

# **Young Driver Crashes in Michigan: 2016-2020**

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## **Special Note**

The Michigan Office of Highway Safety Planning and the University of Michigan Transportation Research Institute acknowledge the differences in traffic and commuting patterns in 2020 due to the COVID-19 pandemic. Travel restrictions from the “Stay Home, Stay Safe” Executive Order (EO 2020-21) were initially in place starting on March 24, 2020. That order was then extended through additional executive orders. The stay-at-home order was officially lifted June 1, 2020.

Overall, the total number of police-reported crashes on Michigan roadways decreased by 21.93 percent, declining from 314,376 in 2019 to 245,432 in 2020. The 2020 fatality count was 1,083, up 9.95 percent from the 2019 figure of 985. Compared with 2019, people sustaining injuries were down 18.65 percent. Vehicle miles traveled, licensed drivers, and vehicle registrations decreased in 2020: vehicle miles traveled decreased 15.53 percent to 86.31 billion, motor vehicle registrations were down 0.49 percent to 9.04 million, and the number of licensed drivers was down 1.86 percent to 7.12 million. The increased fatality count in combination with the reduction of the exposure factors contributed to the fatality rate of 1.25 per 100 million miles of travel, a 30.16 percent increase from 2019 (0.96 per 100 million miles). The 2020 fatality rate is also above the 10-year (2011-2020) average of 1.01 fatalities per 100 million miles.

## 1.0 Executive Summary

This report examines young drivers age 20 and younger who were involved in police-reported crashes in Michigan from 2016-2020. Key findings include:

- In 2020, 41,884 drivers age 20 and younger were involved in police-reported crashes in Michigan, a 22.9% drop from the 2019 total of 54,351, which aligns with the overall decrease in crashes in 2020 due to the pandemic.
- Despite the lower number of crashes involving this age group overall, counts of fatalities and suspected serious injuries were similar to previous years: A total of 135 people were killed in 2020 in crashes involving drivers age 20 and younger and 980 suffered suspected serious injuries.
- Of all drivers under 21 who were involved in crashes from 2016-2020, about two-thirds were age 18 to 20 and one-third were age 17 and younger.
- The share of licensed drivers in Michigan age 15-17 dropped in 2020 to 2.7% from 3.0-3.1% in the years 2016-2019. The percent of drivers age 18-20 has continued to decrease since 2016, but the 2020 proportion (3.9%) was not substantially different from the previous year (4.0%).
- From 2016-2020, 5.5% of all crashes involved a driver age 15-17 and 11.8% involved a driver age 18-20.
- Drivers under the age of 15 in a crash were more likely to have been driving mopeds, go-carts, snowmobiles, and off-road or all-terrain vehicles (ORVs/ATVs) than older drivers.
- Hazardous actions were reported for drivers age 20 and younger more frequently than older drivers. Unable to stop in assured clear distance, failure to yield, and speeding were the most frequently assigned hazardous actions.
- About 32.3% of the crashes with drivers under age 15 took place on the weekends, compared with 20.5% to 23.4% for drivers in older age groups. This may be related to more frequent use of recreational vehicles (e.g., ATVs) by this age group on the weekend.
- Young drivers age 15 to 20 were in more alcohol and drug-involved crashes with each year increase in age. If a crash involved alcohol, young drivers were increasingly likely to be the driver who was drinking as age increases (ranging from 35.2% of drivers age 15 to 68.2% of drivers age 20). For crashes involving drugs, a consistent majority of drivers age 15 to 20 were suspected of using drugs (between 66.7% to 77.5%).

## **2.0 Introduction**

This report examines young drivers, particularly those under the age of 21, who were involved in police-reported traffic crashes in Michigan from 2016-2020. Michigan traffic crashes are defined as taking place on public roadways in Michigan, involving at least one motor vehicle in transport, and resulting in death, injury, or property damage of \$1,000 or more. The report details the share of young drivers among all licensed drivers in Michigan, number of crashes, and numbers of fatalities and injuries resulting from those crashes. The crash distributions of young drivers are compared with those of older drivers across different crash types, road conditions, light conditions, and time of day. The report also investigates the different hazardous actions of young drivers in crashes, as well as their alcohol and drug involvement and restraint use.

In this report, injury severity of people involved in crashes is frequently categorized according to the KABCO scale:

- K - Fatal Injury
- A - Suspected Serious Injury
- B - Suspected Minor Injury
- C - Possible Injury
- O - No Apparent Injury

Similarly, crashes are sometimes classified according to the most severe injury suffered by anyone involved in the crash. Again, the KABCO scale is used, but for O-level severity this refers to crashes with property damage only (PDO) instead of no injury or fatality.

## **3.0 Young Driver Crash Counts and Injury Severity**

### *3.1 Numbers of Young Drivers in Crashes*

Figure 1 shows how many motor vehicle drivers age 20 and younger were involved in police-reported crashes each year from 2016 to 2020. The lowest number of young drivers in crashes occurred in 2020 with 41,884, a decrease of 22.9% from the 54,351 young drivers involved in crashes in 2019. This substantial decrease is likely due to COVID-19 related travel restrictions and other suspended activity. The peak number of young drivers in crashes over this time was in 2016 with 60,702.

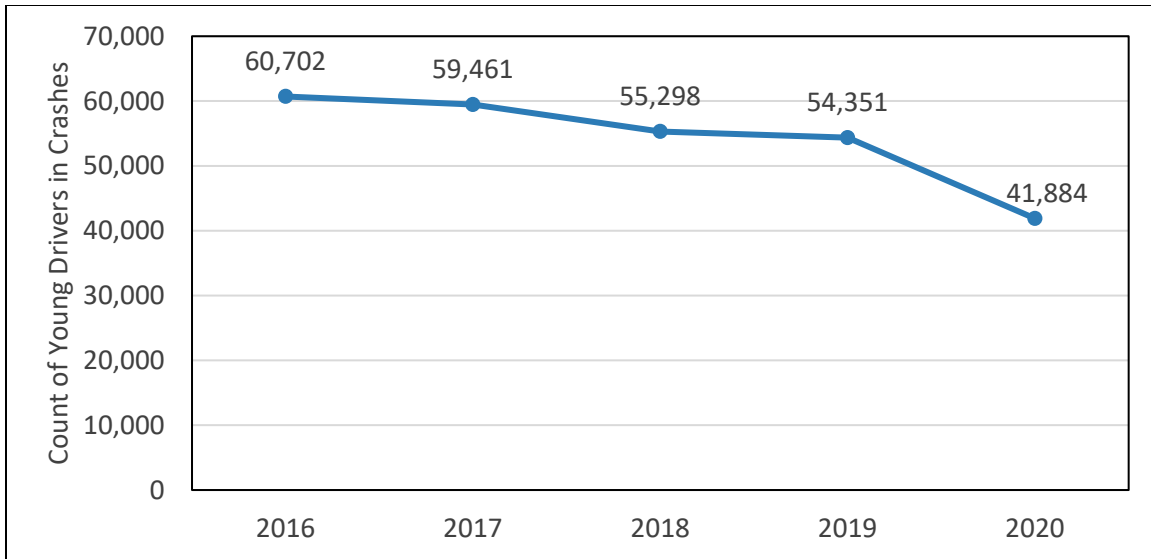


Figure 1 – Drivers Age 20 and Younger Involved in Crashes by Year, 2016-2020

Table 1 shows counts of young drivers involved in crashes each year by single year of age and under age 15 collectively. Table 2 shows the counts group by under 15, 15-17, and 18-20. Of all drivers under the age of 21 who were involved in crashes over the five years, 64.0% were age 18-20 and 32.0% were age 15-17. Drivers age 16 and 17 make up 13.0% and 17.9%, respectively, of the crashes involving drivers under age of 21 while drivers age 18, 19, 20 each make up about 22% of the crashes.

