TRIP

TRAFFIC RECORDS INTEGRATION PROGRAM

Multi-Collision Drivers: Contributing Circumstances

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What this report is about

This research brief expands our previous work on multi-collision drivers by using the eight cohorts of drivers that we created in the Multi-Collision Drivers Impact on Washington report earlier this year.[1] The driver data we use comes from the Washington State Department of Transportation (DOT) driver data starting and starts in 2009 and ends in 2019.

The three recorded contributing circumstances that precede collisions can be organized into four categories: Dangerous driving, distracted driving, substance-related, and none.[1] (The Office of Financial Management aggregated this data.) The first three categories can be viewed as driver error for their part in a collision. The final category indicates that the driver had no contributing circumstances to a collision. We will use the three contributing circumstances we mentioned above to compare multi-collision drivers to single collision drivers.

What we found

- If you're a multi-collision driver, you're more likely to be involved in a collision that involve one of these three high-risk driving behaviors: Dangerous, substance-related, and distracted driving.

- Dangerous driving is the most common contributing circumstances for multi-collision drivers.

- Single-collision drivers are more likely to have no contributing circumstances when they are involved in a collision.

- Single-collision drivers have a higher proportion of driving under the influence of alcohol, while multi-collision drivers have a higher proportion of driving under the influence of drugs.

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[1] **Dangerous driving**: Exceeding Stated Speed Limit, Exceeding Reasonable Safe Speed, Did Not Grant right of way to Vehicle, Improper Passing, Follow Too Closely, Over Center Line, Failing to Signal, Improper Turn/Merge, Disregard Stop and Go Light, Disregard Stop Sign - Flashing Red, Disregard Yield Sign - Flashing Yellow, Apparently Asleep or Fatigued, Improper Parking Location, Operating Defective Equipment, Other Contributing Circ Not Listed, Improper Signal, Improper U-Turn, Light Violation: No Lights/Fail to Dim, Did Not Grant R/W to Non Motorist, Inattention, Improper Backing, Disregard Flagger / Officer, Apparently Ill, Apparently Fatigued, Non-Motorist on Wrong Side of Road, Hitchhiking, Failure to Use Xwalk, Disregard Traffic Sign and Signals, Apparently Emotional (Depressed, Angry, Disturbed, etc.), Physically Impaired, Racing, Operating Recklessly or Aggressively, Overcorrecting / Oversteering
Substances: Under Influence of Alcohol, Under Influence of Drugs, Had Taken Medication
Distracted driving: Operating Handheld Cell Phone, Operating Hands-Free Cell Phone, Operating Other Electronic Devices (computer, navigation, etc.), Driver Adjusting Audio or Entertainment System, Smoking, Eating or Drinking, Reading or Writing, Grooming, Driver Interacting with Passengers, Animals or Objects Inside Vehicle, Other Driver Distractions Inside Vehicle, Distractions Outside Vehicle, Unknown Distraction, Lost in Thought / Day Dreaming, Distracted by Other Occupant, Distracted by Adjusting Vehicle Controls, Other Distractions
None: None, Driver Not Distracted

Here are the most important takeaways from this table:

- Not everyone has a contributing circumstance, which could mean that not every report is incomplete or that an officer may not be able to categorize every driver's behavior.
- Most drivers have at least once contributing circumstance.

Table 1: How many people had one, two or three contributing circumstances in a collision, 2009-2019

Number of contributing circumstances codes	Number of total driver records	Percent of total driver records
Contributing circumstance not recorded	66,404	2.7%
1	2,422,639	86.8%
2	261,407	9.1%
3	34,939	1.4%
TOTAL		**100.0%**

Table 1 above shows the percent of drivers with contributing circumstance codes between 2009 and 2019. Most collisions (86.8%) have just one contributing circumstance. Just over 10% have two or three contributing circumstances and the remaining 2.7% do not.

Issues with data

In 2014, a review committee updated the instructions for how to complete a collision report to indicate the order of severity for a contributing circumstance.[2] However, this change didn't define what 'severity' measures. The data we use in this report covers 2009 to 2019, which means reporting instructions changed during this period. The contributing circumstances listed on a collision report are recorded as 1, 2, and 3 but this does not imply the order of severity. Due to the change in 2014 and so we could interpret the analysis, we will combine the three contributing circumstances.

