Analysis Report: Alcohol- and Drug-Involved Crashes in Michigan (2018-2022)

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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 and 2021 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.

The total number of police-reported crashes on Michigan roadways decreased from 2019 to 2020 by 21.9%, declining from 314,376 in 2019 to 245,432 in 2020, and then in 2021 increased slightly to 282,640 crashes which is still 10.1% less than the 2019 crash total. There were 293,341 crashes in 2022, up 3.8% from 2021, but still 6.7% less than in 2019. Despite the lower amount of crashes since 2019, the fatality count increased from 985 in 2019, to 1,083 in 2020 (9.9% increase from 2019), 1,131 in 2021 (14.8% increase from 2019), and 1,123 in 2022 (14.0% increase from 2019). In 2020, there was a decrease in vehicle miles traveled, licensed drivers, and vehicle registrations: vehicle miles traveled decreased 15.5% to 86.31 billion, motor vehicle registrations were down 0.5% to 9.04 million, and the number of licensed drivers was down 1.9% to 7.12 million. The increased 2020 fatality count in combination with the reduction of the exposure factors contributed to a fatality rate of 1.25 per 100 million miles of travel, a 30.2% 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. In 2021, vehicle miles traveled was still 5.3% less than 2019 at 96.74 billion miles, and the fatality rate was 1.17 fatalities per 100 million miles of travel – a slight decrease from the 2020 fatality rate but still much higher than the 2011-2020 average rate. In 2022, vehicle miles traveled decreased to 95.89, with the fatality rate the same as in 2021, at 1.17 fatalities per 100 million miles of travel.

1.0 Executive Summary

This report utilizes police-reported crash data in Michigan from 2018 through 2022 to study the impact of both alcohol and drug impaired driving on crash trends. Highlights include:

- In 2022, there were 9,331 alcohol-involved crashes after a five-year low of 9,078 in 2020 and a five-year high of 9,787 in 2019. Alcohol-involved fatal crashes reached a five-year high of 336 in 2021.
- In 2022, there were 2,452 drug-involved crashes after a five-year high of 3,040 in 2020. Drug-involved fatal crashes reached a five-year high of 259 in 2021.
- Of the 2,452 drug-involved crashes in 2022, there were 694 crashes and 137 fatal crashes that involved a motor vehicle driver with a positive cannabinoid test.
- Fatal crashes with alcohol-only impairment occurred at a rate 10.9 times higher than crashes with no impairment involved, drug-only impairment fatal crashes were 39.8 times higher, and combined alcohol- and drug-involved fatal crashes occurred at a rate 44.0 times higher.
- Drivers impaired by either alcohol or drugs had a higher frequency of single vehicle and head-on crashes than non-impaired drivers.
- Both alcohol-involved and drug-involved crashes had higher rates on weekends with a peak on Saturday (22.1% of alcohol-involved crashes, and 16.6% of drug-involved crashes).
- Alcohol-involved crashes were more likely to occur at night, with a peak between 10 PM and 11 PM (8.3% of alcohol-involved crashes), while drug-involved crashes peaked between 6 PM and 7 PM (6.1% of drug-involved crashes).
- A comparison of traffic units (motor vehicle, pedestrian, bicycle, or train engineer) in crashes that were drinking alcohol or using drugs showed that for pedestrians involved in crashes, 7.6% were drinking and 1.7% were using drugs, for bicyclists involved in crashes, 2.5% were drinking and 0.3% were using drugs, and for motor vehicle drivers in crashes, 1.9% were drinking and 0.6% were using drugs.
- Impaired motor vehicle drivers were more frequently male than female for both alcohol-involved crashes (71.7% male) and drug-involved crashes (71.0% male).
- Motor vehicle drivers age 26-30 years old had the highest frequency of alcohol-involved crashes (17.7% of all ages) and similarly drivers age 26-30 had the highest frequency of drug-involved crashes (17.5% of all ages).

2.0 Introduction

This report analyzes police-reported motor vehicle crashes involving alcohol and/or drug impairment in Michigan from 2018 through 2022. Alcohol-involvement and/or drug-involvement in crashes is defined as impairment by a motor vehicle driver, a pedestrian, or a bicyclist at the time of the crash. Michigan traffic crashes must take place on public roadways in Michigan, involve at least one motor vehicle in transport, and result in death, injury, or property damage of $1,000 or more. Crash data was used to study the impact of both alcohol and drug impaired driving on crash severity and crash type, as well as the other factors that confound and influence impaired driving, including temporal elements, speed limit, and driver demographics. Blood alcohol content (BAC) and drug test results are explored to determine usage trends. A section on combined alcohol and drug involvement in crashes examines differences from single impairment crashes.

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 Crash Count Trends

Table 1 and Figure 1 display the number of alcohol-involved and drug-involved total crashes and fatal crashes between 2018 and 2022. Alcohol-involved crashes occurred at about 3.5 times the rate of drug-involved crashes. Within the last five years, alcohol-involved crashes reached a high in 2019 of 9,787 and a low in 2020 of 9,078 crashes, drug-involved crashes reached a high of 3,040 in 2020 and a low of 2,452 in 2022. In 2021, fatal crashes reached a five-year high for both alcohol-involved crashes (336) and drug-involved crashes (259).

Table 1. Alcohol- and Drug-Involved Crashes by Year

Impairment	Measure	2018	2019	2020	2021	2022	Total
Alcohol-Involved	Crashes	9,786	9,787	9,078	9,557	9,331	**47,539**
	Fatal Crashes	287	266	303	336	301	**1,493**
Drug-Involved	Crashes	2,636	2,598	3,040	2,999	2,452	**13,725**
	Fatal Crashes	220	214	250	259	229	**1,172**

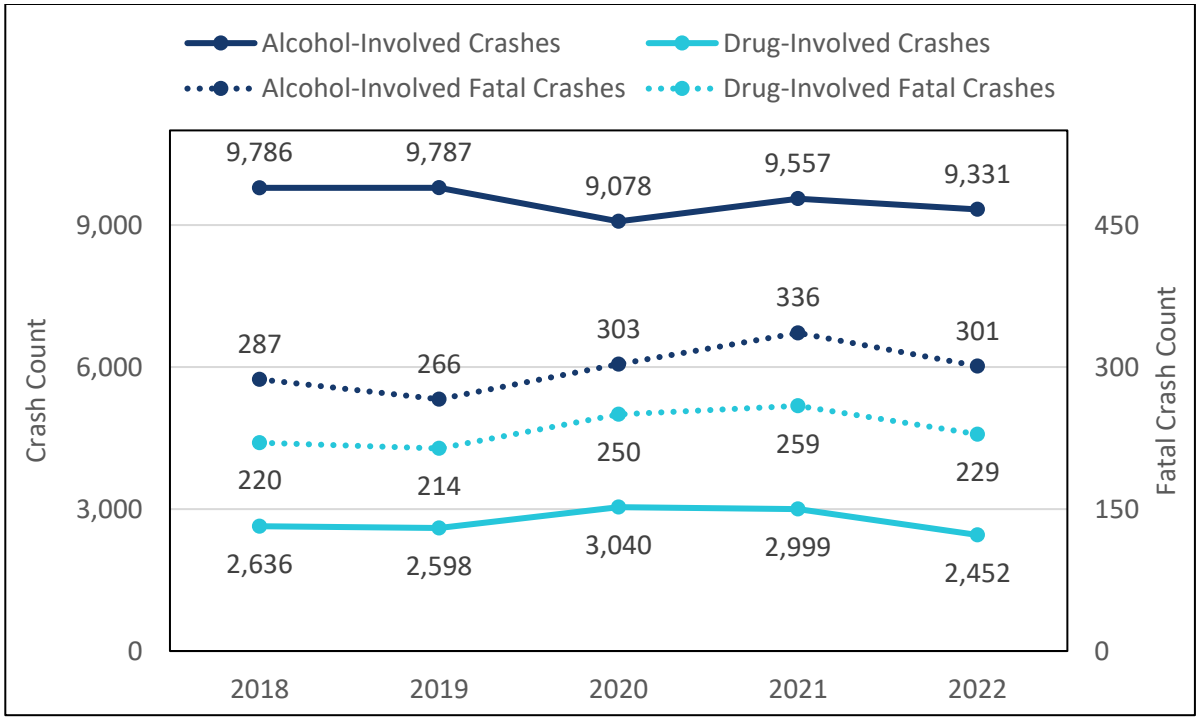

Figure 1 – Alcohol- and Drug-Involved Crashes by Year

4.0 Crash and Injury Severity

Table 2 lists the severity distributions for alcohol-involved, drug-involved, and all crashes, broken down by worst injury in the crash for the years of 2018 through 2022 combined. Alcohol-involved and drug-involved crashes are not mutually exclusive, so crashes in this table may have involved both alcohol and drugs. Fatal crashes occurred in 3.1% of alcohol-involved crashes and 8.5% of drug-involved crashes, compared to 0.3% for all crashes. Injury proportions for both alcohol and drug-involved crashes are also substantially higher than the overall crash injury rates.

Table 2. Crash Severity Distributions for Alcohol-Involved, Drug-Involved, and All Crashes, 2018-2022

Crash Severity – Worst Injury in Crash	Alcohol-Involved Crash Percent	Drug-Involved Crash Percent	All Crash Percent
Fatal Injury (K)	3.1%	8.5%	0.3%
Suspected Serious Injury (A)	8.7%	11.9%	1.6%
Suspected Minor Injury (B)	15.5%	16.0%	5.4%
Possible Injury (C)	16.3%	18.6%	10.7%
No Injury - PDO (O)	56.3%	44.9%	81.9%
Total	**100.0%**	**100.0%**	**100.0%**

Figure 3 shows the distribution of fatal crashes - K, injury crashes (suspected serious injury - A, suspected minor injury - B, and possible injury - C), and no injury - property damage only crashes - O. When compared to all crashes, the proportion of fatal crashes is approximately nine times higher when

a driver tests positive for alcohol and about 25 times higher when a driver tests positive for drugs. However, some caution is needed when interpreting these results as the drug testing of drivers in non-fatal crashes has increased in recent years leading to an increase in the counts of crashes where the worst injury in the crash is injuries of levels A, B, C, or O and a gradual lowering of the relative proportion of drug-involved crashes with a fatal injury. Injury crashes (A, B, and C) made up 40.5% of alcohol-involved crashes and 46.5% of drug-involved crashes. The percent of injuries (A, B, and C) for all crashes regardless of impairment status within the five-year period is 17.7%.

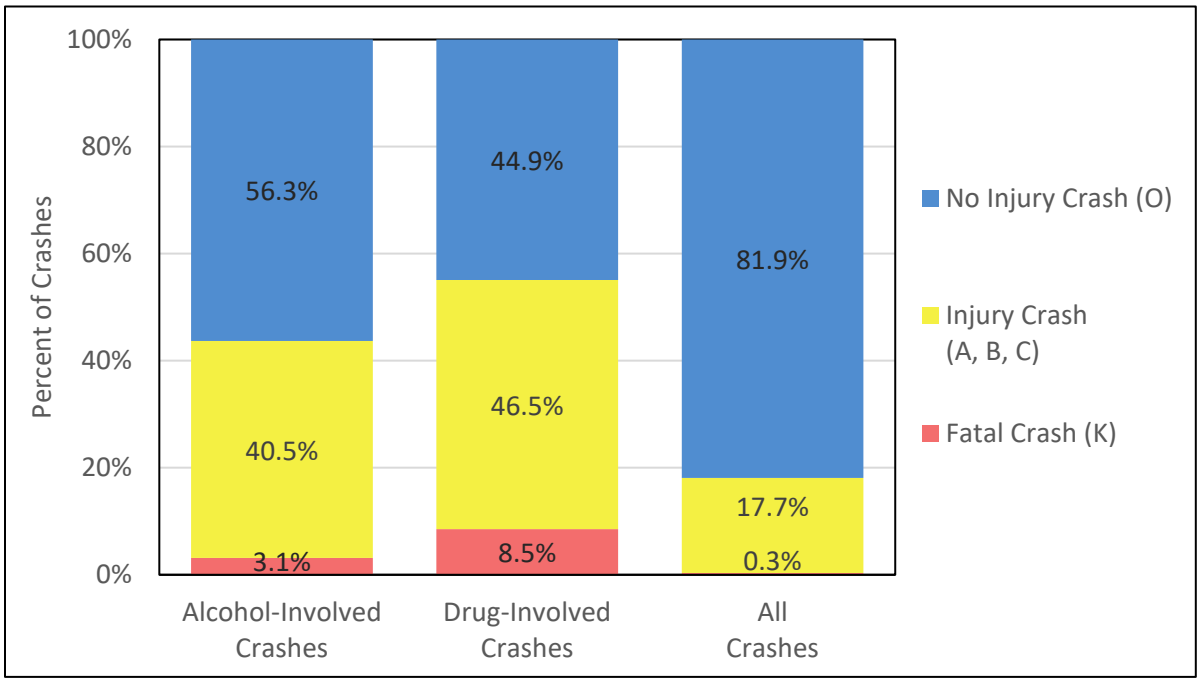

Figure 3 – Crash Severity Comparison by Impairment Status, 2018-2022

Figures 4 and 5 show counts of injured people in crashes with alcohol impairment and drug impairment, respectively. Because the numbers of the crash severity of "no injury" are relatively high, they were excluded from the two charts. Alcohol-involved fatalities (357) and A-level injuries (1,074) reached a high in 2021 with counts slightly higher than the other years that showed fairly low variation. The drug-involved total of fatalities and injuries reached a high of 2,465 in 2021 that included a five-year high of 275 fatalities, 527 A-level injuries, and 747 B-level injuries.

