.	16.8%	18.5%	17.7%	13.7%	14.8%	14.9%	15.4%	18.9%	15.8%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
9 p.m. to Midnight	16.8%	18.3%	22.9%	21.2%	19.0%	19.5%	20.1%	18.4%	19.9%
Midnight to 6 a.m.	26.7%	16.4%	21.0%	29.1%	33.1%	33.8%	28.8%	28.3%	28.7%
Unknown	0.4%	0.8%	0.8%	0.5%	1.1%	1.2%	0.9%	1.3%	1.0%
Day of Week by Age Category									
Weekday (6 a.m. Monday to 6 p.m. Friday)	50.8%	58.5%	52.4%	50.7%	51.5%	50.0%	51.7%	52.5%	51.8%
Weekend (6 p.m. Friday to 6 a.m. Monday)	49.2%	41.5%	47.6%	49.3%	48.5%	50.0%	48.3%	47.5%	48.2%
Weather by Age Category									
Clear and dry	72.1%	72.1%	66.8%	70.6%	70.2%	69.5%	69.8%	70.9%	70.0%
Rain	4.6%	6.7%	9.3%	7.8%	7.1%	8.8%	7.9%	8.0%	7.9%
Sleet/Snow/ Fog/Other	19.1%	18.5%	20.6%	18.3%	19.9%	18.8%	19.2%	17.7%	19.0%
Unknown/ Not Reported	4.2%	2.7%	3.2%	3.3%	2.8%	3.0%	3.1%	3.4%	3.1%
Light Condition by Age Category									
Daylight	43.5%	48.2%	38.3%	34.4%	32.2%	29.1%	34.7%	30.4%	34.1%
Dark- Not Lighted	37.0%	32.8%	39.3%	41.7%	41.6%	41.3%	40.3%	38.2%	40.0%
Dark-Lighted	14.1%	12.2%	17.1%	19.5%	22.1%	24.2%	20.1%	25.7%	20.8%
Other/ Unknown/ Not Reported	5.3%	6.7%	5.2%	4.4%	4.1%	5.4%	4.9%	5.8%	5.0%
Traffic Control by Age Category									
None	92.0%	92.6%	91.3%	89.6%	89.7%	89.7%	90.3%	87.4%	89.9%
Signal (all)	3.1%	1.7%	2.8%	4.2%	4.8%	4.2%	3.9%	6.1%	4.1%
Stop Sign	1.1%	1.6%	1.4%	1.5%	1.1%	1.7%	1.4%	1.9%	1.5%
Yield Sign	-	-	-	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Other	3.4%	4.0%	4.4%	4.3%	3.9%	4.0%	4.1%	4.3%	4.1%
Unknown/ Not Reported	0.4%	0.1%	0.1%	0.3%	0.3%	0.3%	0.2%	0.3%	0.3%

Crash Characteristics: FARS Data, Single-Vehicle Fatal Crashes.

Key Findings

- A collision with a fixed object was the first harmful event in over half of the fatal crashes for all age groups.
- Nearly two-thirds of drivers of all ages were going straight prior to the fatal crashes.
- Three in 10 drivers 16 and older made no effort to avoid the crash. Those younger than 16 were about equally like to steer to avoid the crash or make no avoidance maneuver.
- The initial impact location was the front of the vehicle in nearly half of all fatal crashes among drivers 16 and older. Drivers younger than 16 were more likely to experience non-collision events (e.g., a roll over).
- Three-fourths of young drivers and two-thirds of comparison group drivers were involved in fatal "run off road" crashes.

Table 5. 2013-2017 FARS Single-Vehicle Descriptive Results – Crash Characteristics

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
First Harmful Event by Age Category									
Non-Collision Harmful Events	34.0%	21.1%	16.8%	15.7%	16.8%	13.6%	16.6%	11.8%	16.0%
Collision With Objects Not Fixed	4.2%	3.2%	3.5%	3.6%	3.7%	4.2%	3.7%	4.6%	3.8%
Ped/Bike	8.8%	16.4%	19.6%	21.9%	24.0%	26.0%	22.2%	32.0%	23.5%
Collision With Fixed Object	53.1%	59.4%	60.0%	58.8%	55.5%	56.3%	57.4%	51.6%	56.7%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Manner of Collision by Age Category									
Not Collision With Motor Vehicle in-Transport	100%	100%	100%	100%	100%	100%	100%	99.9%	100%
Other	-	-	-	-	-	-	-	0.1%	-
Pre-Crash Vehicle Maneuver by Age Category									
Going Straight	61.7%	62.3%	60.1%	64.5%	65.6%	65.1%	63.9%	66.0%	64.2%
Passing or Overtaking Another Vehicle	1.1%	2.4%	1.9%	2.0%	2.1%	1.8%	2.0%	1.6%	1.9%
Turning Right	1.1%	0.6%	0.5%	0.6%	0.4%	0.5%	0.6%	0.7%	0.6%
Turning Left	0.8%	1.2%	0.7%	1.1%	1.2%	1.3%	1.1%	1.3%	1.1%
Making a U-Turn	-	-	-	-	0.1%	-	-	-	-
Backing Up (other than for parking position)	0.4%	0.8%	0.4%	0.2%	0.1%	0.2%	0.3%	0.2%	0.3%
Negotiating a Curve	29.5%	29.7%	33.2%	28.5%	27.0%	27.3%	28.7%	26.8%	28.4%
Changing Lanes/ Merging	1.1%	1.1%	1.3%	1.7%	1.6%	1.7%	1.5%	1.1%	1.5%
Other/ Unknown	4.2%	1.8%	2.0%	1.3%	1.9%	2.1%	1.9%	2.2%	1.9%
Avoiding Maneuver by Age Category									
No Avoidance Maneuver	23.7%	28.5%	27.9%	29.0%	30.1%	30.8%	29.3%	34.2%	30.0%
Braking	3.1%	3.0%	5.0%	3.7%	3.9%	3.5%	3.8%	3.8%	3.8%
Steering	26.7%	21.2%	17.7%	16.7%	17.0%	15.1%	17.3%	13.1%	16.7%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Braking and Steering	6.5%	7.3%	6.0%	6.6%	5.4%	5.6%	6.0%	5.6%	6.0%
Accelerating/ Accelerating and Steering	-	-	0.3%	-	0.1%	-	0.1%	0.2%	0.1%
Unknown/ Not Reported	40.1%	40.0%	43.1%	44.0%	43.5%	44.9%	43.5%	43.1%	43.4%
Initial Impact Location by Age Category									
Non-Collision	33.6%	21.1%	16.8%	15.7%	16.8%	13.6%	16.6%	11.8%	16.0%
Front	29.0%	38.1%	44.2%	45.7%	44.6%	48.4%	44.7%	52.2%	45.7%
Right Side	14.5%	14.2%	14.3%	14.2%	13.9%	14.0%	14.1%	13.1%	14.0%
Rear	0.8%	2.1%	1.0%	0.9%	0.9%	0.7%	1.0%	1.1%	1.0%
Left Side	14.9%	15.5%	13.7%	12.6%	13.0%	12.7%	13.2%	11.2%	13.0%
Other/ Unknown/ Not Reported	7.3%	9.1%	10.0%	10.9%	10.9%	10.5%	10.4%	10.6%	10.4%
Run off Road by Age Category									
No	15.6%	19.0%	22.6%	23.5%	26.5%	28.3%	24.6%	33.6%	25.8%
Yes	84.4%	81.0%	77.4%	76.5%	73.5%	71.7%	75.4%	66.4%	74.2%

Multi-Vehicle Fatal Crashes

Driver and Occupant Characteristics: FARS Data, Multi-Vehicle Fatal Crashes.

Key Findings

- Approximately two-thirds of the drivers were male across all age groups.
- Comparison group drivers were more likely than young drivers to have alcohol involvement reported by police.[4]
- Most drivers 16 and older were not carrying passengers at the time of the fatal crashes. A driver younger than 16 was equally likely to be alone or to have one or two passengers.

[4] Based on the data element DRINKING, which reflects the judgment of law enforcement and may or may not be informed by a BAC test result.

- Nearly all comparison group drivers 35 years old had full driver licenses, as did two-thirds of all young drivers; 1 in 5 young drivers had intermediate licenses.
- About 1 in 4 drivers were killed among most age groups, although the proportion was somewhat lower among the youngest drivers.
- Almost one-third of young drivers were each carrying at least one young passenger (14 to 20 years old), compared to just 6% of comparison group drivers.
- Only 14% of young drivers were each carrying a passenger 21 or older, compared to just over one-quarter of comparison group drivers.
- Young drivers were more likely than comparison drivers to have been reported as distracted.[5]
- For 9 in 10 drivers of all ages, there was no indication of cell phone use.[5]
- Fatigue was almost never indicated, across age groups.[6]
- Almost no drivers were cited for following too closely.
- The proportion of drivers each with one prior crash was similar for young and comparison group drivers.
- Comparison group drivers were slightly more likely to have each ad one prior speeding violation; 20-year-olds had the highest percentage prior speeding violations.
- The proportion of drivers who were the registered owners of the vehicles increased with driver age.
- Overall, three-quarters of drivers used restraints.
- Overcorrection was rarely a factor.

[5] Recognized limitations in the accuracy, completeness, and reliability of data of this nature derived from police reports should be considered when interpreting this analysis outcome.

[6] Recognized limitations in the accuracy, completeness, and reliability of data of this nature derived from police reports should be considered when interpreting this analysis outcome.

Table 6. 2013-2017 FARS Multi-Vehicle Descriptive Results – Driver and Occupant Characteristics

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Sex by Age Category									
Male	64.5%	64.9%	63.3%	62.5%	66.4%	65.4%	64.6%	68.2%	65.2%
Female	35.5%	35.1%	36.7%	37.5%	33.6%	34.6%	35.4%	31.8%	34.8%
Police-Reported Alcohol Involvement of Driver by Age Category									
No Alcohol	80.6%	72.8%	67.9%	67.8%	62.5%	55.9%	63.9%	55.2%	62.5%
Yes Alcohol	3.2%	1.7%	5.6%	8.8%	11.8%	13.2%	9.5%	18.0%	10.9%
Unknown/ Not Reported	16.1%	25.5%	26.4%	23.4%	25.7%	30.9%	26.6%	26.8%	26.6%
Occupants by Age Category									
One	32.3%	53.1%	50.3%	55.9%	60.3%	60.7%	56.9%	59.8%	57.4%
Two	29.0%	27.2%	27.2%	25.8%	22.6%	23.3%	24.7%	22.0%	24.3%
Three+	38.7%	19.7%	22.6%	17.9%	17.1%	15.8%	18.3%	18.0%	18.2%
Unknown	-	-	-	0.4%	-	0.1%	0.1%	0.2%	0.1%
License Type by Age Category									
Full Driver License	12.9%	16.3%	30.5%	80.8%	84.1%	86.4%	68.5%	91.6%	72.2%
Intermediate Driver License	22.6%	69.0%	56.9%	9.5%	5.0%	4.3%	20.1%	-	16.9%
Learners Permit	22.6%	7.5%	3.3%	2.7%	1.9%	0.7%	2.8%	0.2%	2.4%
Unknown Type	41.9%	7.1%	9.2%	7.0%	8.9%	8.6%	8.7%	8.2%	8.6%
License Status by Age Category									
Not Licensed	41.9%	6.3%	9.0%	6.4%	8.8%	7.5%	8.1%	7.9%	8.1%
Suspended	-	0.8%	0.3%	2.0%	3.9%	5.5%	3.0%	7.3%	3.7%
Revoked/ Expired/ Canceled or Denied	-	-	0.5%	0.9%	0.3%	0.9%	0.6%	3.6%	1.1%
Valid	58.1%	92.9%	90.0%	90.1%	86.8%	85.4%	87.8%	80.8%	86.7%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Unknown License Status	-	-	0.3%	0.5%	0.2%	0.7%	0.4%	0.4%	0.4%
License Restrictions Compliance by Age Category									
No Restriction or Not Applicable	58.1%	49.0%	56.7%	70.5%	73.2%	68.1%	66.2%	74.5%	67.5%
Restrictions Complied With	19.4%	16.7%	11.3%	4.6%	4.4%	4.6%	6.9%	4.0%	6.4%
Restrictions Not Complied With	12.9%	7.5%	5.9%	1.8%	1.4%	1.0%	2.8%	1.0%	2.5%
Restrictions, Compliance Unknown	9.7%	26.4%	25.9%	22.3%	20.6%	25.1%	23.4%	19.9%	22.8%
Unknown	-	0.4%	0.3%	0.7%	0.5%	1.2%	0.7%	0.6%	0.7%
Injury Severity by Age Category									
O-No Apparent Injury	22.6%	20.5%	15.1%	20.5%	19.5%	18.8%	19.0%	20.9%	19.3%
C-Possible Injury	9.7%	15.1%	19.7%	12.1%	14.4%	14.1%	14.6%	13.4%	14.4%
B-Suspected Minor Injury	19.4%	22.2%	21.8%	24.0%	20.7%	23.2%	22.4%	18.8%	21.8%
A-Suspected Serious Injury	29.0%	20.9%	19.2%	15.8%	16.5%	16.2%	17.3%	18.8%	17.5%
K-Fatal Injury	16.1%	21.3%	23.1%	26.6%	28.1%	27.1%	25.9%	27.4%	26.2%
Unknown/ Not Reported	3.2%	-	1.0%	1.1%	0.8%	0.6%	0.8%	0.6%	0.8%
Number of Young Passengers (age 14-20) by Age Category									
None	58.1%	64.9%	59.0%	63.9%	73.6%	78.4%	69.6%	94.4%	73.5%
One	22.6%	23.8%	26.2%	23.4%	17.4%	16.2%	20.4%	4.6%	17.9%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Two	12.9%	5.0%	7.2%	6.4%	6.6%	4.2%	5.9%	0.8%	5.1%
Three+	6.5%	6.3%	7.7%	6.2%	2.4%	1.2%	4.1%	0.2%	3.5%
Presence of Older Passenger (age 21 or older) by Age Category									
No	64.5%	88.3%	89.7%	89.4%	85.4%	80.3%	85.6%	73.6%	83.7%
Yes	35.5%	11.7%	10.3%	10.6%	14.6%	19.7%	14.4%	26.4%	16.3%
Presence of Distraction by Age Category									
Not Distracted	61.3%	54.0%	56.4%	53.3%	61.2%	58.3%	57.3%	68.4%	59.1%
Distracted	19.4%	27.2%	23.3%	26.4%	19.9%	22.2%	23.1%	13.6%	21.6%
Not Reported	19.4%	18.8%	20.3%	20.3%	18.8%	19.6%	19.6%	18.0%	19.3%
Cell Phone Use by Age Category									
Use NOT Indicated	54.8%	59.4%	65.4%	63.0%	68.8%	67.0%	65.5%	75.1%	67.0%
Use Indicated	-	2.1%	2.1%	2.0%	0.8%	1.7%	1.6%	0.8%	1.5%
Undefined	41.9%	32.2%	24.9%	28.2%	24.5%	24.6%	26.3%	18.6%	25.1%
Unknown/ Not Reported	3.2%	6.3%	7.7%	6.8%	6.0%	6.7%	6.6%	5.4%	6.4%
Fatigued by Age Category									
Fatigue NOT Indicated	64.5%	80.3%	73.1%	70.7%	65.5%	64.8%	69.0%	63.6%	68.1%
Fatigue Indicated	-	1.3%	2.1%	1.8%	3.1%	2.8%	2.4%	1.3%	2.2%
Undefined	6.5%	6.7%	6.9%	10.3%	15.5%	16.4%	12.4%	20.7%	13.7%
Unknown/ Not Reported	29.0%	11.7%	17.9%	17.2%	15.9%	16.1%	16.3%	14.4%	16.0%
Following Too Closely by Age Category									
No Violation	61.3%	64.4%	66.4%	65.4%	68.8%	68.3%	67.0%	74.3%	68.2%
Violation	-	0.4%	-	0.9%	0.5%	0.7%	0.6%	-	0.5%
Undefined	38.7%	33.5%	30.3%	31.0%	29.0%	30.0%	30.4%	24.3%	29.5%
Unknown/ Not Reported	-	1.7%	3.3%	2.7%	1.7%	1.0%	2.0%	1.5%	1.9%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Prior Crash by Age Category									
No Prior Crash	71.0%	87.9%	84.4%	80.2%	77.4%	77.1%	79.9%	77.2%	79.5%
One Prior Crash	-	2.9%	5.9%	9.7%	10.7%	9.4%	8.5%	10.9%	8.9%
More Than One Prior Crash	-	-	1.8%	2.0%	3.5%	3.9%	2.6%	2.3%	2.6%
Unknown/ Not Reported	29.0%	9.2%	7.9%	8.1%	8.5%	9.6%	8.9%	9.6%	9.0%
Prior Speed Violation by Age Category									
No Prior Violation	93.5%	94.1%	93.8%	86.6%	84.3%	72.6%	84.1%	80.3%	83.5%
One Prior Violation	-	4.2%	4.6%	10.4%	11.5%	17.8%	11.1%	13.6%	11.5%
More Than One Violation	-	0.4%	0.8%	2.2%	3.5%	8.1%	3.7%	5.2%	4.0%
Unknown/ Not Reported	6.5%	1.3%	0.8%	0.7%	0.8%	1.4%	1.1%	0.8%	1.0%
Signal Error (failure to signal) by Age Category									
Signal Error NOT Indicated	29.0%	36.8%	36.9%	40.3%	46.0%	44.8%	42.0%	56.5%	44.3%
Failed to Signal Intentions	-	-	-	0.2%	-	-	-	-	-
Undefined	71.0%	63.2%	61.8%	59.0%	53.4%	54.6%	57.4%	42.9%	55.1%
Unknown	-	-	1.3%	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%
Owner of Vehicle by Age Category									
Not Registered Owner	93.5%	86.2%	86.7%	76.7%	64.4%	57.5%	71.0%	40.2%	66.1%
Registered Owner	6.5%	13.8%	12.8%	23.1%	35.5%	42.5%	28.8%	59.4%	33.7%
Unknown/ Not Reported	-	-	0.5%	0.2%	0.2%	-	0.2%	0.4%	0.2%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Restraint Use by Age Category									
Restraint NOT Used	19.4%	10.5%	17.4%	16.5%	18.2%	16.7%	16.6%	17.8%	16.8%
Restraint Used	77.4%	84.1%	77.4%	77.8%	73.9%	73.6%	76.2%	75.1%	76.1%
Restraint Use Unknown	3.2%	5.4%	5.1%	5.7%	7.8%	9.7%	7.2%	7.1%	7.2%
Overcorrection by Age Category									
No	29.0%	36.8%	36.9%	40.3%	46.0%	44.8%	42.0%	56.5%	44.3%
Yes	-	-	-	0.5%	0.6%	0.6%	0.4%	1.3%	0.6%
Undefined	71.0%	63.2%	63.1%	59.2%	53.4%	54.6%	57.6%	42.3%	55.2%

Vehicle Characteristics: FARS Data, Multi-Vehicle Fatal Crashes.

Key Findings

- More than half of vehicles were at least 10 years old.
- Most of the vehicles were passenger cars; among the comparison group, nearly half were driving passenger cars and one-quarter were driving pickup trucks, and SUVs.

Table 7. 2013-2017 FARS Multi-Vehicle Descriptive Results –Vehicle Characteristics

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Vehicle Age by Age Category									
< 5 Years	16.1%	13.8%	14.1%	12.8%	16.0%	19.3%	15.7%	22.8%	16.8%
5-9 Years	22.6%	30.1%	18.2%	21.8%	21.8%	26.4%	23.3%	24.5%	23.5%
10+ Years	61.3%	56.1%	67.7%	65.4%	62.2%	54.3%	61.0%	52.7%	59.7%
Body Type by Age Category									
Passenger Car	58.1%	50.6%	57.9%	61.0%	62.6%	65.2%	61.1%	48.1%	59.0%
Light Truck-Pickup	12.9%	27.2%	22.1%	19.6%	20.3%	18.1%	20.4%	22.0%	20.6%
Light Truck-Utility	25.8%	18.8%	18.2%	17.2%	15.5%	14.2%	16.4%	21.1%	17.1%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Light Truck-Van	3.2%	3.3%	1.8%	2.2%	1.1%	2.0%	1.9%	8.2%	2.9%
Light Truck-Other	-	-	-	-	0.5%	0.4%	0.2%	0.6%	0.3%

Roadway/Environmental Characteristics: FARS Data, Multi-Vehicle Fatal Crashes.

Key Findings

- Nearly 6 in 10 fatal crashes occurred on arterial roads. For young drivers, the next highest percentage were on local/collector roads, while for comparison group drivers the remainder were largely split between local/collector roads and limited access highways.
- Fatal crashes were evenly divided between urban and rural roads.
- Around two-thirds of fatal crashes occurred on two-lane roads.
- Roads with posted speed limits of 50- to 60 mph were the sites of around 4 in 10 fatal crashes among drivers 16 and older and more than 6 in 10 for drivers under 16.
- Over three-fourths of multi-vehicle fatal crashes occurred on straight roads.
- Two-thirds of fatal crashes were *not* at intersections.
- The largest proportion of fatal crashes occurred between 6 a.m. and 3 p.m., followed by crashes between 3 p.m. and 6 p.m. for drivers 16 and older. Among drivers under 16, the largest proportion occurred between 6 p.m. and 9 p.m. (Note that these time windows are of different durations, 9 hours versus 3 hours).
- More than 4 in 10 fatal crashes occurred on weekends.
- Seven in 10 fatal crashes occurred during clear and dry weather.
- Slightly over half of fatal crashes occurred in daylight, and one-quarter in unlit darkness.
- There was no traffic control present in three-quarters of the fatal crashes.