The analysis

For this analysis, we divided drivers into eight cohorts that cover 2009 to 2019. Cohorts were created to increase the explanatory power of 10 years of data. By defining these cohorts, we can better attribute drive behavior to the relevance of multiple collisions. TRIP has defined multi-collision driver cohorts as drivers with a collision in a reference year (this is a year we use as a reference point to identify if a driver is a multi- or single-collision driver) who also have at least one collision during the previous three-year period. Each cohort covers a four-year time span. For Cohort 1, 2012 is the reference year, but the

analysis uses data back to 2009. The second cohort reference year is 2013 and uses data for 2010-2013. This pattern continues with the eighth cohort reference year in 2019, using data for 2016–2019. In the study, we compared multi-collision drivers to single-collision drivers, or drivers with no additional crashes in the previous three years.

Here's the most important takeaway for the figure below:

- Among the eight cohorts we looked at, drivers who have been in multiple collisions are increasing.

Figure 1: How many more times (ratio) we recorded single-collision drivers each year, compared to multi-collision drivers
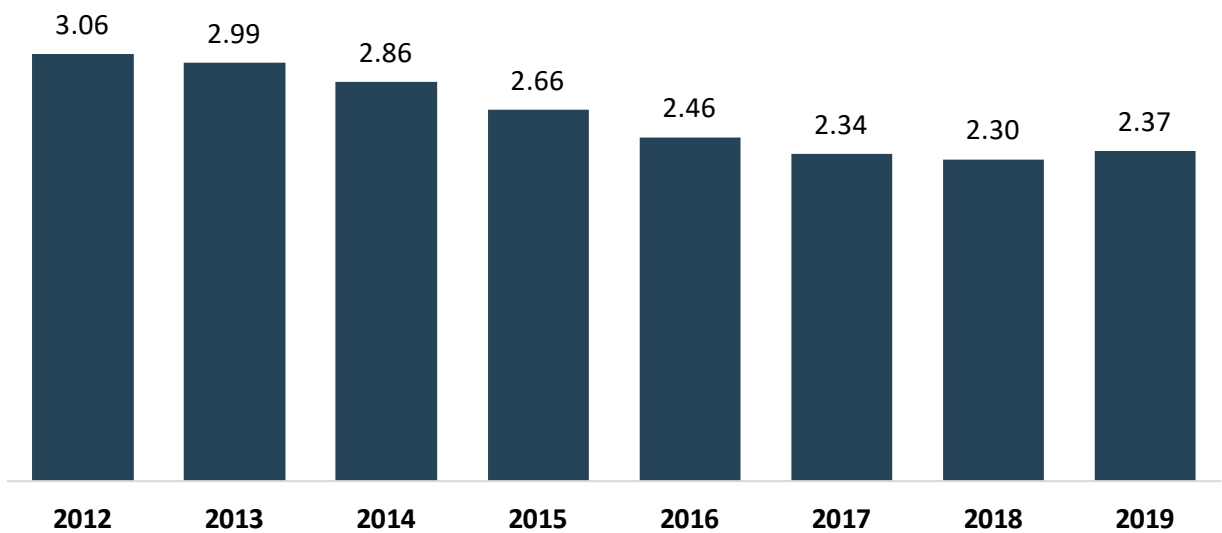
Figure 1 illustrates that single-collision drivers still represent an overwhelming number of traffic collisions within the state, with an average of 2.61 times as many single-collision to multi-collision drivers. However, the number of multi-collision drivers is increasing over time. We can see the increase of multi-collision drivers in the decreasing ratio of single collision drivers from 3.06 to 2.37 times as many from the first cohort (2012) to the last (2019).

Here is the most important takeaway in the figure below:

- Eight of the 10 behaviors below are dangerous driving, and the most common contributing circumstances of multi-collision drivers are generally dangerous driving behaviors.

