COVID-19 Road Safety Monitor 2021

The Impact of the Pandemic on Road Safety & Mobility

Heather Woods-Fry, Ward G.M. Vanlaar & Robyn D. Robertson, December 2021

This fact sheet summarizes results from the Road Safety Monitor (RSM) related to the effects of the COVID-19 pandemic on road safety and travel behaviour. The COVID-19 RSM is a special edition public opinion survey conducted by the Traffic Injury Research Foundation (TIRF) and sponsored by Desjardins. The survey takes the pulse of the nation on key road safety issues, with a specific focus on the COVID-19 pandemic and its effects on driver behaviour. The online survey was fielded to a random, representative sample of Canadians.

The objective of this fact sheet is to examine the effects of the pandemic on the road safety attitudes, beliefs, and practices of Canadians. The COVID-19 pandemic is one of the most disruptive events in recent history – a public health emergency causing significant disturbances in travel behaviour and road safety. In the first 12 full months after the pandemic was declared (April 2020 to March 2021), Canadians drove 13.3% fewer kilometres than they did in the preceding 12 months (Automotive Insurers Association 2021). Increased risky driving behaviours such as speeding and impaired driving were also noted. In New Brunswick, the RCMP issued 10,818 speeding tickets in 2020, a 16.9% increase from 2019 (New Brunswick RCMP 2021). The Ontario Provincial Police saw a 40.1% increase in the percentage of stunt driving[1] offences compared to 2019. Edmonton police noted a 200% increase in drivers speeding more than 50 km/h over the speed limit (Heidenreich, 2020), Saanich police saw a 700% increase in the number of cars impounded for excessive speeding (Chan, 2020), and Toronto Police reported a 35% increase in speeding tickets and an almost 200% increase in stunt driving (City of Toronto, 2020).

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More recently, as lockdown restrictions have eased, impaired driving charges increased in 2021 compared to 2020 in some municipalities. These charges increased by 27.7% in Ottawa and 10.2% in Peel Region, (Pringle 2021; Peel Regional Police 2021). In some municipalities, dangerous driving behaviours decreased from 2019 to 2020 due to less traffic, but increased again in 2021. If one looks at the number of speeding tickets issued annually January to October in Saskatoon, there was a 46.0% decrease in 2020 compared to 2019. However, there was a 25.8% increase in the number of speeding tickets issued in 2021 compared to 2020 (Saskatoon Police 2021). In British Columbia, there was a 13.0% increase in the speeding tickets issued in the April 2020-March 2021 period compared to the April 2019-March 2020 period (ICBC 2021).

In the United States, there was a substantial decrease of approximately 13.2% in vehicle miles travelled (VMT) since March 2020, meaning drivers drove less in 2020 compared to 2019. Despite this anticipated decline, there was an estimated increase of 7.2% in vehicle fatalities with a fatality rate of 1.37 fatalities per 100 million VMT. This represents the highest fatality rate since 2007 (National Center for Statistics and Analysis, 2021). Therefore, although drivers were driving less, there appears to have been more vehicle fatalities per vehicle miles driven.

Data from five American trauma centres suggested an increase in alcohol-impaired and drug-impaired driving. Compared with data collected before the pandemic, data from March 17 to July 2020 revealed a 26.3% increase in seriously or fatally injured drivers who tested positive for alcohol, and a 27.4% increase in seriously or fatally injured drivers testing positive for at least one active drug. Particularly, marijuana was more prevalent among fatally injured drivers compared with alcohol (32.7% versus 28.3%), and opioid use among drivers doubled (Thomas et al. 2020).

Research also indicated preferred transportation modes changed significantly during the pandemic, with a large shift away from public transportation and an increase in personal vehicle use, largely due to concerns about infection-related factors (e.g., social distance, cleanliness, and infection concern) rather than traditional factors such as travel time saving, comfort, and cost (Abdullah et al. 2020). Moreover, the importance of the long-term impact of the pandemic on transportation mode choice can help shape new measures and policies to influence transportation from a planning and sustainability perspective (Zafri et al. 2021).