Table 1. Young Drivers in Crashes by Driver Age, 2016-2020

Driver Age	2016	2017	2018	2019	2020	Total	Percent Total
Age ≤ 14	238	262	245	174	199	1,118	0.4%
Age 15	599	592	523	591	566	2,871	1.1%
Age 16	7,789	7,972	7,193	7,386	5,041	35,381	13.0%
Age 17	10,961	10,637	9,998	9,855	7,119	48,570	17.9%
Age 18	13,486	13,104	12,189	11,790	9,069	59,638	22.0%
Age 19	13,878	13,475	12,417	12,284	10,117	62,171	22.9%
Age 20	13,751	13,419	12,733	12,271	9,773	61,947	22.8%
<b>Total</b>	<b>60,702</b>	<b>59,461</b>	<b>55,298</b>	<b>54,351</b>	<b>41,884</b>	<b>271,696</b>	<b>100%</b>

Table 2. Young Drivers in Crashes by Driver Age Group, 2016-2020

Driver Age Group	2016	2017	2018	2019	2020	Total	Percent Total
Age ≤ 14	238	262	245	174	199	1,118	0.4%
Age 15-17	19,349	19,201	17,714	17,832	12,726	86,822	32.0%
Age 18-20	41,115	39,998	37,339	36,345	28,959	183,756	67.6%
<b>Total</b>	<b>60,702</b>	<b>59,461</b>	<b>55,298</b>	<b>54,351</b>	<b>41,884</b>	<b>271,696</b>	<b>100%</b>

### 3.2 Injuries to People Involved in Young Driver Crashes

The counts of people who sustained fatal or suspected serious injuries in crashes involving a young driver are plotted by year in Figure 2. Over the last five years, a total of 665 people died in crashes involving drivers age 20 and younger, averaging 133 per year. Fatalities peaked at 150 in 2016 and were fewest in 2018 at 112. An average of 1004 people per year sustained suspected serious injuries in young driver crashes. The number of suspected serious injuries in young driver crashes peaked in 2017 with 1,162 then dropped 23.7% to 887 in 2018 before rising to 980 in 2020.

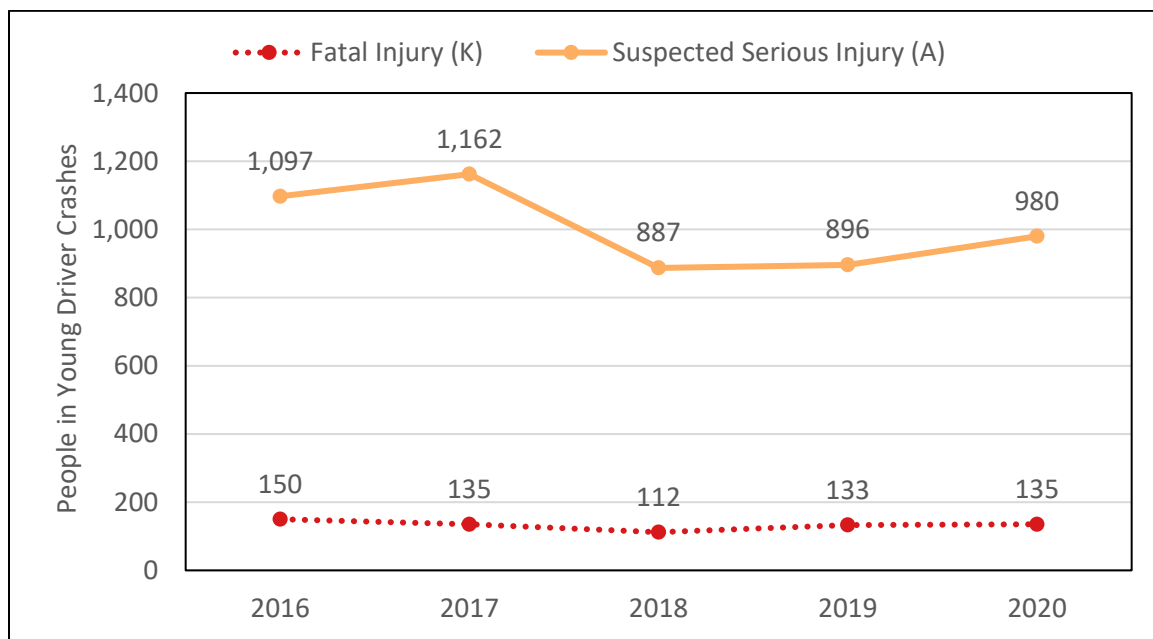


Figure 2 – Fatal or Suspected Serious Injuries in Crashes with a Driver Age 20 or Younger, 2016-2020

Table 3 shows counts of people with all levels of injury severity for drivers under age 15, drivers age 15-17, and drivers age 18-20. Proportion of each injury severity per age group (row %) is included below the count. One crash could potentially be included in more than one group. For example, if a crash involved one driver age 16 and another driver age 18, then people involved in that crash were tallied in both the age 15-17 crash group and the age 18-20 crash group.

Table 3. Counts of People by Injury Severity in Crashes with Young Drivers, 2016-2020

Driver Age	Fatal Injury (K)	Suspected Serious Injury (A)	Suspected Minor Injury (B)	Possible Injury (C)	No Injury (O)	Uncoded & Errors	Total
Age ≤ 14	13 (0.5%)	109 (4.0%)	223 (8.2%)	258 (9.5%)	1,930 (71.2%)	176 (6.5%)	<b>2,709</b> <b>(100.0%)</b>
Age 15-17	162 (0.1%)	1,483 (0.8%)	6,899 (3.5%)	16,664 (8.5%)	166,289 (84.6%)	5,101 (2.6%)	<b>196,598</b> <b>(100.0%)</b>
Age 18-20	496 (0.1%)	3,524 (0.9%)	14,017 (3.5%)	36,599 (9.2%)	331,412 (83.0%)	13,136 (3.3%)	<b>399,184</b> <b>(100.0%)</b>

The injury severity distribution is similar for people involved in a crash with a driver age 15-17 and those involved in a crash with a driver age 18-20. For both groups, 0.1% of the people suffered a fatal injury, 0.8%-0.9% sustained a suspected serious injury, and 3.5% had a suspected minor injury. The injury severity distribution was slightly more severe for people involved in crashes with the youngest group of drivers, those under age 15. Among those individuals, 0.5% suffered a fatality, 4.0% a suspected serious injury, and 8.2% a suspected minor injury.