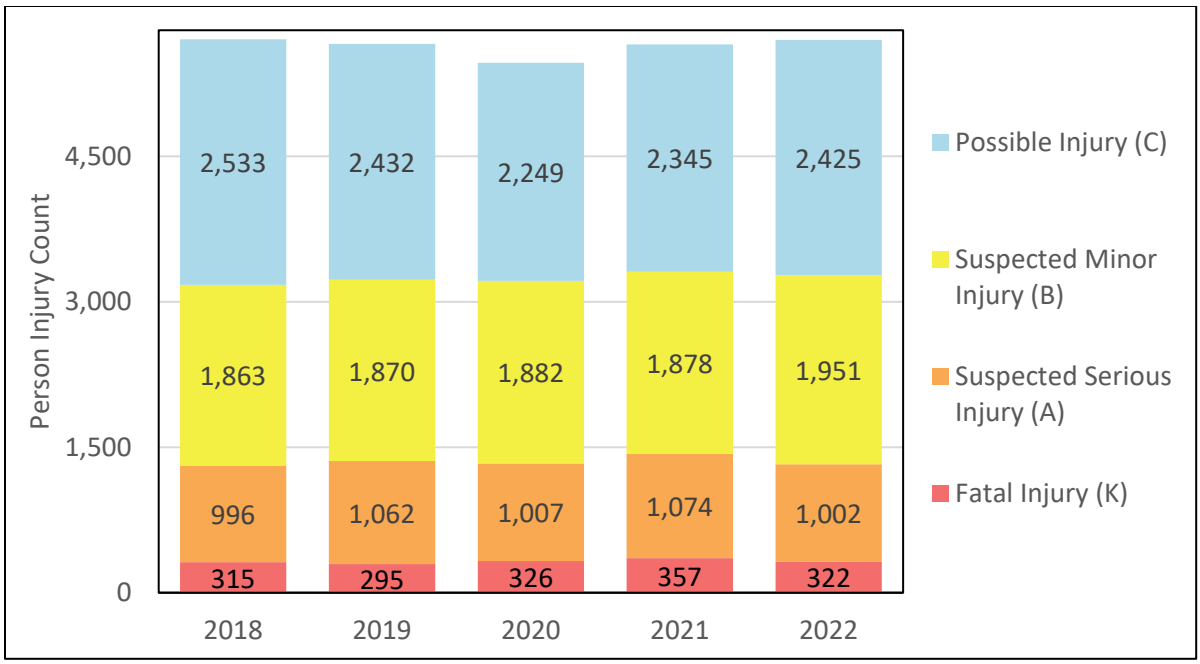

Figure 4 – Injury Counts for People in Alcohol-Involved Crashes by Year

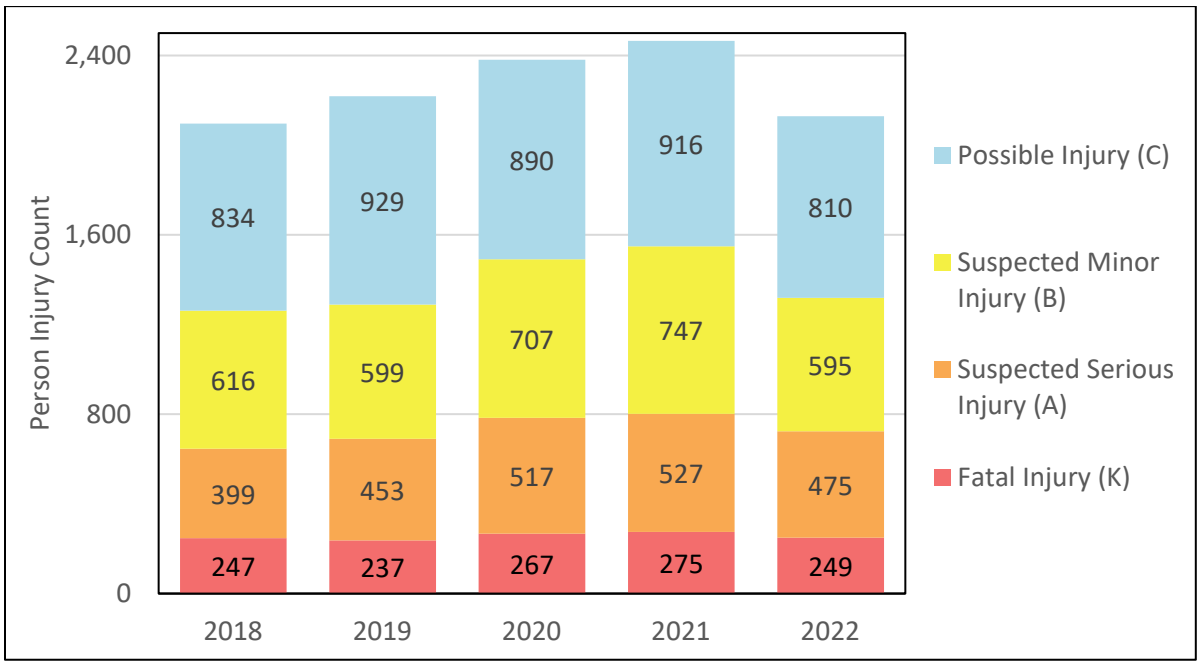

Figure 5 – Injury Counts for People in Drug-Involved Crashes by Year

5.0 BAC Test Results of Drivers

Blood Alcohol Content (BAC) results for motor vehicle drivers in crashes who were coded as drinking is shown in Figure 6. The graph displays percentages for all valid BAC results within each given crash year to explore the proportion of drivers in four different BAC categories: 0.00, 0.01-0.07, 0.08-0.16, and 0.17 and higher. These cutoffs are based on the Michigan impaired driving law legal limit cutoff at 0.08 and

the “super drunk” limit with more severe penalties at 0.17. Unknown BAC levels were excluded from the percentage calculations. The BAC group of 0.17 and higher has increased slightly each year from 2018 through 2022 while the 0.01-0.07 BAC group has generally decreased each year apart from 2021. The BAC group of 0.08-0.16 has shown low variation with a high of 40.3% in 2019 and a low of 37.7% in 2022. The 0.00 BAC group has comprised 0.2% or less since 2018. This low percentage is presumably due to data quality checks implemented for both alcohol and drug elements in the Michigan crash data in recent years.

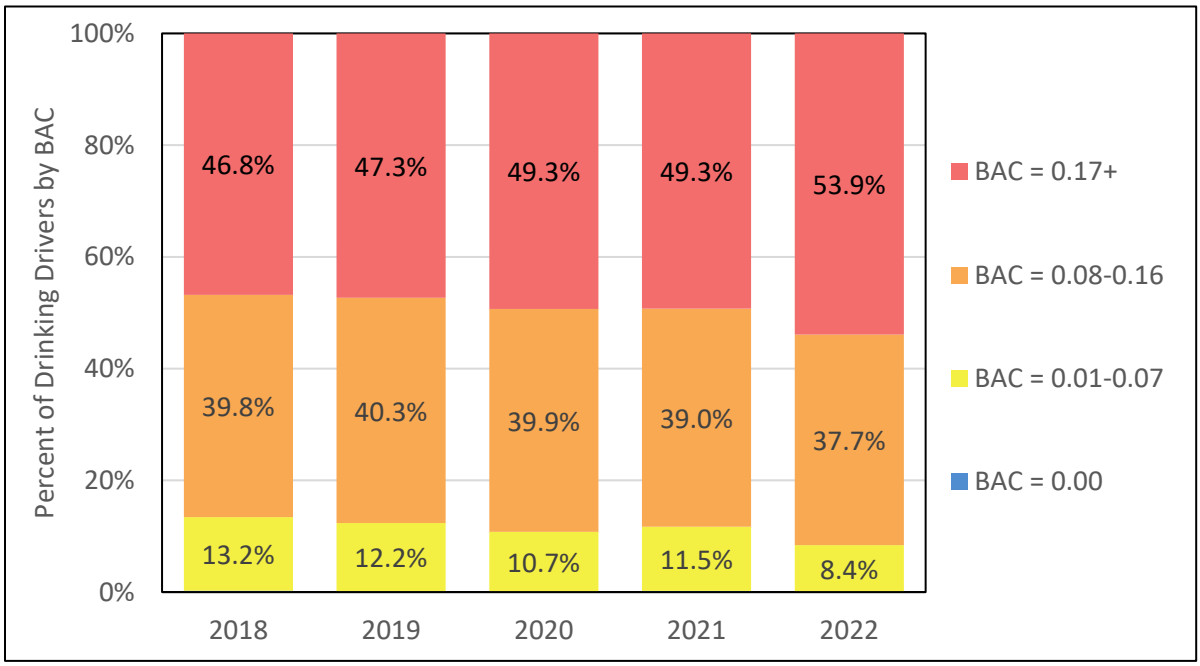

Figure 6 – Motor Vehicle Drivers in Crashes Coded as Drinking by BAC Level and Year

Figures 7 and 8 show the distribution by BAC result of crash-involved motor vehicle drivers coded as drinking (Figure 7) or coded as using drugs (Figure 8). The bar color shading of blue corresponds to a BAC level of 0.0, yellow with BAC levels of 0.01-0.07, orange with BAC levels of 0.08-0.16, and red with BAC levels of 0.17 or higher. Drivers coded with a BAC of greater than 0.40 or unknown are excluded from both figures. A cutoff of 0.40 was used for BAC to exclude infrequent extreme values that may have been inadvertently created due to coding errors. Among drivers coded as drinking in Figure 7, there is a fairly normal distribution by BAC result with a peak at 0.15 (1,870 drivers).

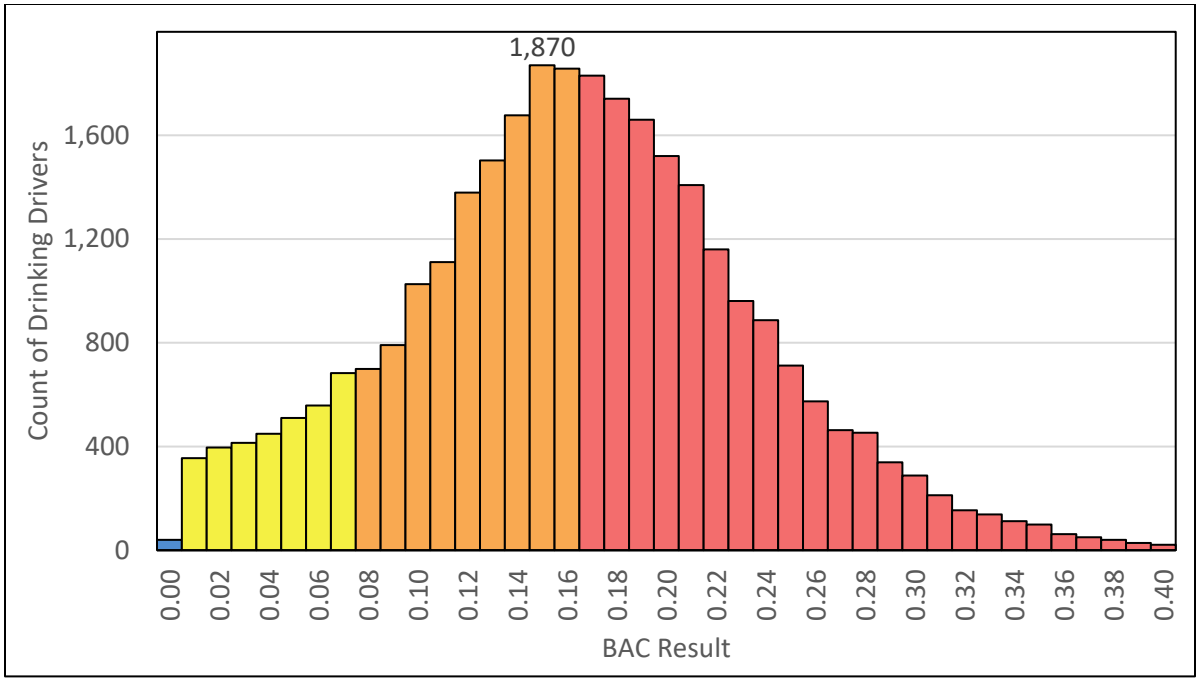

Figure 7 – BAC Result Distribution for Motor Vehicle Drivers in Crashes Coded as Drinking, 2018-2022

Figure 8 shows BAC results for drivers coded as suspected using drugs. Excluding a BAC of 0.00 from the figure eliminates a high count (4,198 or 30.9%) of drivers who were tested for alcohol but were only using drugs. The distribution of BAC results for drivers using drugs is right skewed with BAC results lower than 0.16 being more common. The peak occurs at a BAC result of 0.16 (224 drivers).