Based on this existing research, the current fact sheet empirically examines road user behaviour during the pandemic from a sample of drivers (N=2,099) and non-drivers (N= 601) with respect to the prevalence of certain risky driving behaviours and the effects of the pandemic on travel method and behaviour. Where possible, the latest results are compared to previous data collected from TIRF's RSM on self-reported risky driving behaviours during the pandemic (Vanlaar et al. 2020; Vanlaar et al. 2021).

Risky driving behaviours during the COVID-19 pandemic

To gauge Canadians' attitudes and practices during the COVID-19 pandemic, drivers (N=2,099) were asked about various self-reported unsafe driving behaviours including speeding, distracted driving, alcohol-impaired driving, drug-impaired driving, polysubstance use and driving, fatigued driving, and seatbelt use. Specifically, drivers were asked how likely they were to engage in these risky behaviours during the COVID-19 pandemic, compared to their typical behaviour before the pandemic.[2] The questions were asked on a scale from 1 (far less likely) to 5 (far more likely);[3] for scoring purposes, drivers were coded as more likely to engage in these behaviours while driving if they chose a four or five. Drivers who chose a three were coded as ***no change***, and those who chose a one or two were coded as less likely to engage in these behaviours while driving. Logistic regression analyses were undertaken to determine which factors significantly impacted the likelihood of engaging in these risky driving behaviours during the pandemic. Additionally, drivers were asked to rate their level of agreement to certain statements about their attitudes and behaviours during the pandemic, ranging from 1 (strongly disagree) to 6 (strongly agree); for scoring purposes, drivers were coded as agreeing if they chose five or six.

The current results were compared to previous RSM data on risky driving behaviour during the pandemic. Specifically, questions about self-reported speeding, distracted driving, alcohol-impaired driving, and drug-impaired driving during the pandemic were asked in September

2020 as well as in May 2021. Comparisons were made to determine if significant differences existed in the likelihood of engaging in these risky driving behaviours.

Excessive speeding. A total of 7.4% of Canadians admitted they were more likely to excessively exceed the posted speed limit by at least 20km/h during the pandemic, as compared to before COVID-19 (Table 1). In 2020, 5.5% of drivers reported being more likely to do so, corresponding to a significant increase between 2020 and 2021 in those who reported being more likely to speed during the pandemic as compared to before COVID-19 (z= 2.26, p= 0.02). The majority of drivers (69.5%) reported there was no change to their speeding behaviour in 2021, and 77.5% reported this in 2020 (z= -5.32, p= 0.001). In 2021, 23.1% of respondents reported being less likely to exceed the speed limit during the pandemic as compared to before COVID-19, whereas in 2020, 16.9% said they were less likely to do so, corresponding to a significant increase (z=4.54, p= 0.001).

Table 1: Excessive speeding during the pandemic

Excessive speeding	2021	2020	p-value
More likely	7.4%	5.5%	p= 0.02
No change	69.5%	77.5%	p= 0.001
Less likely	23.1%	16.9%	p= 0.001

These results suggest most drivers in 2020 and 2021 did not change their speeding behaviour during the pandemic as compared to before COVID-19. However, this percentage decreased significantly between 2020 and 2021. This corresponds with an increase in drivers who reported being more cautious and thus less likely to exceed the speed limit in 2021. There was also a significant increase in those who reported being more likely to speed during the pandemic, compared to before COVID-19.