#### 4.0 Relative Share of Young Drivers and Their Crash Involvement

This section considers the numbers of licensed young drivers and crashes, as well as fatal and serious injuries stemming from those crashes. Table 4 shows the number of licensed drivers age 15-17 (including a small number of licensed drivers under age 15 due to reporting limits and grouping of the licensed driver data) and age 18-20 as a percentage of all licensed drivers in Michigan (source: Michigan Department of State, Office of Information Technology). Except for 2020, drivers age 15-17 made up a fairly consistent percentage of all licensed from year to year (3.0% to 3.1%). In 2020, there were slightly fewer licensed drivers in the 15-17 age group (2.7%). Drivers age 18-20 made up between 3.9% and 4.1% of all licensed drivers. The percentage of licensed drivers age 18-20 was also smallest in 2020 (3.9%) but this was not very different from the previous year (4.0%).

Table 4. Young Licensed Drivers, 2016-2020

Year	Licensed Drivers Age 15-17*	Drivers Age 15-17 Percent	Licensed Drivers Age 18-20	Drivers Age 18-20 Percent	Total Licensed Drivers
2016	221,905	3.1%	300,185	4.2%	7,176,692
2017	221,072	3.1%	298,268	4.1%	7,200,401
2018	218,290	3.0%	295,786	4.1%	7,222,155
2019	217,842	3.0%	291,537	4.0%	7,253,398
2020	194,206	2.7%	279,237	3.9%	7,118,197
<b>Average</b>	<b>214,663</b>	<b>3.0%</b>	<b>293,003</b>	<b>4.1%</b>	<b>7,194,169</b>

\* Age 15-17 Includes a small number of licensed drivers under age 15.

Table 5 shows the percentage of all crashes involving drivers age 15-17 and drivers age 18-20 from 2016 to 2020. Between 5.0% and 5.9% of all crashes involved a driver age 15-17, about double their representation in terms of licensure from Table 4 (2.7% - 3.1%). The smallest proportion of crashes involving a driver 15-17 (5.0%) occurred in 2020, likely related to that year also having the fewest licensed drivers in that age group. From 2016 to 2020, 12.7% to 11.4% of all crashes involved a driver age 18 to 20, even though they make up roughly 4.1% of the licensed drivers each year. The percent of crashes involving a driver 18-20 has been trending downward, from 12.7% in 2016 to 11.2% in 2019. Even though the raw count of crashes involving those age 18-20 was smaller in 2020, this was a small increase proportionally of all crashes (11.4%) from the year before. There were 5,585 crashes that involved both a driver age 15-17 and a driver age 18-20, so those crashes are included in the counts for both age groups in Table 5.



Table 5. Crashes Involving Young Drivers, 2016-2020

Year	Crashes Involving Drivers Age 15-17	Percent of Crashes Involving Drivers Age 15-17	Crashes Involving Drivers Age 18-20	Percent of Crashes Involving Drivers Age 18-20	Total Crashes
2016	18,356	5.9%	39,576	12.7%	312,172
2017	18,248	5.8%	38,452	12.2%	314,921
2018	16,904	5.4%	36,002	11.5%	312,798
2019	17,005	5.4%	35,106	11.2%	314,376
2020	12,322	5.0%	27,964	11.4%	245,432
<b>Total</b>	<b>82,835</b>	<b>5.5%</b>	<b>177,100</b>	<b>11.8%</b>	<b>1,499,699</b>

Table 6 shows the number of fatalities resulting from crashes involving drivers age 15-17 and 18-20 as well as the percentage of these fatalities out of all traffic fatalities for each year. The fatality count reflects anyone who may have died in the crashes, not necessarily the young drivers themselves. The number of fatalities resulting from crashes with drivers age 15-17 generally decreased from 40 in 2016 to 24 in 2018 and 2019 but ticked upwards again in 2020 to 35. Overall, 3.2% of all fatalities occurred in crashes with drivers age 15-17, which is only slightly higher than the share of drivers that age (3.0%). On the other hand, 9.7% of all fatalities resulted from crashes with drivers age 18-20, which is notably higher than the percentage of licensed drivers who are 18-20 (4.1%). Six fatalities resulted from crashes involving both a driver age 15-17 and a driver age 18-20 and are included in the columns for both of those age groups in Table 6.

Table 6. Fatalities in Crashes Involving Young Drivers, 2016-2020

Year	Fatalities Involving Drivers Age 15-17	Percent of Fatalities Involving Drivers Age 15-17	Fatalities Involving Drivers Age 18-20	Percent of Fatalities Involving Drivers Age 18-20	Total Fatalities
2016	40	3.8%	107	10.1%	1,064
2017	39	3.8%	99	9.6%	1,028
2018	24	2.5%	85	8.7%	974
2019	24	2.4%	106	10.8%	985
2020	35	3.2%	99	9.1%	1,083
<b>Total</b>	<b>162</b>	<b>3.2%</b>	<b>496</b>	<b>9.7%</b>	<b>5,134</b>

Similar data is presented in Table 7 but for suspected serious injuries resulting from crashes with young drivers. Overall, 5.2% of people with suspected serious injuries were injured in crashes involving a driver 15-17. This percentage was lower in 2018 and 2019 (both 4.7%) before rising to 5.5%, in line with the 2016 and 2017 proportions of serious suspected injuries involving drivers age 15-17. About 12.4% of people with suspected serious injuries were injured in crashes involving a driver 18-20. Again, this proportion had seen decreases in 2018 and 2019 before rising again in 2020. For both age groups the overall percentages are higher than were observed for that age groups' share of all licensed drivers.

There were 88 people who suffered suspected serious injuries in crashes that involved both a driver age 15-17 and a driver age 18-20. These 88 are tallied under both age group columns in Table 7.

Table 7. Suspected Serious Injuries in Crashes Involving Young Drivers, 2016-2020

Year	Suspected Serious Injuries Involving Drivers Age 15-17	Percent of Suspected Serious Injuries Involving Drivers Age 15-17	Suspected Serious Injuries Involving Drivers Age 18-20	Percent of Suspected Serious Injuries Involving Drivers Age 18-20	Total Suspected Serious Injuries
2016	320	5.7%	764	13.6%	5,634
2017	339	5.6%	833	13.7%	6,084
2018	260	4.7%	629	11.3%	5,586
2019	265	4.7%	626	11.1%	5,629
2020	299	5.5%	672	12.4%	5,433
<b>Total</b>	<b>1,483</b>	<b>5.2%</b>	<b>3,524</b>	<b>12.4%</b>	<b>28,366</b>

## 5.0 Vehicle Type, Crash Type, and Hazardous Action

### 5.1 Vehicle Type

Table 8 shows counts and proportions of drivers in crashes by age group and the type of vehicle they were driving. About 61.4% of the youngest drivers, those under age 15, were driving a passenger car, SUV, or van, compared with 87.7% to 89.6% of drivers in the next three older age groups (15-17, 18-20, and 21-24). Drivers under 15 were relatively more likely to have been driving mopeds, go-carts, snowmobiles, and off-road or all-terrain vehicles (ORVs and ATVs). The ORV/ATV category was the most striking—about 15.2% of all drivers under 15 in crashes were driving these vehicles, compared with 0.2% or less of drivers in any of the other four age groups. These youngest drivers may be taking advantage of the fact that they can legally operate these vehicles with few restrictions (e.g., direct supervision, valid ORV safety certificate). However, they do not have the necessary experience and judgement capacity to drive these vehicles safely (see also 5.3 Hazardous Action).