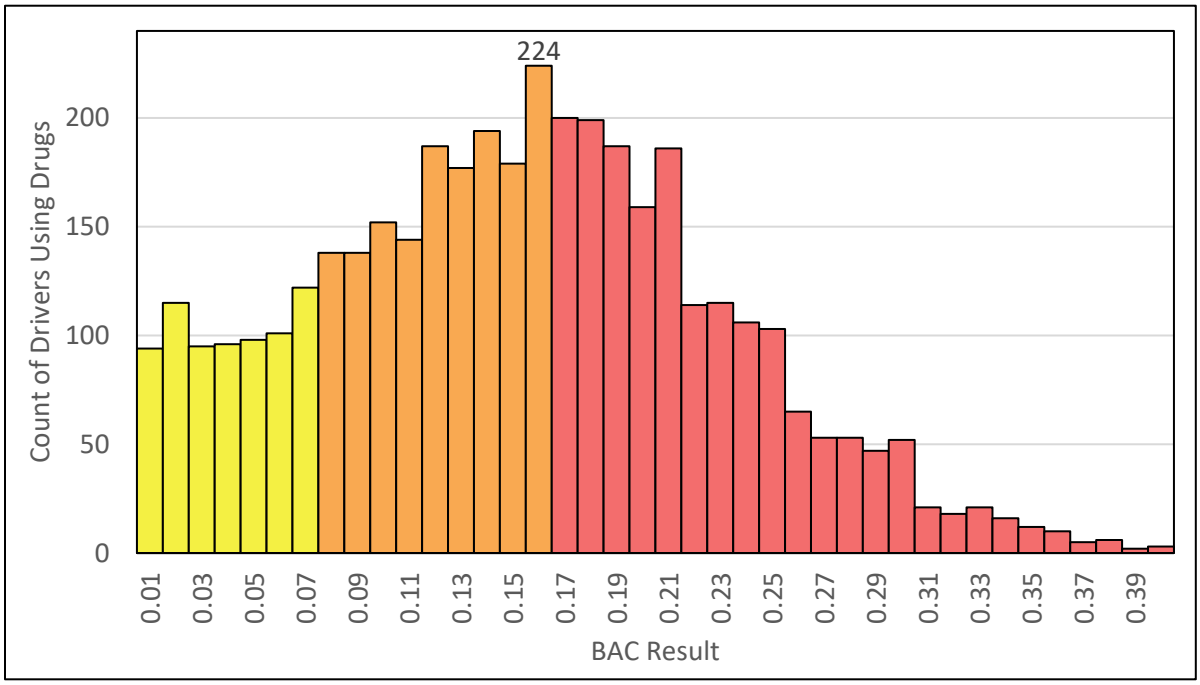

Figure 8 – BAC Result Distribution for Motor Vehicle Drivers in Crashes Coded as Using Drugs, 2018-2022

Figure 9 explores motor vehicle drivers suspected of using drugs and their BAC test results if they were also tested for alcohol use. The percentage of drivers with an unknown BAC test result has decreased from 64.7% in 2018 to 27.3% in 2022 indicating that testing of drivers for both drug and alcohol use has increased in recent years. This multiple impairment testing trend is also evident in the general increase of drivers with a BAC test result of 0.00 (the test came back negative for alcohol use) from 14.0% in 2018 to 38.9% in 2021, and 33.2% in 2022.

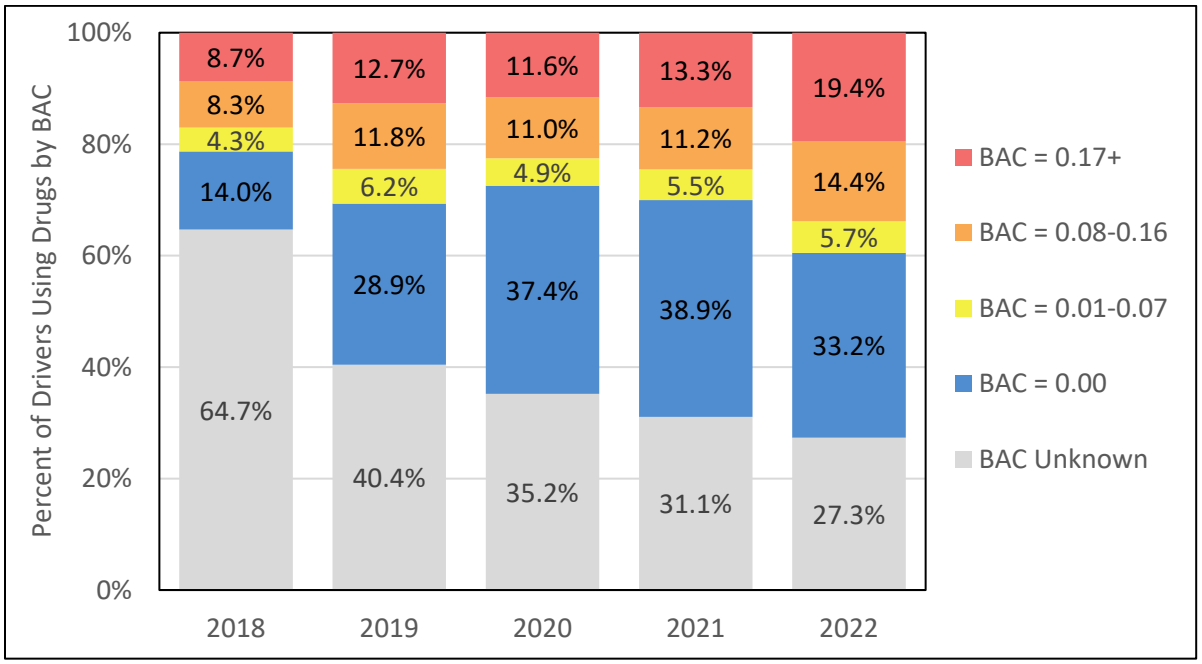

Figure 9 – Motor Vehicle Drivers in Crashes Coded as Using Drugs by BAC Level and Year

6.0 Cannabinoid Drug Test Results of Drivers

Data collection for drug classifications has not been comprehensive in previous data years. However, starting in 2018, additional data for polydrug use was included in the crash database. Polydrug impairment occurs when a driver is under the influence of more than one drug (including alcohol). It is important to note that in some cases a positive alcohol result will lead to no further testing for drugs. After testing and validation of the recently collected polydrug data, the top three drug test results for drivers, pedestrians, and bicyclists in crashes who are tested for drug use became available in the year-end crash dataset starting in 2021. Law enforcement has up to three years to add positive drug test results to existing police reports, which may result in the exclusion of polydrug data in the year-end crash dataset. When a driver tests positive for more than one drug, the substance with the highest priority according to NHTSA's FARS/CRSS coding and validation manual is listed first, regardless of the relative levels of the different drugs in a person's system[1]. For example, since inhalants are relatively low priority, they will generally be undercounted for any drivers who test positive for more than three

[1] National Highway Transportation Safety Administration (NHTSA). *2021 FARS/CRSS Coding and Validation Manual*. DOT HS #813426. Published April 2023. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813426.

drugs. As a result of these recent data improvements, prior to the 2021 year-end crash dataset, we cannot accurately measure the number of drivers testing positive for specific drugs.

Utilizing these recent data collection improvements, this report includes analysis of the cannabinoid drug test results from 2018-2022. It is worth noting that medical marijuana facilities first opened in Michigan in 2016, and the first recreational marijuana facilities opened to the public in December 2019. The eight drug test result codes related to cannabinoids are delta 9, hashish oil, hashish, marijuana/marihuana, marinol, tetrahydrocannabinols (THC), and "cannabinoid, type unknown."

Figure 10 shows the frequency percentages of the different types of cannabinoid drugs for motor vehicle drivers. The results reported in Figure 9 are not mutually exclusive by person, so one driver testing positive for both marijuana and THC would be included in both cannabinoid counts. From 2018-2022, THC is the most common cannabinoid positive test result and has generally been increasing with a peak in 2020 of 89.3% of all test results (835 of 935 test results).

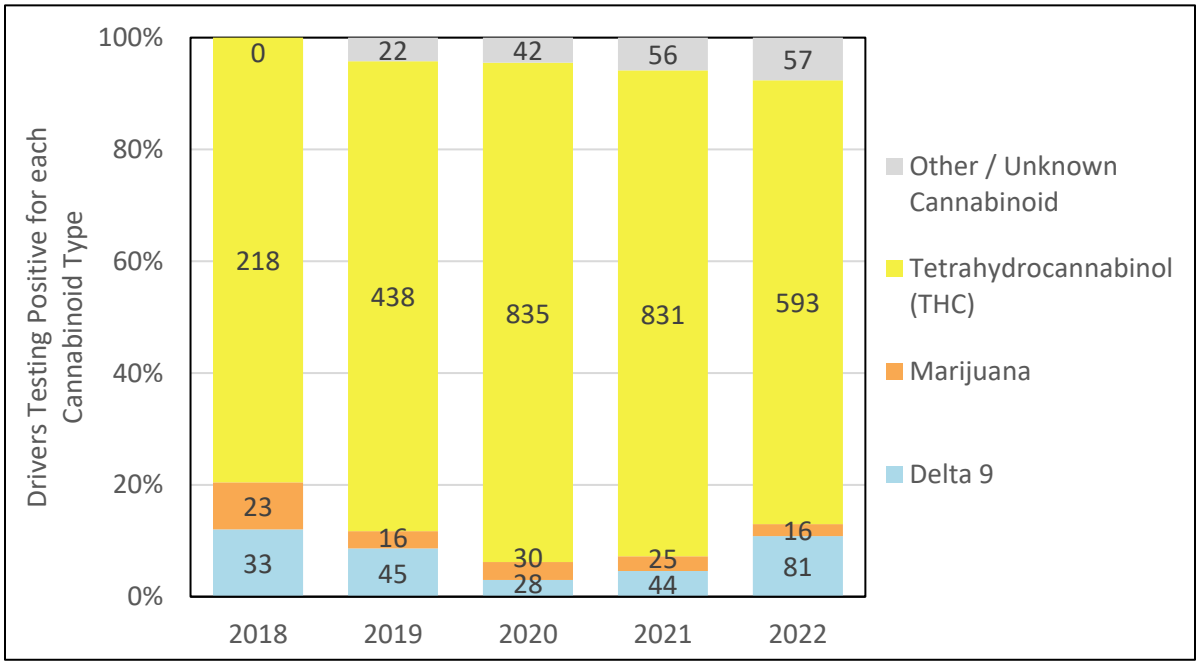

Figure 10 – Positive Cannabinoid Test Results for Motor Vehicle Drivers in Crashes

Figure 11 displays the crash severity results for crashes that involved motor vehicle drivers with a cannabinoid positive test result. The drug testing of drivers in non-fatal crashes has increased in each of the last 5 years leading to an increase in the counts of non-fatal crashes where the worst injury in the crash is injuries of levels A, B, C, or O.

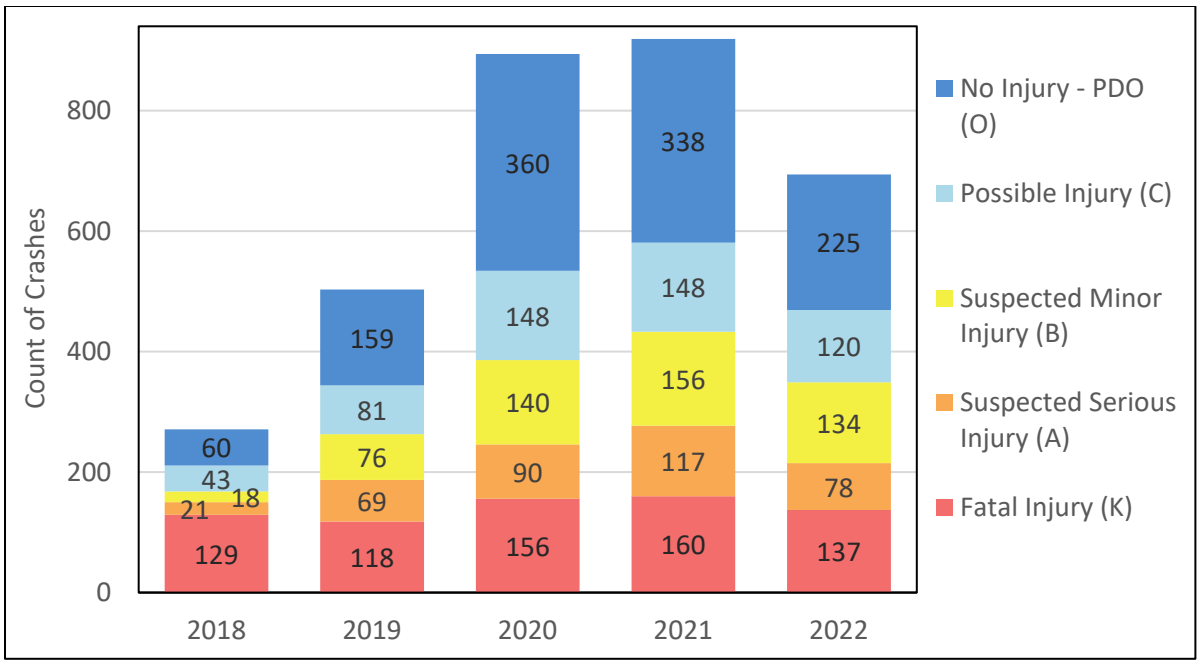

Figure 11 – Crash Severity Distribution of Crashes with at least one Positive Cannabinoid Test

Counts of fatalities in crashes where a driver tested positive for cannabinoids are shown in Figure 12. The number of fatalities has ranged from a low of 142 in 2019 to a peak of 174 in 2021.

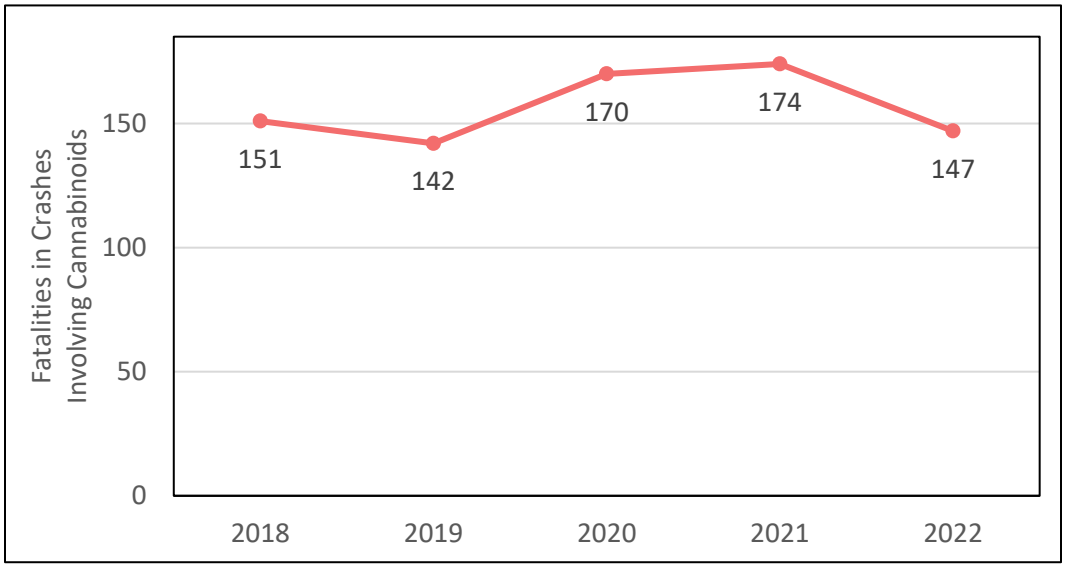

Figure 12 – Fatalities in Crashes where a Driver Tested Positive for a Cannabinoid

7.0 Crash Type

Crash type proportions differ based on impairment status as shown in Figure 13 and Figure 14. Crash type percentages are relatively similar between alcohol-involved and drug-involved crashes. Single vehicle crashes are the most common type of crash regardless of impairment status yet occur at higher

rates for both alcohol-involved crashes (56.3%) and drug-involved crashes (52.9%) than crashes with no alcohol involved (35.7%) or no drugs involved (36.2%). Head-on crashes also occur at higher rates for both impairment types.