Table 8. 2013-2017 FARS Multi-Vehicle Descriptive Results – Roadway/Environmental Characteristics

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Road Type by Age Category									
Limited Access Highway	16.1%	4.6%	6.7%	14.7%	16.8%	18.1%	14.0%	21.8%	15.2%
Arterial	48.4%	62.8%	62.8%	55.5%	57.6%	55.7%	57.8%	56.3%	57.6%
Local/ Collector	32.3%	31.4%	30.3%	29.7%	25.0%	25.5%	27.6%	21.5%	26.7%
Unknown	3.2%	1.3%	0.3%	0.2%	0.6%	0.7%	0.6%	0.4%	0.6%
Rural/Urban Roadway by Age Category									
Urban	51.6%	55.6%	52.8%	52.6%	48.4%	48.8%	50.8%	45.6%	50.0%
Rural	45.2%	43.5%	46.9%	47.3%	51.2%	50.4%	48.7%	54.2%	49.6%
Unknown	3.2%	0.8%	0.3%	0.2%	0.5%	0.7%	0.5%	0.2%	0.5%
Number of Lanes by Age Category									
1 Lane	-	-	0.5%	0.7%	0.5%	1.0%	0.6%	1.9%	0.8%
2 Lanes	71.0%	76.2%	73.8%	69.2%	65.8%	64.3%	68.4%	62.8%	67.5%
3 or More Lanes	29.0%	22.2%	24.9%	29.9%	32.8%	33.8%	30.2%	34.7%	30.9%
Non-Trafficway/ Unknown/ Not Reported	-	1.7%	0.8%	0.2%	0.9%	0.9%	0.8%	0.6%	0.8%
Posted Speed Limit by Age Category									
No Statutory Limit/Non-Trafficway or Driveway Access	-	1.3%	0.3%	0.2%	0.2%	0.3%	0.3%	0.4%	0.3%
5-35 mph	6.5%	11.7%	14.9%	11.9%	12.6%	14.2%	13.1%	14.4%	13.3%
40-45 mph	12.9%	20.1%	26.9%	22.7%	22.9%	21.3%	22.7%	19.7%	22.2%
50-60 mph	61.3%	48.1%	40.5%	43.4%	41.1%	40.9%	42.4%	40.2%	42.0%
65-95 mph	19.4%	14.6%	14.1%	19.0%	21.0%	18.8%	18.3%	22.0%	18.9%
Unknown/ Not Reported	-	4.2%	3.3%	2.7%	2.2%	4.5%	3.3%	3.3%	3.3%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Roadway Alignment by Age Category									
Straight	87.1%	81.4%	83.0%	79.8%	80.5%	83.7%	81.8%	78.2%	81.2%
Curves	12.9%	15.7%	16.2%	18.5%	17.3%	14.2%	16.4%	20.1%	17.0%
Unknown/ Not Reported	-	3.0%	0.8%	1.7%	2.2%	2.0%	1.9%	1.7%	1.8%
Intersection Type by Age Category									
Not an Intersection	54.8%	59.4%	59.2%	66.3%	67.5%	63.8%	64.0%	69.0%	64.8%
Four-Way Intersection	41.9%	27.2%	26.9%	24.4%	24.0%	26.1%	25.6%	21.5%	25.0%
T-Intersection	-	12.6%	12.6%	8.4%	7.7%	9.7%	9.5%	8.8%	9.4%
Y-Intersection	3.2%	-	0.8%	0.7%	0.5%	0.4%	0.6%	0.2%	0.5%
Five-Point, or More	-	0.4%	0.3%	0.2%	-	-	0.1%	0.2%	0.1%
Unknown/ Not Reported	-	0.4%	0.3%	-	0.3%	-	0.2%	0.2%	0.2%
Time of Day by Age Category									
6 a.m. to 3 p.m.	22.6%	41.8%	29.2%	33.2%	32.7%	32.9%	33.0%	34.5%	33.3%
3 p.m. to 6 a.m.	32.3%	25.5%	24.6%	19.8%	19.6%	14.9%	19.9%	18.6%	19.7%
6 p.m. to 9 p.m.	38.7%	15.5%	18.2%	18.7%	14.9%	17.7%	17.3%	16.3%	17.2%
9 p.m. to Midnight	3.2%	10.9%	17.4%	15.2%	14.8%	16.4%	15.2%	11.7%	14.6%
Midnight to 6 a.m.	-	6.3%	10.5%	13.2%	17.9%	18.1%	14.5%	18.6%	15.1%
Unknown	3.2%	-	-	-	0.2%	-	0.1%	0.2%	0.1%
Day of Week by Age Category									
Weekday (6 a.m. Monday to 6 p.m. Friday)	58.1%	64.4%	57.2%	57.9%	57.9%	59.3%	58.8%	56.7%	58.5%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Weekend (6 p.m. Friday to 6 a.m. Monday)	41.9%	35.6%	42.8%	42.1%	42.1%	40.7%	41.2%	43.3%	41.5%
Weather by Age Category									
Clear and Dry	74.2%	72.4%	71.5%	68.3%	68.8%	72.0%	70.4%	67.6%	69.9%
Rain	-	5.4%	9.2%	9.7%	6.1%	7.4%	7.6%	7.9%	7.6%
Sleet/Snow/ Fog/Other	22.6%	19.7%	18.5%	18.9%	22.3%	18.6%	19.7%	21.5%	20.0%
Unknown/ Not Reported	3.2%	2.5%	0.8%	3.1%	2.8%	2.0%	2.3%	2.9%	2.4%
Light Condition by Age Category									
Daylight	61.3%	71.5%	54.1%	55.3%	51.0%	49.4%	54.0%	53.6%	54.0%
Dark-Not Lighted	16.1%	16.3%	28.2%	26.4%	26.1%	27.0%	25.7%	26.2%	25.7%
Dark-Lighted	3.2%	7.5%	12.6%	14.8%	17.7%	19.4%	15.6%	15.3%	15.6%
Other/ Unknown/ Not Reported	19.4%	4.6%	5.1%	3.5%	5.2%	4.2%	4.7%	5.0%	4.7%
Traffic Control by Age Category									
None	71.0%	74.1%	70.8%	73.8%	77.1%	72.5%	73.8%	77.2%	74.3%
Signal (all)	9.7%	10.9%	10.8%	11.5%	12.7%	15.1%	12.6%	13.6%	12.8%
Stop Sign	16.1%	11.7%	13.1%	11.2%	6.8%	9.1%	9.9%	4.2%	9.0%
Yield Sign	-	-	0.3%	0.4%	-	0.4%	0.2%	0.2%	0.2%
Other	3.2%	3.3%	5.1%	2.9%	3.1%	2.6%	3.3%	4.0%	3.4%
Unknown/ Not Reported	-	-	-	0.2%	0.3%	0.3%	0.2%	0.8%	0.3%

Crash Characteristics: FARS Data, Multi-Vehicle Fatal Crashes.

Key Findings

- A collision with a motor vehicle in transport was reported as the first harmful event in nearly all cases.
- Young drivers were most often involved in *angle* collisions, followed by *front-to-front* collisions; among comparison group drivers, the largest proportion of fatal crashes were *front-to front*, followed closely by *angle*.
- Two-thirds of drivers were going straight prior to the fatal crashes.
- Drivers made no avoidance maneuver in more than a third of the fatal crashes.
- For nearly two-thirds of drivers of all ages, the initial impact location was the front of the vehicles.

Table 9. 2013-2017 FARS Multi-Vehicle Descriptive Results – Crash Characteristics

	Age <16	**Age 16**	**Age 17**	**Age 18**	**Age 19**	**Age 20**	**All young drivers**	**Age 35**	**Total**
First Harmful Event									
Non-Collision Harmful Events	-	1.3%	-	0.7%	1.3%	0.1%	0.6%	0.6%	0.6%
Collision With Motor Vehicle in-Transport	96.8%	96.7%	97.2%	94.5%	93.4%	93.9%	94.7%	95.4%	94.8%
Collision With Objects Not Fixed	-	-	0.3%	0.2%	-	0.4%	0.2%	0.6%	0.3%
Ped/Bike	-	0.4%	0.8%	2.0%	1.3%	1.9%	1.4%	0.8%	1.3%
Collision With Fixed Object	3.2%	1.7%	1.8%	2.6%	4.1%	3.6%	3.0%	2.5%	3.0%
Manner of Collision by Age Category									
Not Collision With Motor Vehicle in-Transport	3.2%	3.3%	2.8%	5.5%	6.6%	6.1%	5.3%	4.6%	5.2%
Front-to-Rear	3.2%	15.1%	10.8%	9.2%	12.6%	13.6%	12.0%	15.1%	12.5%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Front-to-Front	25.8%	28.9%	32.6%	34.2%	33.0%	31.6%	32.3%	37.4%	33.1%
Angle	48.4%	44.8%	48.2%	43.8%	39.9%	41.3%	43.0%	34.9%	41.7%
Sideswipe-Same Direction	19.4%	3.3%	2.6%	3.8%	3.9%	3.2%	3.6%	2.5%	3.5%
Sideswipe-Opposite Direction	-	3.8%	2.8%	2.7%	3.8%	3.3%	3.2%	5.2%	3.6%
Rear-to-Side	-	-	0.3%	-	0.2%	0.3%	0.2%	-	0.1%
Other	-	0.4%	-	0.2%	-	-	0.1%	-	0.1%
Unknown/ Not Reported	-	0.4%	-	0.5%	0.2%	0.6%	0.4%	0.2%	0.3%
Pre-Crash Vehicle Maneuver by Age Category									
Going Straight	58.1%	59.8%	62.3%	64.8%	66.7%	70.1%	65.8%	65.3%	65.7%
Passing or Overtaking Another Vehicle	6.5%	2.9%	2.1%	3.5%	2.5%	1.7%	2.5%	2.1%	2.5%
Turning Right	-	0.4%	0.5%	-	-	0.1%	0.2%	-	0.1%
Turning Left	-	10.9%	13.8%	8.1%	6.0%	5.7%	7.9%	3.6%	7.2%
Making a U-Turn	-	-	0.3%	0.2%	0.3%	0.3%	0.2%	-	0.2%
Backing Up (other than for parking position)	-	-	-	0.2%	0.2%	-	0.1%	-	0.1%
Negotiating a Curve	9.7%	13.0%	15.1%	16.5%	16.2%	13.2%	14.9%	18.6%	15.5%
Changing Lanes/ Merging	6.5%	2.1%	1.5%	1.5%	1.4%	1.9%	1.7%	0.8%	1.6%

	Age <16	Age 16	Age 17	Age 18	Age 19	Age 20	All young drivers	Age 35	Total
Other/ Unknown	19.4%	10.9%	4.4%	5.3%	6.8%	7.0%	6.7%	9.6%	7.1%
Avoiding Maneuver by Age Category									
No Avoidance Maneuver	38.7%	38.9%	38.2%	35.5%	35.9%	34.5%	36.1%	40.4%	36.8%
Braking	3.2%	2.9%	2.1%	3.3%	3.1%	4.1%	3.2%	2.9%	3.2%
Steering	9.7%	12.1%	11.5%	12.3%	10.4%	11.7%	11.5%	9.8%	11.2%
Braking and Steering	6.5%	5.9%	4.9%	6.0%	4.6%	5.4%	5.3%	4.6%	5.2%
Accelerating/ Accelerating and Steering	-	0.8%	1.3%	-	0.2%	0.9%	0.6%	0.2%	0.5%
Unknown/ Not Reported	41.9%	39.3%	42.1%	42.9%	45.8%	43.5%	43.3%	42.1%	43.1%
Initial Impact Location by Age Category									
Non-Collision	-	1.3%	-	0.5%	0.8%	0.1%	0.5%	0.6%	0.5%
Front	54.8%	56.5%	59.2%	66.8%	64.2%	63.8%	63.0%	67.8%	63.8%
Right Side	29.0%	19.7%	17.9%	14.8%	13.5%	14.1%	15.4%	10.9%	14.7%
Rear	-	7.5%	5.6%	3.1%	5.7%	5.8%	5.3%	7.3%	5.6%
Left Side	12.9%	15.1%	16.9%	13.4%	14.9%	15.2%	15.0%	12.6%	14.6%
Other/ Unknown/ Not Reported	3.2%	-	0.3%	1.3%	0.9%	1.0%	0.9%	0.8%	0.9%

References

National Center for Statistics and Analysis. (2021, June). *Young drivers: 2019 data* (Traffic Safety Facts. Report No. DOT HS 813 130). National Highway Traffic Safety Administration. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813130

Venkatraman, V., Richard, C. M., Magee, K., & Johnson, K. (2021, July). *Countermeasures that work: A highway safety countermeasures guide for State Highway Safety Offices*, 10th edition, 2020 (Report No. DOT HS 813 097). National Highway Traffic Safety Administration. https://www.nhtsa.gov/sites/nhtsa.gov/files/2021-09/15100_Countermeasures10th_080621_v5_tag.pdf

Appendix A. Rules for Defining Contributing Factors for FARS Analyses

Table A-1. Tables, Variables, and Variable Levels for Defining Contributing Factors

Table	Variable	Variable Level Codes
DISTRACT	MDRDSTRD	5,6,7,10,15,97,12,3,4,9, 13, 14, 17, 18, 92, 93, 98
VIOLATN	MVIOLATN	4,11-19,22, 23, 24, 29,31-39, 41,42-69, 98
VEHICLE	DR_SF1 DR_SF2 DR_SF3 DR_SF4	18,50,51,54,58

Appendix B. FARS Variable Definitions

The table below provides the FARS variable definitions.

Table B-1. Tables, Variables, and Variable Levels for Defining Variables and Variable Levels

TransAnalytics VARIABLE NAME	TransAnalytics LEVEL	FARSDATA FILE	FARS VARIABLE NAME	FARS LEVEL
Sex		PERSON	SEX	
	Male			1
	Female			2
	Unknown/Not Reported			8, 9
Police-Reported Alcohol Involvement of driver		PERSON	DRINKING	
	No alcohol			0
	Yes alcohol			1
	Unknown/Not Reported			8, 9
Vehicle Occupants		VEHICLE	NUMOCCS	
	One			1
	Two			2
	Three+			3-98
	Unknown			99
License Type		VEHICLE	L_TYPE	
	Full Driver License			1
	Intermediate Driver License			2
	Learners Permit			7
	Unknown License Type			0, 8, 9
License Status		VEHICLE	L_STATUS	
	Not Licensed			0
	Suspended			1
	Revoked/Expired/Canceled or Denied			2, 3, 4
	Valid			6
	Unknown License Status			9
License Restriction		VEHICLE	L_RESTRI	
	No Restrictions or Not Applicable			0
	Restrictions Complied With			1

TransAnalytics VARIABLE NAME	TransAnalytics LEVEL	FARSDATA FILE	FARS VARIABLE NAME	FARS LEVEL
	Restrictions Not Complied With			2
	Restrictions, Compliance Unknown			3
	Unknown			9
Injury Severity		PERSON	INJ_SEV	
	O-No Apparent Injury			0
	C-Possible Injury			1
	B-Suspected Minor Injury			2
	A-Suspected Serious Injury			3
	K-Fatal Injury			4
	Unknown/Not Reported			
Young Passengers		PERSON	PER_TYP	2
			AGE	14-20
	None			Counts Frequency PER_TYP =2 & AGE 14-20
	One			
	Two			
	Three +			
Older Passengers		PERSON	PER_TYP	2
			AGE	21-120
	Yes			
	No			
	Unknown			
Presence of Distraction		DISTRACT	MDRDSTRD	
	Distracted			2-15, 17-95, 97, 98
	Not Distracted			0,1,16
	Not Reported			96, 99
Cell Phone Use		DISTRACT	MDRDSTRD	
			MVIOLATN (2015 or Later)	
	Use Indicated		MDRDSTRD	5, 6, 15
			MVIOLATN (2015 or Later)	10
	Use NOT Indicated		MDRDSTRD	All other codes not defined
			MVIOLATN (2015 or Later)	All other codes not defined

TransAnalytics VARIABLE NAME	TransAnalytics LEVEL	FARSDATA FILE	FARS VARIABLE NAME	FARS LEVEL
	Unknown/Not Reported		MDRDSTRD	96, 99
			MVIOLATN (2015 or Later)	97, 99
Fatigue		DRIMPAIR	DRIMPAIR	
	Fatigue Indicated			2
	Fatigue NOT Indicated			All other codes not defined
	Unknown/Not Reported			98, 99
Following Too Closely		VIOLATN	MVIOLATN	
	Violation			58
	No Violation			All other codes not defined
	Unknown/Not Reported			97, 99
Prior Crash		VEHICLE	PREV_ACC	
	No Prior Crash			0
	One Prior Crashes			1
	More Than One Prior Crash			2-97
	Unknown/Not Reported			998, 98, 99
Prior Speed Violation		VEHICLE	PREV_SPD	
	No Prior Speeding Conviction			0
	One Prior Speeding Conviction			1
	More Than One Prior Speeding Conviction			2-97
	Unknown/Not Reported			98, 99
Signal Error (failure to signal)		VEHICLE	DR_SF1, DR_SF2, DR_SF3, DR_SF4	
	Failed to Signal Intentions			42
	Signal Error NOT Indicated			All other codes not defined
	Unknown			99
Owner of Vehicle		VEHICLE	POWNER	
	Registered Owner			1
	Not Registered Owner			0, 2-6
	Unknown			9
Restraint Use		PER_AUX	A_REST	

TransAnalytics VARIABLE NAME	TransAnalytics LEVEL	FARSDATA FILE	FARS VARIABLE NAME	FARS LEVEL
	Restraint Used			1
	Restraint NOT Used			2
	Restraint Use Unknown			3
Overcorrecting		VEH_AUX	DR_SF1, DR_SF2, DR_SF3, DR_SF4	
	Yes			50
	No			0
Vehicle Age		VEHICLE	MOD_YEAR	
			YEAR	
	< 5 Years			Required Calculation: YEAR-MOD_YEAR
	5-9 Years			
	10+ Years			
	Unknown/Not Reported			MOD_YEAR = 9998 OR YEAR = 9999
Body Type		VEH_AUX	A_BODY	
	Passenger Car			1
	Light Truck-Pickup			2
	Light Truck-Utility			3
	Light Truck-Van			4
	Light Truck-Other			5
Road Type		ACC_AUX	A_ROADFC	
	Limited Access Highway			1, 2
	Arterial			3, 4
	Local/Collector			5, 6
	Unknown			7
Rural/Urban Roadway		ACCIDENT	ROAD_FUNC (pre 2015)	
			RUR_URB (2015 and later)	
	Rural		ROAD_FUNC (pre 2015)	1-6, 9
			RUR_URB (2015 and later)	1
	Urban		ROAD_FUNC (pre 2015)	11-16, 19
			RUR_URB (2015 and later)	2
	Unknown		ROAD_FUNC (pre 2015)	99
			RUR_URB (2015 and later)	6, 8, 9
Number of Lanes		VEHICLE	VNUM_LAN	
	1 Lane			1

TransAnalytics VARIABLE NAME	TransAnalytics LEVEL	FARSDATA FILE	FARS VARIABLE NAME	FARS LEVEL
	2 Lanes			2
	3 or More Lanes			3-7
	Non-Trafficway/Unknown/ Not Reported			0, 8, 9
Posted Speed Limit		VEHICLE	VSPD_LIM	
	No Statutory Limit/Non-Trafficway or Driveway Access			0
	5-35 mph			5-35
	40-45 mph			40-45
	50-60 mph			50-60
	65-95 mph			65-95
	Unknown/Not Reported			99, 99
Roadway Alignment		VEHICLE	VALIGN	
	Straight			1
	Curves			2-4
	Unknown/Not Reported			8, 9
Intersection Type		ACCIDENT	TYP_INT	
	Not an Intersection			1
	Four-Way Intersection			2
	T-Intersection			3
	Y-Intersection			4
	Traffic Circle			5
	Roundabout			6
	Five-Point, or More			7
	L-Intersection			10
	Unknown/Not Reported			98, 99
Time of Day		ACCIDENT	HOUR	
	6 a.m. to 3 p.m.			6-14
	3 p.m. to 6 a.m.			15-17
	6 p.m. to 9 p.m.			18-20
	9 p.m. to Midnight			21-23
	Midnight to 6 a.m.			0-5
	Unknown			99

TransAnalytics VARIABLE NAME	TransAnalytics LEVEL	FARSDATA FILE	FARS VARIABLE NAME	FARS LEVEL
Day of Week		ACCIDENT	DAY_WEEK HOUR	
	Weekday (6 a.m. Monday to 6 p.m. Friday)			DAY_WEEK = 2 & HOUR = 6-23
				DAY_WEEK = 3, 4, 5
				DAY_WEEK = 6 & HOUR = 0-17
	Weekend (6 p.m. Friday to 6 a.m. Monday)			DAY_WEEK = 2 & HOUR = 0-5
				DAY_WEEK = 6 & HOUR = 18-23
				DAY_WEEK = 1, 7
	Unknown			DAY_WEEK = 9
Light Condition		ACCIDENT	LGT_COND	
	Daylight			1
	Dark-Lighted			3
	Dark-Not Lighted			2
	Other/Unknown/Not Reported			4-9
Weather		ACCIDENT	WEATHER	
	Clear and Dry			1
	Rain			2
	Sleet/Snow/Fog/Other			3-12
	Unknown/Not Reported			98, 99
Traffic Control		VEHICLE	VTRAFCON	
	None			0
	Signal (all)			1-4, 7-9
	Stop Sign			20
	Yield Sign			21
	Other			98, 23, 28, 29, 40, 50, 65
	Unknown/Not Reported			97, 99
First Harmful Event		ACCIDENT	HARM_EV	
	Non-Collision Harmful Events			1-7, 16, 44, 51, 72
	Collision With Motor Vehicle in-Transport			12, 54, 55