Table 8. Drivers in Crashes by Vehicle Type and Age Group, 2016-2020

Vehicle Type	Age ≤ 14	Age 15-17	Age 18-20	Age 21-24	Age 25+	Unknown	Total
Passenger Car, SUV, Van	687 (61.4%)	77,814 (89.6%)	164,245 (89.4%)	210,848 (87.7%)	1,470,396 (81.5%)	152,586 (64.4%)	2,076,576 (81.3%)
Motor Home	3 (0.3%)	255 (0.3%)	566 (0.3%)	903 (0.4%)	11,363 (0.6%)	1,020 (0.4%)	14,110 (0.6%)
Pickup Truck	61 (5.5%)	7,720 (8.9%)	15,948 (8.7%)	21,527 (9.0%)	224,515 (12.4%)	19,065 (8.0%)	288,836 (11.3%)
Small Truck (< 10,000)	3 (0.3%)	277 (0.3%)	781 (0.4%)	1,331 (0.6%)	11,798 (0.7%)	1,434 (0.6%)	15,624 (0.6%)
Motorcycle	32 (2.9%)	115 (0.1%)	676 (0.4%)	1,458 (0.6%)	12,219 (0.7%)	477 (0.2%)	14,977 (0.6%)
Moped/Goped	72 (6.4%)	238 (0.3%)	267 (0.1%)	210 (0.1%)	1,169 (0.1%)	93 (0.0%)	2,049 (0.1%)
Go-Cart/Golf Cart	35 (3.1%)	29 (0.0%)	15 (0.0%)	10 (0.0%)	103 (0.0%)	28 (0.0%)	220 (0.0%)
Snowmobile	20 (1.8%)	28 (0.0%)	30 (0.0%)	40 (0.0%)	424 (0.0%)	16 (0.0%)	558 (0.0%)
Off-Road Vehicle	170 (15.2%)	189 (0.2%)	159 (0.1%)	148 (0.1%)	943 (0.1%)	73 (0.0%)	1,682 (0.1%)
Truck/Bus	3 (0.3%)	33 (0.0%)	676 (0.4%)	3,122 (1.3%)	62,888 (3.5%)	3,182 (1.3%)	69,904 (2.7%)
Other	30 (2.7%)	93 (0.1%)	305 (0.2%)	609 (0.3%)	7,389 (0.4%)	2,014 (0.9%)	10,440 (0.4%)
Uncoded & Errors	2 (0.2%)	31 (0.0%)	88 (0.0%)	138 (0.1%)	871 (0.0%)	56,923 (24.0%)	58,053 (2.3%)
<b>Total</b>	<b>1,118 (100.0%)</b>	<b>86,822 (100.0%)</b>	<b>183,756 (100.0%)</b>	<b>240,344 (100.0%)</b>	<b>1,804,078 (100.0%)</b>	<b>236,911 (100.0%)</b>	<b>2,553,029 (100.0%)</b>

### 5.2 Crash Type

Figure 3 shows distributions of crash involvements by the type of crash for passenger vehicle drivers in five different age groups (14 and under, 15-17, 18-20, 21-24, and 25 and older). The analysis is restricted to passenger vehicle drivers for a more equal comparison across driver age groups (see Table 8). The categories of crash type are single vehicle, head-on (including head-on left turn), angle, rear-end (includes rear-end on right and left turns), sideswipe (includes same and opposite directions), backing, and other or unknown crash types.

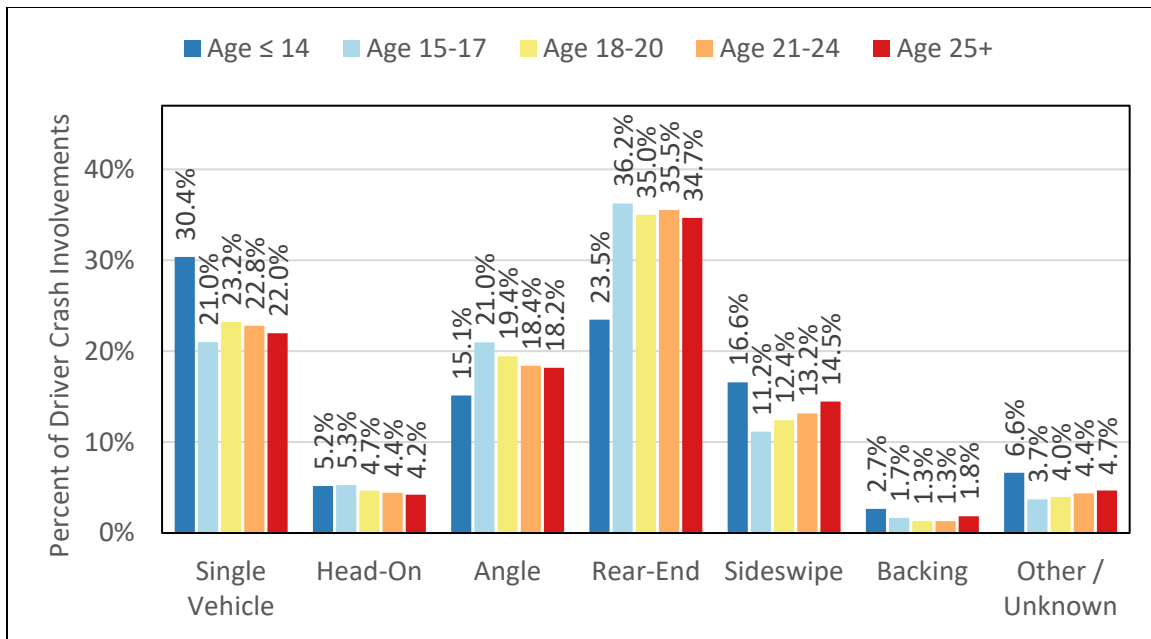


Figure 3 – Crash Type Distributions for Passenger Vehicle Drivers by Age Group, 2016-2020

Differences in crash type distributions among the four driver age groups above age 15 are subtle. The proportion of head-on and angle crashes appears to decrease slightly as age increases. This is consistent with the idea that the judgment involved when turning left across opposing traffic is something that improves with age and driving experience. Sideswipe crashes increase slightly in frequency with age for the age groups 15-17 years and higher.

The crash type distribution for drivers age 14 and under is different than the crash type distributions of the other driver age groups. About 30.4% of the crash involvements with the youngest drivers were in single-vehicle collisions, compared with 21.0% to 23.2% for the other driver age groups. Conversely, only 23.5% of the crash involvements with the youngest drivers were in rear-end crashes, compared with 34.7% to 36.2% for the other driver age groups. Sideswipe crashes made up higher percentages of the crash involvements of drivers age 14 and younger compared with the other age groups, suggesting the youngest drivers have greater lane control difficulties.