Figure 2: How often these top 10 driving behaviors occur (average difference) between single- or multi-collision drivers
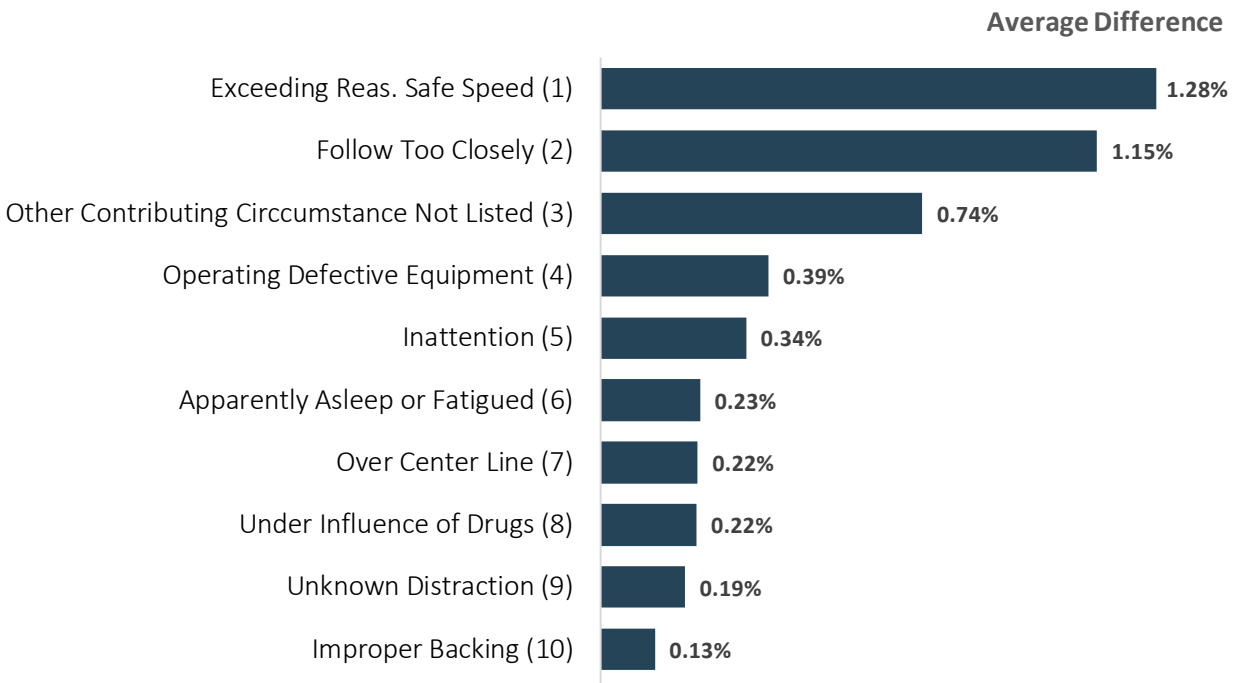
Figure 2 shows the largest average percentage point difference (this means the numerical difference between two percentages) of the top 10 contributing circumstances between the multi- and single-collision groups over the eight cohorts. The positive number on the right side of the graphic means multi-collision drivers had a higher proportion of contributing circumstances than single collision drivers. We define the top 10 behaviors listed above as primarily dangerous driving related. This means the contributing circumstances point to multi-collision drivers engaging in riskier driving behavior than single-collision drivers.

The most notable example above is under influence of drugs, which is the eighth greatest difference between the collision groups. While the substance-related category is overwhelmingly made up of under influence of alcohol, under influence of drugs is a distant second and is a leading difference between the multi- and single-collision groups. This signals a higher likelihood of drug-impaired driving among multi-collision drivers.

Here's the most important takeaway in the table below:

- If you're a multi-collision driver, you're more likely to be involved in a collision that involves one of the three high-risk driving behaviors: Distracted driving, dangerous driving, substance-related driving.

Table 2: The difference (percentage point) between
multi-collision vs. single collision contributing circumstances

Aggregated Categories	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Cohort 8
Distracted driving	0.58%	0.52%	0.80%	0.68%	0.67%	0.76%	0.82%	0.80%
None	-4.74%	-4.35%	-4.38%	-5.60%	-5.74%	-5.40%	-5.99%	-5.79%
Dangerous driving	4.00%	3.40%	3.64%	4.73%	5.07%	4.60%	5.10%	4.84%
Substance-related	0.16%	0.42%	-0.05%	0.19%	-0.01%	0.03%	0.07%	0.16%

Table 2 provides the percentage point difference (this means the numerical difference between two percentages) between multi- and single-collision drivers within cohorts by aggregated category to show what actions impact these drivers. For all four of the aggregated categories listed in Table 2, a positive number means a higher percentage of multi-collision drivers were involved in those contributing circumstances. As a reference point, if there was a 0% difference between multi- and single-collision drivers, then the percent of contributing circumstances would be the same for both groups.