TransAnalytics VARIABLE NAME	TransAnalytics LEVEL	FARSDATA FILE	FARS VARIABLE NAME	FARS LEVEL
	Collision With Objects Not Fixed			10, 11, 14, 15, 18, 45, 49, 73, 74, 91
	Ped/Bike			8, 9
	Collision With Fixed Object			17, 19-21, 23-26, 30-35, 38-43, 46, 48, 50, 52, 53, 57-59, 93
	Unknown			99
Manner of Collision		ACCIDENT	MAN_COLL	
	Not Collision With Motor Vehicle in-Transport			0
	Front-to-Rear			1
	Front-to-Front			2
	Angle			6
	Sideswipe-Same Direction			7
	Sideswipe-Opposite Direction			8
	Rear-to-Side			9
	Rear-to-Rear			10
	Other			11
	Unknown/Not Reported			98, 99
Pre-Crash Vehicle Maneuver		VEHICLE	P_CRASH1	
	Going Straight			1
	Passing or Overtaking Another Vehicle			6
	Turning Right			10
	Turning Left			11
	Making a U-Turn			12
	Backing Up (other than for parking position)			13
	Negotiating a Curve			14
	Changing Lanes/Merging			15, 16
	Other/Unknown			2-5, 7, 17, 89, 99
Pre-Crash Avoidance Maneuver		VEHICLE	P_CRASH3	
	No Driver Present/Unknown if Driver Present			0

TransAnalytics VARIABLE NAME	TransAnalytics LEVEL	FARSDATA FILE	FARS VARIABLE NAME	FARS LEVEL
	No Avoidance Maneuver			1
	Braking			2-5
	Steering			6, 7
	Braking and Steering			8, 9, 15, 16
	Accelerating/Accelerating and Steering			10-12
	Unknown/Not Reported			98, 99
Initial Impact Location		VEHICLE	IMPACT1	
	Front			12
	Right Side			1-5, 81-83
	Rear			6
	Left Side			7-11, 61-63
	Non-Collision			0
	Other/Unknown/Not Reported			13, 14, 18-20, 98, 99
Run Off Road (single-vehicle crashes only)		VEVENT	SOE	
	Yes			63, 64, 69

Appendix C. SHRP2 Variable Definitions

Table C-1. Rules for Defining Variables and Variable Levels for SHRP2 Crash Involvement Ratio Analyses

- Driver sex
  - SHRP2 Variable: sex
  - Levels:
    - Male = M
    - Female = F
- Total number of occupants (including driver)
  - SHRP2 Variable: front-seat passengers + rear-seat passengers
  - Levels:
    - 1
    - 2
    - 3+
- Traffic flow
  - SHRP2 Variable: traffic flow
  - Levels:
    - Not divided-simple two-way
    - Not divided-center two-way left-turn lane
    - Divided
- Number of contiguous travel lanes
  - SHRP 2 variable: contiguous travel lanes
  - Levels:
    - 1
    - 2
    - 3+
- Roadway junction type
  - SHRP2 Variable: relation to junction
  - Levels:
    - Non-junction
    - Intersection
    - Intersection-related
- Interchange feature
  - SHRP2 Variable: relation to junction
  - Levels:
    - Entrance/exit ramp
    - Interchange area
- Intersection traffic control
  - SHRP2 Variable: traffic control
  - Levels:
    - Traffic signal
    - Stop sign
    - Yield sign
- Urban versus rural roadways
  - SHRP2 Variable: locality

    - Levels:
        - Rural = open residential + open country
        - Suburban/commercial = moderate residential + business industrial
        - Urban
- Various light conditions
    - SHRP2 Variable: lighting
    - Levels:
        - Darkness-lighted
        - Darkness-not lighted
        - Dawn
        - Daylight
        - Dusk
- Adverse and non-adverse weather conditions
    - SHRP2 Variable: weather
    - Levels:
        - Non-adverse = no adverse conditions
        - Adverse = fog, mist/light rain, raining, snowing, sleeting, rain and fog; snow/sleet and fog; other
- Vehicle maneuver at signal-controlled intersections
    - SHRP2 Variable: pre-incident maneuver
    - Filter: traffic control = traffic signal
    - Levels:
        - Straight = Going straight, constant speed; Going straight, accelerating; Going straight, but with unintentional "drifting" within lane or across lanes; Starting in traffic lane
        - Turning right
        - Turning left
- Vehicle maneuver at non-junction locations
    - SHRP2 Variable: pre-incident maneuver
    - Filter: relation to junction = non-junction
    - Levels:
        - Changing lanes/merging = changing lanes + merging
        - Passing or overtaking = Passing or overtaking another vehicle
        - Negotiating a curve
        - Straight = Going straight, constant speed; Going straight, accelerating; Going straight, but with unintentional "drifting" within lane or across lanes; Starting in traffic lane
- Changing lanes or merging on various types of roadways
    - SHRP 2 Variable: traffic flow
    - Filter: pre-incident maneuver = changing lanes *or* merging
    - Levels:
        - Not divided-simple two way
        - Not divided-center two way left-turn lane
        - Divided
- Incident type
    - SHRP2 Variable: incident type 1

    - Levels:
        - Rear end – striking
        - Road departure = Road departure (left or right); Road departure (end)
        - Sideswipe (same direction) = Sideswipe, same direction (left or right)
        - Opposite direction (head-on or sideswipe)
        - Crossing path = Straight crossing path; Turn across path
- Presence of hands on wheel
    - SHRP2 Variable: hands on the wheel
    - Levels:
        - None = none; none-knees
        - Both hands
        - One hand = left hand only; right hand only
- Engaged with cell phone
    - SHRP2 Variable: secondary task 1-3
    - Levels:
        - Yes (cell phone, browsing, cell phone, dialing hand-held, cell phone, holding, cell phone, holding, cell phone, locating/reaching/answering, cell phone, other, cell phone, talking/listening, hand-held, cell phone, texting)
- Interaction with passenger
    - SHRP2 Variable: secondary task 1-3
    - Levels:
        - Yes (Passenger in adjacent seat – interaction + Passenger in rear seat – interaction)
- External distraction
    - SHRP2 Variable: secondary task 1-3
    - Levels:
        - Yes (Looking at an object external to the vehicle + Other external distraction)
- Aggressive driving
    - SHRP2 Variable: driver behavior 1 + driver behavior 2 + driver behavior 3
    - Levels:
        - Aggressive and intentionally unsafe maneuvers = aggressive driving, other; aggressive driving, specific, directed menacing actions; other sign (e.g., Yield) violation, intentionally disregarded; signal violation, intentionally disregarded
- Distracted driving
    - SHRP2 Variable: driver behavior 1 + driver behavior 2 + driver behavior 3
    - Levels:
        - Distracted driving = Distracted
- Excessive speeding
    - SHRP2 Variable: driver behavior 1 + driver behavior 2 + driver behavior 3
    - Levels:
        - Excessive Speeding = Exceeded speed limit; Exceeded safe speed but not speed limit

- Following too closely
    - SHRP2 Variable: driver behavior 1 + driver behavior 2 + driver behavior 3
    - Levels:
        - Following too closely

Appendix D. Appendix D: FARS Multi-Vehicle Fatal Crashes—Crash Involvement Ratios and Frequency Tables

Note. CIR values were calculated by comparing the numbers of drivers with contributing factors to drivers without contributing factors across ages, as follows:

$$\text{Crash Involvement Ratio (CIR)} = \frac{\text{Count of drivers with a contributing factor}}{\text{Count of drivers without a contributing factor}}$$

Driver and Occupant Characteristics

Driver and Occupant Characteristics: Driver Age

Table D-1. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Contribution?		CIR
	Yes	No	
<16	18	13	1.38
16	151	88	**1.72**
17	247	143	**1.73**
18	345	201	**1.72**
19	358	279	**1.28**
20	404	286	**1.41**
35	217	261	0.83

Table D-2. Summary of Fatal Crash Counts Totals

	Age							
FARS - Multi-vehicle	<16	16	17	18	19	20	35	Total
Not-Contributing	13	88	143	201	279	286	261	1,271
Contributing	18	151	247	345	358	404	217	1,740
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Sex

Table D-3. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Sex	Contribution?		CIR
		Yes	No	
<16				
	Male	11	9	1.22
	Female	7	4	1.75
16				
	Male	103	52	**1.98**
	Female	48	36	**1.33**
17				
	Male	167	80	**2.09**
	Female	80	63	**1.27**
18				
	Male	225	116	**1.94**
	Female	120	85	**1.41**
19				
	Male	256	167	**1.53**
	Female	102	112	0.91
20				
	Male	288	163	**1.77**
	Female	116	123	**0.94**
35				
	Male	160	166	0.96
	Female	57	95	0.60

Table D-4. Summary of Fatal Crash Counts by Driver's Sex

	Age							
	<16	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Male	20	155	247	341	423	451	326	1,963
Female	11	84	143	205	214	239	152	1,048
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Police-Reported Alcohol Involvement of Driver

Table D-5. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Police-Reported Alcohol Involvement of Driver	Contribution?		CIR
		Yes	No	
<16				
	No alcohol	15	10	**1.50**
	Yes alcohol	1	0	-
16				
	No alcohol	107	67	**1.60**
	Yes alcohol	2	2	**1.00**
17				
	No alcohol	157	108	**1.45**
	Yes alcohol	21	1	21.00
18				
	No alcohol	222	148	**1.50**
	Yes alcohol	44	4	11.00
19				
	No alcohol	210	188	**1.12**
	Yes alcohol	70	5	14.00
20				
	No alcohol	190	196	**0.97**
	Yes alcohol	84	7	12.00
35				
	No alcohol	88	176	0.50
	Yes alcohol	80	6	13.33

Table D-6. Summary of Fatal Crash Counts by Police-Reported Alcohol Involvement of Driver

	Age							
Alcohol	<16	16	17	18	19	20	35	Total
No alcohol	25	174	265	370	398	386	264	1,882
Yes alcohol	1	4	22	48	75	91	86	327
Unknown/Not Reported	5	61	103	128	164	213	128	802
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Vehicle Occupants

Table D-7. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, $p < .05$)

Age	Vehicle Occupant	Contribution?		CIR
		Yes	No	
<16				
	One	5	5	1.00
	Two	6	3	2.00
	Three+	7	5	1.40
16				
	One	89	38	**2.34**
	Two	38	27	1.41
	Three+	24	23	1.04
17				
	One	125	71	**1.76**
	Two	74	32	**2.31**
	Three+	48	40	**1.20**
18				
	One	194	111	**1.75**
	Two	88	53	**1.66**
	Three+	61	37	**1.65**
19				
	One	220	164	**1.34**
	Two	77	67	1.15

Age	Vehicle Occupant	Contribution?		CIR
		Yes	No	
	Three+	61	48	**1.27**
20				
	One	267	152	**1.76**
	Two	76	85	0.89
	Three+	60	49	**1.22**
35				
	One	137	149	0.92
	Two	48	57	0.84
	Three+	32	54	0.59

Table D-8. Summary of Fatal Crash Counts by Vehicle Occupants

	Age							
Vehicle Occupants	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
One	10	127	196	305	384	419	286	1,727
Two	9	65	106	141	144	161	105	731
Three+	12	47	88	98	109	109	86	549
Unknown/	0	0	0	2	0	1	1	4
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: License Type

Table D-9. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, $p < .05$)

Age	License Type	Contribution?		CIR
		Yes	No	
<16				
	Full Driver License	2	2	1.00
	Intermediate Driver License	4	3	1.33
	Learners Permit	2	5	**0.40**
16				
	Full Driver License	23	16	1.44
	Intermediate Driver License	104	61	1.70
	Learners Permit	8	10	**0.80**
17				
	Full Driver License	68	51	**1.33**
	Intermediate Driver License	144	78	1.85
	Learners Permit	9	4	**2.25**
18				
	Full Driver License	271	170	**1.59**
	Intermediate Driver License	33	19	1.74
	Learners Permit	13	2	**6.50**
19				
	Full Driver License	289	247	**1.17**
	Intermediate Driver License	23	9	2.56
	Learners Permit	6	6	**1.00**
20				
	Full Driver License	340	256	**1.33**
	Intermediate Driver License	16	14	1.14
	Learners Permit	4	1	4.00
35				
	Full Driver License	188	250	0.75
	Intermediate Driver License	-	-	-
	Learners Permit	1	0	-

Table D-10. Summary of Fatal Crash Counts by Driver's License Type

	Age							
License Type	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Full Driver License	4	39	119	441	536	596	438	2,173
Intermediate Driver License	7	165	222	52	32	30	0	508
Learners Permit	7	18	13	15	12	5	1	71
Unknown License Type	13	17	36	38	57	59	39	259
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: License Status

Table D-11. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	**License Status**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	Not Licensed	10	3	3.33
	Suspended	-	-	-
	Revoked/Expired/Canceled or Denied	-	-	-
	Valid	8	10	0.80
16				
	Not Licensed	14	1	14.00
	Suspended	1	1	1.00
	Revoked/Expired/Canceled or Denied	-	-	-
	Valid	136	86	**1.58**
17				
	Not Licensed	26	9	2.89
	Suspended	1	0	-
	Revoked/Expired/Canceled or Denied	1	1	1.00
	Valid	219	132	**1.66**
18				
	Not Licensed	26	9	2.89

Age	License Status	Contribution?		CIR
		Yes	No	
	Suspended	10	1	10.00
	Revoked/Expired/Canceled or Denied	2	3	0.67
	Valid	305	187	**1.63**
19				
	Not Licensed	40	16	2.50
	Suspended	17	8	2.13
	Revoked/Expired/Canceled or Denied	2	0	-
	Valid	299	254	**1.18**
20				
	Not Licensed	41	11	3.73
	Suspended	27	11	2.45
	Revoked/Expired/Canceled or Denied	6	0	-
	Valid	329	260	**1.27**
35				
	Not Licensed	28	10	2.80
	Suspended	28	7	4.00
	Revoked/Expired/Canceled or Denied	10	7	1.43
	Valid	151	235	0.64

Table D-12. Summary of Crash Counts by Driver's License Status

	Age							
License Status	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Not Licensed	13	15	35	35	56	52	38	244
Suspended	0	2	1	11	25	38	35	112
Revoked/Expired/Canceled or Denied	0	0	2	5	2	6	17	32
Valid	18	222	351	492	553	589	386	2,611
Unknown License Status	0	0	1	3	1	5	2	12
Total	31	239	390	546	637	690	478	3,011

Driver and Occupants Characteristics: License Restriction

Table D-13. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	License Restriction	Contribution?		CIR
		Yes	No	
<16				
	No Restrictions or Not Applicable	12	6	2.00
	Restrictions Complied With	3	3	1.00
	Restrictions Not Complied With	1	3	0.33
	Restrictions, Compliance Unknown	2	1	2.00
16				
	No Restrictions or Not Applicable	77	40	**1.93**
	Restrictions Complied With	24	16	**1.50**
	Restrictions Not Complied With	12	6	2.00
	Restrictions, Compliance Unknown	38	25	**1.52**
17				
	No Restrictions or Not Applicable	139	82	**1.70**
	Restrictions Complied With	27	17	**1.59**
	Restrictions Not Complied With	17	6	2.83
	Restrictions, Compliance Unknown	64	37	**1.73**
18				
	No Restrictions or Not Applicable	242	143	**1.69**
	Restrictions Complied With	16	9	**1.78**
	Restrictions Not Complied With	8	2	4.00
	Restrictions, Compliance Unknown	76	46	**1.65**
19				
	No Restrictions or Not Applicable	261	205	**1.27**
	Restrictions Complied With	20	8	**2.50**
	Restrictions Not Complied With	5	4	1.25
	Restrictions, Compliance Unknown	71	60	1.18
20				
	No Restrictions or Not Applicable	281	189	**1.49**

Age	License Restriction	Contribution?		CIR
		Yes	No	
	Restrictions Complied With	19	13	**1.46**
	Restrictions Not Complied With	5	2	2.50
	Restrictions, Compliance Unknown	96	77	**1.25**
35				
	No Restrictions or Not Applicable	169	187	0.90
	Restrictions Complied With	4	15	0.27
	Restrictions Not Complied With	3	2	1.50
	Restrictions, Compliance Unknown	40	55	0.73

Table D-14. Summary of Fatal Crash Counts by Driver's License Restriction

	Age							
License Restriction	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
No Restrictions or Not Applicable	18	117	221	385	466	470	356	2,033
Restrictions Complied With	6	40	44	25	28	32	19	194
Restrictions Not Complied With	4	18	23	10	9	7	5	76
Restrictions, Compliance Unknown	3	63	101	122	131	173	95	688
Unknown	0	1	1	4	3	8	3	20
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Injury Severity

Table D-15. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Injury Severity	Contribution?		CIR
		Yes	No	
<16				
	O-No Apparent Injury	2	5	0.40
	C-Possible Injury	1	2	0.50
	B-Suspected Minor Injury	5	1	5.00
	A-Suspected Serious Injury	5	4	1.25
	K-Fatal Injury	4	1	4.00
16				
	O-No Apparent Injury	30	19	**1.58**
	C-Possible Injury	21	15	**1.40**
	B-Suspected Minor Injury	36	17	2.12
	A-Suspected Serious Injury	36	14	2.57
	K-Fatal Injury	28	23	1.22
17				
	O-No Apparent Injury	31	28	**1.11**
	C-Possible Injury	57	20	**2.85**
	B-Suspected Minor Injury	47	38	1.24
	A-Suspected Serious Injury	45	30	1.50
	K-Fatal Injury	63	27	**2.33**
18				
	O-No Apparent Injury	66	46	**1.43**
	C-Possible Injury	45	21	**2.14**
	B-Suspected Minor Injury	79	52	1.52
	A-Suspected Serious Injury	61	25	**2.44**
	K-Fatal Injury	90	55	**1.64**
19				
	O-No Apparent Injury	61	63	**0.97**
	C-Possible Injury	50	42	**1.19**

Age	Injury Severity	Contribution?		CIR
		Yes	No	
	B-Suspected Minor Injury	82	50	1.64
	A-Suspected Serious Injury	68	37	1.84
	K-Fatal Injury	93	86	1.08
20				
	O-No Apparent Injury	65	65	**1.00**
	C-Possible Injury	50	47	1.06
	B-Suspected Minor Injury	112	48	**2.33**
	A-Suspected Serious Injury	74	38	1.95
	K-Fatal Injury	103	84	1.23
35				
	O-No Apparent Injury	35	65	0.54
	C-Possible Injury	24	40	0.60
	B-Suspected Minor Injury	46	44	1.05
	A-Suspected Serious Injury	50	40	1.25
	K-Fatal Injury	60	71	0.85

Table D-16. Summary of Fatal Crash Counts by Driver's Injury Severity

	Age							
Injury Severity	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
O-No Apparent Injury	7	49	59	112	124	130	100	581
C-Possible Injury	3	36	77	66	92	97	64	435
B-Suspected Minor Injury	6	53	85	131	132	160	90	657
A-Suspected Serious Injury	9	50	75	86	105	112	90	527
K-Fatal Injury	5	51	90	145	179	187	131	788
Unknown/Not Reported	1	0	4	6	5	4	3	23
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Young Passengers

Table D-17. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Young Passengers	Contribution?		CIR
		Yes	No	
<16				
	None	9	9	1.00
	One	5	2	2.50
	Two	2	2	**1.00**
	Three+	2	0	-
16				
	None	105	50	**2.10**
	One	33	24	**1.38**
	Two	8	4	**2.00**
	Three+	5	10	**0.50**
17				
	None	144	86	**1.67**
	One	69	33	**2.09**
	Two	15	13	**1.15**
	Three+	19	11	**1.73**
18				
	None	223	126	**1.77**
	One	77	51	**1.51**
	Two	21	14	**1.50**
	Three+	24	10	**2.40**
19				
	None	261	208	**1.25**
	One	62	49	**1.27**
	Two	26	16	**1.63**
	Three+	9	6	**1.50**
20				
	None	326	215	**1.52**

Age	Young Passengers	Contribution?		CIR
		Yes	No	
	One	55	57	0.96
	Two	18	11	1.64
	Three+	5	3	1.67
35				
	None	209	242	0.86
	One	7	15	0.47
	Two	0	4	0.00
	Three+	1	0	-

Table D-18. Summary of Fatal Crash Counts by Young Passengers

	Age							
Young Passengers	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
None	18	155	230	349	469	541	451	2,213
One	7	57	102	128	111	112	22	539
Two	4	12	28	35	42	29	4	154
Three+	2	15	30	34	15	8	1	105
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Passenger(s) 21 or Older

Table D-19. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, $p < .05$)

Age	Passenger(s) 21 or Older	Contribution?		CIR
		Yes	No	
<16				
	No	13	7	1.86
	Yes	5	6	0.83
16				
	No	137	74	**1.85**
	Yes	14	14	1.00
17				
	No	224	126	**1.78**
	Yes	23	17	1.35
18				
	No	307	181	**1.70**
	Yes	38	20	**1.90**
19				
	No	314	230	**1.37**
	Yes	44	49	0.90
20				
	No	338	216	**1.56**
	Yes	66	70	0.94
35				
	No	164	188	0.87
	Yes	53	73	0.73

Table D-20. Summary of Fatal Crash Counts by Passengers 21 or Older

	Age							
Passenger(s) 21 or Older	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
No	20	211	350	488	544	554	352	2,519
Yes	11	28	40	58	93	136	126	492
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Fatigue

Table D-21. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, $p < .05$)

Age	**Fatigue**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	Fatigue NOT Indicated	11	9	**1.22**
	Fatigue Indicated	-	-	-
16				
	Fatigue NOT Indicated	118	74	**1.59**
	Fatigue Indicated	3	0	-
17				
	Fatigue NOT Indicated	166	119	**1.39**
	Fatigue Indicated	8	0	-
18				
	Fatigue NOT Indicated	224	162	**1.38**
	Fatigue Indicated	10	0	-
19				
	Fatigue NOT Indicated	183	234	**0.78**
	Fatigue Indicated	20	0	-
20				
	Fatigue NOT Indicated	213	234	**0.91**
	Fatigue Indicated	19	0	-
35				

Age	Fatigue	Contribution?		CIR
		Yes	No	
	Fatigue NOT Indicated	113	246	**0.46**
	Fatigue Indicated	6	0	-