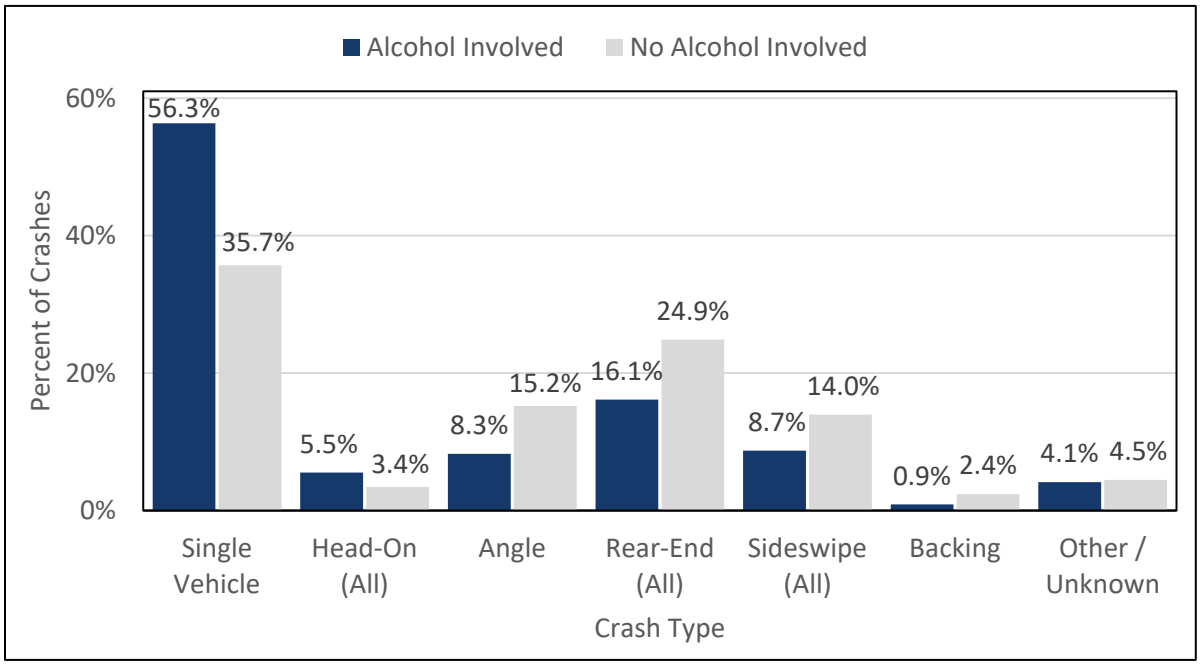

Figure 13 – Alcohol-Involved Status Crash Percentages by Crash Type, 2018-2022

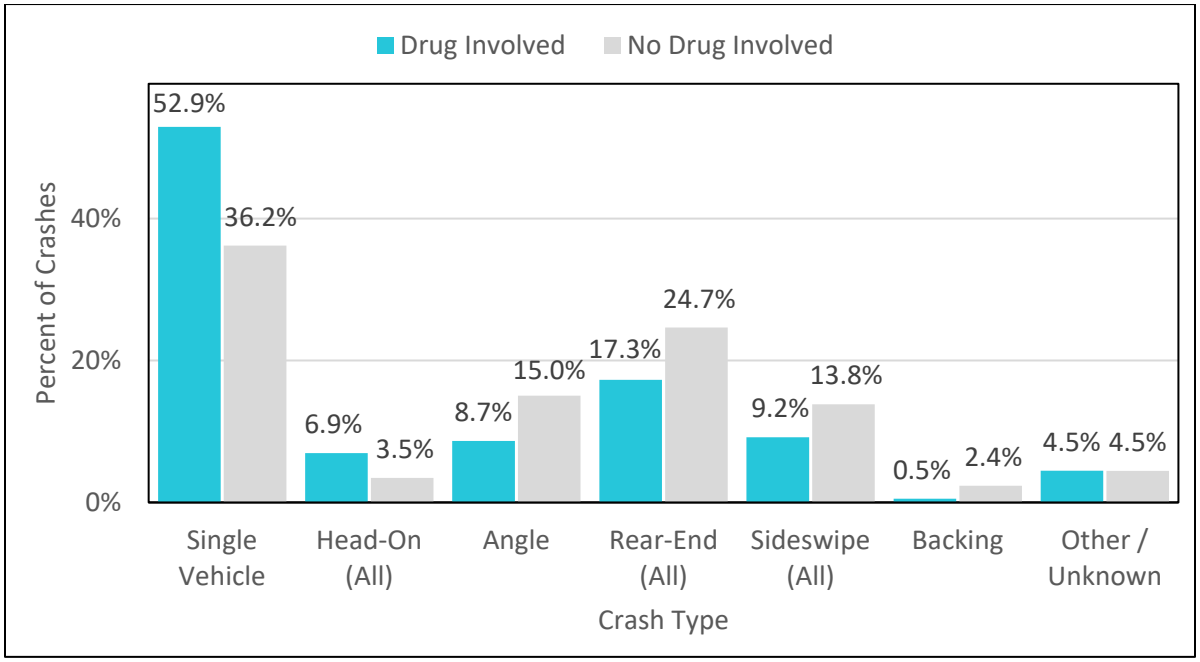

Figure 14 – Drug-Involved Status Crash Percentages by Crash Type, 2018-2022

8.0 Temporal Variables

8.1 Month of Year

Figures 15 and 16 show the percent of crashes by month for alcohol and drug involvement respectively. The relative proportion of alcohol-involved crashes is higher than crashes with no alcohol involved from March through September. October had the highest percentage of alcohol-involved crashes at 9.5%. Similarly, drug-involved crashes also occur at slightly higher rates than crashes with no drugs involved during the warmer months of the year from March through September, with a low in February. The peak month for drug-involved crashes was May at 9.4%.

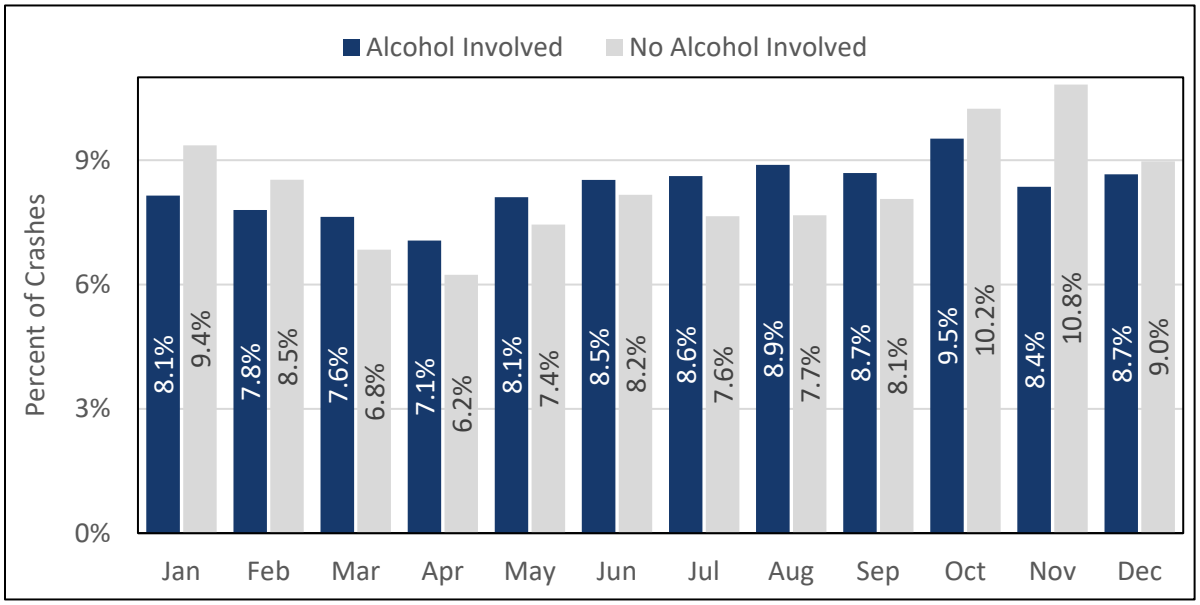

Figure 15 – Alcohol-Involved Crash Percentages by Month, 2018-2022

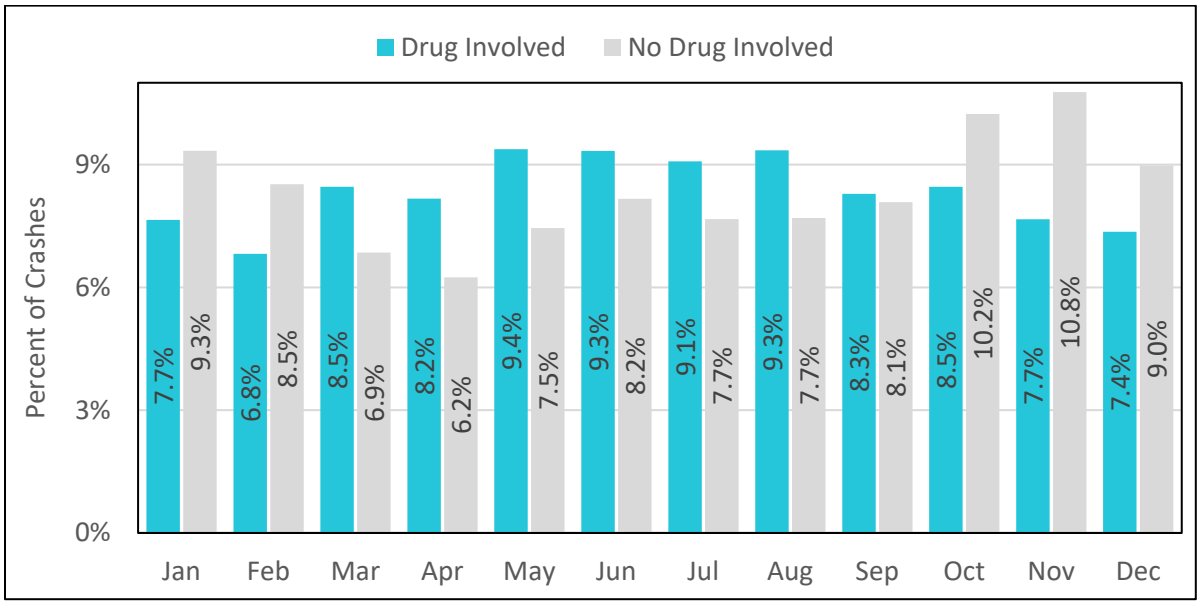

Figure 16 – Drug-Involved Crash Percentages by Month, 2018-2022

8.2 Day of Week

The percent of alcohol-involved and drug-involved crashes on each day of the week are shown in Figure 17 and 18. Alcohol-involved crashes occur at higher percentages during the weekend with 42.1% of crashes involving alcohol occurring on Saturday (22.1%) and Sunday (20.0%). Drug-involved crashes are also slightly more common on the weekends with Friday (15.8%) and Saturday (16.6%) being the most common crash days.