Multi-collision drivers have greater averages in three of the four categories. These three categories can be generally defined by driver error. The greatest difference among the three categories is dangerous driving. Dangerous driving-related contributing circumstances from multi-collision drivers increased over the eight cohorts of data. This difference is not surprising because eight of the 10 contributing circumstances in Figure 2 fall under dangerous driving.

The distracted driving category has a noticeably smaller difference than dangerous driving. The difference increases, which means that multi-collision drivers had more distracted driving incidents than single collision drivers over the eight cohorts. Table 3 breaks down the individual contributing circumstances that make up the aggregated categories. An important caveat for the distracted driving category is that until 2013, 'inattention' was a catch-all description that officers used in collision reporting. Inattention is important because it has largest changes over the eight cohorts and is the largest contributing circumstance in the distracted driving category.

The substance-related category has the smallest difference between multi- and single-collision drivers. Table 2 shows substance-related contributing circumstances is the only category that changes what collision group had greater representation. Table 3 shows single-collision drivers are more likely to involve alcohol while multi-collision drivers are more likely to have drugs involved in their collisions.

Table 2 shows 'None' as a category has the largest percentage point difference (this means the numerical difference between two percentages) between single and multi-collision drivers. The change in the none category over the eight cohorts is also the largest category. It shows that single-collision drivers over all cohorts are more likely to have no contributing circumstances involved in their collision than multi-collision drivers.

Here's the most important takeaway in the table below:

- This table lists all the driving behaviors (42) we found in the eight groups.
- The most common thing to occur for a single-collision driver is nothing.

Table 3: Differences between multi- and single-collision contributing circumstances by cohorts [3]

Percentage Point Difference Multi-Collision vs Single Collision Contributing Circumstances	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Cohort 8
Under Influence of Alcohol	-0.238%	-0.008%	-0.241%	-0.023%	-0.203%	-0.141%	-0.149%	-0.076%
Under Influence of Drugs	0.311%	0.346%	0.158%	0.181%	0.178%	0.149%	0.218%	0.230%
Exceeding Stated Speed Limit	0.116%	0.133%	0.013%	0.204%	0.077%	0.054%	0.119%	0.070%
Exceeding Reasonable Safe Speed	1.505%	1.923%	1.272%	1.474%	1.079%	0.957%	1.303%	0.757%
Did Not Grant RW to Vehicle	-0.201%	0.079%	-0.417%	-0.311%	-0.245%	-0.446%	-0.547%	-0.672%
Improper Passing	0.046%	0.126%	0.167%	0.122%	0.075%	0.113%	0.133%	0.111%
Follow Too Closely	1.249%	1.550%	1.269%	1.065%	0.916%	1.008%	1.053%	1.062%
Over Center Line	0.063%	0.793%	0.127%	0.468%	0.129%	0.080%	0.063%	0.070%
Failing to Signal	0.014%	-0.001%	0.000%	-0.014%	-0.004%	0.010%	0.009%	0.004%
Improper Turn/Merge	0.079%	0.010%	0.031%	-0.098%	-0.040%	-0.134%	-0.080%	-0.075%
Disregard Stop and Go Light	-0.053%	0.002%	-0.033%	-0.005%	-0.012%	-0.091%	-0.062%	-0.047%
Disregard Stop Sign - Flashing Red	0.099%	-0.011%	-0.093%	-0.020%	-0.024%	-0.047%	-0.084%	-0.052%
Disregard Yield Sign - Flashing Yellow	0.021%	0.029%	0.020%	0.009%	0.005%	-0.015%	-0.004%	-0.008%
Apparently Asleep or Fatigued	0.065%	0.288%	0.79%	0.223%	0.247%	0.337%	0.220%	0.276%
Improper Parking Location	-0.001%	0.015%	0.005%	0.001%	0.018%	-0.004%	-0.005%	-0.011%
Operating Defective Equipment	0.436%	0.334%	0.224%	0.438%	0.465%	0.400%	0.436%	0.366%
Other Contributing Circ Not Listed	0.580%	0.868%	0.727%	0.834%	0.771%	0.603%	0.645%	0.915%
None	-4.681%	-2.965%	-4.188%	-5.056%	-5.610%	-5.405%	-5.867%	-5.555%
Improper Signal	0.000%	-0.016%	0.006%	-0.004%	0.008%	-0.008%	0.000%	-0.001%