### 5.3 Hazardous Action

The hazardous action variable indicates whether the reporting officer thought a driver's actions contributed to the crash. Younger drivers were more likely than older drivers to have been assigned a hazardous action. Excluding unknowns and uncoded, hazardous actions were coded for 68.8% of drivers age 14 or younger, 65.3% of drivers age 15-17, 60.4% of drivers age 18-20, 53.8% of drivers age 21-24, and 39.2% of drivers age 25 and older. This aligns with the data in the previous section on crash type suggesting increased driver experience contributes to improved roadway maneuver judgement.

Figure 4 shows a visual comparison of the 6 most common hazardous actions for drivers of all types of vehicles by age group. This figure and percentage calculation exclude drivers who were not assigned a hazardous action as well as designations of unknown, uncoded, or coding errors. The category "Other Hazardous Actions" includes nine values of other, improper passing, improper turn, improper/no signal,

improper backing, reckless driving, speed too slow, drove left of center, and drove wrong way. Among these hazardous action groupings for ages 15 or higher, unable to stop in assured clear distance is the most common hazardous action (31.4% to 35.3%), followed by failure to yield (17.6% to 23.2%) and speed too fast (12.6% to 23.2%), where drivers age 25+ show a sharp drop in speeding compared to younger age groups. For drivers age 14 and under, the most common single hazardous action was speeding (18.1%). Drivers age 14 and under also had a higher proportion of the 9 grouped actions labeled “Other Hazardous Actions” (33.7%) compared to the other age groups (11.9% to 18.3%), careless/negligent driving (11.4% compared to a range of 5.1% to 6.1%), and disregarding traffic control (7.0% compared to a range of 3.7% to 4.7%).

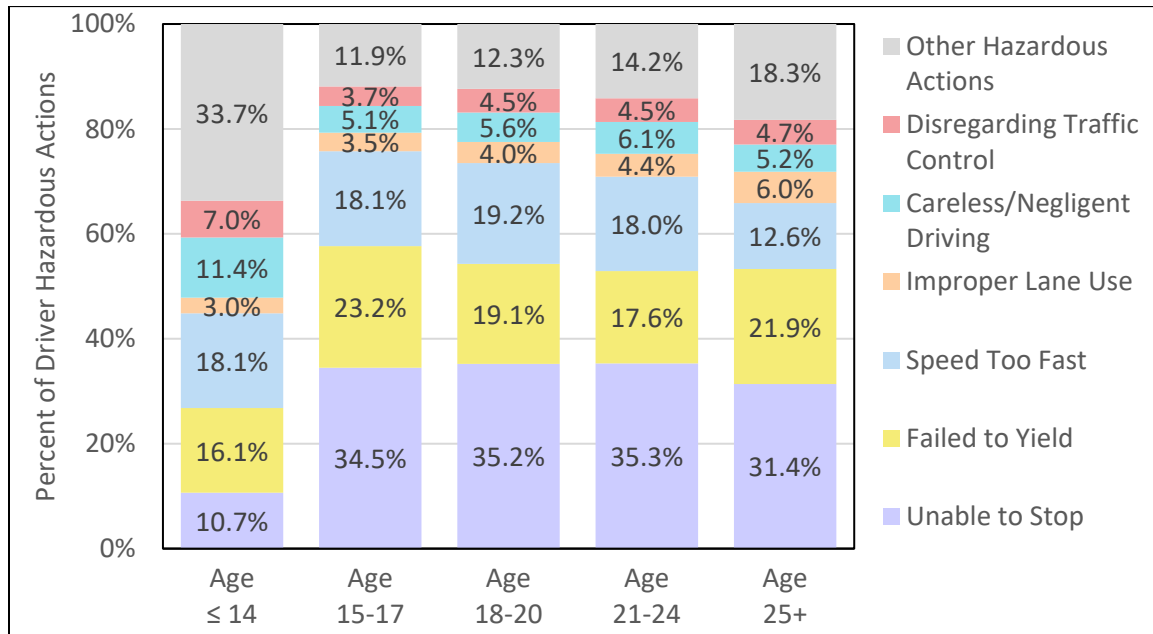


Figure 4 – Hazardous Action Distributions for Drivers by Age Group, 2016-2020

Table 9 shows the distributions of all the code levels of the hazardous action variable in each driver age group, including “none” and “unknown.” The table has complete counts for all the less frequently coded hazardous actions that were not included in Figure 4.

Table 9. Drivers in Crashes by Hazardous Action and Age Group, 2016-2020

Hazardous Action	Age ≤ 14	Age 15-17	Age 18-20	Age 21-24	Age 25+	Age Unknown	Total
None	252 (22.5%)	28,499 (32.8%)	68,132 (37.1%)	104,133 (43.3%)	1,042,596 (57.8%)	54,807 (23.1%)	1,298,419 (50.9%)
Speed Too Fast	139 (12.4%)	10,248 (11.8%)	21,285 (11.6%)	23,246 (9.7%)	88,921 (4.9%)	4,710 (2.0%)	148,549 (5.8%)
Speed Too Slow	1 (0.1%)	57 (0.1%)	96 (0.1%)	140 (0.1%)	815 (0.0%)	83 (0.0%)	1,192 (0.0%)
Failed To Yield	124 (11.1%)	13,150 (15.1%)	21,154 (11.5%)	22,751 (9.5%)	155,247 (8.6%)	9,469 (4.0%)	221,895 (8.7%)
Disregard Traffic Control	54 (4.8%)	2,105 (2.4%)	5,013 (2.7%)	5,826 (2.4%)	33,219 (1.8%)	5,282 (2.2%)	51,499 (2.0%)
Drove Wrong Way	6 (0.5%)	56 (0.1%)	130 (0.1%)	198 (0.1%)	1,214 (0.1%)	345 (0.1%)	1,949 (0.1%)
Drove Left of Center	15 (1.3%)	446 (0.5%)	820 (0.4%)	1,117 (0.5%)	8,108 (0.4%)	1,623 (0.7%)	12,129 (0.5%)
Improper Passing	7 (0.6%)	403 (0.5%)	970 (0.5%)	1,241 (0.5%)	8,522 (0.5%)	2,530 (1.1%)	13,673 (0.5%)
Improper Lane Use	23 (2.1%)	2,011 (2.3%)	4,472 (2.4%)	5,637 (2.3%)	42,428 (2.4%)	9,292 (3.9%)	63,863 (2.5%)
Improper Turn	26 (2.3%)	1,023 (1.2%)	2,025 (1.1%)	2,416 (1.0%)	18,114 (1.0%)	2,045 (0.9%)	25,649 (1.0%)
Improper/No Signal	0 (0.0%)	84 (0.1%)	154 (0.1%)	202 (0.1%)	1,613 (0.1%)	156 (0.1%)	2,209 (0.1%)
Improper Backing	35 (3.1%)	1,325 (1.5%)	2,153 (1.2%)	2,611 (1.1%)	26,592 (1.5%)	3,204 (1.4%)	35,920 (1.4%)
Unable to Stop in Assured Clear Distance	82 (7.3%)	19,550 (22.5%)	39,057 (21.3%)	45,644 (19.0%)	222,026 (12.3%)	16,874 (7.1%)	343,233 (13.4%)
Reckless Driving	57 (5.1%)	429 (0.5%)	1,031 (0.6%)	1,626 (0.7%)	6,801 (0.4%)	2,480 (1.0%)	12,424 (0.5%)
Careless/Negligent Driving	88 (7.9%)	2,891 (3.3%)	6,233 (3.4%)	7,851 (3.3%)	36,619 (2.0%)	6,843 (2.9%)	60,525 (2.4%)
Other	112 (10.0%)	2,930 (3.4%)	6,311 (3.4%)	8,766 (3.6%)	57,610 (3.2%)	5,502 (2.3%)	81,231 (3.2%)
Unknown	97 (8.7%)	1,564 (1.8%)	4,643 (2.5%)	6,794 (2.8%)	52,464 (2.9%)	83,768 (35.4%)	149,330 (5.8%)
Uncoded & Errors	0 (0.0%)	51 (0.1%)	77 (0.0%)	145 (0.1%)	1,169 (0.1%)	27,898 (11.8%)	29,340 (1.1%)
<b>Total</b>	<b>1,118 (100.0%)</b>	<b>86,822 (100.0%)</b>	<b>183,756 (100.0%)</b>	<b>240,344 (100.0%)</b>	<b>1,804,078 (100.0%)</b>	<b>236,911 (100.0%)</b>	<b>2,553,029 (100.0%)</b>