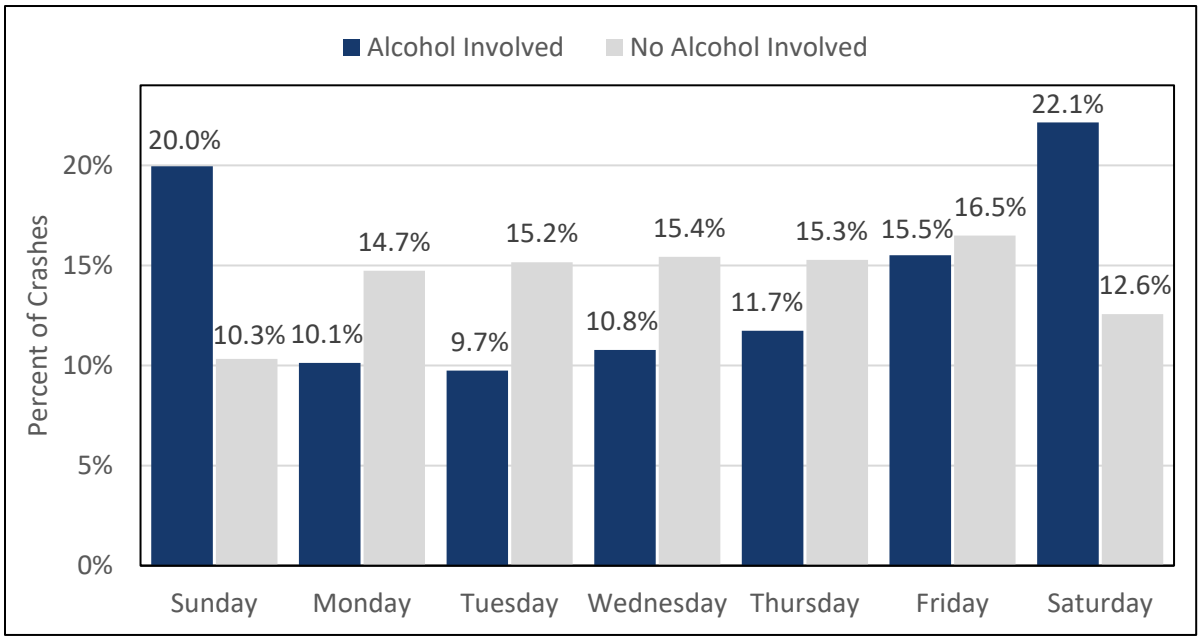

Figure 17 – Alcohol-Involved Crash Percentages by Day of the Week, 2018-2022

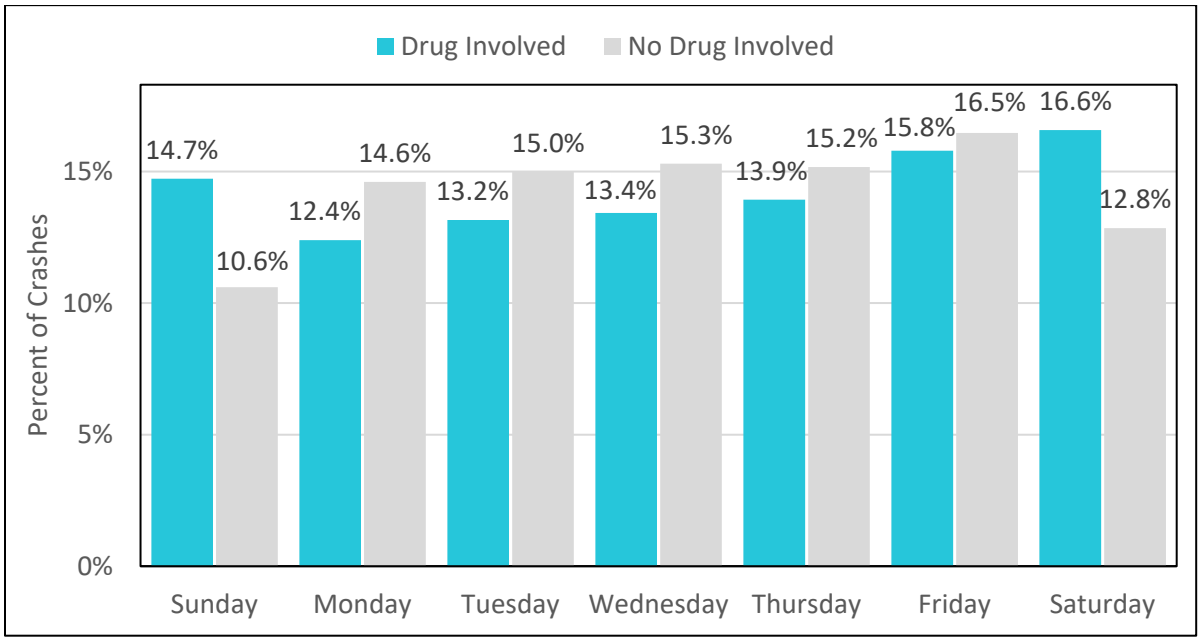

Figure 18 – Drug-Involved Crash Percentages by Day of the Week, 2018-2022

8.3 Time of Day

Figures 19 and 20 show the percent of alcohol-involved and drug-involved crashes by time of the day. The percent of alcohol-involved crashes is greatest from 9 PM to 2 AM (with a peak of 8.3% at 10 PM) and after a low of 0.8% at 9 AM the number of crashes increases through the day. The number of drug-involved crashes has less overall variation with a peak of 6.1% at 6 PM and a low of 1.9% at 5 AM.

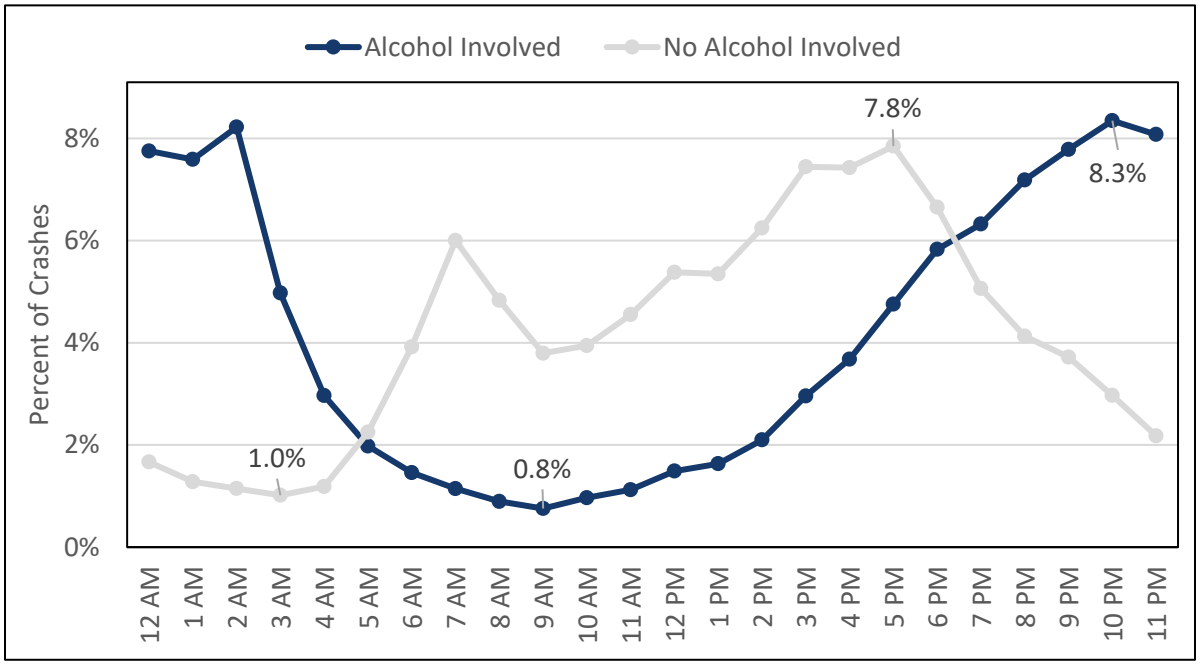

Figure 19 – Alcohol-Involved Crashes by Time of Day, 2018-2022

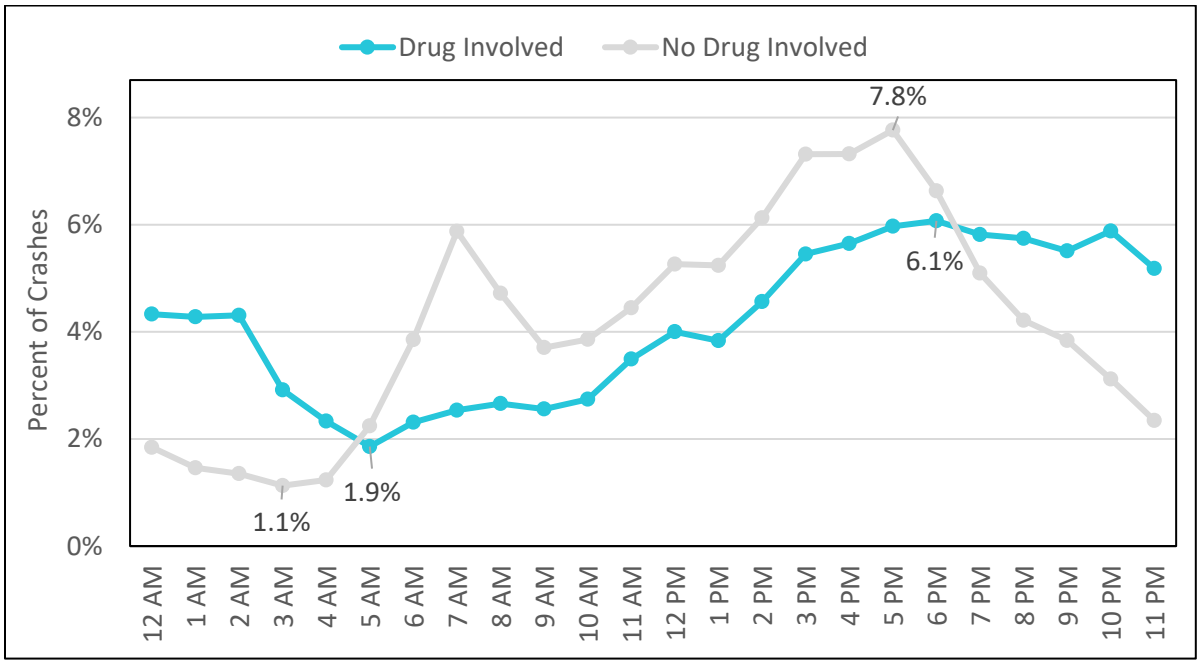

Figure 20 – Drug-Involved Crashes by Time of Day, 2018-2022

9.0 Speed Limit

Figures 21 and 22 compare the percent of crashes according to the grouping of posted speed limits at the crash site for alcohol- or drug-involved crashes versus crashes with no alcohol involved or no drugs involved. The crash distributions have low variation across the impairment-involved statuses. Alcohol- or drug-involved crashes within the 20-25 and 50-55 mph posted speed limit groups were slightly more common than for crashes that didn't involve alcohol or drugs. Comparing alcohol-involved crashes to crashes without alcohol, 19.8% vs. 13.7% occurred in the 20-25 mph group and 34.8% vs. 32.9% occurred in the 50-55 mph group. Comparing drug-involved crashes to crashes without drugs, 15.9% vs. 13.9% occurred in the 20-25 mph group and 34.7% vs. 33.0% occurred in the 50-55 mph group.

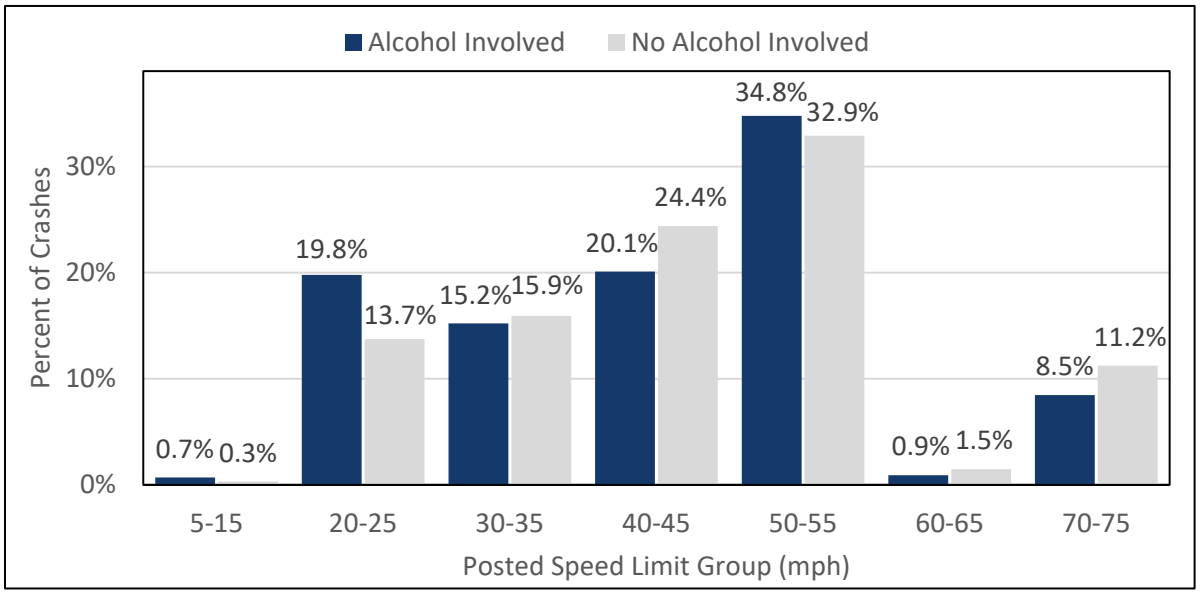

Figure 21 – Alcohol-Involved Crash Percentages by Posted Speed Limit, 2018-2022

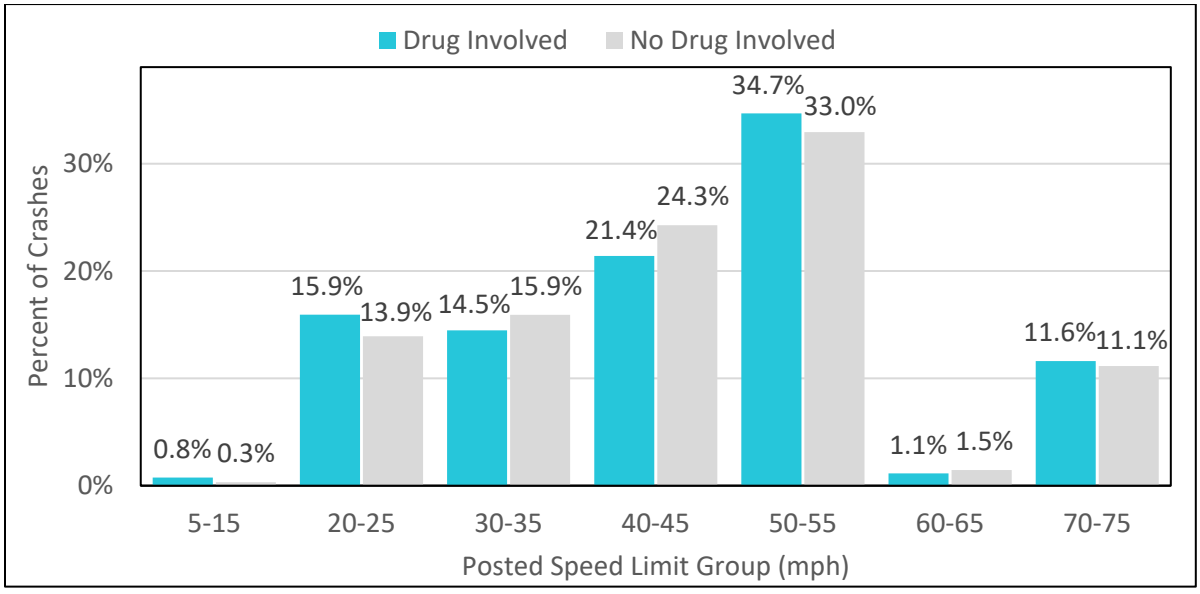

Figure 22 – Drug-Involved Crash Percentages by Posted Speed Limit, 2018-2022

To examine the relationship between posted speed limits at the crash site and crash severity, the crashes were split into two groups according to levels of the KABCO scale of crash severity: fatal crash - K and injury crashes (including suspected serious injury - A, suspected minor injury - B, and possible injury - C) with property damage only crashes - O excluded. Figure 23 shows the percentage of these two groups of crashes according to posted speed limit ranges at the crash site. Crashes with an unknown speed limit, about 1.6% of the total, were excluded. There is a slight increase in overall crash severity at posted speeds at 30 mph or higher for both drug- and alcohol-involved crashes. Crashes tended to be more severe at higher speed limit groups for both alcohol-involved and drug-involved crashes. Most notable is that 13.4% of the drug-involved crashes at speed limits from 50-55 mph were fatal crashes.