Logistic regression analysis was performed with the 2021 results to predict the odds of being more likely to excessively speed during the pandemic compared to before COVID-19. The model revealed age was a significant predictor of excessive speeding during the pandemic. With every ten-year increase in age, drivers were 31% less likely to report excessive speeding during the pandemic as compared to before COVID-19 (OR: 0.69, p= 0.001; CI: 0.609 - 0.775). Drivers who agreed they were more likely to take risks while driving during the pandemic because of the reductions in traffic volumes had 5.6 times greater odds of reporting they were more likely to excessively speed during the pandemic as compared to before COVID-19 (OR: 5.64, p= 0.001; CI: 3.565 - 8.926). Sex was not a significant predictor of this behaviour.

In 2021, drivers who indicated they were more likely to speed during the pandemic were asked to indicate the main reason for speeding. More than half of drivers (60.2%) cited fewer vehicles on the road as the main reason

for exceeding the speed limit, and 17.5% stated it was because they felt there were fewer police patrols. Drivers were also asked if they would continue to exceed the posted speed limit by at least 20 km/h after the pandemic because it had become a habit, 7.7% agreed or strongly agreed with this statement.

It would seem the decrease in traffic volumes played a large role in drivers indicating they were likely to speed during the pandemic. Further, a sizeable proportion of drivers may continue to speed even after the pandemic when road traffic has returned to a normal volume, posing significant implications for road safety.

A logistic regression model was conducted predicting agreement with the following statement "I will continue to exceed the posted speed limit by at least 20 km/h after the pandemic because it has become a habit." Age was a significant predictor, as with every ten-year increase in age, drivers were 19% less likely to agree they would continue to exceed the speed limit after the pandemic because it had become a habit (OR: 0.81, p= 0.01; CI: 0.694 - 0.945). Drivers who agreed they were more likely to take risks while driving during the pandemic because of the reductions in traffic were over 13 times more likely to report they would continue to speed after the pandemic because it had become a habit (OR: 13.12, p= 0.001; CI: 7.70 - 22.556). Having two or more traffic tickets in the past 12 months was a significant predictor (OR: 5.01, p= 0.001; CI: 2.106 - 11.925). Sex was not a significant predictor of agreement with this statement.

Distracted driving. A total of 7.4% of Canadians admitted they were more likely to drive distracted during the pandemic, as compared to before COVID-19 (Table 2). Whereas in 2020, 4.2% of drivers reported this, corresponding to a significant increase between 2020 and 2021 (z= 3.96, p= 0.001). The majority of drivers (69.7%) reported there was no change in this behaviour in 2021, and 79.3% indicated this in 2020, corresponding to a significant decrease (z= -6.45, p=0.001). In 2021, almost one-quarter (22.9%) of drivers reported being less likely to drive distracted during the pandemic as compared to before COVID-19, which was a significant increase from 2020 when 16.5% reported this (z= 4.71, p=0.001).

Table 2: Distracted driving during the pandemic

Distracted driving	2021	2020	p-value
More likely	7.4%	4.2%	p= 0.001
No change	69.7%	79.3%	p= 0.001
Less likely	22.9%	16.5%	p= 0.001

When asked about whether they had trouble focusing on the driving task during the pandemic compared to their level of focus while driving before COVID-19, a sizable proportion of respondents (12.4%) admitted to experiencing this issue in 2021. Previously, a total of 9.1% of drivers indicated they had trouble focusing while driving during the pandemic in 2020, corresponding to a significant increase (z= 3.12, p=0.002).

Different sources of distraction were also examined. In 2021, drivers who indicated they were more likely to be distracted while driving during COVID-19 reported the primary source of distraction was competing thoughts unrelated to driving (34%), and somewhat fewer indicated texting on a cell phone was the primary source of distraction (21.2%). Both of these reasons were also listed as top sources of distraction in 2020, where 53.5% indicated the primary source of distraction was from competing thoughts not related to driving, and 14.3% of drivers indicated the primary source of distraction was texting on a cell phone.