## 6.0 Temporal Factors

### 6.1 Day of Week

Figure 5 shows the distribution of drivers in crashes by age group and day of the week. The crash involvement distributions by day of week were nearly identical between the 18-20 and 21-24 driver age groups. Both of those groups had relatively more crash involvements on the weekends and fewer on the weekdays compared with the 15-17 group and the 25 and older group. Drivers under 15 had a much higher share of their crashes on Saturdays and Sundays compared with all the other age groups. About 32.0% of the crash involvements of drivers under 15 took place on the weekends, whereas 20.1%-23.0% of crash involvements of drivers in the older age groups were on weekends. The difference is likely partially due to relatively more driving of ATVs and similar vehicles by the youngest drivers compared with older drivers (see Table 8), since ATV-riding is likely concentrated on the weekends. The requirement for drivers under 15 to drive with a licensed adult in the vehicle may also be a factor in the relatively high percentage of weekend crashes.

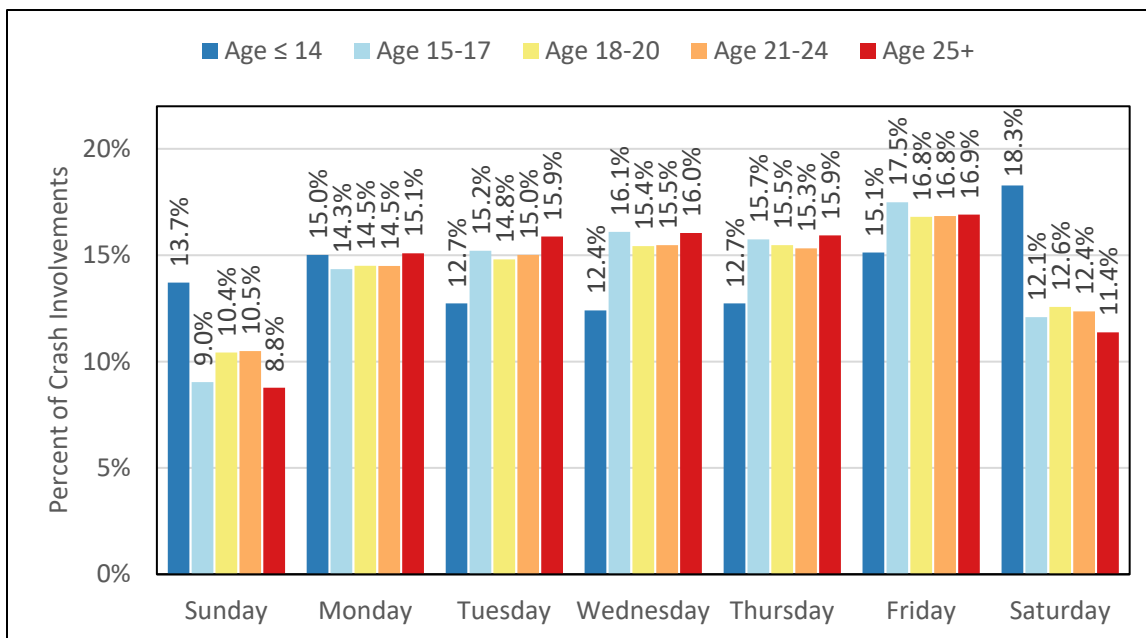


Figure 5 – Distribution of Crash Involvements by Day of Week for Drivers by Age Group, 2016-2020

### 6.2 Time of Day

Figure 6 shows the distribution of crash involvements of the different driver age groups across three-hour time blocks. The peak period for crash involvements for all the age groups was in the afternoon, from 3:00-6:00 p.m. This time was especially prevalent among drivers age 15-17 (29.6% of their crash involvements). Drivers age 18-20 and 21-24 had relatively more crash involvements in the three hours prior to midnight than drivers of other ages.

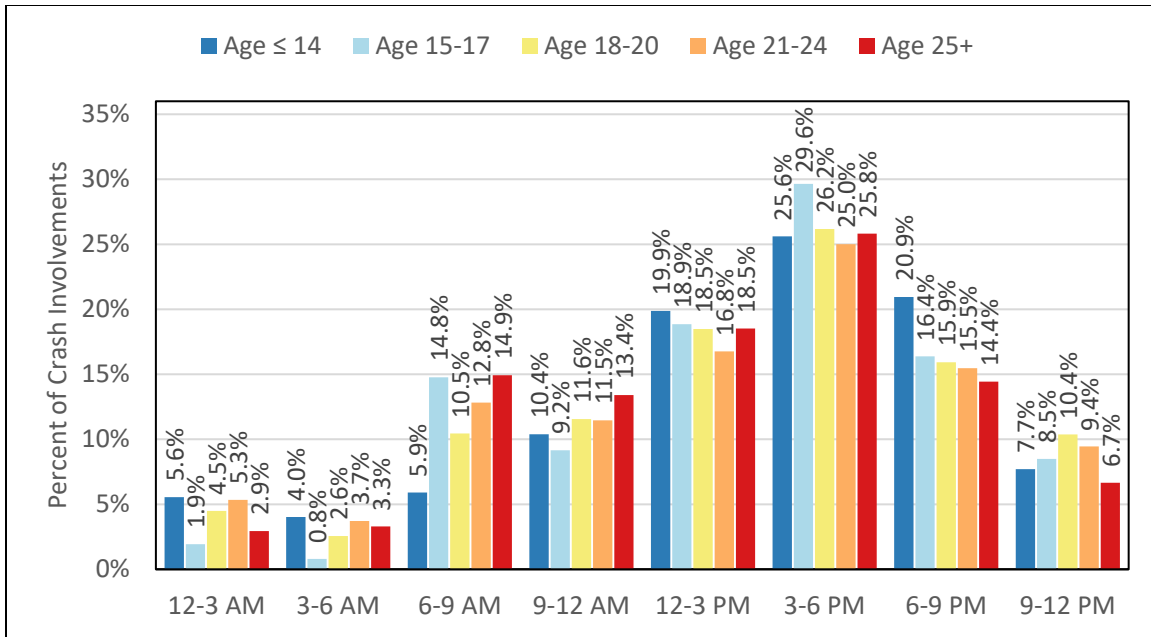


Figure 6 – Distribution of Crash Involvements by Time of Day for Drivers by Age Group, 2016-2020