Table D-22. Summary of Fatal Crash Counts by Driver's Fatigue

	Age							
Fatigue	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Fatigue NOT Indicated	20	192	285	386	417	447	304	2,051
Fatigue Indicated	0	3	8	10	20	19	6	66
Undefined	2	16	27	56	99	113	99	412
Unknown/Not Reported	9	28	70	94	101	111	69	482
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Prior Crash

Table D-23. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, $p < .05$)

Age	Prior Crash	Contribution?		CIR
		Yes	No	
<16				
	No Prior Crash	14	8	1.75
	One Prior Crashes	-	-	-
	More Than One Prior Crash	-	-	-
16				
	No Prior Crash	135	75	**1.80**
	One Prior Crashes	2	5	0.40
	More Than One Prior Crash	-	-	-
17				
	No Prior Crash	207	122	**1.70**
	One Prior Crashes	15	8	1.88
	More Than One Prior Crash	4	3	1.33

Age	Prior Crash	Contribution?		CIR
		Yes	No	
18				
	No Prior Crash	279	159	**1.75**
	One Prior Crashes	30	23	1.30
	More Than One Prior Crash	7	4	1.75
19				
	No Prior Crash	276	217	**1.27**
	One Prior Crashes	36	32	1.13
	More Than One Prior Crash	15	7	2.14
20				
	No Prior Crash	314	218	**1.44**
	One Prior Crashes	39	26	1.50
	More Than One Prior Crash	14	13	1.08
35				
	No Prior Crash	167	202	0.83
	One Prior Crashes	25	27	0.93
	More Than One Prior Crash	6	5	1.20

Table D-24. Summary of Fatal Crash Counts by Driver's Prior Crashes

	Age							
Prior Crash	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
No Prior Crash	22	210	329	438	493	532	369	2,393
One Prior Crashes	0	7	23	53	68	65	52	268
More Than One Prior Crash	0	0	7	11	22	27	11	78
Unknown/Not Reported	9	22	31	44	54	66	46	272
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Prior Speed Violation

Table D-25. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Prior Speed Violation	Contribution?		CIR
		Yes	No	
<16				
	No Prior Speed Violation	17	12	1.42
	One Prior Speed Violation	-	-	-
	More Than One Prior Speed Violation	-	-	-
16				
	No Prior Speed Violation	142	83	**1.71**
	One Prior Speed Violation	6	4	1.50
	More Than One Prior Speed Violation	1	0	-
17				
	No Prior Speed Violation	228	138	**1.65**
	One Prior Speed Violation	14	4	**3.50**
	More Than One Prior Speed Violation	3	0	-
18				
	No Prior Speed Violation	301	172	**1.75**
	One Prior Speed Violation	33	24	1.38
	More Than One Prior Speed Violation	8	4	2.00
19				
	No Prior Speed Violation	290	247	**1.17**
	One Prior Speed Violation	51	22	**2.32**
	More Than One Prior Speed Violation	16	6	2.67
20				
	No Prior Speed Violation	300	201	**1.49**
	One Prior Speed Violation	66	57	1.16
	More Than One Prior Speed Violation	35	21	1.67
35				
	No Prior Speed Violation	171	213	0.80
	One Prior Speed Violation	31	34	0.91

Age	Prior Speed Violation	Contribution?		CIR
		Yes	No	
	More Than One Prior Speed Violation	14	11	1.27

Table D-26. Summary of Fatal Crash Counts by Driver's Prior Speed Violation

	Age							
Prior Speed Violation	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
No Prior Crash	29	225	366	473	537	501	384	2,515
One Prior Crashes	0	10	18	57	73	123	65	346
More Than One Prior Crash	0	1	3	12	22	56	25	119
Unknown/Not Reported	2	3	3	4	5	10	4	31
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Failure to Signal

Table D-27. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, $p < .05$)

Age	Signal Error (failure to signal)	Contribution?		CIR
		Yes	No	
<16				
	Signal Error NOT Indicated	1	8	0.13
	Failed to Signal Intentions	-	-	-
16				
	Signal Error NOT Indicated	14	74	0.19
	Failed to Signal Intentions	-	-	-
17				
	Signal Error NOT Indicated	21	123	0.17
	Failed to Signal Intentions	-	-	-
18				
	Signal Error NOT Indicated	33	187	0.18
	Failed to Signal Intentions	0	1	0.00
19				

Age	Signal Error (failure to signal)	Contribution?		CIR
		Yes	No	
	Signal Error NOT Indicated	40	253	0.16
	Failed to Signal Intentions	-	-	-
20				
	Signal Error NOT Indicated	55	254	**0.22**
	Failed to Signal Intentions	-	-	-
35				
	Signal Error NOT Indicated	26	244	0.11
	Failed to Signal Intentions	-	-	-

Table D-28. Summary of Fatal Crash Counts by Driver's Signal Error

	Age							
Signal Error (failure to signal)	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Signal Error NOT Indicated	9	88	144	220	293	309	270	1,333
Failed to Signal Intentions	0	0	0	1	0	0	0	1
Undefined	22	151	241	322	340	377	205	1658
Unknown	0	0	5	3	4	4	3	19
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Owner of Vehicle

Table D-29. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Owner of Vehicle	Contribution?		CIR
		Yes	No	
<16				
	Not Registered Owner	17	12	1.42
	Registered Owner	1	1	1.00
16				
	Not Registered Owner	135	71	**1.90**
	Registered Owner	16	17	0.94
17				
	Not Registered Owner	208	130	**1.60**
	Registered Owner	38	12	**3.17**
18				
	Not Registered Owner	267	152	**1.76**
	Registered Owner	77	49	**1.57**
19				
	Not Registered Owner	238	172	**1.38**
	Registered Owner	119	107	**1.11**
20				
	Not Registered Owner	240	157	**1.53**
	Registered Owner	164	129	**1.27**
35				
	Not Registered Owner	93	99	0.94
	Registered Owner	123	161	0.76

Table D-30. Summary of Fatal Crash Counts by Owner of Vehicle

	Age							
Owner of Vehicle	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Not Registered Owner	29	206	338	419	410	397	192	1,991
Registered Owner	2	33	50	126	226	293	284	1,014
Unknown/Not Reported	0	0	2	1	1	0	2	6
Total	31	239	390	546	637	690	478	3,011

Driver and Occupant Characteristics: Restraint

Table D-31. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	**Restraint Use**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	Restraint NOT Used	4	2	*2.00*
	Restraint Used	14	10	1.40
16				
	Restraint NOT Used	20	5	4.00
	Restraint Used	123	78	**1.58**
17				
	Restraint NOT Used	52	16	3.25
	Restraint Used	183	119	**1.54**
18				
	Restraint NOT Used	68	22	3.09
	Restraint Used	257	168	**1.53**
19				
	Restraint NOT Used	78	38	2.05
	Restraint Used	245	226	**1.08**
20				
	Restraint NOT Used	87	28	**3.11**
	Restraint Used	280	228	**1.23**

Age	Restraint Use	Contribution?		CIR
		Yes	No	
35				
	Restraint NOT Used	53	32	1.66
	Restraint Used	147	212	0.69

Table D-32. Summary of Fatal Crash Counts by Restraint Use

	Age							
Restraint Use	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Restraint NOT Used	6	25	68	90	116	115	85	505
Restraint Used	24	201	302	425	471	508	359	2,290
Restraint Use Unknown	1	13	20	31	50	67	34	216
Total	31	239	390	546	637	690	478	3,011

Vehicle Characteristics

Vehicle Characteristics: Vehicle Age

Table D-33. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Vehicle Age	Contribution?		CIR
		Yes	No	
<16				
	< 5 Years	2	3	0.67
	5-9 Years	3	4	0.75
	10+ Years	13	6	2.17
16				
	< 5 Years	18	15	1.20
	5-9 Years	46	26	**1.77**
	10+ Years	87	47	**1.85**
17				
	< 5 Years	34	21	**1.62**
	5-9 Years	52	19	**2.74**

Age	Vehicle Age	Contribution?		CIR
		Yes	No	
	10+ Years	161	103	**1.56**
18				
	< 5 Years	36	34	1.06
	5-9 Years	82	37	**2.22**
	10+ Years	227	130	**1.75**
19				
	< 5 Years	54	48	1.13
	5-9 Years	75	64	1.17
	10+ Years	229	167	**1.37**
20				
	< 5 Years	75	58	**1.29**
	5-9 Years	101	81	**1.25**
	10+ Years	228	147	**1.55**
35				
	< 5 Years	46	63	0.73
	5-9 Years	49	68	0.72
	10+ Years	122	130	0.94

Table D-34. Summary of Fatal Crash Counts by Vehicle Age

	Age							
Vehicle Age	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
< 5 Years	5	33	55	70	102	133	109	507
5-9 Years	7	72	71	119	139	182	117	707
10+ Years	19	134	264	357	396	375	252	1,797
Total	31	239	390	546	637	690	478	3,011

Vehicle Characteristics: Body Type

Table D-35. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Body Type	Contribution?		CIR
		Yes	No	
<16				
	Passenger Car	10	8	1.25
	Light Truck-Pickup	2	2	1.00
	Light Truck-Utility	5	3	1.67
	Light Truck-Van	1	0	-
	Light Truck-Other	-	-	-
16				
	Passenger Car	74	47	**1.57**
	Light Truck-Pickup	43	22	**1.95**
	Light Truck-Utility	30	15	**2.00**
	Light Truck-Van	4	4	1.00
	Light Truck-Other	-	-	-
17				
	Passenger Car	149	77	**1.94**
	Light Truck-Pickup	51	35	1.46
	Light Truck-Utility	44	27	1.63
	Light Truck-Van	3	4	0.75
	Light Truck-Other	-	-	-
18				
	Passenger Car	211	122	**1.73**
	Light Truck-Pickup	66	41	1.61
	Light Truck-Utility	60	34	**1.76**
	Light Truck-Van	8	4	**2.00**
	Light Truck-Other	-	-	-
19				
	Passenger Car	214	185	**1.16**
	Light Truck-Pickup	79	50	1.58

Age	Body Type	Contribution?		CIR
		Yes	**No**	
	Light Truck-Utility	59	40	1.48
	Light Truck-Van	5	2	2.50
	Light Truck-Other	1	2	0.50
20				
	Passenger Car	242	208	**1.16**
	Light Truck-Pickup	95	30	**3.17**
	Light Truck-Utility	59	39	1.51
	Light Truck-Van	7	7	1.00
	Light Truck-Other	1	2	0.50
35				
	Passenger Car	102	128	0.80
	Light Truck-Pickup	53	52	1.02
	Light Truck-Utility	49	52	0.94
	Light Truck-Van	12	27	0.44
	Light Truck-Other	1	2	0.50

Table D-36. Summary of Fatal Crash Counts by Vehicle's Body Type

	Age							
Body Type	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Passenger Car	18	121	226	333	399	450	230	1,777
Light Truck-Pickup	4	65	86	107	129	125	105	621
Light Truck-Utility	8	45	71	94	99	98	101	516
Light Truck-Van	1	8	7	12	7	14	39	88
Light Truck-Other	0	0	0	0	3	3	3	9
Total	31	239	390	546	637	690	478	3,011

Roadway/Environment Characteristics

Roadway/Environment Characteristics: Road Type

Table D-37. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Road Type	Contribution?		CIR
		Yes	**No**	
<16				
	Limited Access Highway	2	3	0.67
	Arterial	9	6	1.50
	Local/Collector	6	4	1.50
16				
	Limited Access Highway	6	5	1.20
	Arterial	96	54	**1.78**
	Local/Collector	48	27	**1.78**
17				
	Limited Access Highway	9	17	0.53
	Arterial	156	89	**1.75**
	Local/Collector	82	36	**2.28**
18				
	Limited Access Highway	45	35	1.29
	Arterial	190	113	**1.68**
	Local/Collector	109	53	**2.06**
19				
	Limited Access Highway	54	53	1.02
	Arterial	208	159	**1.31**
	Local/Collector	94	65	1.45
20				
	Limited Access Highway	57	68	0.84
	Arterial	231	153	**1.51**
	Local/Collector	113	63	**1.79**
35				

Age	Road Type	Contribution?		CIR
		Yes	**No**	
	Limited Access Highway	46	58	0.79
	Arterial	120	149	0.81
	Local/Collector	50	53	0.94

Table D-38. Summary of Fatal Crash Counts by Road Type

	Age							
Road Type	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Limited Access Highway	5	11	26	80	107	125	104	458
Arterial	15	150	245	303	367	384	269	1,733
Local/Collector	10	75	118	162	159	176	103	803
Unknown	1	3	1	1	4	5	2	17
Total	31	239	390	546	637	690	478	3,011

Roadway/Environment Characteristics: Urban/Rural

Table D-39. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, $p < .05$)

Age	Urban/Rural	Contribution?		CIR
		Yes	**No**	
<16				
	Urban	10	6	1.67
	Rural	7	7	1.00
16				
	Urban	81	52	**1.56**
	Rural	69	35	**1.97**
17				
	Urban	133	73	**1.82**
	Rural	114	69	**1.65**
18				
	Urban	184	103	**1.79**
	Rural	160	98	**1.63**

Age	Urban/Rural	Contribution?		CIR
		Yes	No	
19				
	Urban	174	134	**1.30**
	Rural	183	143	**1.28**
20				
	Urban	200	137	**1.46**
	Rural	201	147	**1.37**
35				
	Urban	103	115	0.90
	Rural	114	145	0.79

Table D-40. Summary of Fatal Crash Counts by Rural or Urban Roadway

	Age							
Rural/Urban Roadway	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Urban	16	133	206	287	308	337	218	1,505
Rural	14	104	183	258	326	348	259	1,492
Unknown	1	2	1	1	3	5	1	14
Total	31	239	390	546	637	690	478	3,011

Roadway/Environment Characteristics: Number of Travel Lanes

Table D-41. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Number of Travel Lanes	Contribution?		CIR
		Yes	No	
<16				
	1 Lane	-	-	-
	2 Lanes	13	9	1.44
	3 or More Lanes	5	4	1.25
16				
	1 Lane	-	-	-

Age	Number of Travel Lanes	Contribution?		CIR
		Yes	No	
	2 Lanes	116	66	**1.76**
	3 or More Lanes	31	22	1.41
17				
	1 Lane	1	1	1.00
	2 Lanes	191	97	**1.97**
	3 or More Lanes	53	44	1.20
18				
	1 Lane	1	3	0.33
	2 Lanes	257	121	**2.12**
	3 or More Lanes	87	76	1.14
19				
	1 Lane	2	1	2.00
	2 Lanes	250	169	**1.48**
	3 or More Lanes	103	106	0.97
20				
	1 Lane	3	4	0.75
	2 Lanes	271	173	**1.57**
	3 or More Lanes	127	106	**1.20**
35				
	1 Lane	6	3	2.00
	2 Lanes	136	164	0.83
	3 or More Lanes	73	93	0.78

Table D-42. Summary of Fatal Crash Counts by Number of Travel Lanes

	Age							
Number of Travel Lanes	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
1 Lane	0	0	2	4	3	7	9	25
2 Lanes	22	182	288	378	419	444	300	2,033
3 or More Lanes	9	53	97	163	209	233	166	930
Non-Trafficway/Unknown/Not Reported	0	4	3	1	6	6	3	23
Total	31	239	390	546	637	690	478	3,011

Roadway/Environment Characteristics: Posted Speed Limit

Table D-43. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	**Posted Speed Limit**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	No Statutory Limit/ Non-Trafficway or Driveway Access	-	-	-
	5-35 mph	2	0	-
	40-45 mph	2	2	1.00
	50-60 mph	12	7	1.71
	65-95 mph	2	4	0.50
16				
	No Statutory Limit/ Non-Trafficway or Driveway Access	3	0	-
	5-35 mph	10	18	0.56
	40-45 mph	34	14	**2.43**
	50-60 mph	74	41	**1.80**
	65-95 mph	21	14	1.50
17				
	No Statutory Limit/ Non-Trafficway or Driveway Access	0	1	0.00
	5-35 mph	39	19	**2.05**
	40-45 mph	69	36	**1.92**
	50-60 mph	96	62	**1.55**

Age	Posted Speed Limit	Contribution?		CIR
		Yes	No	
	65-95 mph	32	23	1.39
18				
	No Statutory Limit/ Non-Trafficway or Driveway Access	0	1	0.00
	5-35 mph	35	30	1.17
	40-45 mph	80	44	**1.82**
	50-60 mph	156	81	**1.93**
	65-95 mph	64	40	**1.60**
19				
	No Statutory Limit/ Non-Trafficway or Driveway Access	1	0	-
	5-35 mph	46	34	1.35
	40-45 mph	89	57	**1.56**
	50-60 mph	152	110	**1.38**
	65-95 mph	63	71	0.89
20				
	No Statutory Limit/ Non-Trafficway or Driveway Access	1	1	1.00
	5-35 mph	63	35	**1.80**
	40-45 mph	83	64	**1.30**
	50-60 mph	177	105	**1.69**
	65-95 mph	65	65	1.00
35				
	No Statutory Limit/ Non-Trafficway or Driveway Access	1	1	1.00
	5-35 mph	31	38	0.82
	40-45 mph	40	54	0.74
	50-60 mph	93	99	0.94
	65-95 mph	45	60	0.75

Table D-44. Summary of Fatal Crash Counts by Posted Speed Limit

	Age							
Posted Speed Limit	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
No Statutory Limit/Non-Trafficway or Driveway Access	0	3	1	1	1	2	2	10
5-35 mph	2	28	58	65	80	98	69	400
40-45 mph	4	48	105	124	146	147	94	668
50-60 mph	19	115	158	237	262	282	192	1,265
65-95 mph	6	35	55	104	134	130	105	569
Unknown/Not Reported	0	10	13	15	14	31	16	99
Total	31	239	390	546	637	690	478	3,011

Roadway/Environment Characteristics: Roadway Alignment

Table D-45. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	**Roadway Alignment**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	Straight	16	11	1.45
	Curves	2	2	1.00
16				
	Straight	112	80	**1.40**
	Curves	29	8	**3.63**
17				
	Straight	200	123	**1.63**
	Curves	45	18	**2.50**
18				
	Straight	263	172	**1.53**
	Curves	76	25	**3.04**
19				
	Straight	283	229	**1.24**

Age	Roadway Alignment	Contribution?		CIR
		Yes	No	
	Curves	67	43	1.56
20				
	Straight	337	239	**1.41**
	Curves	60	38	1.58
35				
	Straight	161	212	0.76
	Curves	51	45	1.13

Table D-46. Summary of Fatal Crash Counts by Roadway Alignment

	Age							
Roadway Alignment	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Straight	27	192	323	435	512	576	373	2,438
Curves	4	37	63	101	110	98	96	509
Unknown/Not Reported	0	7	3	9	14	14	8	55
Total	31	236	389	545	636	688	477	3,002
Frequency Missing = 9								

Roadway/Environment Characteristics: Intersection Type

Table D-47. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Intersection Type	Contribution?		CIR
		Yes	No	
<16				
	Not an Intersection	10	7	1.43
	Four-Way Intersection	8	5	1.60
	T-Intersection	-	-	-
	Y-Intersection	0	1	0.00
	Five-Point, or More	-	-	-
16				
	Not an Intersection	98	44	**2.23**

Age	Intersection Type	Contribution?		CIR
		Yes	No	
	Four-Way Intersection	38	27	1.41
	T-Intersection	14	16	0.88
	Y-Intersection	-	-	-
	Five-Point, or More	0	1	0.00
17				
	Not an Intersection	143	88	**1.63**
	Four-Way Intersection	70	35	**2.00**
	T-Intersection	32	17	**1.88**
	Y-Intersection	2	1	**2.00**
	Five-Point, or More	0	1	0.00
18				
	Not an Intersection	234	128	**1.83**
	Four-Way Intersection	82	51	**1.61**
	T-Intersection	25	21	**1.19**
	Y-Intersection	4	0	-
	Five-Point, or More	0	1	0.00
19				
	Not an Intersection	243	187	**1.30**
	Four-Way Intersection	89	64	**1.39**
	T-Intersection	24	25	0.96
	Y-Intersection	1	2	0.50
	Five-Point, or More	-	-	-
20				
	Not an Intersection	258	182	**1.42**
	Four-Way Intersection	105	75	**1.40**
	T-Intersection	38	29	**1.31**
	Y-Intersection	3	0	-
	Five-Point, or More	-	-	-
35				

Age	Intersection Type	Contribution?		CIR
		Yes	No	
	Not an Intersection	159	171	0.93
	Four-Way Intersection	43	60	0.72
	T-Intersection	14	28	0.50
	Y-Intersection	0	1	0.00
	Five-Point, or More	0	1	0.00

Table D-48. Summary of Fatal Crash Counts by Intersection Type

	Age							
Intersection Type	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Not an Intersection	17	142	231	362	430	440	330	1,952
Four-Way Intersection	13	65	105	133	153	180	103	752
T-Intersection	0	30	49	46	49	67	42	283
Y-Intersection	1	0	3	4	3	3	1	15
Five-Point, or More	0	1	1	1	0	0	1	4
Unknown/Not Reported	0	1	1	0	2	0	1	5
Total	31	239	390	546	637	690	478	3,011

Roadway/Environment Characteristics: Time of Day

Table D-49. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Time of Day	Contribution?		CIR
		Yes	No	
<16				
	6 a.m. to 3 p.m.	4	3	1.33
	3 p.m. to 6 a.m.	6	4	1.50
	6 p.m. to 9 p.m.	6	6	1.00
	9 p.m. to Midnight	1	0	-
	Midnight to 6 a.m.	-	-	-
16				
	6 a.m. to 3 p.m.	68	32	**2.13**
	3 p.m. to 6 a.m.	40	21	**1.90**
	6 p.m. to 9 p.m.	24	13	1.85
	9 p.m. to Midnight	10	16	0.63
	Midnight to 6 a.m.	9	6	1.50
17				
	6 a.m. to 3 p.m.	81	33	**2.45**
	3 p.m. to 6 a.m.	65	31	**2.10**
	6 p.m. to 9 p.m.	44	27	1.63
	9 p.m. to Midnight	34	34	1.00
	Midnight to 6 a.m.	23	18	1.28
18				
	6 a.m. to 3 p.m.	132	49	**2.69**
	3 p.m. to 6 a.m.	78	30	**2.60**
	6 p.m. to 9 p.m.	60	42	1.43
	9 p.m. to Midnight	41	42	0.98
	Midnight to 6 a.m.	34	38	0.89
19				
	6 a.m. to 3 p.m.	126	82	**1.54**
	3 p.m. to 6 a.m.	80	45	**1.78**