In 2021, drivers were also asked to state their level of agreement with the following statement: "I find I am more distracted by calls, texts, and/or emails while driving because it is difficult to keep a work-life balance during the pandemic." A total of 9.5% of drivers agreed or strongly agreed they experienced this during the pandemic. Other common sources of distraction while driving were also explored in this sample, such as driving with passengers or unsecured animals. Results showed 12.4% of drivers reported being more likely to drive with passengers during the pandemic. The majority of drivers indicated there was no change (48%) or were less likely to drive with passengers (39.6%) during the pandemic as compared to before COVID-19. A small proportion (6%) of respondents were more likely to drive with unsecured pets during the pandemic as compared to before COVID-19, but the majority reported no change (70.9%) or were less likely to do so (23.1%).

In sum, the majority of drivers did not change their behaviours during the pandemic, although the percentage of drivers reporting this decreased in 2021. Moreover, a large increase was observed in those who indicated they were less likely to drive distracted during the pandemic. There was also a sizeable increase in the percentage of drivers who reported being more likely to drive distracted during the pandemic in 2021 as compared to before COVID-19. Results showed drivers who indicated being more likely to drive distracted during the pandemic were primarily affected by competing thoughts unrelated to driving. The percentage of drivers who indicated this as the primary reason for distraction was much higher at the beginning of the pandemic in 2020. This may be a result of the unprecedented nature of the COVID-19 pandemic and the greater level of uncertainly at the beginning of the pandemic, which could have caused drivers to be more preoccupied while driving with concerns such as personal health, the health of loved ones, and the possible negative impacts on income and financial stability. Such issues might still be a prevalent concern in 2021, but it is possible there would be fewer feelings of ambiguity and less focus on these concerns later during the pandemic as people become more accustomed to the ***new normal***.

Interestingly, slightly more than one in ten drivers reported having trouble focusing while driving during the pandemic in 2021, whereas fewer indicated this earlier on in the pandemic in 2020. This uptick may have been due to increasing demands felt by Canadians as the pandemic progressed, as a similar proportion indicated they had difficulty with a work-life balance and managing calls, texts and/or emails during the pandemic.

One in ten drivers reported having trouble focusing while driving during the pandemic in 2021, whereas fewer indicated this earlier on in the pandemic in 2020.

Logistic regression analysis was performed with the 2021 results to predict the odds of being more likely to drive distracted during the pandemic, compared to before COVID-19. Age was a significant predictor of this behaviour. With every ten-year increase in age, drivers were 33% less likely to report distracted driving during the pandemic as compared to before COVID-19 (OR: 0.67, p= 0.001; CI: 0.592 - 0.761). Drivers who agreed they were more likely to take risks while driving during the pandemic because of the reductions in traffic were also 4.2 times more likely to indicate distracted driving behaviour during the pandemic as compared to before COVID-19 (OR: 4.16, p= 0.001; CI: 2.598 – 6.657). Sex was not a significant predictor of this behaviour.

Alcohol-impaired driving. A total of 4.1% of Canadians admitted they were more likely to drive within two hours of consuming alcohol during the pandemic, as compared to before COVID-19 (Table 3). Whereas in 2020, 2.4% of drivers reported this behaviour, corresponding to a significant increase (z= 2.78, p= 0.005). The majority of drivers (65.3%) reported there was no change in this behaviour in 2021, versus 75.4% in 2020 (z= -6.49, p= 0.001). In 2021, there were 30.6% of drivers who reported being less likely to drive within two hours of consuming alcohol during the pandemic, which was a significant increase from 2020 when 22.1% reported being less likely to do so (z= 5.66, p= 0.001).