## 7.0 Environmental Conditions

### 7.1 Light Conditions

Figure 7 presents the distribution of drivers by light condition and five driver age groups. Cases coded as other or unknown light condition have been excluded (about 0.5% of cases with known ages). The youngest group of drivers, those under 15, had the highest percentage of crash involvements in daylight (72.5% of their involvements). The percentage of daylight involvements decreased with each of the next three older age groups, down to 64.9% of the crash involvements of drivers 21-24. The percentage of daylight involvements was 69.4% for drivers 25 and older, on par with the 15-17 driver age group, likely reflecting more daytime driving overall from these age groups.

It follows that the pattern for crash involvements in dark unlighted conditions was the reverse of the daylight pattern. The percentage of dark unlighted involvements was 7.8% for drivers under 15 and increased up to 14.7% of the crash involvements of drivers 21-24. Crash involvements in dark unlighted conditions accounted for 13.5% of the crash involvements of drivers age 25 and older. Exposure likely accounts for most of these differences—driver age groups with relatively fewer daytime crash involvements were probably doing more of their driving in dark conditions.



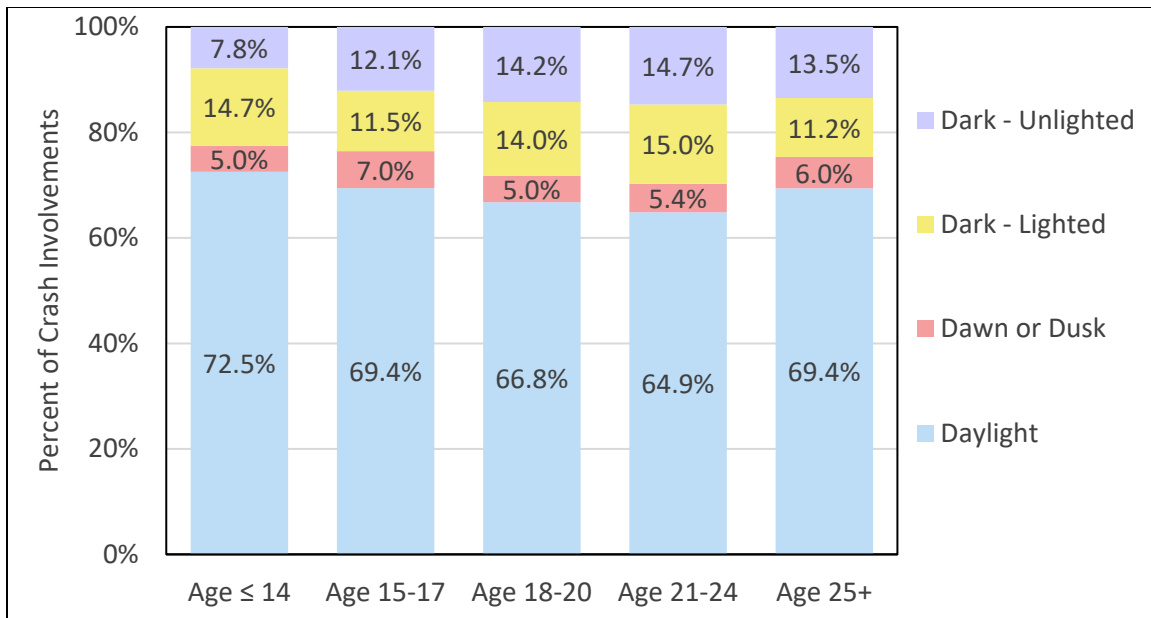


Figure 7 – Distribution of Crash Involvements by Light Condition for Drivers by Age Group, 2016-2020

## 7.2 Road Conditions

The distributions of road conditions for crashes are shown for the five driver age groups in Figure 8. The “other/unknown” category contains the remaining small values of mud/dirt/gravel, debris, water, sand, oily, other, unknown, and missing values. Road condition distributions were very similar for crash involvements of drivers age 15-17, 18-20, and 21-24. From 65.8% to 67.5% of the crash involvements for drivers in those age groups were on dry roads, compared with 73.7% of the involvements for the youngest drivers and 71.1% of the involvements for drivers 25 and older. Conversely, drivers between 15 and 24 had higher proportions of crash involvements on wet, icy, snowy, and slushy roads compared with the youngest drivers or those 25 and older. Both exposure and experience may be factors in the observed road condition distributions for involvements at different ages. The high percentage of dry road crash involvements for drivers under 15 may indicate they were not driving as much during unfavorable road conditions. The higher percentages of crash involvements on wet, icy, snowy, and slushy roads for drivers 15-24 compared with drivers 25 and older may reflect the inexperience of younger drivers with unfavorable road conditions.

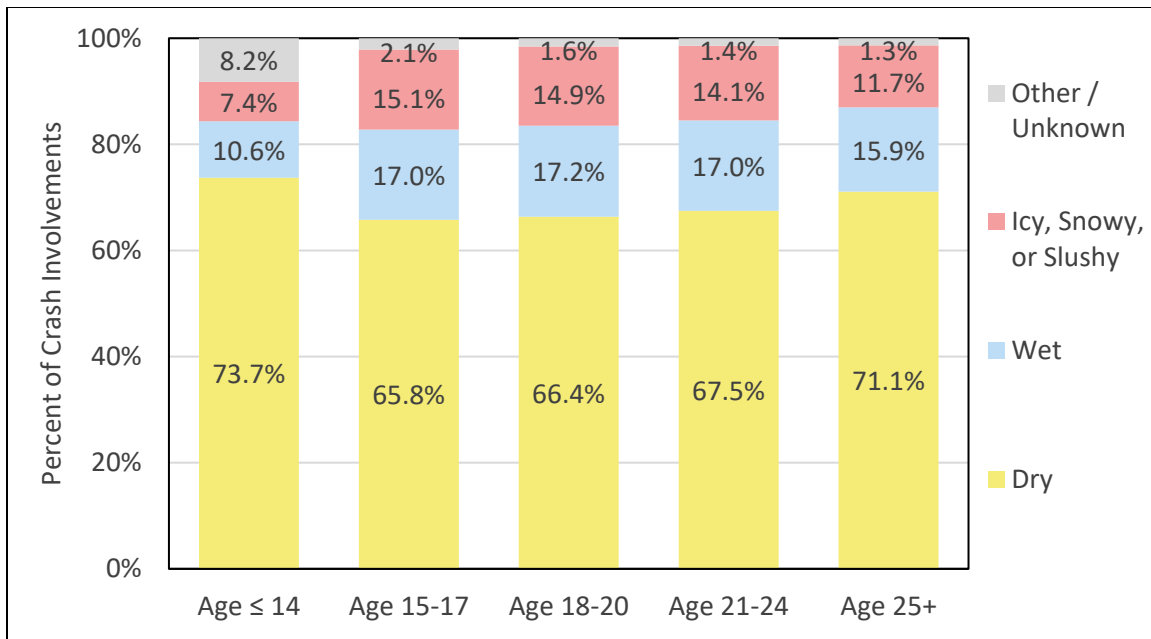


Figure 8 – Distribution of Crash Involvements by Road Condition for Drivers by Age Group, 2016-2020