Age	Time of Day	Contribution?		CIR
		Yes	No	
	6 p.m. to 9 p.m.	46	49	0.94
	9 p.m. to Midnight	43	51	0.84
	Midnight to 6 a.m.	63	51	1.24
20				
	6 a.m. to 3 p.m.	148	79	**1.87**
	3 p.m. to 6 a.m.	64	39	**1.64**
	6 p.m. to 9 p.m.	70	52	1.35
	9 p.m. to Midnight	53	60	0.88
	Midnight to 6 a.m.	69	56	1.23
35				
	6 a.m. to 3 p.m.	74	91	0.81
	3 p.m. to 6 a.m.	35	54	0.65
	6 p.m. to 9 p.m.	43	35	1.23
	9 p.m. to Midnight	20	36	0.56
	Midnight to 6 a.m.	45	44	1.02

Table D-50. Summary of Fatal Crash Counts by Time of Day

	Age							
Time of Day	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
6 a.m. to 3 p.m.	7	100	114	181	208	227	165	1,002
3 p.m. to 6 a.m.	10	61	96	108	125	103	89	592
6 p.m. to 9 p.m.	12	37	71	102	95	122	78	517
9 p.m. to Midnight	1	26	68	83	94	113	56	441
Midnight to 6 a.m.	0	15	41	72	114	125	89	456
Unknown	1	0	0	0	1	0	1	3
Total	31	239	390	546	637	690	478	3,011

Roadway/Environment Characteristics: Day of Week

Table D-51. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Day of Week	Contribution?		CIR
		Yes	No	
<16				
	Weekday	10	8	1.25
	Weekend	8	5	1.60
16				
	Weekday	102	52	**1.96**
	Weekend	49	36	1.36
17				
	Weekday	150	73	**2.05**
	Weekend	97	70	**1.39**
18				
	Weekday	212	104	**2.04**
	Weekend	133	97	**1.37**
19				
	Weekday	211	158	**1.34**
	Weekend	147	121	1.21
20				
	Weekday	246	163	**1.51**
	Weekend	158	123	**1.28**
35				
	Weekday	121	150	0.81
	Weekend	96	111	0.86

Table D-52. Summary of Fatal Crash Counts by Day of the Week

	Age							
Day of Week	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Weekday (6 a.m. Monday to 6 p.m. Friday)	18	154	223	316	369	409	271	1,760
Weekend (6 p.m. Friday to 6 a.m. Monday)	13	85	167	230	268	281	207	1,251

Roadway/Environment Characteristics: Weather

Table D-53. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	**Weather**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	Clear and Dry	13	10	1.30
	Rain	-	-	-
	Sleet/Snow/Fog/Other	4	3	1.33
16				
	Clear and Dry	113	60	**1.88**
	Rain	8	5	1.60
	Sleet/Snow/Fog/Other	28	19	1.47
17				
	Clear and Dry	179	100	**1.79**
	Rain	22	14	1.57
	Sleet/Snow/Fog/Other	45	27	**1.67**
18				
	Clear and Dry	237	136	**1.74**
	Rain	32	21	1.52
	Sleet/Snow/Fog/Other	68	35	**1.94**
19				
	Clear and Dry	244	194	**1.26**
	Rain	20	19	1.05
	Sleet/Snow/Fog/Other	84	58	**1.45**
20				

Age	Weather	Contribution?		CIR
		Yes	No	
	Clear and Dry	301	196	**1.54**
	Rain	29	22	1.32
	Sleet/Snow/Fog/Other	67	61	1.10
35				
	Clear and Dry	147	176	0.84
	Rain	18	20	0.90
	Sleet/Snow/Fog/Other	47	56	0.84

Table D-54. Summary of Fatal Crash Counts by Weather

	Age							
Weather	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Clear and Dry	23	173	279	373	438	497	323	2,106
Rain	0	13	36	53	39	51	38	230
Sleet/Snow/Fog/Other	7	47	72	103	142	128	103	602
Unknown/Not Reported	1	6	3	17	18	14	14	73
Total	31	239	390	546	637	690	478	3,011

Roadway/Environment Characteristics: Light Condition

Table D-55. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Light Condition	Contribution?		CIR
		Yes	No	
<16				
	Daylight	11	8	1.38
	Dark-Not Lighted	3	2	1.50
	Dark-Lighted	1	0	-
16				
	Daylight	116	55	**2.11**
	Dark-Not Lighted	22	17	1.29

Age	Light Condition	Contribution?		CIR
		Yes	**No**	
	Dark-Lighted	7	11	0.64
17				
	Daylight	146	65	**2.25**
	Dark-Not Lighted	59	51	1.16
	Dark-Lighted	27	22	**1.23**
18				
	Daylight	215	87	**2.47**
	Dark-Not Lighted	74	70	1.06
	Dark-Lighted	42	39	1.08
19				
	Daylight	196	129	**1.52**
	Dark-Not Lighted	89	77	1.16
	Dark-Lighted	53	60	0.88
20				
	Daylight	221	120	**1.84**
	Dark-Not Lighted	98	88	1.11
	Dark-Lighted	66	68	0.97
35				
	Daylight	112	144	0.78
	Dark-Not Lighted	69	56	1.23
	Dark-Lighted	27	46	0.59

Table D-56. Summary of Fatal Crash Counts by Light Condition

	Age							
Light Condition	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Daylight	19	171	211	302	325	341	256	1,625
Dark-Not Lighted	5	39	110	144	166	186	125	775
Dark-Lighted	1	18	49	81	113	134	73	469
Other/Unknown/Not Reported	6	11	20	19	33	29	24	142
Total	31	239	390	546	637	690	478	3,011

Roadway/Environment Characteristics: Traffic Control

Table D-57. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	**Traffic Control**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	None	12	10	1.20
	Signal (all)	1	2	0.50
	Stop Sign	4	1	4.00
	Yield Sign	-	-	-
	Other	1	0	-
16				
	None	111	66	**1.68**
	Signal (all)	15	11	1.36
	Stop Sign	21	7	3.00
	Yield Sign	-	-	-
	Other	4	4	1.00
17				
	None	163	113	**1.44**
	Signal (all)	24	18	1.33
	Stop Sign	47	4	**11.75**
	Yield Sign	1	0	-

Age	Traffic Control	Contribution?		CIR
		Yes	No	
	Other	12	8	1.50
18				
	None	242	161	**1.50**
	Signal (all)	34	29	1.17
	Stop Sign	57	4	**14.25**
	Yield Sign	2	0	-
	Other	10	6	1.67
19				
	None	264	227	**1.16**
	Signal (all)	41	40	1.03
	Stop Sign	36	7	5.14
	Yield Sign	-	-	-
	Other	15	5	**3.00**
20				
	None	274	226	**1.21**
	Signal (all)	60	44	1.36
	Stop Sign	53	10	5.30
	Yield Sign	1	2	0.50
	Other	15	3	**5.00**
35				
	None	165	204	0.81
	Signal (all)	28	37	0.76
	Stop Sign	14	6	2.33
	Yield Sign	0	1	0.00
	Other	8	11	0.73

Table D-58. Summary of Fatal Crash Counts by Traffic Control

	Age							
Traffic Control	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
None	22	177	276	403	491	500	369	2,238
Signal (all)	3	26	42	63	81	104	65	384
Stop Sign	5	28	51	61	43	63	20	271
Yield Sign	0	0	1	2	0	3	1	7
Other	1	8	20	16	20	18	19	102
Unknown/Not Reported	0	0	0	1	2	2	4	9
Total	31	239	390	546	637	690	478	3,011

Crash Characteristics

Crash Characteristics: First Harmful Event

Table D-59. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	**First Harmful Event**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	Non-Collision Harmful Events	-	-	-
	Collision With Motor Vehicle in-Transport	17	13	1.31
	Collision With Objects Not Fixed	-	-	-
	Ped/Bike	-	-	-
	Collision With Fixed Object	1	0	-
16				
	Non-Collision Harmful Events	3	0	-
	Collision With Motor Vehicle in-Transport	144	87	**1.66**
	Collision With Objects Not Fixed	-	-	-
	Ped/Bike	1	0	-
	Collision With Fixed Object	3	1	3.00
17				
	Non-Collision Harmful Events	-	-	-
	Collision With Motor Vehicle in-Transport	239	140	**1.71**

Age	First Harmful Event	Contribution?		CIR
		Yes	No	
	Collision With Objects Not Fixed	0	1	0.00
	Ped/Bike	2	1	2.00
	Collision With Fixed Object	6	1	6.00
18				
	Non-Collision Harmful Events	3	1	3.00
	Collision With Motor Vehicle in-Transport	328	188	**1.74**
	Collision With Objects Not Fixed	1	0	-
	Ped/Bike	4	7	0.57
	Collision With Fixed Object	9	5	1.80
19				
	Non-Collision Harmful Events	5	3	1.67
	Collision With Motor Vehicle in-Transport	335	260	**1.29**
	Collision With Objects Not Fixed	-	-	-
	Ped/Bike	4	4	1.00
	Collision With Fixed Object	14	12	1.17
20				
	Non-Collision Harmful Events	1	0	-
	Collision With Motor Vehicle in-Transport	377	271	**1.39**
	Collision With Objects Not Fixed	2	1	2.00
	Ped/Bike	8	5	1.60
	Collision With Fixed Object	16	9	1.78
35				
	Non-Collision Harmful Events	2	1	2.00
	Collision With Motor Vehicle in-Transport	206	250	0.82
	Collision With Objects Not Fixed	1	2	0.50
	Ped/Bike	2	2	1.00
	Collision With Fixed Object	6	6	1.00

Table D-60. Summary of Fatal Crash Counts by First Harmful Event

	Age							
First Harmful Event	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Non-Collision Harmful Events	0	3	0	4	8	1	3	19
Collision With Motor Vehicle in-Transport	30	231	379	516	595	648	456	2855
Collision With Objects Not Fixed	0	0	1	1	0	3	3	8
Ped/Bike	0	1	3	11	8	13	4	40
Collision With Fixed Object	1	4	7	14	26	25	12	89
Total	31	239	390	546	637	690	478	3011

Crash Characteristics: Manner of Collision

Table D-61. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	**Manner of Collision**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	Not Collision With Motor Vehicle in-Transport	1	0	-
	Front-to-Rear	1	0	-
	Front-to-Front	4	4	1.00
	Angle	8	7	1.14
	Sideswipe-Same Direction	4	2	2.00
	Sideswipe-Opposite Direction	-	-	-
	Rear-to-Side	-	-	-
	Other	-	-	-
16				
	Not Collision With Motor Vehicle in-Transport	7	1	7.00
	Front-to-Rear	18	18	1.00
	Front-to-Front	48	21	**2.29**
	Angle	65	42	1.55
	Sideswipe-Same Direction	7	1	7.00
	Sideswipe-Opposite Direction	5	4	1.25
	Rear-to-Side	-	-	-

Age	Manner of Collision	Contribution?		CIR
		Yes	No	
	Other	1	0	-
17				
	Not Collision With Motor Vehicle in-Transport	8	3	2.67
	Front-to-Rear	20	22	0.91
	Front-to-Front	79	48	**1.65**
	Angle	127	61	**2.08**
	Sideswipe-Same Direction	6	4	1.50
	Sideswipe-Opposite Direction	7	4	1.75
	Rear-to-Side	0	1	0.00
	Other	-	-	-
18				
	Not Collision With Motor Vehicle in-Transport	17	13	1.31
	Front-to-Rear	31	19	**1.63**
	Front-to-Front	125	62	**2.02**
	Angle	148	91	**1.63**
	Sideswipe-Same Direction	13	8	1.63
	Sideswipe-Opposite Direction	10	5	2.00
	Rear-to-Side	-	-	-
	Other	0	1	0.00
19				
	Not Collision With Motor Vehicle in-Transport	23	19	1.21
	Front-to-Rear	41	39	1.05
	Front-to-Front	117	93	1.26
	Angle	147	107	**1.37**
	Sideswipe-Same Direction	13	12	1.08
	Sideswipe-Opposite Direction	15	9	1.67
	Rear-to-Side	1	0	-
	Other	-	-	-
20				

Age	Manner of Collision	Contribution?		CIR
		Yes	No	
	Not Collision With Motor Vehicle in-Transport	27	15	1.80
	Front-to-Rear	53	41	**1.29**
	Front-to-Front	126	92	1.37
	Angle	172	113	**1.52**
	Sideswipe-Same Direction	13	9	1.44
	Sideswipe-Opposite Direction	11	12	0.92
	Rear-to-Side	1	1	1.00
	Other	-	-	-
35				
	Not Collision With Motor Vehicle in-Transport	11	11	1.00
	Front-to-Rear	29	43	0.67
	Front-to-Front	90	89	1.01
	Angle	68	99	0.69
	Sideswipe-Same Direction	7	5	1.40
	Sideswipe-Opposite Direction	11	14	0.79
	Rear-to-Side	-	-	-
	Other	-	-	-

Table D-62. Summary of Fatal Crash Counts by Manner of Collision

	Age							
Manner of Collision	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Not Collision with Motor Vehicle in-Transport	1	8	11	30	42	42	22	156
Front-to-Rear	1	36	42	50	80	94	72	375
Front-to-Front	8	69	127	187	210	218	179	998
Angle	15	107	188	239	254	285	167	1,255
Sideswipe-Same Direction	6	8	10	21	25	22	12	104
Sideswipe-Opposite Direction	0	9	11	15	24	23	25	107
Rear-to-Side	0	0	1	0	1	2	0	4

	Age							
Manner of Collision	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Other	0	1	0	1	0	0	0	2
Unknown/Not Reported	0	1	0	3	1	4	1	10
Total	31	239	390	546	637	690	478	3,011

Crash Characteristics: Pre-Crash Vehicle Maneuver

Table D-63. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	**Pre-Crash Vehicle Maneuver**	**Contribution?**		**CIR**
		Yes	**No**	
<16				
	Going Straight	10	8	1.25
	Passing or Overtaking Another Vehicle	1	1	1.00
	Turning Right	-	-	-
	Turning Left	-	-	-
	Making a U-Turn	-	-	-
	Backing Up (other than for parking position)	-	-	-
	Negotiating a Curve	1	2	0.50
	Changing Lanes/Merging	2	0	-
16				
	Going Straight	86	57	**1.51**
	Passing or Overtaking Another Vehicle	6	1	6.00
	Turning Right	0	1	0.00
	Turning Left	22	4	5.50
	Making a U-Turn	-	-	-
	Backing Up (other than for parking position)	-	-	-
	Negotiating a Curve	23	8	**2.88**
	Changing Lanes/Merging	4	1	4.00
17				
	Going Straight	145	98	**1.48**
	Passing or Overtaking Another Vehicle	7	1	7.00

Age	Pre-Crash Vehicle Maneuver	Contribution?		CIR
		Yes	No	
	Turning Right	2	0	-
	Turning Left	43	11	3.91
	Making a U-Turn	0	1	0.00
	Backing Up (other than for parking position)	-	-	-
	Negotiating a Curve	41	18	**2.28**
	Changing Lanes/Merging	5	1	5.00
18				
	Going Straight	207	147	**1.41**
	Passing or Overtaking Another Vehicle	18	1	18.00
	Turning Right	-	-	-
	Turning Left	36	8	4.50
	Making a U-Turn	0	1	0.00
	Backing Up (other than for parking position)	0	1	0.00
	Negotiating a Curve	66	24	**2.75**
	Changing Lanes/Merging	7	1	7.00
19				
	Going Straight	235	190	**1.24**
	Passing or Overtaking Another Vehicle	14	2	7.00
	Turning Right	-	-	-
	Turning Left	29	9	3.22
	Making a U-Turn	1	1	1.00
	Backing Up (other than for parking position)	0	1	0.00
	Negotiating a Curve	62	41	1.51
	Changing Lanes/Merging	6	3	2.00
20				
	Going Straight	279	205	**1.36**
	Passing or Overtaking Another Vehicle	11	1	11.00
	Turning Right	1	0	-
	Turning Left	27	12	2.25

Age	Pre-Crash Vehicle Maneuver	Contribution?		CIR
		Yes	No	
	Making a U-Turn	1	1	1.00
	Backing Up (other than for parking position)	-	-	-
	Negotiating a Curve	56	35	1.60
	Changing Lanes/Merging	11	2	5.50
35				
	Going Straight	139	173	0.80
	Passing or Overtaking Another Vehicle	9	1	9.00
	Turning Right	-	-	-
	Turning Left	10	7	1.43
	Making a U-Turn	-	-	-
	Backing Up (other than for parking position)	-	-	-
	Negotiating a Curve	47	42	1.12
	Changing Lanes/Merging	3	1	3.00

Table D-64. Summary of Fatal Crash Counts by Pre-Crash Vehicle Maneuver

	Age							
Pre-Crash Vehicle Maneuver	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Going Straight	18	143	243	354	425	484	312	1,979
Passing or Overtaking Another Vehicle	2	7	8	19	16	12	10	74
Turning Right	0	1	2	0	0	1	0	4
Turning Left	0	26	54	44	38	39	17	218
Making a U-Turn	0	0	1	1	2	2	0	6
Backing Up (other than for parking position)	0	0	0	1	1	0	0	2
Negotiating a Curve	3	31	59	90	103	91	89	466
Changing Lanes/Merging	2	5	6	8	9	13	4	47
Other/Unknown	6	26	17	29	43	48	46	215
Total	31	239	390	546	637	690	478	3,011

Crash Characteristics: Pre-Crash Avoidance Maneuver

Table D-65. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Pre-Crash Avoidance Maneuver	Contribution?		CIR
		Yes	No	
<16				
	No Avoidance Maneuver	8	4	2.00
	Braking	0	1	0.00
	Steering	3	0	-
	Braking and Steering	0	2	0.00
	Accelerating/Accelerating and Steering	-	-	-
16				
	No Avoidance Maneuver	62	31	**2.00**
	Braking	2	5	0.40
	Steering	26	3	8.67
	Braking and Steering	6	8	0.75
	Accelerating/Accelerating and Steering	2	0	-
17				
	No Avoidance Maneuver	95	54	**1.76**
	Braking	5	3	1.67
	Steering	29	16	1.81
	Braking and Steering	9	10	0.90
	Accelerating/Accelerating and Steering	5	0	-
18				
	No Avoidance Maneuver	124	70	**1.77**
	Braking	8	10	0.80
	Steering	49	18	2.72
	Braking and Steering	20	13	1.54
	Accelerating/Accelerating and Steering	-	-	-
19				
	No Avoidance Maneuver	125	104	**1.20**
	Braking	7	13	0.54

Age	Pre-Crash Avoidance Maneuver	Contribution?		CIR
		Yes	No	
	Steering	43	23	1.87
	Braking and Steering	16	13	1.23
	Accelerating/Accelerating and Steering	1	0	-
20				
	No Avoidance Maneuver	142	96	**1.48**
	Braking	12	16	0.75
	Steering	54	27	2.00
	Braking and Steering	20	17	1.18
	Accelerating/Accelerating and Steering	3	3	1.00
35				
	No Avoidance Maneuver	79	114	0.69
	Braking	4	10	0.40
	Steering	18	29	0.62
	Braking and Steering	8	14	0.57
	Accelerating/Accelerating and Steering	1	0	-

Table D-66. Summary of Fatal Crash Counts by Pre-Crash Avoidance Maneuver

	Age							
Pre-Crash Avoidance Maneuver	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
No Avoidance Maneuver	12	93	149	194	229	238	193	1,108
Braking	1	7	8	18	20	28	14	96
Steering	3	29	45	67	66	81	47	338
Braking and Steering	2	14	19	33	29	37	22	156
Accelerating/Accelerating and Steering	0	2	5	0	1	6	1	15
Unknown/Not Reported	13	94	164	234	292	300	201	1,298
Total	31	239	390	546	637	690	478	3,011

Crash Characteristics: Initial Impact Location

Table D-67. Frequency Counts Used in CIR Calculations (bold values denote young driver CIR values significantly different from drivers age 35, p < .05)

Age	Initial Impact Location	Contribution?		CIR
		Yes	No	
<16				
	Non-Collision	-	-	-
	Front	8	9	0.89
	Right Side	7	2	3.50
	Rear	-	-	-
	Left Side	2	2	1.00
16				
	Non-Collision	3	0	-
	Front	93	42	**2.21**
	Right Side	32	15	2.13
	Rear	3	15	0.20
	Left Side	20	16	1.25
17				
	Non-Collision	-	-	-
	Front	143	88	**1.63**
	Right Side	56	14	**4.00**
	Rear	5	17	**0.29**
	Left Side	43	23	**1.87**
18				
	Non-Collision	3	-	-
	Front	224	141	**1.59**
	Right Side	67	14	**4.79**
	Rear	3	14	0.21
	Left Side	44	29	**1.52**
19				
	Non-Collision	5	0	-
	Front	231	178	1.30

Age	Initial Impact Location	Contribution?		CIR
		Yes	No	
	Right Side	71	15	**4.73**
	Rear	6	30	0.20
	Left Side	42	53	0.79
20				
	Non-Collision	1	0	-
	Front	265	175	**1.51**
	Right Side	68	29	2.34
	Rear	8	32	**0.25**
	Left Side	58	47	**1.23**
35				
	Non-Collision	3	0	-
	Front	161	163	0.99
	Right Side	29	23	1.26
	Rear	1	34	0.03
	Left Side	23	37	0.62