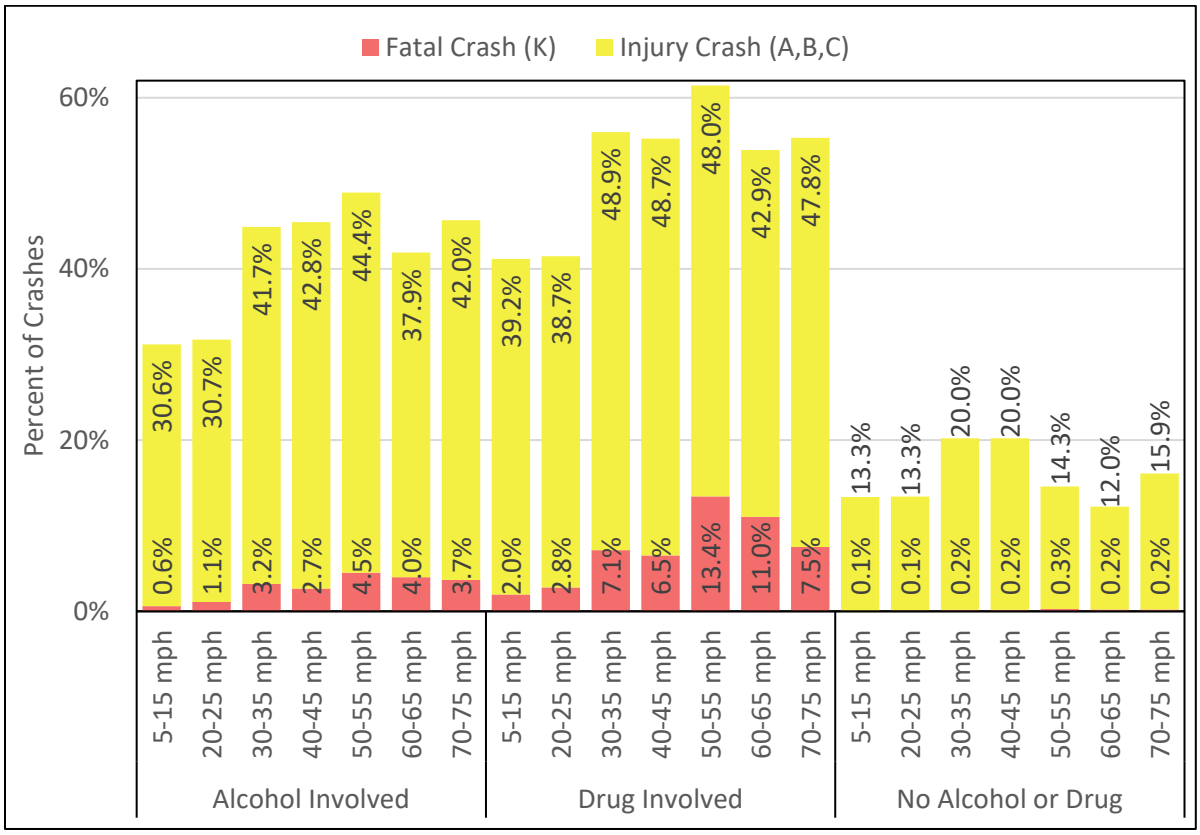

Figure 23 – Impairment Status Crash Severity by Posted Speed Limit, 2018-2022

10.0 Demographics

10.1 Traffic Unit Types

Figure 24 shows the impairment distributions for pedestrian-involved crashes, bicycle-involved crashes, and crashes involving only motor vehicles by impairment status at the crash level. Pedestrian-involved and bicycle-involved crashes are crashes with any number of traffic units that also include at least one pedestrian or one bicyclist and a motor vehicle. Pedestrian-involved crashes involved alcohol and/or drug impairment at rates that were about three times higher than motor-vehicle-only crashes (12.0% vs. 3.7%), while bicycle-involved crashes had only slightly higher rates of impairment involved crashes than motor-vehicle-only crashes (4.1% vs. 3.7%).

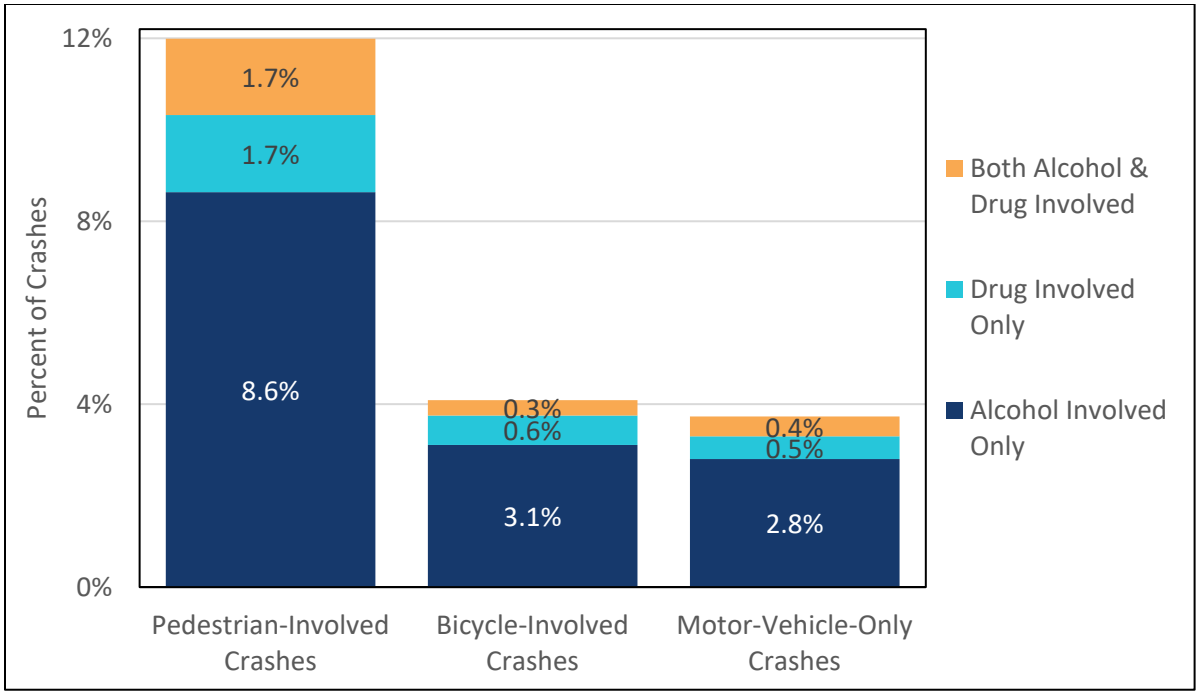

Figure 24 – Impairment Distributions of Pedestrian, Bicycle, and Motor-Vehicle-Only Crashes, 2018-2022

Table 3 shows the count and percent of people who were drinking or using drugs in crashes by traffic unit type (motor vehicle, pedestrian, bicycle, or train engineer). Motor vehicle drivers understandably account for the highest counts of crashes for both drinking and drug use. However, pedestrians in crashes are about 4 times more likely to be drinking (7.6% to 1.9%) and about 3 times more likely to be using drugs (1.7% to 0.6%) than motor vehicle drivers in crashes. Bicyclists in crashes have a slightly lower percent of drug use than motor vehicle drivers (0.3% to 0.6%) but slightly higher alcohol use (2.5% to 1.9%).

Table 3. Traffic Units in Crashes Drinking or Using Drugs, 2018-2022

Traffic Unit Type	Drinking Count	Drinking Percent	Using Drugs Count	Using Drugs Percent
Motor Vehicle	46,899	1.9%	13,595	0.6%
Pedestrian	791	7.6%	179	1.7%
Bicycle	172	2.5%	22	0.3%
Train Engineer	1	0.4%	0	0.0%
Total	**47,863**	**1.9%**	**13,796**	**0.6%**

Figure 25 displays the drinking status for alcohol-involved crashes by traffic unit type (0.3% of cases had unknown drinking status and were excluded). In crashes involving both alcohol and pedestrians, there were 26.3% of motor vehicle drivers drinking (298 of 1,132), compared to 72.3% of pedestrians drinking (791 of 1,094) in the same subset of crashes. This trend was similar in crashes that involved both alcohol and bicycles with 31.3% of drivers drinking (75 of 240) and 72.3% of bicyclists drinking (172 of 238).

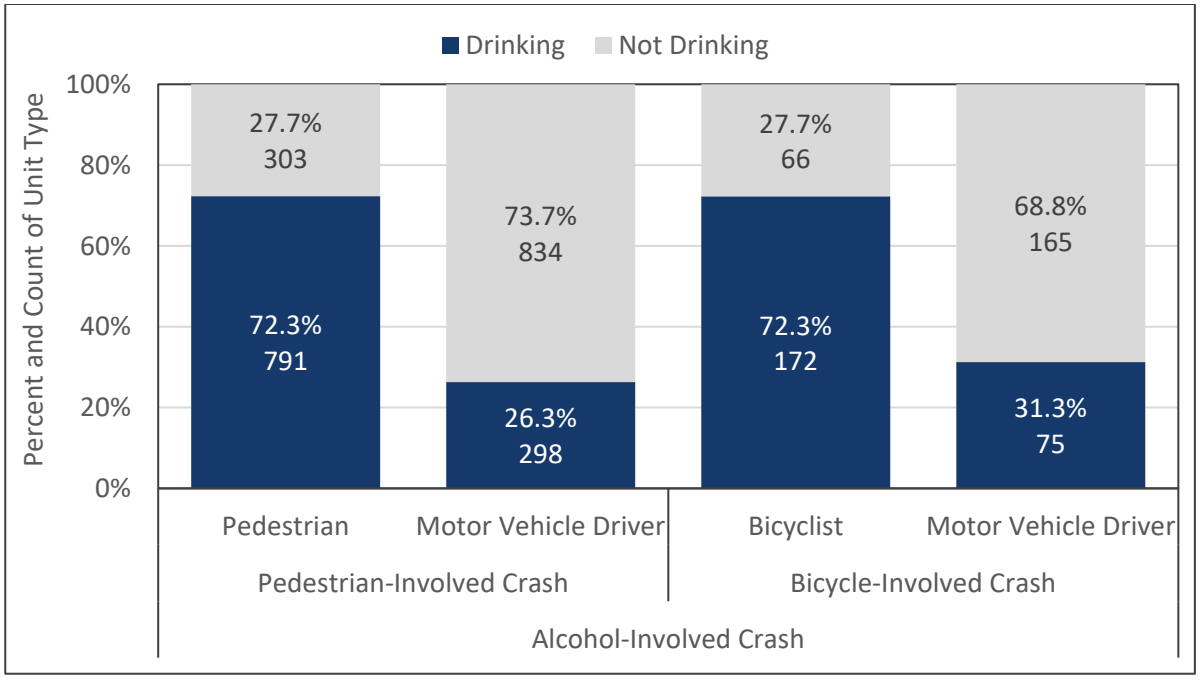

Figure 25 – Alcohol-Involved Crashes: Alcohol Use by Unit Type, 2018-2022

Figure 26 displays the drug use status for drug-involved crashes by traffic unit type (0.3% of cases had unknown drug use status and were excluded). In crashes involving both drugs and pedestrians, there were 43.3% of motor vehicle drivers using drugs (167 of 386), compared to 50.0% of pedestrians using drugs (179 of 358) in the same subset of crashes. In crashes that involved both drugs and bicycles, 66.2% of drivers (45 of 68) and 29.7% of bicyclists (22 of 74) were using drugs.

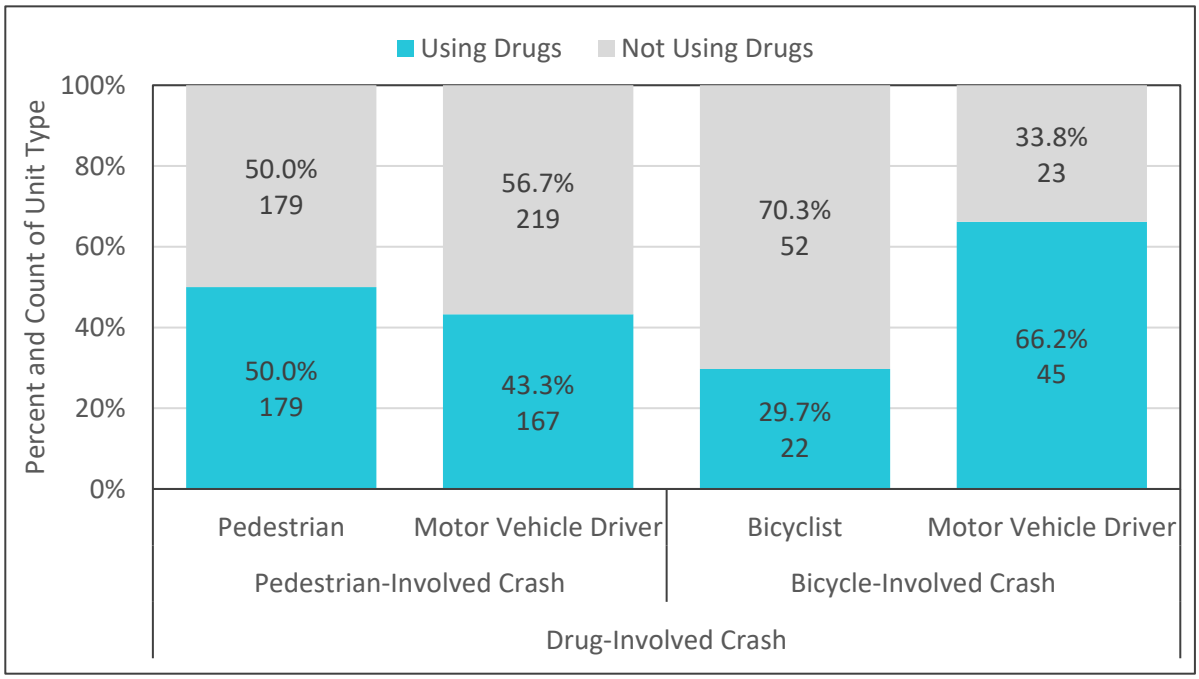

Figure 26 – Drug-Involved Crashes: Drug Use by Unit Type, 2018-2022

10.2 Gender

Figure 27 shows the gender distribution of motor vehicle drivers who were drinking and motor vehicle drivers who were using drugs in crashes. Males were more than twice as likely as females to be identified as both drinking (71.7% to 28.3%) and using drugs (71.0% to 29.0%). The non-binary gender category was added to the Michigan crash dataset in 2022, and in this data set from 2018-2022, there was only one (0.0%) non-binary driver drinking and one (0.0%) non-binary driver using drugs.