## 8.0 Driver Factors

### 8.1 Impairment

Table 10 illuminates the scope of young drivers' involvement in alcohol-involved crashes. Although alcohol-involved crashes featuring drivers age 15-20 were a relatively small percent of same-age crashes, large proportions of these alcohol-involved crashes occurred when that young driver had been drinking. For example, there were 849 alcohol-involved crashes involving drivers age 18. In those crashes, 483 18-year-old drivers were drinking out of 856 drivers that age in alcohol-involved crashes, or 56.4%.

With each successive year of driver age from age 16 to 20, a higher percentage of the crashes involved alcohol and a greater proportion of drivers had been drinking in those crashes. The final column in table 10 is particularly interesting. It indicates that less than 40% of the drivers age 15 and 16 who were in alcohol-involved crashes were themselves drinking, but the percentage increased in each older age group. About 68.2% of drivers age 20 who were in alcohol-involved crashes were themselves drinking. In other words, the closer drivers were to age 21 (the legal drinking age), the greater their percentage of drinking drivers in alcohol-involved crashes.

Table 10. Young Drivers and Alcohol-Involved Crashes, 2016-2020

Age	Alcohol-Involved Crashes	Total Crashes	Percent of Crashes Involving Alcohol	Drinking Drivers	Total Drivers	Percent of Drivers Drinking	Drivers in Alcohol-Involved Crashes	Percent of Drivers Drinking in Alcohol-Involved Crashes
15	54	2,865	1.9%	19	2,871	0.7%	54	35.2%
16	245	34,460	0.7%	91	35,381	0.3%	245	37.1%
17	486	47,336	1.0%	223	48,570	0.5%	489	45.6%
18	849	58,855	1.4%	483	59,638	0.8%	856	56.4%
19	1,202	61,360	2.0%	759	62,171	1.2%	1,209	62.8%
20	1,473	61,057	2.4%	1,013	61,947	1.6%	1,485	68.2%

Table 11 has similar data for crashes involving drugs and drug use by young drivers. Drivers age 15-20 were in fewer crashes involving drugs than alcohol, and fewer young drivers were reported to have been using drugs than alcohol. Like alcohol-involvement, the numbers of drug-involved crashes and drivers who used drugs in those crashes increased with each year of driver age from age 15 through age 20. The final column shows that the percentage of drivers in each age group using drugs in drug-involved crashes increased with each year of age from 16 through 19, ranging from 66.7% of drivers age 16 to 77.5% of drivers age 19.

Table 11. Young Drivers and Drug-Involved Crashes, 2016-2020

Age	Drug-Involved Crashes	Total Crashes	Percent of Crashes Involving Drugs	Drivers Using Drugs	Total Drivers	Percent of Drivers Using Drugs	Drivers in Drug-Involved Crashes	Percent of Drivers Using Drugs in Drug-Involved Crashes
15	24	2,865	0.8%	17	2,871	0.6%	24	70.8%
16	129	34,460	0.4%	86	35,381	0.2%	129	66.7%
17	243	47,336	0.5%	171	48,570	0.4%	245	69.8%
18	424	58,855	0.7%	312	59,638	0.5%	429	72.7%
19	520	61,360	0.8%	407	62,171	0.7%	525	77.5%
20	572	61,057	0.9%	440	61,947	0.7%	583	75.5%

## 8.2 Seat Belt Use

To look at belt use patterns, drivers were restricted to those driving passenger vehicles. As such, vehicles like ATVs, motorcycles, or mopeds that do not typically have belts were not included. Drivers were considered belted if they were coded as using a shoulder belt only, lap belt only, both lap and shoulder belt, or restraint failure. Unbelted drivers were defined as those with no belts available or no belts used at the time of the crash. All other levels of restraint use (e.g., child restraint used, helmet used, other, unknown) were excluded from the data shown in Table 12.

Table 12. Passenger Vehicle Drivers by Belt Use and Age Group, 2016-2020

Belt Use	Age ≤ 14	Age 15-17	Age 18-20	Age 21-24	Age 25+	Unknown	Total
Belted	496 (91.5%)	83,273 (99.4%)	172,504 (99.2%)	220,650 (99.0%)	1,629,444 (99.3%)	669 (74.6%)	<b>2,107,036 (99.2%)</b>
Unbelted	46 (8.5%)	491 (0.6%)	1,453 (0.8%)	2,148 (1.0%)	11,867 (0.7%)	228 (25.4%)	<b>16,233 (0.8%)</b>

Drivers in the 15-17, 18-20, and 25 and older age groups were at or above the overall belt use rate of 99.2% in crashes. Drivers age 21-24 were slightly below the overall rate, at 99.0%. The data indicate a much higher proportion of drivers under age 15 were not belted. About 8.5% of the passenger vehicle drivers under 15 were coded as unbelted (91.5% were belted) compared to only 1.0% or less of drivers in each the other age groups. Low belt use among drivers under 15 in a crash may be partly due to coding anomalies and unusual circumstances, along with very low driver counts. These would include drivers of unknown age being inadvertently coded as age 0, small children left unattended in a vehicle who were able to put the car in motion, or underage and unlicensed drivers.

## 9.0 Summary

In 2020, 41,884 drivers age 20 and younger were involved in police-reported crashes in Michigan, a 22.9% drop from the 2019 total. Of all drivers 20 and younger who were involved in crashes from 2016-2020, about two-thirds were age 18 to 20 and about one-third were age 17 and younger. A total of 135 people were killed in 2020 in crashes involving drivers age 20 and younger, and 980 had suspected serious injuries.

Hazardous actions were reported for younger drivers more frequently than older drivers. Unable to stop in assured clear distance, failure to yield, and speeding were the top hazardous actions for all young drivers. Young driver crashes involving alcohol or drugs generally increased with each year of age. Given that a crash involved alcohol impairment, young drivers were increasingly likely to be the driver who was drinking as age increased from 35.2% of drivers age 15 to 68.2% of drivers age 20. Young drivers were also more likely to be the driver who was using drugs with proportions increasing across 16- to 19-year-olds, ranging from 66.7% to 77.5%.