Percentage Point Difference Multi-Collision vs Single Collision Contributing Circumstances	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Cohort 8
Improper U-Turn	0.022%	0.022%	0.006%	0.073%	0.024%	0.015%	0.019%	-0.021%
Light Violation: No Lights/Fail to Dim	0.001%	-0.003%	-0.011%	-0.005%	-0.010%	-0.020%	-0.002%	0.007%
Did Not Grant R/W to Non-Motorist	-0.110%	0.002%	-0.038%	0.034%	-0.007%	-0.035%	-0.038%	-0.025%
Inattention	-0.140%	-2.986%	-0.185%	-0.012%	1.224%	1.507%	1.583%	1.695%
Improper Backing	0.007%	0.089%	0.188%	0.089%	0.239%	0.141%	0.145%	0.102%
Disregard Flagger / Officer	0.001%	0.004%	0.004%	-0.001%	0.006%	0.007%	-0.003%	0.013%
Apparently Ill	0.123%	0.115%	0.082%	0.137%	0.063%	0.067%	0.052%	0.060%
Apparently Fatigued	0.076%	0.031%	0.095%	0.084%	0.069%	0.088%	0.074%	0.152%
Had Taken Medication	0.088%	0.084%	0.030%	0.027%	0.014%	0.026%	0.000%	0.005%
Non-Motorist on Wrong Side of Road	0.001%	0.006%	0.002%	-0.052%	0.001%	0.014%	0.072%	0.084%
Operating Handheld Cell Phone	0.169%	0.067%	0.053%	0.078%	0.062%	0.092%	0.076%	0.083%
Operating Hands-Free Cell Phone	0.017%	0.000%	0.004%	0.023%	0.006%	-0.013%	0.006%	0.011%
Operating Other Electronic Devices (computer, navigation, etc.)	0.013%	-0.003%	0.010%	0.026%	0.033%	0.020%	-0.006%	0.034%
Driver Adjusting Audio or Entertainment System	0.050%	0.067%	0.056%	0.059%	0.059%	0.024%	0.032%	0.046%
Smoking	0.063%	0.048%	0.016%	0.028%	0.024%	0.023%	0.005%	0.016%
Eating or Drinking	0.042%	0.081%	0.064%	0.044%	0.022%	0.042%	0.059%	0.051%
Reading or Writing	0.023%	0.011%	0.014%	-0.003%	-0.003%	0.007%	0.005%	0.003%
Grooming	0.004%	0.003%	0.002%	-0.005%	0.003%	0.005%	-0.002%	-0.002%
Driver Interacting with Passengers, Animals or Objects Inside Vehicle	0.057%	0.152%	0.062%	0.123%	0.127%	0.107%	0.148%	0.081%
Other Driver Distractions Inside Vehicle	0.084%	0.036%	0.004%	0.109%	0.082%	0.093%	0.045%	0.051%
Distractions Outside Vehicle	0.083%	0.203%	0.070%	0.151%	0.098%	0.087%	0.056%	0.037%
Unknown Distraction	-0.024%	-0.142%	0.439%	0.048%	0.156%	0.274%	0.401%	0.407%
Driver Not Distracted	-0.062%	-1.382%	-0.193%	-0.546%	-0.125%	0.010%	-0.127%	-0.237%

Appendix

Table 4: Percentage of multi-collision drivers contributing circumstances aggerate categories

Multi-Collision Drivers	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Cohort 8
Distracted Driving	4.59%	4.65%	4.92%	5.15%	5.16%	4.96%	5.00%	4.94%
No Contributing Circumstances	36.75%	36.78%	36.75%	36.97%	37.32%	38.15%	38.17%	38.27%
Dangerous Driving	54.92%	55.11%	55.35%	55.06%	54.87%	54.09%	53.85%	53.70%
Substances	3.74%	3.46%	2.99%	2.81%	2.65%	2.80%	2.98%	3.08%

Table 5: Percentage of single-collision drivers contributing circumstances aggerate categories

Single Collision Drivers	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Cohort 8
Distracted Driving	4.01%	4.12%	4.12%	4.47%	4.49%	4.20%	4.18%	4.14%
No Contributing Circumstances	41.50%	41.13%	41.13%	42.58%	43.06%	43.55%	44.17%	44.07%
Dangerous Driving	50.92%	51.71%	51.71%	50.33%	49.79%	49.49%	48.74%	48.86%
Substances	3.58%	3.04%	3.04%	2.63%	2.66%	2.76%	2.91%	2.92%