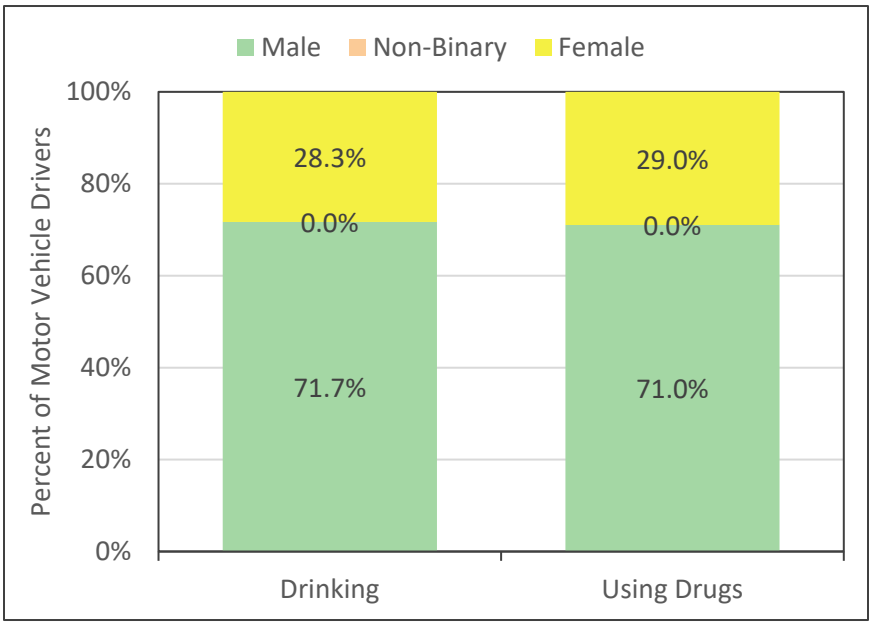

Figure 27 – Impaired Motor Vehicle Drivers in Crashes by Gender, 2018-2022

10.3 Age Group

Figures 28 and 29 show the distributions of crash-involved motor vehicle drivers by age group and alcohol (Figure 28) and drug (Figure 29) impairment status. Drivers with an invalid date of birth have been excluded. Both alcohol and drug impairment types have a similar general pattern where the two age groups in the 20s have the highest proportions of impaired drivers and the proportions then decrease with age. For drivers drinking, the proportion peaks at age group 26-30 (17.7%), and the proportion of drivers drinking is higher than the proportion of drivers not drinking from age group 21-25 through 46-50. For drivers using drugs, the proportion peaks at age group 26-30 (17.5%), and the proportion of drivers using drugs is higher than the proportion of drivers not using drugs from age group 21-25 through 41-45. The 16-20 age group had a higher percentage of drivers using drugs (8.8%) as drinking (5.2%) but both impaired rates for this age group were lower than the proportion of non-impaired drivers. All groups age 41-45 and older had a higher percentage of drinking than using drugs.

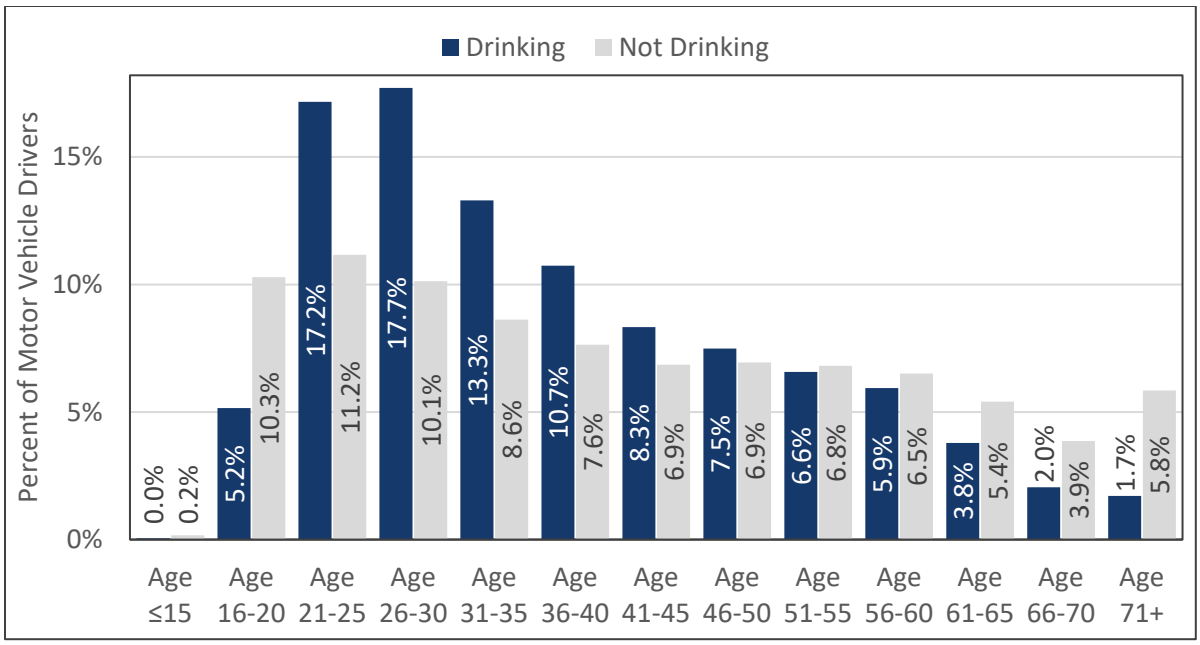

Figure 28 – Motor Vehicle Drivers in Crashes by Age Group and Alcohol Impairment Status, 2018-2022

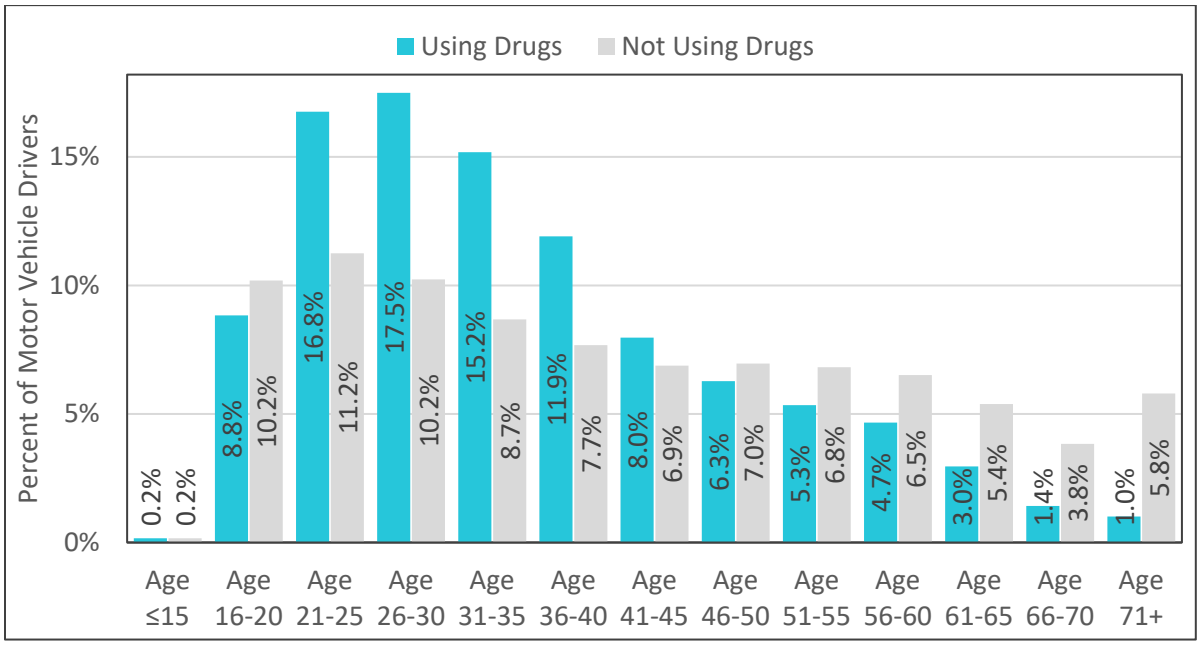

Figure 29 – Motor Vehicle Drivers in Crashes by Age Group and Drug Impairment Status, 2018-2022

11.0 Results for Combined Alcohol and Drug Impairment

There are unique characteristics associated with crashes where drivers who are under the influence of more than one impairing substance, a condition referred to as "polydrug impairment." As shown in Figure 30, the crashes with a combination of both alcohol and drugs involved have shown little variation with no clear trend over the last five years and a five-year high in 2020 of 1,336 crashes. For comparison, crash counts are also included for crashes involving only alcohol and only drugs.

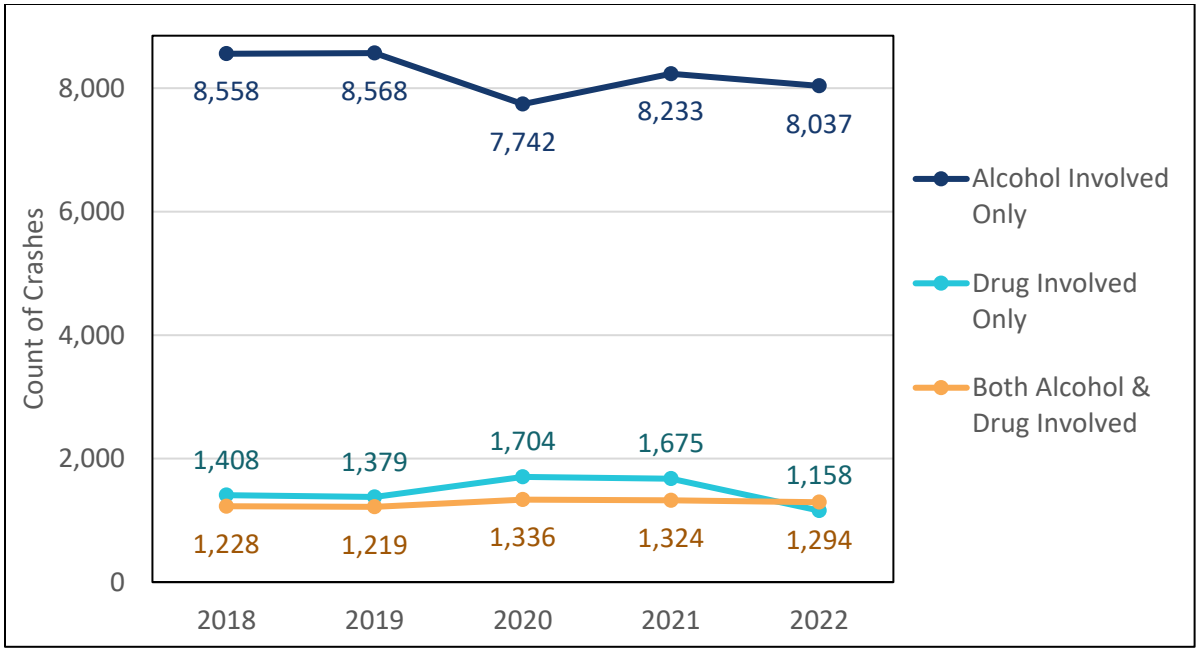

Figure 30 – Crashes Involving Impairment by Year

Table 4 shows the overall and fatal crash counts and percentages of alcohol involved only, drug involved only, both alcohol and drug involved, and no impairment. Among all crashes, alcohol-involved-only crashes make up 2.8%, drug-involved-only crashes make up 0.5%, and both alcohol- and drug-involved crashes make up 0.4%. However, among fatal crashes, crashes involving only alcohol make up 18.6% of crashes, crashes involving only drugs make up 12.1%, and both alcohol- and drug-involved crashes make up 11.7% of fatal crashes. About 42.3% of fatal crashes involve one of these three types of impairment despite crashes involving impairment comprising just 3.8% of all crashes.

Table 4. Impairment Distributions in Crashes, 2018-2022

Impairment Type	Crash Count	Crash Percent	Fatal Crash Count	Fatal Crash Percent
Alcohol Involved Only	41,138	2.8%	917	18.6%
Drug Involved Only	7,324	0.5%	596	12.1%
Both Alcohol & Drug Involved	6,401	0.4%	576	11.7%
No Impairment	1,393,724	96.2%	2,849	57.7%
Total	**1,448,587**	**100.0%**	**4,938**	**100.0%**

Figure 30 shows details of crash severity based on worst injury in crash across the same four impairment groups. Fatal Injury (K) and all three injury level crashes (A, B, and C) occur at higher percentages in the three impaired groups than in the non-impaired crash group. For fatal injury (K) and suspected serious injury crashes (A), crashes involving both alcohol and drugs have the highest rates at 9.0% (K) and 12.0% (A), followed by the drug involved only crashes with 8.1% (K) and 11.8% (A), and the alcohol involved only crashes with 2.2% (K) and 8.2% (A). In comparison, crashes with no impairment occur at a rate of 0.2% (K) and 1.3% (A).