Table D-68. Summary of Fatal Crash Counts by Initial Impact Location

	Age							
Initial Impact Location	**<16**	**16**	**17**	**18**	**19**	**20**	**35**	**Total**
Non-Collision	0	3	0	3	5	1	3	15
Front	17	135	231	365	409	440	324	1,921
Right Side	9	47	70	81	86	97	52	442
Rear	0	18	22	17	36	40	35	168
Left Side	4	36	66	73	95	105	60	439
Other/Unknown/Not Reported	1	0	1	7	6	7	4	26
Total	31	239	390	546	637	690	478	3,011

Appendix E. SHRP2 Multi-Vehicle Crashes—Crash Involvement Ratios and Frequency Tables

Driver and Occupant Characteristics

Driver and Occupant Characteristics: Driver Age (years)

Table E-1. Frequency Counts Used in CIR Calculations

Age	Contribution?		CIR
	Yes	No	
16	4	2	2.00
16.5	52	18	2.89
17	70	25	2.80
17.5	87	34	2.56
18	99	52	1.90
18.5	68	23	2.96
19	69	30	2.30
19.5	77	36	2.14
20	116	43	2.70
20.5	146	62	2.35

Table E-2. Summary of Crash Counts by Age (years)

	Age (years)										
	16	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Total	6	70	95	121	151	91	99	113	159	208	1,113

Driver and Occupant Characteristics: Driver Experience (years)

Table E-3. Frequency Counts Used in CIR Calculations

Experience	Contribution?		CIR
	Yes	No	
0	10	3	3.33
0.5	74	25	2.96
1	125	41	3.05
1.5	118	53	2.23
2	93	43	2.16
2.5	80	32	2.50
3	80	22	3.64
3.5	53	33	1.61
4	64	38	1.68
4.5	73	27	2.70
5	7	3	2.33
5.5	5	3	1.67

Table E-4. Summary of Crash Counts by Driver's Experience (years)

	Experience (years)												
	0	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Total	13	99	166	171	136	112	102	86	102	100	10	8	1,105

Driver and Occupant Characteristics: Driver Sex

Table E-5. Frequency Counts Used in CIR Calculations by Age (years)

Age	Sex	Contribution?		CIR
		Yes	No	
16				
	Female	1	2	0.50
	Male	3	0	-
16.5				
	Female	21	10	2.10
	Male	31	8	3.88
17				
	Female	28	13	2.15
	Male	42	12	3.50
17.5				
	Female	45	17	2.65
	Male	42	17	2.47
18				
	Female	45	23	1.96
	Male	54	29	1.86
18.5				
	Female	29	9	3.22
	Male	39	14	2.79
19				
	Female	36	12	3.00
	Male	33	18	1.83
19.5				
	Female	50	18	2.78
	Male	27	18	1.50
20				
	Female	58	20	2.90
	Male	58	23	2.52

Age	Sex	Contribution?		CIR
		Yes	No	
20.5				
	Female	80	30	2.67
	Male	66	32	2.06

Table E-6. Summary of Crash Counts by Age (years)

	Age (years)										
Sex	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Female	3	31	41	62	68	38	48	68	78	110	547
Male	3	39	54	59	83	53	51	45	81	98	566
Total	6	70	95	121	151	91	99	113	159	208	1,113

Table E-7. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Sex	Contribution?		CIR
		Yes	No	
0				
	Female	6	2	3.00
	Male	4	1	4.00
0.5				
	Female	32	16	2.00
	Male	42	9	4.67
1				
	Female	49	17	2.88
	Male	76	24	3.17
1.5				
	Female	59	25	2.36
	Male	59	28	2.11
2				
	Female	41	21	1.95
	Male	52	22	2.36

Experience	Sex	Contribution?		CIR
		Yes	No	
2.5				
	Female	46	19	2.42
	Male	34	13	2.62
3				
	Female	57	13	4.38
	Male	23	9	2.56
3.5				
	Female	30	16	1.88
	Male	23	17	1.35
4				
	Female	30	15	2.00
	Male	34	23	1.48
4.5				
	Female	39	9	4.33
	Male	34	18	1.89
5				
	Female	1	0	-
	Male	6	3	2.00
5.5				
	Female	0	0	-
	Male	5	3	1.67

Table E-8. Summary of Crash Counts by Experience (years)

	Experience (years)												
Sex	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Female	8	48	66	84	62	65	70	46	45	48	1	0	543
Male	5	51	100	87	74	47	32	40	57	52	9	8	562
Total	13	99	166	171	136	112	102	86	102	100	10	8	1,105

Driver and Occupant Characteristics: Total Number of Occupants (including driver)

Table E-9. Frequency Counts Used in CIR Calculations by Age (years)

Age	Occupants	Contribution?		CIR
		Yes	No	
16				
	1	2	1	2.00
	2	1	1	1.00
	3+	1	0	-
16.5				
	1	38	14	2.71
	2	11	4	2.75
	3+	3	0	
17				
	1	47	18	2.61
	2	19	6	3.17
	3+	4	1	4.00
17.5				
	1	58	23	2.52
	2	23	10	2.30
	3+	6	1	6.00
18				
	1	67	31	2.16
	2	24	17	1.41
	3+	8	4	2.00
18.5				
	1	48	13	3.69
	2	13	9	1.44
	3+	7	1	7.00
19				
	1	50	21	2.38
	2	16	7	2.29

Age	Occupants	Contribution?		CIR
		Yes	No	
	3+	3	2	1.50
19.5				
	1	62	28	2.21
	2	13	6	2.17
	3+	2	2	1.00
20				
	1	101	31	3.26
	2	9	9	1.00
	3+	6	3	2.00
20.5				
	1	129	47	2.74
	2	12	12	1.00
	3+	5	3	1.67

Table E-10. Summary of Crash Counts by Age (years)

	Age										
Occupants	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
1	3	52	65	81	98	61	71	90	132	176	829
2	2	15	25	33	41	22	23	19	18	24	222
3+	1	3	5	7	12	8	5	4	9	8	62
Total	6	70	95	121	151	91	99	113	159	208	1,113

Table E-11. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Occupants	Contribution?		CIR
		Yes	No	
0				
	1	6	2	3.00
	2	3	1	3.00
	3+	1	0	-

Experience	Occupants	Contribution?		CIR
		Yes	No	
0.5				
	1	52	17	3.06
	2	19	6	3.17
	3+	3	2	1.50
1				
	1	87	27	3.22
	2	29	13	2.23
	3+	9	1	9.00
1.5				
	1	75	37	2.03
	2	31	15	2.07
	3+	12	1	12.00
2				
	1	70	31	2.26
	2	21	10	2.10
	3+	2	2	1.00
2.5				
	1	64	19	3.37
	2	9	11	0.82
	3+	7	2	3.50
3				
	1	68	17	4.00
	2	11	2	5.50
	3+	1	3	0.33
3.5				
	1	42	25	1.68
	2	7	7	1.00
	3+	4	1	4.00
4				

Experience	Occupants	Contribution?		CIR
		Yes	No	
	1	59	27	2.19
	2	4	9	0.44
	3+	1	2	0.50
4.5				
	1	61	22	2.77
	2	7	3	2.33
	3+	5	2	2.50
5				
	1	7	1	7.00
	2	0	1	0.00
	3+	0	1	0.00
5.5				
	1	5	1	5.00
	2	0	2	0.00
	3+	0	0	-

Table E-12. Summary of Crash Counts by Experience (years)

	Experience												
Occupants	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
1	8	69	114	112	101	83	85	67	86	83	8	6	822
2	4	25	42	46	31	20	13	14	13	10	1	2	221
3+	1	5	10	13	4	9	4	5	3	7	1	0	62
Total	13	99	166	171	136	112	102	86	102	100	10	8	1,105

Driver and Occupant Characteristics: Presence of Hands on Wheel

Table E-13. Frequency Counts Used in CIR Calculations by Age (years)

Age	Level of Hand of Wheel	Contribution?		CIR
		Yes	No	
16				
	Both hands	3	1	3.00
	One hand	1	1	1.00
	None	0	0	-
16.5				
	Both hands	23	5	4.60
	One hand	24	13	1.85
	None	1	0	-
17				
	Both hands	19	10	1.90
	One hand	45	13	3.46
	None	3	2	1.50
17.5				
	Both hands	21	12	1.75
	One hand	60	18	3.33
	None	1	2	0.50
18				
	Both hands	26	19	1.37
	One hand	64	30	2.13
	None	6	1	6.00
18.5				
	Both hands	14	3	4.67
	One hand	45	18	2.50
	None	7	1	7.00
19				
	Both hands	24	6	4.00
	One hand	41	22	1.86

Age	Level of Hand of Wheel	Contribution?		CIR
		Yes	No	
	None	2	1	2.00
19.5				
	Both hands	23	10	2.30
	One hand	38	21	1.81
	None	10	4	2.50
20				
	Both hands	32	15	2.13
	One hand	69	22	3.14
	None	8	2	4.00
20.5				
	Both hands	40	23	1.74
	One hand	96	36	2.67
	None	8	2	4.00

Table E-14. Summary of Crash Counts by Age (years)

	Age										
Level of Hand of Wheel	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Both hands	4	28	29	33	45	17	30	33	47	63	329
One hand	2	37	58	78	94	63	63	59	91	132	677
None	0	1	5	3	7	8	3	14	10	10	61
Total	6	66	92	114	146	88	96	106	148	205	1,067

Table E-15. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Level of Hand of Wheel	Contribution?		CIR
		Yes	No	
0				
	Both Hands	4	0	-
	One Hand	5	2	2.50
	None	0	1	0.00

Experience	Level of Hand of Wheel	Contribution?		CIR
		Yes	No	
0.5				
	Both Hands	28	7	4.00
	One Hand	38	17	2.24
	None	3	1	3.00
1				
	Both Hands	39	13	3.00
	One Hand	76	25	3.04
	None	5	1	5.00
1.5				
	Both Hands	25	17	1.47
	One Hand	87	30	2.90
	None	4	3	1.33
2				
	Both Hands	25	14	1.79
	One Hand	57	27	2.11
	None	8	1	8.00
2.5				
	Both Hands	28	9	3.11
	One Hand	43	22	1.95
	None	3	0	-
3				
	Both Hands	24	8	3.00
	One Hand	43	13	3.31
	None	6	1	6.00
3.5				
	Both Hands	9	11	0.82
	One Hand	37	18	2.06
	None	6	3	2.00
4				

Experience	Level of Hand of Wheel	Contribution?		CIR
		Yes	No	
	Both Hands	16	14	1.14
	One Hand	40	20	2.00
	None	7	3	2.33
4.5				
	Both Hands	19	8	2.38
	One Hand	49	17	2.88
	None	4	1	4.00
5				
	Both Hands	4	0	-
	One Hand	2	2	1.00
	None	0	0	-
5.5				
	Both Hands	3	2	1.50
	One Hand	2	1	2.00
	None	0	0	-

Table E-16. Summary of Crash Counts by Experience (years)

	Experience												
Level of Hand of Wheel	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Both Hands	4	35	52	42	39	37	32	20	30	27	4	5	327
One Hand	7	55	101	117	84	65	56	55	60	66	4	3	673
None	1	4	6	7	9	3	7	9	10	5	0	0	61
Total	12	94	159	166	132	105	95	84	100	98	8	8	1,061

Driver and Occupant Characteristics: Engaged With Cell Phone

Table E-17. Frequency Counts Used in CIR Calculations by Age (years)

Age	Contribution?		CIR
	Yes	No	
16.5	5	1	5.00
17	8	0	-
17.5	8	6	1.33
18	19	5	3.80
18.5	8	0	-
19	12	2	6.00
19.5	16	10	1.60
20	25	7	3.57
20.5	31	4	7.75

Table E-18. Summary of Crash Counts by Age (years)

	Age										
	16	16.5	17	17.5	18	18.5	19	19.5	20	20.5	Total
Engaged With Cell Phone	-	6	8	14	24	8	14	26	32	35	167

Table E-19. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Contribution?		CIR
	Yes	No	
0	1	0	-
0.5	6	2	3.00
1	16	2	8.00
1.5	20	4	5.00
2	15	8	1.88
2.5	8	1	8.00
3	18	3	6.00
3.5	11	7	1.57
4	18	4	4.50

Experience	Contribution?		CIR
	Yes	No	
4.5	16	4	4.00
5.5	1	0	-

Table E-20. Summary of Crash Counts by Experience (years)

	Experience												
	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	Total
Engaged With Cell Phone	1	8	18	24	23	9	21	18	22	20	1	-	165

Driver and Occupant Characteristics: Interaction With Passenger

Table E-21. Frequency Counts Used in CIR Calculations by Age (years)

Age	Contribution?		CIR
	Yes	No	
16	2	1	2.00
16.5	8	3	2.67
17	14	6	2.33
17.5	15	8	1.88
18	15	16	0.94
18.5	9	7	1.29
19	8	5	1.60
19.5	8	5	1.60
20	10	6	1.67
20.5	9	7	1.29

Table E-22. Summary of Crash Counts by Age (years)

	Age										
	16	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Passenger Interaction	3	11	20	23	31	16	13	13	16	16	162

Table E-23. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	**Contribution?**		**CIR**
	Yes	**No**	
0	4	1	4.00
0.5	11	7	1.57
1	20	11	1.82
1.5	23	13	1.77
2	11	6	1.83
2.5	6	8	0.75
3	7	3	2.33
3.5	7	4	1.75
4	3	6	0.50
4.5	6	3	2.00
5	0	1	0.00

Table E-24. Summary of Crash Counts by Experience (years)

	Experience												
	0	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Passenger Interaction	5	18	31	36	17	14	10	11	9	9	1	-	161

Driver and Occupant Characteristics: External Distraction

Table E-25. Frequency Counts Used in CIR Calculations by Age (years)

Age	Contribution?		CIR
	Yes	No	
16	1	0	-
16.5	2	2	1.00
17	6	3	2.00
17.5	13	1	13.00
18	14	5	2.80
18.5	10	2	5.00
19	14	1	14.00
19.5	11	2	5.50
20	11	2	5.50
20.5	27	4	6.75

Table E-26. Summary of Crash Counts by Age (years)

	Age										
	16	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
External Distraction	1	4	9	14	19	12	15	13	13	31	131

Table E-27. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Contribution?		CIR
	Yes	No	
0	1	0	-
0.5	6	3	2.00
1	19	3	6.33
1.5	15	2	7.50
2	11	2	5.50
2.5	16	4	4.00
3	10	1	10.00
3.5	9	4	2.25

Experience	Contribution?		CIR
	Yes	No	
4	8	1	8.00
4.5	12	2	6.00
5.5	2	0	-

Table E-28. Summary of Crash Counts by Experience (years)

	Experience												
	0	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
External Distraction	1	9	22	17	13	20	11	13	9	14	-	2	131

Driver and Occupant Characteristics: Distracted Driving

Table E-29. Frequency Counts Used in CIR Calculations by Age (years)

Age	Contribution?		CIR
	Yes	No	
16	2	0	-
16.5	15	3	5.00
17	24	2	12.00
17.5	37	5	7.40
18	46	5	9.20
18.5	25	1	25.00
19	29	0	-
19.5	33	5	6.60
20	45	6	7.50
20.5	62	3	20.67

Table E-30. Summary of Crash Counts by Age (years)

	Age										
	16	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Distracted Driving	2	18	26	42	51	26	29	38	51	65	348

Table E-31. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	**Contribution?**		**CIR**
	Yes	**No**	
0	4	0	-
0.5	27	3	9.00
1	46	5	9.20
1.5	52	6	8.67
2	40	4	10.00
2.5	23	2	11.50
3	36	1	36.00
3.5	30	6	5.00
4	27	1	27.00
4.5	28	1	28.00
5	1	1	1.00
5.5	1	0	-

Table E-32. Summary of Crash Counts by Experience (years)

	Experience												
	0	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Distracted Driving	4	30	51	58	44	25	37	36	28	29	2	1	345

Driver and Occupant Characteristics: Excessive Speeding

Table E-33. Frequency Counts Used in CIR Calculations by Age (years)

Age	Contribution?		CIR
	Yes	No	
16.5	7	0	-
17	12	4	3.00
17.5	9	4	2.25
18	9	7	1.29
18.5	3	1	3.00
19	2	2	1.00
19.5	7	2	3.50
20	14	4	3.50
20.5	15	6	2.50

Table E-34. Summary of Crash Counts by Age (years)

	Age										
	16	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Excessive Speeding	-	7	16	13	16	4	4	9	18	21	108

Table E-35. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Contribution?		CIR
	Yes	No	
0	2	0	-
0.5	7	0	-
1	19	4	4.75
1.5	8	8	1.00
2	7	6	1.17
2.5	6	2	3.00
3	7	1	7.00
3.5	3	1	3.00
4	7	4	1.75

Experience	Contribution?		CIR
	Yes	No	
4.5	10	3	3.33
5	1	0	-
5.5	1	1	1.00

Table E-36. Summary of Crash Counts by Experience (years)

	Experience												
	0	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Excessive Speeding	2	7	23	16	13	8	8	4	11	13	1	2	108

Driver and Occupant Characteristics: Following Too Closely

Table E-37. Frequency Counts Used in CIR Calculations by Age (years)

Age	Contribution?		CIR
	Yes	No	
17	1	1	1.00
17.5	7	0	-
18	11	0	-
18.5	4	0	-
19	2	0	-
19.5	4	0	-
20	9	0	-
20.5	12	2	6.00

Table E-38. Summary of Crash Counts by Age (years)

	Age										
	16	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Following Too Closely	-	-	2	7	11	4	2	4	9	14	53

Table E-39. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Contribution?		CIR
	Yes	No	
0.5	3	1	3.00
1	2	0	-
1.5	10	0	-
2	9	0	-
2.5	5	0	-
3	7	0	-
3.5	3	0	-
4	5	1	5.00
4.5	4	1	4.00
5	1	0	-
5.5	1	0	-

Table E-40. Summary of Crash Counts by Experience (years)

	Experience												
	0	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Following Too Closely	-	4	2	10	9	5	7	3	6	5	1	1	53

Roadway/Environment Characteristics

Roadway/Environment Characteristics: Traffic Flow

Table E-41. Frequency Counts Used in CIR Calculations by Age (years)

Age	Traffic Flow	Contribution?		CIR
		Yes	No	
16				
	Divided	2	0	-
	Not Divided - Center 2-Way Left-Turn Lane	1	0	-
	Not Divided - Simple 2-Way	1	2	0.50
16.5				

Age	Traffic Flow	Contribution?		CIR
		Yes	No	
	Divided	16	4	4.00
	Not Divided - Center 2-Way Left-Turn Lane	2	3	0.67
	Not Divided - Simple 2-Way	30	10	3.00
17				
	Divided	19	7	2.71
	Not Divided - Center 2-Way Left-Turn Lane	9	0	-
	Not Divided - Simple 2-Way	40	14	2.86
17.5				
	Divided	33	15	2.20
	Not Divided - Center 2-Way Left-Turn Lane	4	5	0.80
	Not Divided - Simple 2-Way	45	13	3.46
18				
	Divided	39	17	2.29
	Not Divided - Center 2-Way Left-Turn Lane	12	2	6.00
	Not Divided - Simple 2-Way	45	30	1.50
18.5				
	Divided	27	10	2.70
	Not Divided - Center 2-Way Left-Turn Lane	7	1	7.00
	Not Divided - Simple 2-Way	32	11	2.91
19				
	Divided	39	15	2.60
	Not Divided - Center 2-Way Left-Turn Lane	5	2	2.50
	Not Divided - Simple 2-Way	22	11	2.00
19.5				
	Divided	51	21	2.43
	Not Divided - Center 2-Way Left-Turn Lane	8	2	4.00
	Not Divided - Simple 2-Way	15	9	1.67
20				
	Divided	66	25	2.64

Age	Traffic Flow	Contribution?		CIR
		Yes	No	
	Not Divided - Center 2-Way Left-Turn Lane	6	3	2.00
	Not Divided - Simple 2-Way	40	13	3.08
20.5				
	Divided	93	28	3.32
	Not Divided - Center 2-Way Left-Turn Lane	9	2	4.50
	Not Divided - Simple 2-Way	39	27	1.44

Table E-42. Summary of Crash Counts by Age (years)

	Age										
Traffic Flow	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Divided	2	20	26	48	56	37	54	72	91	121	527
Not Divided – Center 2-Way Left-Turn Lane	1	5	9	9	14	8	7	10	9	11	83
Not Divided - Simple 2-Way	3	40	54	58	75	43	33	24	53	66	449
Total	6	65	89	115	145	88	94	106	153	198	1059

Table E-43. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Traffic Flow	Contribution?		CIR
		Yes	No	
0				
	Divided	2	0	-
	Not Divided - Center 2-Way Left-Turn Lane	2	0	-
	Not Divided - Simple 2-Way	6	1	6.00
0.5				
	Divided	25	8	3.13

Experience	Traffic Flow	Contribution?		CIR
		Yes	No	
	Not Divided - Center 2-Way Left-Turn Lane	8	4	2.00
	Not Divided - Simple 2-Way	36	12	3.00
1				
	Divided	51	15	3.40
	Not Divided - Center 2-Way Left-Turn Lane	11	1	11.00
	Not Divided - Simple 2-Way	60	20	3.00
1.5				
	Divided	51	18	2.83
	Not Divided - Center 2-Way Left-Turn Lane	10	4	2.50
	Not Divided - Simple 2-Way	52	29	1.79
2				
	Divided	32	18	1.78
	Not Divided - Center 2-Way Left-Turn Lane	7	3	2.33
	Not Divided - Simple 2-Way	51	21	2.43
2.5				
	Divided	48	14	3.43
	Not Divided - Center 2-Way Left-Turn Lane	7	2	3.50
	Not Divided - Simple 2-Way	24	15	1.60
3				
	Divided	46	12	3.83
	Not Divided - Center 2-Way Left-Turn Lane	8	2	4.00
	Not Divided - Simple 2-Way	19	7	2.71
3.5				
	Divided	31	15	2.07
	Not Divided - Center 2-Way Left-Turn Lane	3	2	1.50
	Not Divided - Simple 2-Way	17	11	1.55
4				
	Divided	37	27	1.37
	Not Divided - Center 2-Way Left-Turn Lane	4	1	4.00