Table 6: Percentages of multi-collision contributing circumstances by cohorts[4]

Contributing Circumstances	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Cohort 8
Under Influence of Alcohol	2.920%	2.636%	2.403%	2.298%	2.151%	2.310%	2.425%	2.536%
Under Influence of Drugs	0.646%	0.668%	0.481%	0.440%	0.448%	0.432%	0.515%	0.512%
Exceeding Stated Speed Limit	0.873%	0.831%	0.711%	0.713%	0.602%	0.538%	0.578%	0.537%
Exceeding Reasonable Safe Speed	10.911%	9.685%	9.035%	8.745%	8.422%	8.300%	7.772%	7.667%
Did Not Grant RW to Vehicle	9.441%	8.395%	7.899%	7.388%	7.349%	7.257%	7.254%	7.217%
Improper Passing	0.534%	0.531%	0.572%	0.617%	0.600%	0.643%	0.641%	0.671%
Follow Too Closely	9.336%	8.944%	8.663%	8.701%	8.669%	8.715%	8.994%	8.991%
Over Center Line	2.591%	1.906%	1.239%	0.921%	0.567%	0.487%	0.481%	0.470%
Failing to Signal	0.066%	0.058%	0.058%	0.043%	0.047%	0.047%	0.055%	0.057%
Improper Turn/Merge	1.627%	1.432%	1.452%	1.404%	1.408%	1.454%	1.503%	1.539%
Disregard Stop and Go Light	1.573%	1.263%	1.227%	1.073%	1.031%	0.947%	0.974%	0.969%
Disregard Stop Sign - Flashing Red	0.975%	0.686%	0.604%	0.534%	0.519%	0.523%	0.499%	0.554%
Disregard Yield Sign - Flashing Yellow	0.091%	0.077%	0.069%	0.062%	0.071%	0.065%	0.068%	0.066%
Apparently Asleep or Fatigued	0.909%	1.075%	0.967%	0.990%	0.994%	1.053%	0.978%	1.000%
Improper Parking Location	0.014%	0.027%	0.017%	0.027%	0.033%	0.024%	0.014%	0.010%
Operating Defective Equipment	1.794%	1.633%	1.523%	1.486%	1.496%	1.368%	1.385%	1.322%
Other Contributing Circ Not Listed	5.263%	5.633%	5.492%	5.222%	5.181%	5.079%	5.156%	5.523%
None	36.567%	35.301%	34.079%	34.362%	34.614%	35.591%	35.817%	36.075%
Improper Signal	0.027%	0.019%	0.041%	0.036%	0.053%	0.041%	0.052%	0.054%
Improper U-Turn	0.393%	0.312%	0.295%	0.328%	0.295%	0.288%	0.302%	0.261%