Table 3: Alcohol-impaired driving during the pandemic

Alcohol-impaired driving	2021	2020	p-value
More likely	4.1%	2.4%	p= 0.005
No change	65.3%	75.4%	p= 0.001
Less likely	30.6%	22.1%	p= 0.001

Overall, the majority of drivers in 2021 and 2020 reported they did not change their behaviour. However, there was a decrease in the proportion of drivers who indicated this. Positively, almost one in three drivers indicated they were less likely to drive within two hours of consuming alcohol. Conversely, those who reported being more likely to drink and drive during the pandemic increased almost twofold between 2020 and 2021. These findings are contextualized with other research showing that alcohol sales more than doubled in the first week when a worldwide pandemic was officially declared (Nielsen, 2020). Data on alcohol consumption show there was a 14% increase in consumption between the Spring/Summer of 2019 to approximately the same period in 2020 (Pollard, Tucker, & Green, 2020). Self-reported alcohol consumption also reflects a similar increase, where 18.5% of Canadians reported drinking slightly more alcohol during the pandemic as compared to before COVID-19, and 4.8% reported drinking much more alcohol (Shield et al. 2020)

Logistic regression analysis was performed with the 2021 results to predict the odds of being more likely to drive within two hours of consuming alcohol, compared to before COVID-19. Sex was a significant predictor, as males had 3.3 times greater odds of reporting they were more likely to drive within two hours of consuming alcohol during the pandemic, as compared to before COVID-19 (OR: 3.27, p= 0.001; CI: 1.643 - 6.487). Moreover, with every ten-year increase in age, drivers were 36% less likely to report driving within two hours of consuming alcohol during the pandemic, as compared to before COVID-19 (OR: 0.64, p= 0.001; CI: 0. .538 - 0.77). Drivers who agreed they were more likely to take risks while driving during the pandemic because of the reductions in traffic were also 223% more likely to report driving within two hours of consuming alcohol during the pandemic as compared to before COVID-19 (OR: 3.23, p= 0.005; CI: 1.439 - 7.232). Compared to drivers with less than two traffic tickets in the past 12 months, those with two or more tickets had 4.5 times greater odds of reporting they were more likely to drive within two hours of consuming alcohol during the pandemic as compared to before COVID-19 (OR: 4.54, p=0.001; CI:1.820 - 11.337).

Drugged driving. A total of 3.7% of Canadians admitted they were more likely to drive within two hours of taking drugs during the pandemic as compared to before COVID-19 (Table 4), whereas in 2020, 2.2% of drivers reported this behaviour, corresponding to a significant increase (z= 2.57, p= 0.01). The majority of drivers (68.4%) in 2021 reported there was no change in this behaviour, and 77.3% reported this in 2020 (z= -5.88, p= 0.001). More than one-quarter (27.9%) of drivers in 2021 reported being less likely to drive within two hours of taking drugs during the pandemic as compared to before COVID-19, and 20.6% reported being less likely to do so in 2020, corresponding to a significant increase (z= 5.00, p= 0.001).

Table 4: Drugged driving during the pandemic

Drugged driving	2021	2020	p-value
More likely	3.7%	2.2%	p= 0.01
No change	68.4%	77.3%	p= 0.001
Less likely	27.9%	20.6%	p= 0.001

Drivers who indicated they were more likely to drive within two hours of taking drugs during the pandemic were asked which substance they most frequently used before driving. In 2021, 41.2% of these drivers indicated marijuana was the most frequently used substance before driving compared to 2020 when 33.5% of drivers indicated this. In 2021, prescription drugs that may affect driving were most frequently used before driving by 38.7% of drivers, compared to 46% in 2020. The use of illegal drugs was reported by 10.5% of drivers in 2021, compared to 20.4% in 2020. Finally, in 2021, 10.1% indicated the most frequently used substance was a combination of these drugs (i.e., marijuana, and/or illegal drugs, and/or prescription drugs that may affect driving), however this was not listed as an option to drivers in 2020.