Experience	Traffic Flow	Contribution?		CIR
		Yes	No	
	Not Divided - Simple 2-Way	21	10	2.10
4.5	Divided	48	11	4.36
	Not Divided - Center 2-Way Left-Turn Lane	2	1	2.00
	Not Divided - Simple 2-Way	21	10	2.10
5				
	Divided	6	2	3.00
	Not Divided - Center 2-Way Left-Turn Lane	1	0	-
	Not Divided - Simple 2-Way	0	1	0.00
5.5				
	Divided	5	1	5.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	0	2	0.00

Table E-44. Summary of Crash Counts by Experience (years)

	Experience												
Traffic Flow	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Divided	2	33	66	69	50	62	58	46	64	59	8	6	523
Not Divided – Center 2-Way Left-Turn Lane	2	12	12	14	10	9	10	5	5	3	1	0	83
Not Divided – Simple 2-Way	7	48	80	81	72	39	26	28	31	31	1	2	446
Total	11	93	158	164	132	110	94	79	100	93	10	8	1052

Roadway/Environment Characteristics: Number of Contiguous Travel Lanes

Table E-45. Frequency Counts Used in CIR Calculations by Age (years)

Age	Contiguous Lanes	Contribution?		CIR
		Yes	No	
16				
	1	0	0	-
	2	0	0	-
	3+	4	2	2.00
16.5				
	1	4	0	
	2	20	7	2.86
	3+	26	10	2.60
17				
	1	1	1	1.00
	2	26	7	3.71
	3+	43	14	3.07
17.5				
	1	0	1	0.00
	2	36	10	3.60
	3+	49	23	2.13
18				
	1	2	4	0.50
	2	36	21	1.71
	3+	59	27	2.19
18.5				
	1	0	0	
	2	19	5	3.80
	3+	48	17	2.82
19				
	1	1	1	1.00
	2	26	5	5.20

Age	Contiguous Lanes	Contribution?		CIR
		Yes	No	
	3+	48	17	2.82
19.5				
	1	2	0	
	2	21	10	2.10
	3+	52	24	2.17
20				
	1	3	1	3.00
	2	34	9	3.78
	3+	77	32	2.41
20.5				
	1	2	1	2.00
	2	33	18	1.83
	3+	107	41	2.61

Table E-46. Summary of Crash counts by Age (years)

	Age										
Contiguous Lanes	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
1	0	4	2	1	6	0	2	2	4	3	24
2	0	27	33	46	57	24	31	31	43	51	343
3+	6	36	57	72	86	65	65	76	109	148	720
Total	6	67	92	119	149	89	98	109	156	202	1,087

Table E-47. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Contiguous Lanes	Contribution?		CIR
		Yes	No	
0				
	1	0	0	-
	2	4	1	4.00
	3+	6	1	6.00
0.5				
	1	4	1	4.00
	2	25	8	3.13
	3+	43	15	2.87
1				
	1	1	0	-
	2	45	16	2.81
	3+	78	23	3.39
1.5				
	1	2	4	0.50
	2	38	12	3.17
	3+	77	37	2.08
2				
	1	1	1	1.00
	2	40	17	2.35
	3+	49	25	1.96
2.5				
	1	1	0	-
	2	24	7	3.43
	3+	55	24	2.29
3				
	1	1	1	1.00
	2	22	9	2.44
	3+	53	12	4.42

Experience	Contiguous Lanes	Contribution?		CIR
		Yes	No	
3.5				
	1	2	1	2.00
	2	13	8	1.63
	3+	37	21	1.76
4				
	1	3	0	
	2	16	8	2.00
	3+	43	30	1.43
4.5				
	1	0	0	-
	2	22	8	2.75
	3+	50	17	2.94
5				
	1	0	1	0.00
	2	0	2	0.00
	3+	7	0	-
5.5				
	1	0	0	-
	2	0	0	-
	3+	5	3	1.67

Table E-48. Summary of Crash Counts by Experience (years)

	Age												
Contiguous Lanes	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
1	0	5	1	6	2	1	2	3	3	0	1	0	24
2	5	33	61	50	57	31	31	21	24	30	2	0	345
3+	7	58	101	114	74	79	65	58	73	67	7	8	711
Total	12	96	163	170	133	111	98	82	100	97	10	8	1,080

Roadway/Environment Characteristics: Roadway Junction Type

Table E-49. Frequency Counts Used in CIR Calculations by Age (years)

Age	Junction	Contribution?		CIR
		Yes	No	
16				
	Intersection	0	0	-
	Intersection-related	1	0	-
	Non-junction	1	0	-
16.5				
	Intersection	9	3	3.00
	Intersection-related	11	5	2.20
	Non-junction	15	7	2.14
17				
	Intersection	11	3	3.67
	Intersection-related	12	6	2.00
	Non-junction	29	7	4.14
17.5				
	Intersection	20	8	2.50
	Intersection-related	16	8	2.00
	Non-junction	31	12	2.58
18				
	Intersection	13	12	1.08
	Intersection-related	13	7	1.86
	Non-junction	44	20	2.20
18.5				
	Intersection	12	4	3.00
	Intersection-related	8	5	1.60
	Non-junction	25	4	6.25
19				
	Intersection	8	7	1.14
	Intersection-related	6	5	1.20

Age	Junction	Contribution?		CIR
		Yes	No	
	Non-junction	28	7	4.00
19.5				
	Intersection	6	1	6.00
	Intersection-related	7	6	1.17
	Non-junction	37	15	2.47
20				
	Intersection	13	5	2.60
	Intersection-related	8	5	1.60
	Non-junction	61	18	3.39
20.5				
	Intersection	12	4	3.00
	Intersection-related	17	9	1.89
	Non-junction	68	22	3.09

Table E-50. Summary of Crash Counts by Age (years)

	Age										
Junction	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Intersection	0	12	14	28	25	16	15	7	18	16	151
Intersection-related	1	16	18	24	20	13	11	13	13	26	155
Non-junction	1	22	36	43	64	29	35	52	79	90	451
Total	2	50	68	95	109	58	61	72	110	132	757

Table E-51. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Junction	Contribution?		CIR
		Yes	No	
0				
	Intersection	1	0	-
	Intersection-related	1	0	-
	Non-junction	6	0	-
0.5				
	Intersection	14	4	3.50
	Intersection-related	12	6	2.00
	Non-junction	23	9	2.56
1				
	Intersection	20	6	3.33
	Intersection-related	20	6	3.33
	Non-junction	48	12	4.00
1.5				
	Intersection	25	12	2.08
	Intersection-related	17	12	1.42
	Non-junction	43	19	2.26
2				
	Intersection	11	11	1.00
	Intersection-related	9	6	1.50
	Non-junction	45	13	3.46
2.5				
	Intersection	9	2	4.50
	Intersection-related	12	9	1.33
	Non-junction	29	9	3.22
3				
	Intersection	7	3	2.33
	Intersection-related	8	3	2.67
	Non-junction	39	6	6.50

Experience	Junction	Contribution?		CIR
		Yes	No	
3.5				
	Intersection	3	1	3.00
	Intersection-related	4	6	0.67
	Non-junction	27	15	1.80
4				
	Intersection	8	4	2.00
	Intersection-related	7	5	1.40
	Non-junction	31	16	1.94
4.5				
	Intersection	5	2	2.50
	Intersection-related	8	3	2.67
	Non-junction	37	10	3.70
5				
	Intersection	0	2	0.00
	Intersection-related	0	0	-
	Non-junction	5	0	-
5.5				
	Intersection	0	0	-
	Intersection-related	0	0	-
	Non-junction	3	2	1.50

Table E-52. Summary of Crash Counts by Experience (years)

	Experience												
Junction	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Intersection	1	18	26	37	22	11	10	4	12	7	2	0	150
Intersection-related	1	18	26	29	15	21	11	10	12	11	0	0	154
Non-junction	6	32	60	62	58	38	45	42	47	47	5	5	447
Total	8	68	112	128	95	70	66	56	71	65	7	5	751

Roadway/Environment Characteristics: Interchange Feature

Table E-53. Frequency Counts Used in CIR Calculations by Age (years)

Age	Interchange	Contribution?		CIR
		Yes	No	
16.5				
	Entrance/Exit ramp	1	0	-
	Interchange area	5	1	5.00
17				
	Entrance/Exit ramp	1	0	-
	Interchange area	5	2	2.50
17.5				
	Entrance/Exit ramp	2	1	2.00
	Interchange area	9	0	-
18				
	Entrance/Exit ramp	1	1	1.00
	Interchange area	12	3	4.00
18.5				
	Entrance/Exit ramp	0	0	-
	Interchange area	12	3	4.00
19				
	Entrance/Exit ramp	1	2	0.50
	Interchange area	19	4	4.75
19.5				
	Entrance/Exit ramp	2	2	1.00
	Interchange area	14	6	2.33
20				
	Entrance/Exit ramp	4	1	4.00
	Interchange area	17	7	2.43
20.5				
	Entrance/Exit ramp	5	2	2.50
	Interchange area	26	12	2.17

Table E-54. Summary of Crash Counts by Age (years)

	Age										
Interchange	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Entrance/Exit ramp	-	1	1	3	2	0	3	4	5	7	26
Interchange area	-	6	7	9	15	15	23	20	24	38	157
Total	0	7	8	12	17	15	26	24	29	45	183

Table E-55. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	**Interchange**	**Contribution?**		**CIR**
		Yes	**No**	
0				
	Entrance/Exit ramp	0	1	0.00
	Interchange area	0	0	-
0.5				
	Entrance/Exit ramp	1	0	-
	Interchange area	6	1	6.00
1				
	Entrance/Exit ramp	1	2	0.50
	Interchange area	18	5	3.60
1.5				
	Entrance/Exit ramp	3	0	-
	Interchange area	17	2	8.50
2				
	Entrance/Exit ramp	0	0	-
	Interchange area	13	5	2.60
2.5				
	Entrance/Exit ramp	2	1	2.00
	Interchange area	22	4	5.50
3				
	Entrance/Exit ramp	4	1	4.00
	Interchange area	11	5	2.20

Experience	Interchange	Contribution?		CIR
		Yes	No	
3.5				
	Entrance/Exit ramp	4	2	2.00
	Interchange area	6	3	2.00
4				
	Entrance/Exit ramp	0	0	-
	Interchange area	11	9	1.22
4.5				
	Entrance/Exit ramp	2	2	1.00
	Interchange area	11	3	3.67
5				
	Entrance/Exit ramp	0	0	-
	Interchange area	2	0	-
5.5				
	Entrance/Exit ramp	0	0	-
	Interchange area	2	1	2.00

Table E-56. Summary of Crash Counts by Experience (years)

	Experience												
Interchange	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Entrance/Exit ramp	1	1	3	3	0	3	5	6	0	4	0	0	26
Interchange area	0	7	23	19	18	26	16	9	20	14	2	3	157
Total	1	8	26	22	18	29	21	15	20	18	2	3	183

Roadway/Environment Characteristics: Intersection Traffic Control

Table E-57. Frequency Counts Used in CIR Calculations by Age (years)

Age	Traffic Control	Contribution?		CIR
		Yes	No	
16.5				
	Stop sign	3	2	1.50
	Traffic signal	10	1	10.00
	Yield sign	1	0	-
17				
	Stop sign	2	1	2.00
	Traffic signal	10	5	2.00
	Yield sign	0	0	-
17.5				
	Stop sign	0	0	-
	Traffic signal	14	8	1.75
	Yield sign	0	1	0.00
18				
	Stop sign	3	4	0.75
	Traffic signal	11	6	1.83
	Yield sign	2	1	2.00
18.5				
	Stop sign	1	0	-
	Traffic signal	10	6	1.67
	Yield sign	0	2	0.00
19				
	Stop sign	3	0	-
	Traffic signal	9	5	1.80
	Yield sign	0	1	0.00
19.5				
	Stop sign	2	0	-
	Traffic signal	5	4	1.25

Age	Traffic Control	Contribution?		CIR
		Yes	No	
	Yield sign	0	0	-
20				
	Stop sign	5	0	-
	Traffic signal	13	5	2.60
	Yield sign	0	1	0.00
20.5				
	Stop sign	4	1	4.00
	Traffic signal	14	11	1.27
	Yield sign	0	0	-

Table E-58. Summary of Crash Counts by Age (years)

	Age										
Traffic Control	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Stop sign	-	5	3	0	7	1	3	2	5	5	31
Traffic signal	-	11	15	22	17	16	14	9	18	25	147
Yield sign	-	1	0	1	3	2	1	0	1	0	9
Total	0	17	18	23	27	19	18	11	24	30	187

Table E-59. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Traffic Control	Contribution?		CIR
		Yes	No	
0				
	Stop sign	0	0	-
	Traffic signal	1	0	-
	Yield sign	0	0	-
0.5				
	Stop sign	3	2	1.50
	Traffic signal	13	1	13.00
	Yield sign	1	0	-

Experience	Traffic Control	Contribution?		CIR
		Yes	No	
1				
	Stop sign	3	0	-
	Traffic signal	15	10	1.50
	Yield sign	0	0	-
1.5				
	Stop sign	3	3	1.00
	Traffic signal	17	8	2.13
	Yield sign	1	3	0.33
2				
	Stop sign	3	2	1.50
	Traffic signal	10	6	1.67
	Yield sign	1	0	-
2.5				
	Stop sign	0	0	-
	Traffic signal	12	6	2.00
	Yield sign	0	1	0.00
3				
	Stop sign	4	0	-
	Traffic signal	7	3	2.33
	Yield sign	0	1	0.00
3.5				
	Stop sign	2	0	-
	Traffic signal	5	4	1.25
	Yield sign	0	1	0.00
4				
	Stop sign	3	0	-
	Traffic signal	7	7	1.00
	Yield sign	0	0	-
4.5				

Experience	Traffic Control	Contribution?		CIR
		Yes	No	
	Stop sign	0	0	-
	Traffic signal	9	5	1.80
	Yield sign	0	0	-
5				
	Stop sign	0	1	0.00
	Traffic signal	0	1	0.00
	Yield sign	0	0	-

Table E-60. Summary of Crash Counts by Experience (years)

	Experience												
Traffic Control	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Stop sign	0	5	3	6	5	0	4	2	3	0	1	-	29
Traffic signal	1	14	25	25	16	18	10	9	14	14	1	-	147
Yield sign	0	1	0	4	1	1	1	1	0	0	0	-	9
Total	1	20	28	35	22	19	15	12	17	14	2	0	185

Roadway/Environment Characteristics: Urban Versus Rural Roadways

Table E-61. Frequency Counts Used in CIR Calculations by Age (years)

Age	Locality	Contribution?		CIR
		Yes	No	
16				
	Suburban/Commercial	4	1	4.00
	Rural	0	0	-
	Urban	0	0	-
16.5				
	Suburban/Commercial	31	13	2.38
	Rural	0	0	-
	Urban	2	0	-
17				

Age	Locality	Contribution?		CIR
		Yes	No	
	Suburban/Commercial	38	14	2.71
	Rural	3	0	-
	Urban	1	1	1.00
17.5				
	Suburban/Commercial	45	19	2.37
	Rural	3	1	3.00
	Urban	1	1	1.00
18				
	Suburban/Commercial	54	39	1.38
	Rural	5	1	5.00
	Urban	3	1	3.00
18.5				
	Suburban/Commercial	35	15	2.33
	Rural	0	1	0.00
	Urban	2	1	2.00
19				
	Suburban/Commercial	30	20	1.50
	Rural	1	0	-
	Urban	4	0	-
19.5				
	Suburban/Commercial	31	16	1.94
	Rural	0	1	0.00
	Urban	1	0	-
20				
	Suburban/Commercial	50	21	2.38
	Rural	2	0	-
	Urban	1	1	1.00
20.5				

Age	Locality	Contribution?		CIR
		Yes	No	
	Suburban/Commercial	62	37	1.68
	Rural	5	0	-
	Urban	3	2	1.50

Table E-62. Summary of Crash Counts by Age (years)

	Age										
Locality	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Suburban/Commercial	5	44	52	64	93	50	50	47	71	99	575
Rural	0	0	3	4	6	1	1	1	2	5	23
Urban	0	2	2	2	4	3	4	1	2	5	25
Total	5	46	57	70	103	54	55	49	75	109	623

Table E-63. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Locality	Contribution?		CIR
		Yes	No	
0				
	Suburban/Commercial	9	1	9.00
	Rural	0	0	-
	Urban	0	0	-
0.5				
	Suburban/Commercial	44	17	2.59
	Rural	2	0	-
	Urban	2	1	2.00
1				
	Suburban/Commercial	59	21	2.81
	Rural	4	0	-
	Urban	2	0	-

Experience	Locality	Contribution?		CIR
		Yes	No	
1.5				
	Suburban/Commercial	60	36	1.67
	Rural	2	1	2.00
	Urban	5	2	2.50
2				
	Suburban/Commercial	52	32	1.63
	Rural	5	1	5.00
	Urban	0	1	0.00
2.5				
	Suburban/Commercial	35	16	2.19
	Rural	1	2	0.50
	Urban	1	0	-
3				
	Suburban/Commercial	33	13	2.54
	Rural	1	0	-
	Urban	3	0	-
3.5				
	Suburban/Commercial	23	21	1.10
	Rural	1	0	-
	Urban	2	0	-
4				
	Suburban/Commercial	30	17	1.76
	Rural	0	0	-
	Urban	1	2	0.50
4.5				
	Suburban/Commercial	30	14	2.14
	Rural	3	0	-
	Urban	2	1	2.00
5				

Experience	Locality	Contribution?		CIR
		Yes	No	
	Suburban/Commercial	1	3	0.33
	Rural	0	0	-
	Urban	0	0	-
5.5				
	Suburban/Commercial	0	2	0.00
	Rural	0	0	-
	Urban	0	0	-

Table E-64. Summary of Crash Counts by Experience (years)

	Experience												
Locality	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Suburban/Commercial	10	61	80	96	84	51	46	44	47	44	4	2	569
Rural	0	2	4	3	6	3	1	1	0	3	0	0	23
Urban	0	3	2	7	1	1	3	2	3	3	0	0	25
Total	10	66	86	106	91	55	50	47	50	50	4	2	617

Roadway/Environment Characteristics: Various Light Conditions

Table E-65. Frequency Counts Used in CIR Calculations by Age (years)

Age	Lighting	Contribution?		CIR
		Yes	No	
16				
	Darkness, Lighted	0	0	-
	Darkness, Not Lighted	0	0	-
	Dawn	0	1	0.00
	Daylight	4	1	4.00
	Dusk	0	0	-
17				
	Darkness, Lighted	6	4	1.50
	Darkness, Not Lighted	1	2	0.50

Age	Lighting	Contribution?		CIR
		Yes	No	
	Dawn	2	0	-
	Daylight	41	11	3.73
	Dusk	2	1	2.00
17				
	Darkness, Lighted	12	4	3.00
	Darkness, Not Lighted	2	0	-
	Dawn	1	1	1.00
	Daylight	52	18	2.89
	Dusk	3	2	1.50
18				
	Darkness, Lighted	11	6	1.83
	Darkness, Not Lighted	0	0	-
	Dawn	2	2	1.00
	Daylight	72	25	2.88
	Dusk	2	1	2.00
18				
	Darkness, Lighted	14	12	1.17
	Darkness, Not Lighted	0	1	0.00
	Dawn	2	0	-
	Daylight	79	38	2.08
	Dusk	4	1	4.00
19				
	Darkness, Lighted	7	3	2.33
	Darkness, Not Lighted	1	0	-
	Dawn	2	0	-
	Daylight	55	18	3.06
	Dusk	3	2	1.50
19				
	Darkness, Lighted	7	8	0.88

Age	Lighting	Contribution?		CIR
		Yes	No	
	Darkness, Not Lighted	0	0	-
	Dawn	0	0	-
	Daylight	61	22	2.77
	Dusk	1	0	-
20				
	Darkness, Lighted	12	6	2.00
	Darkness, Not Lighted	2	1	2.00
	Dawn	1	0	-
	Daylight	60	29	2.07
	Dusk	2	0	-
20				
	Darkness, Lighted	13	6	2.17
	Darkness, Not Lighted	5	2	2.50
	Dawn	0	0	-
	Daylight	96	33	2.91
	Dusk	2	2	1.00
21				
	Darkness, Lighted	21	11	1.91
	Darkness, Not Lighted	2	3	0.67
	Dawn	0	0	-
	Daylight	122	47	2.60
	Dusk	1	1	1.00

Table E-66. Summary of Crash Counts by Age (years)

	Age										
Lighting	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Darkness, Lighted	0	10	16	17	26	10	15	18	19	32	163
Darkness, Not Lighted	0	3	2	0	1	1	0	3	7	5	22
Dawn	1	2	2	4	2	2	0	1	0	0	14
Daylight	5	52	70	97	117	73	83	89	129	169	884
Dusk	0	3	5	3	5	5	1	2	4	2	30
Total	6	70	95	121	151	91	99	113	159	208	1,113

Table E-67. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	**Lighting**	**Contribution?**		**CIR**
		Yes	**No**	
0				
	Darkness, Lighted	0	0	-
	Darkness, Not Lighted	0	0	-
	Dawn	0	1	0
	Daylight	9	1	9.00
	Dusk	1	1	1.00
0.5				
	Darkness, Lighted	9	5	1.80
	Darkness, Not Lighted	1	2	0.50
	Dawn	3	1	3.00
	Daylight	58	17	3.41
	Dusk	3	0	-
1				
	Darkness, Lighted	20	9	2.22
	Darkness, Not Lighted	2	0	-
	Dawn	3	0	-
	Daylight	96	31	3.10
	Dusk	4	1	4.00