Contributing Circumstances	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Cohort 8
Light Violation: No Lights/Fail to Dim	0.033%	0.027%	0.019%	0.024%	0.022%	0.017%	0.027%	0.040%
Did Not Grant R/W to Non-Motorist	0.625%	0.457%	0.417%	0.393%	0.326%	0.300%	0.353%	0.344%
Inattention	5.840%	10.255%	13.056%	14.342%	15.142%	14.875%	14.711%	14.265%
Improper Backing	1.219%	1.203%	1.301%	1.168%	1.176%	1.147%	1.072%	1.055%
Disregard Flagger / Officer	0.017%	0.015%	0.015%	0.015%	0.017%	0.018%	0.010%	0.026%
Apparently Ill	0.497%	0.385%	0.352%	0.344%	0.293%	0.265%	0.275%	0.288%
Apparently Fatigued	0.265%	0.252%	0.316%	0.380%	0.351%	0.410%	0.417%	0.476%
Had Taken Medication	0.172%	0.157%	0.103%	0.073%	0.053%	0.056%	0.040%	0.035%
Non-Motorist on Wrong Side of Road	0.006%	0.010%	0.005%	0.108%	0.203%	0.228%	0.272%	0.289%
Operating Handheld Cell Phone	0.509%	0.329%	0.316%	0.319%	0.327%	0.318%	0.329%	0.318%
Operating Hands-Free Cell Phone	0.041%	0.037%	0.041%	0.046%	0.040%	0.029%	0.046%	0.050%
Operating Other Electronic Devices (computer, navigation, etc.)	0.128%	0.108%	0.122%	0.145%	0.145%	0.123%	0.102%	0.113%
Driver Adjusting Audio or Entertainment System	0.271%	0.242%	0.232%	0.197%	0.174%	0.141%	0.134%	0.140%
Smoking	0.116%	0.087%	0.055%	0.061%	0.043%	0.041%	0.025%	0.033%
Eating or Drinking	0.221%	0.225%	0.208%	0.162%	0.136%	0.143%	0.161%	0.147%
Reading or Writing	0.043%	0.021%	0.024%	0.006%	0.008%	0.017%	0.012%	0.011%
Grooming	0.017%	0.014%	0.012%	0.006%	0.013%	0.014%	0.010%	0.010%
Driver Interacting with Passengers, Animals or Objects Inside Vehicle	0.836%	0.742%	0.652%	0.621%	0.610%	0.541%	0.582%	0.523%
Other Driver Distractions Inside Vehicle	0.611%	0.515%	0.484%	0.532%	0.525%	0.510%	0.458%	0.478%
Distractions Outside Vehicle	1.314%	1.137%	1.004%	0.928%	0.821%	0.755%	0.702%	0.657%
Unknown Distraction	0.480%	1.187%	1.768%	2.128%	2.316%	2.331%	2.441%	2.450%
Driver Not Distracted	0.188%	1.480%	2.670%	2.613%	2.710%	2.560%	2.356%	2.200%

Table 7: Percentages of multi-collision contributing circumstances by cohorts5

Contributing Circumstances	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Cohort 8
Under Influence of Alcohol	3.158%	2.645%	2.645%	2.321%	2.354%	2.451%	2.574%	2.612%
Under Influence of Drugs	0.335%	0.322%	0.322%	0.259%	0.270%	0.283%	0.296%	0.282%
Exceeding Stated Speed Limit	0.758%	0.698%	0.698%	0.509%	0.525%	0.484%	0.459%	0.467%
Exceeding Reasonable Safe Speed	9.406%	7.763%	7.763%	7.271%	7.343%	7.343%	6.470%	6.910%
Did Not Grant RW to Vehicle	9.642%	8.316%	8.316%	7.699%	7.594%	7.703%	7.801%	7.888%
Improper Passing	0.488%	0.405%	0.405%	0.495%	0.525%	0.530%	0.508%	0.559%
Follow Too Closely	8.087%	7.393%	7.393%	7.636%	7.753%	7.707%	7.941%	7.929%
Over Center Line	2.528%	1.113%	1.113%	0.453%	0.437%	0.407%	0.418%	0.400%
Failing to Signal	0.052%	0.059%	0.059%	0.057%	0.051%	0.038%	0.047%	0.053%
Improper Turn/Merge	1.547%	1.422%	1.422%	1.502%	1.448%	1.588%	1.583%	1.614%
Disregard Stop and Go Light	1.626%	1.260%	1.260%	1.079%	1.043%	1.037%	1.036%	1.016%
Disregard Stop Sign - Flashing Red	0.875%	0.697%	0.697%	0.553%	0.544%	0.570%	0.583%	0.606%
Disregard Yield Sign - Flashing Yellow	0.070%	0.048%	0.048%	0.054%	0.066%	0.081%	0.073%	0.074%
Apparently Asleep or Fatigued	0.843%	0.787%	0.787%	0.767%	0.747%	0.716%	0.758%	0.724%
Improper Parking Location	0.016%	0.012%	0.012%	0.026%	0.015%	0.028%	0.020%	0.021%
Operating Defective Equipment	1.358%	1.299%	1.299%	1.047%	1.031%	0.968%	0.950%	0.956%
Other Contributing Circ Not Listed	4.683%	4.765%	4.765%	4.388%	4.410%	4.475%	4.512%	4.607%
None	41.248%	38.267%	38.267%	39.417%	40.225%	40.996%	41.685%	41.630%
Improper Signal	0.027%	0.035%	0.035%	0.040%	0.044%	0.049%	0.051%	0.055%
Improper U-Turn	0.371%	0.289%	0.289%	0.255%	0.271%	0.273%	0.283%	0.282%
Light Violation: No Lights/Fail to Dim	0.032%	0.030%	0.030%	0.028%	0.032%	0.036%	0.029%	0.034%
Did Not Grant R/W to Non-Motorist	0.735%	0.455%	0.455%	0.359%	0.332%	0.334%	0.391%	0.370%
Inattention	5.980%	13.241%	13.241%	14.355%	13.918%	13.368%	13.128%	12.569%
Improper Backing	1.212%	1.113%	1.113%	1.080%	0.937%	1.005%	0.927%	0.953%
Disregard Flagger / Officer	0.016%	0.012%	0.012%	0.016%	0.012%	0.011%	0.013%	0.013%
Apparently Ill	0.374%	0.270%	0.270%	0.207%	0.229%	0.198%	0.223%	0.228%
Apparently Fatigued	0.189%	0.221%	0.221%	0.295%	0.282%	0.322%	0.343%	0.324%
Had Taken Medication	0.084%	0.073%	0.073%	0.046%	0.038%	0.030%	0.040%	0.030%
Non-Motorist on Wrong Side of Road	0.005%	0.003%	0.003%	0.160%	0.202%	0.215%	0.200%	0.205%
Operating Handheld Cell Phone	0.340%	0.262%	0.262%	0.241%	0.265%	0.226%	0.253%	0.235%
Operating Hands-Free Cell Phone	0.025%	0.037%	0.037%	0.023%	0.034%	0.042%	0.040%	0.039%
Operating Other Electronic Devices (computer, navigation, etc.)	0.116%	0.112%	0.112%	0.119%	0.112%	0.103%	0.108%	0.080%