Some caution is needed when interpreting these results as the drug testing of drivers in non-fatal crashes has been increasing in recent years. This increased testing has led to an increase in the counts of crashes where the worst injury in the crash is injuries of levels A, B, C, or O and a gradual lowering of the relative percentage of drug-involved crashes with a fatal injury.

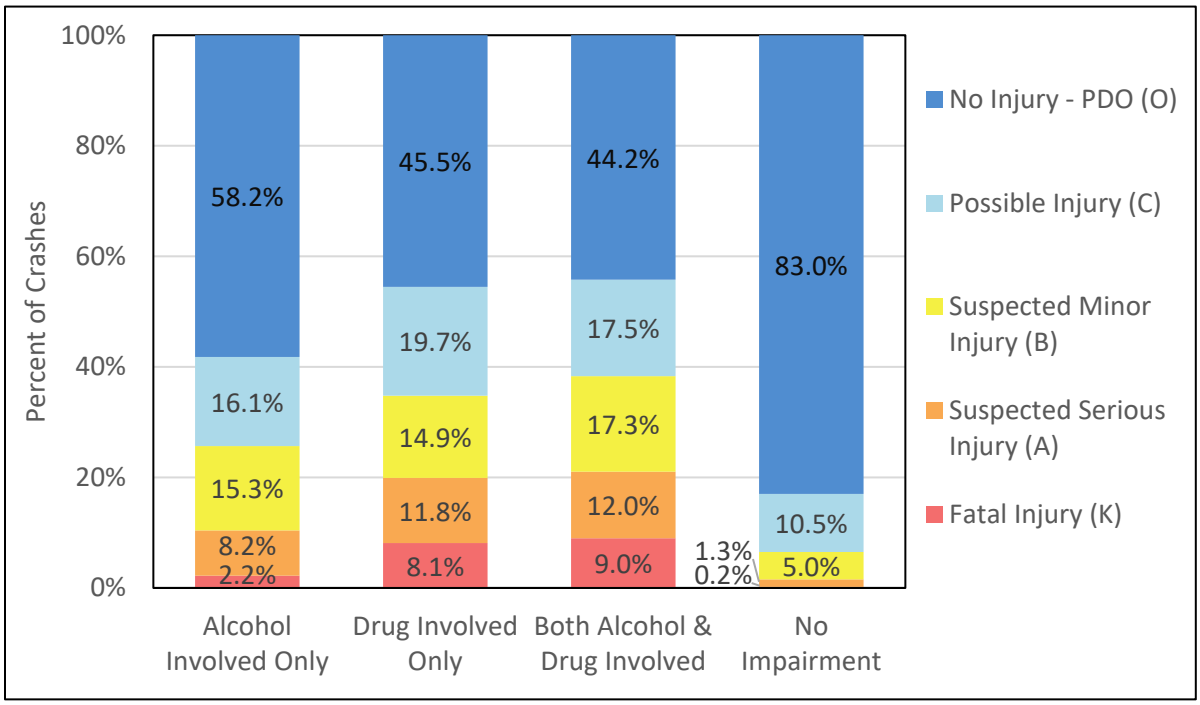

Figure 30 – Crash Severity by Impairment Combination, 2018-2022

Figure 31 shows the percent of crashes with both alcohol- and drug-involved impairment by month. This monthly crash distribution more closely aligns with the drug-involved crashes (Figure 16) than the alcohol-involved crashes (Figure 15), with the highest proportions during the warmer months of June through August. August has the highest percentage of both alcohol and drug involved crashes (9.3%) and February the lowest percentage (7.0%) for the five-year period.

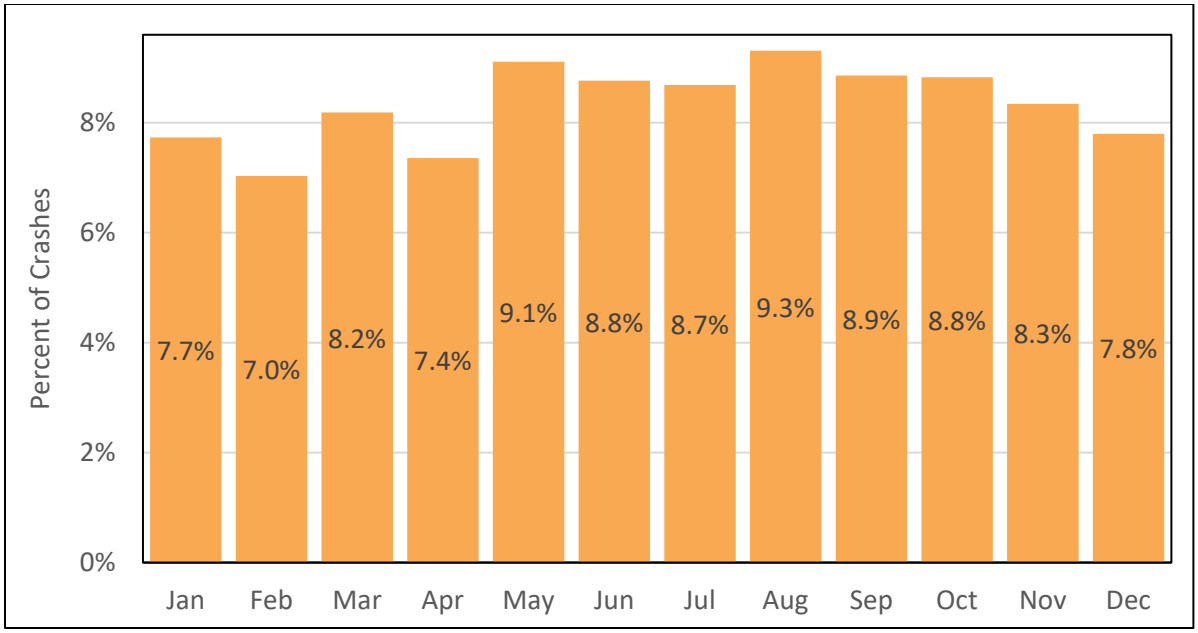

Figure 31 – Combined Alcohol- and Drug-Involved Crash Percentages by Month, 2018-2022

Crashes involving both alcohol- and drug-involved impairment by day of the week are shown in Figure 32. Similar to the alcohol-involved or drug-involved impairment types (Figures 17 and 18), the impairment combination occurs more frequently on the weekends. Saturday was the most frequent crash day of the week with 19.0% of the crashes involving both alcohol and drugs.

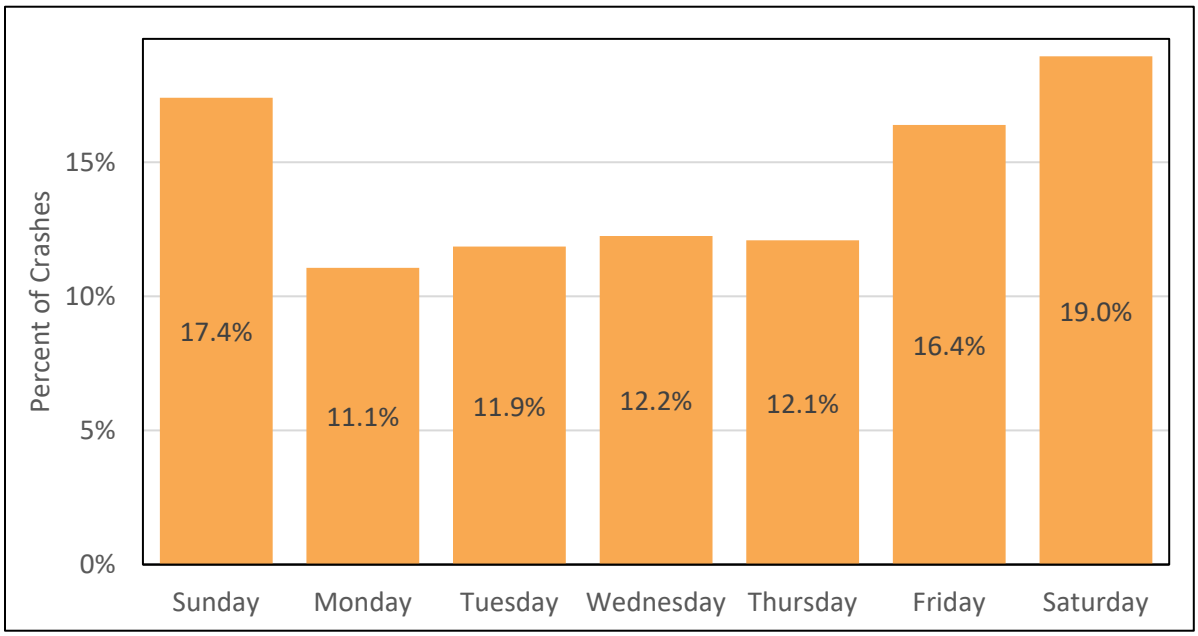

Figure 32 – Combined Alcohol- and Drug-Involved Crash Percentages by Day of Week, 2018-2022

Figure 33 shows crashes involving both alcohol and drug impairment by time of day. The trend of both alcohol and drug involved crashes appears to be a combination of the patterns for alcohol-involved

crashes (Figure 19) and drug-involved crashes (Figure 20) with a relatively consistent plateau between the hours of 7 PM and 2 AM. The 10-11 PM hour has an hourly high of 7.4% of the total crashes.

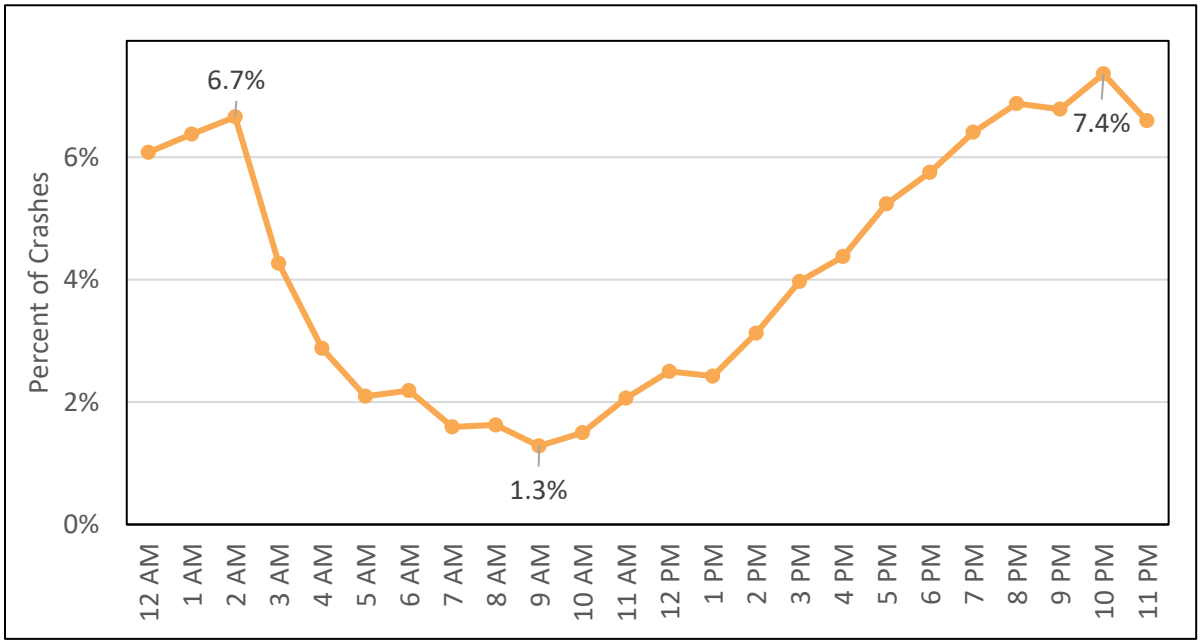

Figure 33 – Combined Alcohol- and Drug-Involved Crash Percentages by Time of Day, 2018-2022

12.0 Summary

Alcohol and drug impairment greatly increases the risk of fatal injury in a crash. A growing concern is combined alcohol and drug use, which has even higher fatal crash rates. Drivers between the ages of 21-25 and 26-30 are the most common age groups involved in impaired crashes and male gender drivers are involved in impaired crashes at over double the proportion of female drivers. Both alcohol-involved and drug-involved crashes had higher rates on weekends with a peak on Saturday (22.1% of alcohol-involved crashes, and 16.6% of drug-involved crashes). Alcohol-involved crashes were more likely to occur at night, with a peak between 10 PM and 11 PM (8.3% of alcohol-involved crashes), while drug-involved crashes peaked between 6 PM and 7 PM (6.1% of drug-involved crashes). To decrease the injury risk of impaired crashes, intervention and awareness campaigns should focus on the high-risk groups (e.g., younger males) who are more likely to drive while impaired or times of heavier use (e.g., alcohol use during weekends or late evening hours).

One challenge for tracking and interpreting the trends in drug-impaired driving has been changes in testing practices over time. In earlier years, drug testing was often only done when impairment was suspected but the alcohol BAC result was 0. In general, drug testing is more challenging without a commonly used roadside test device, so drug testing occurs more frequently when the crash severity is worse compared to alcohol testing. As a result, there tends to be a lower proportion of possible injury (C) and no injury (O) crashes involving drug use. As more drug testing is done in lower severity crashes, the proportion of fatal drug-involved crashes will continue to decrease. Thus, when 8.5% of drug-involved crashes are fatal crashes, this should not be interpreted as indicating that drug-involved crashes are 3 times deadlier than alcohol-involved crashes where 3.1% are fatal crashes.