Experience	Lighting	Contribution?		CIR
		Yes	No	
1.5				
	Darkness, Lighted	16	8	2.00
	Darkness, Not Lighted	0	0	-
	Dawn	1	1	1.00
	Daylight	97	42	2.31
	Dusk	4	2	2.00
2				
	Darkness, Lighted	11	10	1.10
	Darkness, Not Lighted	4	0	-
	Dawn	1	1	1.00
	Daylight	76	31	2.45
	Dusk	1	1	1.00
2.5				
	Darkness, Lighted	8	4	2.00
	Darkness, Not Lighted	0	1	0.00
	Dawn	1	0	-
	Daylight	69	24	2.88
	Dusk	2	3	0.67
3				
	Darkness, Lighted	7	2	3.50
	Darkness, Not Lighted	2	2	1.00
	Dawn	1	0	-
	Daylight	67	18	3.72
	Dusk	3	0	-
3.5				
	Darkness, Lighted	7	8	0.88
	Darkness, Not Lighted	1	2	0.50
	Dawn	0	0	-
	Daylight	44	22	2.00

Experience	Lighting	Contribution?		CIR
		Yes	No	
	Dusk	1	1	1.00
4				
	Darkness, Lighted	9	7	1.29
	Darkness, Not Lighted	2	1	2.00
	Dawn	0	0	-
	Daylight	52	30	1.73
	Dusk	1	0	-
4.5				
	Darkness, Lighted	13	7	1.86
	Darkness, Not Lighted	1	1	1.00
	Dawn	0	0	-
	Daylight	59	19	3.11
	Dusk	0	0	-
5				
	Darkness, Lighted	0	0	-
	Darkness, Not Lighted	0	0	-
	Dawn	0	0	-
	Daylight	7	3	2.33
	Dusk	0	0	-
5.5				
	Darkness, Lighted	1	0	-
	Darkness, Not Lighted	0	0	-
	Dawn	0	0	-
	Daylight	4	3	1.33
	Dusk	0	0	-

Table E-68. Summary of Crash Counts by Experience (years)

	Experience												
Lighting	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Darkness, Lighted	0	14	29	24	21	12	9	15	16	20	0	1	161
Darkness, Not Lighted	0	3	2	0	4	1	4	3	3	2	0	0	22
Dawn	1	4	3	2	2	1	1	0	0	0	0	0	14
Daylight	10	75	127	139	107	93	85	66	82	78	10	7	879
Dusk	2	3	5	6	2	5	3	2	1	0	0	0	29
Total	13	99	166	171	136	112	102	86	102	100	10	8	1,105

Roadway/Environment Characteristics: Adverse and Non-Adverse Weather Conditions

Table E-69. Frequency Counts Used in CIR Calculations by Age (years)

Age	**Weather**	**Contribution?**		**CIR**
		Yes	**No**	
16				
	Adverse	1	0	-
	Non-Adverse	3	2	1.50
16.5				
	Adverse	6	2	3.00
	Non-Adverse	46	16	2.88
17				
	Adverse	18	4	4.50
	Non-Adverse	52	21	2.48
17.5				
	Adverse	10	6	1.67
	Non-Adverse	77	28	2.75
18				
	Adverse	12	7	1.71

Age	Weather	Contribution?		CIR
		Yes	No	
	Non-Adverse	87	45	1.93
18.5				
	Adverse	6	3	2.00
	Non-Adverse	62	20	3.10
19				
	Adverse	6	1	6.00
	Non-Adverse	63	29	2.17
19.5				
	Adverse	8	3	2.67
	Non-Adverse	69	33	2.09
20				
	Adverse	9	3	3.00
	Non-Adverse	107	40	2.68
20.5				
	Adverse	18	7	2.57
	Non-Adverse	128	55	2.33

Table E-70. Summary of Crash Counts by Age (years)

	Age										
Weather	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Adverse	1	8	22	16	19	9	7	11	12	25	130
Non-Adverse	5	62	73	105	132	82	92	102	147	183	983
Total	6	70	95	121	151	91	99	113	159	208	1,113

Table E-71. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Weather	Contribution?		CIR
		Yes	No	
0				
	Adverse	4	0	-
	Non-Adverse	6	3	2.00
0.5				
	Adverse	9	2	4.50
	Non-Adverse	65	23	2.83
1				
	Adverse	21	6	3.50
	Non-Adverse	104	35	2.97
1.5				
	Adverse	15	8	1.88
	Non-Adverse	103	45	2.29
2				
	Adverse	11	8	1.38
	Non-Adverse	82	35	2.34
2.5				
	Adverse	11	2	5.50
	Non-Adverse	69	30	2.30
3				
	Adverse	5	1	5.00
	Non-Adverse	75	21	3.57
3.5				
	Adverse	7	3	2.33
	Non-Adverse	46	30	1.53
4				
	Adverse	7	5	1.40
	Non-Adverse	57	33	1.73

Experience	Weather	Contribution?		CIR
		Yes	No	
4.5				
	Adverse	4	1	4.00
	Non-Adverse	69	26	2.65
5				
	Adverse	0	0	-
	Non-Adverse	7	3	2.33
5.5				
	Adverse	0	0	-
	Non-Adverse	5	3	1.67

Table E-72. Summary of Crash Counts by Experience (years)

	Experience												
Weather	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Adverse	4	11	27	23	19	13	6	10	12	5	0	0	130
Non-Adverse	9	88	139	148	117	99	96	76	90	95	10	8	975
Total	13	99	166	171	136	112	102	86	102	100	10	8	1,105

Crash Characteristics

Crash Characteristics: Incident Type

Table E-73. Frequency Counts Used in CIR Calculations by Age (years)

Age	Incident Type	Contribution		CIR
		Yes	No	
16				
	Rear-End - Striking	4	0	-
	Road Departure	0	0	-
	Sideswipe (same direction)	0	0	-
	Crossing Path	0	1	0.00
16.5				
	Rear-End - Striking	44	6	7.33
	Road Departure	0	0	-
	Sideswipe (same direction)	0	2	0.00
	Crossing Path	1	2	0.50
17				
	Rear-End - Striking	62	3	20.67
	Road Departure	0	0	-
	Sideswipe (same direction)	1	5	0.20
	Crossing Path	4	5	0.80
17.5				
	Rear-End - Striking	76	5	15.20
	Road Departure	0	0	-
	Sideswipe (same direction)	4	13	0.31
	Crossing Path	3	5	0.60
18				
	Rear-End - Striking	87	14	6.21
	Road Departure	1	0	-
	Sideswipe (same direction)	3	8	0.38
	Crossing Path	1	8	0.13
18.5				

Age	Incident Type	Contribution		CIR
		Yes	No	
	Rear-End - Striking	60	5	12.00
	Road Departure	0	0	-
	Sideswipe (same direction)	1	7	0.14
	Crossing Path	1	2	0.50
19				
	Rear-End - Striking	57	9	6.33
	Road Departure	1	0	-
	Sideswipe (same direction)	4	6	0.67
	Crossing Path	3	4	0.75
19.5				
	Rear-End - Striking	66	12	5.50
	Road Departure	0	0	-
	Sideswipe (same direction)	0	10	0.00
	Crossing Path	3	3	1.00
20				
	Rear-End - Striking	95	11	8.64
	Road Departure	1	0	-
	Sideswipe (same direction)	6	15	0.40
	Crossing Path	2	5	0.40
20.5				
	Rear-End - Striking	117	20	5.85
	Road Departure	0	0	-
	Sideswipe (same direction)	14	16	0.88
	Crossing Path	3	9	0.33

Table E-74. Summary of Crash Counts by Age (years)

	Age										
Incident Type	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Rear-End - Striking	4	50	65	81	101	65	66	78	106	137	753
Road Departure	0	0	0	0	1	0	1	0	1	0	3
Sideswipe (same direction)	0	2	6	17	11	8	10	10	21	30	115
Crossing Path	1	3	9	8	9	3	7	6	7	12	65
Total	5	55	80	106	122	76	84	94	135	179	936

Table E-75. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	**Incident Type**	**Contribution?**		**CIR**
		Yes	**No**	
0				
	Rear-End - Striking	9	1	9.00
	Road Departure	0	0	-
	Sideswipe (same direction)	0	0	-
	Crossing Path	0	0	-
0.5				
	Rear-End - Striking	62	8	7.75
	Road Departure	0	0	-
	Sideswipe (same direction)	3	4	0.75
	Crossing Path	1	3	0.33
1				
	Rear-End - Striking	111	9	12.33
	Road Departure	1	0	-
	Sideswipe (same direction)	2	8	0.25
	Crossing Path	4	8	0.50
1.5				
	Rear-End - Striking	105	8	13.13
	Road Departure	1	0	-
	Sideswipe (same direction)	4	17	0.24

Experience	Incident Type	Contribution?		CIR
		Yes	No	
	Crossing Path	5	7	0.71
2				
	Rear-End - Striking	81	10	8.10
	Road Departure	0	0	-
	Sideswipe (same direction)	1	10	0.10
	Crossing Path	3	7	0.43
2.5				
	Rear-End - Striking	68	8	8.50
	Road Departure	0	0	-
	Sideswipe (same direction)	7	8	0.88
	Crossing Path	0	7	0.00
3				
	Rear-End - Striking	65	5	13.00
	Road Departure	1	0	-
	Sideswipe (same direction)	4	5	0.80
	Crossing Path	3	2	1.50
3.5				
	Rear-End - Striking	48	11	4.36
	Road Departure	0	0	-
	Sideswipe (same direction)	0	6	0.00
	Crossing Path	0	2	0.00
4				
	Rear-End - Striking	55	14	3.93
	Road Departure	0	0	-
	Sideswipe (same direction)	3	18	0.17
	Crossing Path	0	0	-
4.5				
	Rear-End - Striking	56	9	6.22
	Road Departure	0	0	-

Experience	Incident Type	Contribution?		CIR
		Yes	No	
	Sideswipe (same direction)	7	4	1.75
	Crossing Path	4	7	0.57
5				
	Rear-End - Striking	2	0	-
	Road Departure	0	0	-
	Sideswipe (same direction)	1	0	-
	Crossing Path	1	0	-
5.5				
	Rear-End - Striking	2	1	2.00
	Road Departure	0	0	-
	Sideswipe (same direction)	1	2	0.50
	Crossing Path	0	0	-

Table E-76. Summary of Crash Counts by Experience (years)

	Experience												
Incident Type	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Rear-End - Striking	10	70	120	113	91	76	70	59	69	65	2	3	748
Road Departure	0	0	1	1	0	0	1	0	0	0	0	0	3
Sideswipe (same direction)	0	7	10	21	11	15	9	6	21	11	1	3	115
Crossing Path	0	4	12	12	10	7	5	2	0	11	1	0	64
Total	10	81	143	147	112	98	85	67	90	87	4	6	930

Crash Characteristics: Vehicle Maneuver at Signal-Controlled Intersections

Table E-77. Frequency Counts Used in CIR Calculations by Age (years)

Age	Signal Maneuver	Contribution?		CIR
		Yes	No	
16.5				
	Straight	4	0	-
	Turning Left	0	0	-
17				
	Straight	6	3	2.00
	Turning Left	1	1	1.00
17.5				
	Straight	9	4	2.25
	Turning Left	0	1	0.00
18				
	Straight	10	3	3.33
	Turning Left	1	0	-
18.5				
	Straight	7	3	2.33
	Turning Left	0	1	0.00
19				
	Straight	6	1	6.00
	Turning Left	1	1	1.00
19.5				
	Straight	2	1	2.00
	Turning Left	1	0	-
20				
	Straight	8	3	2.67
	Turning Left	0	1	0.00
20.5				
	Straight	12	6	2.00
	Turning Left	1	2	0.50

Table E-78. Summary of Crash Counts by Age (years)

	Age										
Signal Maneuver	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Straight	-	4	9	13	13	10	7	3	11	18	88
Turning Left	-	0	2	1	1	1	2	1	1	3	12
Total	0	4	11	14	14	11	9	4	12	21	100

Table E-79. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	**Signal Maneuver**	**Contribution?**		**CIR**
		Yes	**No**	
0				
	Straight	1	0	-
	Turning Left	0	0	-
0.5				
	Straight	4	0	-
	Turning Left	1	0	-
1				
	Straight	10	6	1.67
	Turning Left	0	2	0.00
1.5				
	Straight	12	4	3.00
	Turning Left	3	0	-
2				
	Straight	8	2	4.00
	Turning Left	0	2	0.00
2.5				
	Straight	7	1	7.00
	Turning Left	1	0	-
3				
	Straight	4	2	2.00
	Turning Left	0	0	-

Experience	Signal Maneuver	Contribution?		CIR
		Yes	No	
3.5				
	Straight	4	2	2.00
	Turning Left	0	0	-
4				
	Straight	5	3	1.67
	Turning Left	0	1	0.00
4.5				
	Straight	9	3	3.00
	Turning Left	0	2	0.00
5				
	Straight	0	1	0.00
	Turning Left	0	0	-

Table E-80. Summary of Crash Counts by Experience (years)

	Experience												
Signal Maneuver	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Straight	1	4	16	16	10	8	6	6	8	12	1	-	88
Turning Left	0	1	2	3	2	1	0	0	1	2	0	-	12
Total	1	5	18	19	12	9	6	6	9	14	1	0	100

Crash Characteristics: Vehicle Maneuver at Non-Junction Locations

Table E-81. Frequency Counts Used in CIR Calculations by Age (years)

Age	Non-Junction Maneuver	Contribution?		CIR
		Yes	No	
16				
	Changing Lanes/Merging	0	0	-
	Straight	1	0	-
	Negotiating a Curve	0	0	-
	Passing or Overtaking	0	0	-
16.5				
	Changing Lanes/Merging	2	1	2.00
	Straight	10	3	3.33
	Negotiating a Curve	1	3	0.33
	Passing or Overtaking	0	0	-
17				
	Changing Lanes/Merging	1	0	-
	Straight	20	4	5.00
	Negotiating a Curve	4	0	-
	Passing or Overtaking	0	0	-
17.5				
	Changing Lanes/Merging	3	1	3.00
	Straight	20	9	2.22
	Negotiating a Curve	1	1	1.00
	Passing or Overtaking	0	1	0.00
18				
	Changing Lanes/Merging	2	3	0.67
	Straight	29	11	2.64
	Negotiating a Curve	6	2	3.00
	Passing or Overtaking	0	0	-
18.5				
	Changing Lanes/Merging	4	2	2.00

Age	Non-Junction Maneuver	Contribution?		CIR
		Yes	No	
	Straight	16	2	8.00
	Negotiating a Curve	1	0	-
	Passing or Overtaking	0	0	-
19				
	Changing Lanes/Merging	1	1	1.00
	Straight	19	3	6.33
	Negotiating a Curve	1	1	1.00
	Passing or Overtaking	0	0	-
19.5				
	Changing Lanes/Merging	2	2	1.00
	Straight	26	8	3.25
	Negotiating a Curve	1	1	1.00
	Passing or Overtaking	1	0	-
20				
	Changing Lanes/Merging	4	2	2.00
	Straight	37	10	3.70
	Negotiating a Curve	4	2	2.00
	Passing or Overtaking	0	1	0.00
20.5				
	Changing Lanes/Merging	11	3	3.67
	Straight	42	13	3.23
	Negotiating a Curve	1	2	0.50
	Passing or Overtaking	0	0	-

Table E-82. Summary of Crash Counts by Age (years)

	Age										
Non-junction maneuver	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Changing Lanes/Merging	0	3	1	4	5	6	2	4	6	14	227.5
Straight	1	13	24	29	40	18	22	34	47	55	328
Negotiating a Curve	0	4	4	2	8	1	2	2	6	3	315
Passing or Overtaking	0	0	0	1	0	0	0	1	1	0	35
Total	1	20	29	36	53	25	26	41	60	72	905.5

Table E-83. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	**Non-Junction Maneuver**	**Contribution?**		**CIR**
		Yes	**No**	
0				
	Changing Lanes/Merging	0	0	-
	Straight	3	0	-
	Negotiating a Curve	2	0	-
	Passing or Overtaking	0	0	-
0.5				
	Changing Lanes/Merging	4	1	4.00
	Straight	16	4	4.00
	Negotiating a Curve	1	3	0.33
	Passing or Overtaking	0	0	-
1				
	Changing Lanes/Merging	2	1	2.00
	Straight	30	7	4.29
	Negotiating a Curve	5	1	5.00
	Passing or Overtaking	0	0	-
1.5				
	Changing Lanes/Merging	2	1	2.00
	Straight	31	14	2.21
	Negotiating a Curve	2	0	-

Experience	Non-Junction Maneuver	Contribution?		CIR
		Yes	No	
	Passing or Overtaking	0	1	0.00
2				
	Changing Lanes/Merging	3	2	1.50
	Straight	28	7	4.00
	Negotiating a Curve	3	2	1.50
	Passing or Overtaking	0	0	-
2.5				
	Changing Lanes/Merging	5	2	2.50
	Straight	15	4	3.75
	Negotiating a Curve	3	0	-
	Passing or Overtaking	0	0	-
3				
	Changing Lanes/Merging	2	0	-
	Straight	28	4	7.00
	Negotiating a Curve	0	2	0.00
	Passing or Overtaking	0	0	-
3.5				
	Changing Lanes/Merging	2	2	1.00
	Straight	18	7	2.57
	Negotiating a Curve	3	1	3.00
	Passing or Overtaking	0	0	-
4				
	Changing Lanes/Merging	1	3	0.33
	Straight	22	11	2.00
	Negotiating a Curve	0	1	0.00
	Passing or Overtaking	0	0	-
4.5				
	Changing Lanes/Merging	6	1	6.00
	Straight	24	4	6.00

Experience	Non-Junction Maneuver	Contribution?		CIR
		Yes	No	
	Negotiating a Curve	1	2	0.50
	Passing or Overtaking	1	1	1.00
5				
	Changing Lanes/Merging	2	0	-
	Straight	3	0	-
	Negotiating a Curve	0	0	-
	Passing or Overtaking	0	0	-
5.5				
	Changing Lanes/Merging	1	1	1.00
	Straight	0	1	0.00
	Negotiating a Curve	0	0	-
	Passing or Overtaking	0	0	-

Table E-84. Summary of Crash Counts by Experience (years)

	Experience												
Non-junction maneuver	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Changing Lanes/Merging	0	5	3	3	5	7	2	4	4	7	2	2	44
Straight	3	20	37	45	35	19	32	25	33	28	3	1	281
Negotiating a Curve	2	4	6	2	5	3	2	4	1	3	0	0	32
Passing or Overtaking	0	0	0	1	0	0	0	0	0	2	0	0	3
Total	5	29	46	51	45	29	36	33	38	40	5	3	360

Crash Characteristics: Changing Lanes or Merging on Various Types of Roadways

Table E-85. Frequency Counts Used in CIR Calculations by Age (years)

Age	Traffic Flow	Contribution?		CIR
		Yes	No	
16				
	Divided	0	0	-
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	1	0	-
16.5				
	Divided	1	1	1.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	2	0	-
17				
	Divided	2	2	1.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	0	0	-
17.5				
	Divided	7	1	7.00
	Not Divided - Center 2-Way Left-Turn Lane	1	0	-
	Not Divided - Simple 2-Way	0	1	0.00
18				
	Divided	0	3	0.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	2	1	2.00
18.5				
	Divided	4	2	2.00
	Not divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	3	2	1.50
19				
	Divided	4	3	1.33
	Not divided - Center 2-Way Left-Turn Lane	0	0	-

Age	Traffic Flow	Contribution?		CIR
		Yes	No	
	Not Divided - Simple 2-Way	2	1	2.00
19.5				
	Divided	8	2	4.00
	Not divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	0	0	-
20				
	Divided	12	3	4.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	2	1	2.00
20.5				
	Divided	16	5	3.20
	Not Divided - Center 2-Way Left-Turn Lane	3	0	-
	Not Divided - Simple 2-Way	1	4	0.25

Table E-86. Summary of Crash Counts by Age (years)

	Age										
Traffic Flow	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**Total**
Divided	0	2	4	8	3	6	7	10	15	21	76
Not Divided – Center 2-way Left-Turn Lane	0	0	0	1	0	0	0	0	0	3	4
Not Divided - Simple 2-Way	1	2	0	1	3	5	3	0	3	5	23
Total	1	4	4	10	6	11	10	10	18	29	103

Table E-87. Frequency Counts Used in CIR Calculations by Experience (years)

Experience	Traffic Flow	Contribution?		CIR
		Yes	No	
0				
	Divided	0	0	-
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	1	0	-
0.5				
	Divided	3	1	3.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	2	0	-
1				
	Divided	4	4	1.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	0	0	-
1.5				
	Divided	7	1	7.00
	Not Divided - Center 2-Way Left-Turn Lane	1	0	-
	Not Divided - Simple 2-Way	2	2	1.00
2				
	Divided	4	2	2.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	3	0	-
2.5				
	Divided	11	5	2.20
	Not Divided - Center 2-Way Left-Turn Lane	1	0	-
	Not Divided - Simple 2-Way	2	3	0.67
3				
	Divided	5	1	5.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	1	0	-

Experience	Traffic Flow	Contribution?		CIR
		Yes	No	
3.5				
	Divided	4	3	1.33
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	0	1	0.00
4				
	Divided	3	2	1.50
	Not divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	1	1	1.00
4.5				
	Divided	8	1	8.00
	Not Divided - Center 2-Way Left-Turn Lane	2	0	-
	Not Divided - Simple 2-Way	1	2	0.50
5				
	Divided	4	0	-
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	0	0	-
5.5				
	Divided	1	1	1.00
	Not Divided - Center 2-Way Left-Turn Lane	0	0	-
	Not Divided - Simple 2-Way	0	1	0.00

Table E-88. Summary of Crash Counts by Experience (years)

	Experience												
Traffic Flow	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**Total**
Divided	0	4	8	8	6	16	6	7	5	9	4	2	75
Not Divided – center 2-way Left-Turn Lane	0	0	0	1	0	1	0	0	0	2	0	0	4
Not Divided - Simple 2-Way	1	2	0	4	3	5	1	1	2	3	0	1	23
Total	1	6	8	13	9	22	7	8	7	14	4	3	102

DOT HS 813 303B
June 2022

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

15567-061022-v3