Similar to alcohol-impaired driving during the pandemic, the majority of drivers reported no change in their behaviour. A large proportion indicated they were less likely to drive within two hours of using drugs. Yet those who reported being more likely to drive within two hours of consuming drugs almost doubled from 2020 to 2021. Moreover, in 2021, marijuana was the most frequently used drug within two hours of driving, increasing by 23% from 2020. These findings are supported by a recent Statistics Canada survey, indicating more than one-third (34%) of existing marijuana users claimed their consumption had increased during the pandemic, and 20% of Canadians now report using marijuana, up from 14% before COVID-19 (Statistics Canada, 2021). However, the use of prescription drugs as the substance most often used within two hours of driving decreased from 2020 to 2021, as has the use of illegal drugs.

Logistic regression analysis was performed with the 2021 results to predict the odds of being more likely to drive within two hours of consuming drugs, compared to before COVID-19. Sex was a significant predictor, as males had 2.7 times greater odds of reporting they were more likely to drive within two hours of consuming drugs during the pandemic, compared to before COVID-19 (OR: 2.73, p= 0.01; CI: 1.248 - 5.983). Moreover, with every ten-year increase in age, drivers were 29% less likely to report driving within two hours of taking drugs during the pandemic, as compared to before COVID-19 (OR: 0.71, p= 0.001; CI: 0.602 - 0.825). Drivers who agreed they were more likely to take risks while driving during the pandemic because of the reductions in traffic also had 5.5 times greater odds of reporting they were more likely to drive within two hours of taking drugs during the pandemic as compared to before COVID-19 (OR: 5.48, p= 0.001; CI: 2.469 - 12.184). Compared to drivers with less than two traffic tickets in the past 12 months, those with two or more tickets had 3.7 times greater odds of reporting they were more likely to drive within two hours of consuming drugs during the pandemic as compared to before COVID-19 (OR: 3.70, p=0.02; CI: 1.227 - 11.182).

Polysubstance use and driving. A total of 3.8% of Canadians admitted they were more likely to drive within two hours of consuming alcohol and marijuana during the pandemic, as compared to before COVID-19 (Table 5). The majority of drivers (68.7%) reported there was no change in this behaviour, and 27.5% were less likely to do so, as compared to before COVID-19.

Despite not having data about this behaviour from earlier in the pandemic, previous RSM data exists from 2018 and 2019 when drivers were asked if they had driven within two hours of using alcohol and marijuana in the last 12 months. Only 1.7% of drivers in 2018 and 3% of drivers in 2019 reported this behaviour (Woods-Fry et al. 2019). This suggests alcohol and marijuana use while driving may have increased during the pandemic, and greater attention to this and other types of polysubstance use is warranted.

Table 5: Polysubstance use and driving during the pandemic

Polysubstance use and driving	2021
More likely	3.8%
No change	68.7%
Less likely	27.5%

Logistic regression analysis was performed to predict the odds of being more likely to drive within two hours of consuming alcohol and marijuana, compared to before COVID-19. Sex was a significant predictor of this behaviour. Males had approximately 2 times greater odds of reporting being more likely to drive within two hours of consuming alcohol and marijuana during the pandemic, compared to before COVID-19 (OR: 1.96, p= 0.04; CI: 1.022 - 3.756). Moreover, with every ten-year increase in age, drivers were 35% less likely to report driving within two hours of consuming marijuana and alcohol during the pandemic, as compared to before COVID-19 (OR: 0.65, p= 0.001; CI: 0.538 0.777). Drivers who agreed they were more likely to take risks while driving during the pandemic because of the reductions in traffic were also 370% more likely to report driving within two hours of consuming marijuana and alcohol during the pandemic as compared to before COVID-19 (OR: 4.70, p= 0.001; CI: 2.194 - 10.075). Compared to drivers with less than two traffic tickets in the past 12 months, those with two or more tickets had 5.4 times greater odds of reporting they were more likely to drive within two hours of consuming alcohol and marijuana during the pandemic as compared to before COVID-19 (OR: 5.36, p= 0.001; CI: 2.070 - 13.890).

Fatigued driving. A total of 7.1% of Canadians admitted they were more likely to drive fatigued during the pandemic, as compared to before COVID-19 (Table 6). The majority of drivers (64.9%) reported there was no change to this behaviour and 27.9% were less likely to drive fatigued during the pandemic as compared to before COVID-19.