Contributing Circumstances	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Cohort 8
Driver Adjusting Audio or Entertainment System	0.221%	0.175%	0.175%	0.138%	0.115%	0.117%	0.102%	0.094%
Smoking	0.053%	0.039%	0.039%	0.033%	0.019%	0.018%	0.020%	0.017%
Eating or Drinking	0.179%	0.144%	0.144%	0.117%	0.113%	0.101%	0.102%	0.096%
Reading or Writing	0.020%	0.010%	0.010%	0.008%	0.010%	0.010%	0.006%	0.008%
Grooming	0.012%	0.010%	0.010%	0.011%	0.010%	0.010%	0.013%	0.012%
Driver Interacting with Passengers, Animals or Objects Inside Vehicle	0.779%	0.590%	0.590%	0.499%	0.483%	0.434%	0.434%	0.442%
Other Driver Distractions Inside Vehicle	0.526%	0.480%	0.480%	0.423%	0.442%	0.417%	0.413%	0.427%
Distractions Outside Vehicle	1.231%	0.934%	0.934%	0.777%	0.724%	0.668%	0.646%	0.620%
Unknown Distraction	0.504%	1.329%	1.329%	2.080%	2.160%	2.057%	2.040%	2.043%
Driver Not Distracted	0.251%	2.862%	2.862%	3.159%	2.835%	2.550%	2.482%	2.437%

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[1] Lee, Joe. "Multi-Collision Drivers Impact on Washington." Statistical Analysis Center, Forecasting and Research, Office of Financial Management Washington State, July 2021, https://sac.ofm.wa.gov/sites/default/files/public/TRIP/TRIP_Multi-Collision_Drivers_Impact_on_Washington.pdf

[2] "Washington State Police Collision Report Instruction Manual" Washington State Patrol, August 2014, https://www.wsp.wa.gov/wp-content/uploads/2018/01/PTCR-Manual-8-2014.pdf

The collection of contributing circumstance variables through the paper form has an order bias because the paper form relies on the PTCR manual which has the values ordered numerically based on the contributing circumstances, but the SECTOR system has all options in alphabetical order for the contributing circumstances.

[3] Lost in Thought / Day Dreaming, Other Distractions, Disregard Traffic Sign and Signals, Apparently Emotional (Depressed, Angry, Disturbed, etc.), Operating Recklessly or Aggressively have been removed due to data quality concerns and represent less than one percent of the data used in this analysis.

[4] Ibid

[5] Lost in Thought / Day Dreaming, Distracted by Other Occupant, Distracted by Adjusting Vehicle Controls, Other Distractions, Disregard Traffic Sign and Signals, Operating Recklessly or Aggressively, Overcorrecting / Oversteering have been removed due to data quality concerns and represent less than one percent of the data used in this analysis.