Table 6: Fatigued driving during the pandemic

Fatigued driving	2021
More likely	7.1%
No change	64.9%
Less likely	27.9%

Drivers were also asked to state their level of agreement with the following statements: "I find I am more fatigued when driving because of the stress from the pandemic" and "I can drive safely even though I feel drowsy." A total of 9.8% of respondents agreed or strongly agreed they were more fatigued when driving because of stress during the pandemic and just over one in ten (10.6%) drivers agreed they could drive safely when drowsy.

It appears the pandemic negatively affected the fatigue level of drivers. Not only did a sizeable proportion indicate they were more likely to drive fatigued during the pandemic, but stress was cited as a reason for fatigue by one in ten drivers. These findings are similar to those of a recent survey by Desjardins (2021), showing that 1 out of 2 Canadians said they felt stressed out (50%) or tired (53%) frequently or most of the time in the past 12 months. The top two reasons for the cause of this stress or fatigue were social isolation (32%), and insecurities associated with the pandemic (31%).

> Respondents reported they were more likely to drive fatigued during the pandemic.

Logistic regression analysis was performed to predict the odds of being more likely to drive fatigued during the pandemic, compared to before COVID-19. Age was a significant predictor of fatigued driving during the pandemic. With every ten-year increase in age, drivers were 38% less likely to report fatigued driving during the pandemic, as compared to before COVID-19 (OR: 0.62, p= 0.001; CI: 0.547 - 0.705). Drivers who agreed they could drive safely while feeling drowsy had 1.9 times greater odds of reporting they were more likely to drive fatigued during the pandemic as compared to before COVID-19 (OR: 1.92, p= 0.01; CI: 1.158 - 3.176). Drivers who agreed they were more likely to take risks while driving during the pandemic because of the reductions in traffic were also 233% more likely to report they drove fatigued during the pandemic, as compared to before COVID-19 (OR: 3.33, p=0.001; CI: .964 - 5.659). Sex was not a significant predictor of this behaviour.

Seatbelts. A total of 4.2% of Canadians admitted they were less likely to wear their seatbelt while driving during the pandemic, as compared to before COVID-19 (Table 7). The majority of drivers (74.9%) reported there was no change in this behaviour and 20.9% were more likely to wear their seatbelt during the pandemic as compared to before COVID-19.

Table 7: Seatbelt use during the pandemic

Seatbelt use	2021
Less likely	4.2%
No change	74.9%
More likely	20.9%

Overall, most drivers indicated their seatbelt use did not change and a proportion of drivers seem to have adopted safer habits as they were more likely to use seatbelts during the pandemic. However, a smaller group of drivers admitted they were less likely to use their seatbelts. The National Highway Traffic Safety Administration (NHTSA)'s Office of Behavioral Safety Research (2021) has monitored the vehicle ejection rate throughout 2020 and compared this to data from 2019. Ejection rate is a valuable proxy measure for seatbelt use. These results reflect a similar conclusion, that fewer drivers and vehicle occupants were wearing their seatbelt during the pandemic, as the ejection rate increased across 2020, compared to the previous year before the COVID-19 pandemic.

A logistic regression revealed age was a significant predictor of seatbelt use during the pandemic. With every ten-year increase in age, drivers were 49% less likely to report not wearing their seatbelt during the pandemic, as compared to before COVID-19 (OR: 0.51, p= 0.001; CI: 0.408 - 0.629). Compared to drivers with less than two traffic tickets in the past 12 months, those with two or more tickets had 7 times greater odds of reporting they were less likely to wear a seatbelt during the pandemic (OR: 7.07, p= 0.001; CI: 3.106 - 16.094). Sex was not a significant predictor of this behaviour.

Effects of the pandemic on travel behaviour

Preferred method of travel. Respondents (drivers N= 2099; non-drivers N= 601) were asked whether their preferred method of travel changed during COVID-19. Almost 1 in 4 Canadians (25.2%) indicated their preferred method of travel changed during the pandemic as compared to before COVID-19. This increased from 23.3% in 2020.

Respondents who reported this were also asked to indicate their preferred travel method before COVID-19, as well as during the pandemic (Table 8). Prior to COVID-19, public transit (48.7%) and personal vehicle (30.4%) were the main preferred method of travel. However, during the pandemic, public transit use decreased by 82.1% to 8.7% (z= -32.49, p= 0.001) and personal vehicle use increased by 57.6% to 47.9% (z= 13.17, p= 0.001). Walking was the preferred travel method of 7.4% of respondents before the pandemic, which increased by 260.8% to 26.7% during the pandemic (z= 18.86, p= 0.001). Before the pandemic, bicycling was the preferred travel method of 3.4% of respondents, compared to 5.9% of respondents during the pandemic, corresponding to a 73.5% increase (z= 4.36, p= 0.001). The only method of travel that did not change significantly was taxi or rideshare. Only a small increase was found from 7.9% before the pandemic to 8.5% during the pandemic (z= 0.80, p= 0.422). Almost 1 in 3 (30.6%) of respondents indicated it was likely this change in preferred travel method would be permanent.

Table 8: Preferred travel method before and during the pandemic

	Before the pandemic	During the pandemic	p-value
Public transit	48.7%	8.7%	p= 0.001
Personal vehicle	30.4%	47.9%	p= 0.001
Walk	7.4%	26.7%	p= 0.001
Bicycle	3.4%	5.9%	p= 0.001
Taxi or rideshare	7.9%	8.5%	n.s.

A logistic regression analysis was conducted to determine which factors predicted change in the preferred travel method, but no significant results were found.

Effects of the pandemic on perceptions of public transit and ridesharing. All respondents were asked to rate their level of agreement to certain statements about their attitudes and perceptions of public transit and ridesharing during the pandemic, ranging from 1 (strongly disagree) to 6 (strongly agree); for scoring purposes, drivers were coded as agreeing if they chose five or six.

Almost half of respondents (41.6%) indicated they agreed or strongly agreed they would not return to taking public transportation until after the pandemic was over, and 28.7% agreed they would not return to taking public transportation even after the pandemic was over. Similarly, 39.7% of respondents agreed they would not return to using ridesharing until after the pandemic was over, and 33.16% agreed they would not return to using ridesharing even after the pandemic was over. Moreover, 38.2% of drivers agreed less traffic during the pandemic made driving more appealing, and 23.8% of non-drivers agreed less traffic during the pandemic made driving a more appealing option.

Effects of the pandemic on mobility patterns. Respondents were asked to indicate changes in particular means of transportation at certain times of the day/day of the week during the pandemic as compared to before COVID-19.[4]

Just 8.2% of drivers indicated they drove more during peak hours (6:30-9:00 am/3:30-6:00pm) compared to 42.8% who drove less during this time (Table 9). Similarly, 16% drove more during the middle of the day, while 34.7% drove less. Only 6.3% drove more at night, compared to 48.7% who drove less at night than they did before the pandemic. There were 12% of drivers who drove more on the weekends, compared to 42.7% who drove less at this time during the pandemic. During weekdays, 11% drove more at this time whereas 40.9% drove less at this time during the pandemic.

Table 9: Driving habits during the pandemic

	More often	No change	Less often
Driving during peak hours (6:30-9:00 am/3:30-6:00pm)	8.2%	49%	42.8%
Driving in the middle of the day	16%	49.2%	34.7%
Driving at night	6.3%	45%	48.7%
Driving on weekends	12%	45.3%	42.7%
Driving on weekdays	11%	48%	41%

The walking habits of both drivers and non-drivers were explored. Almost one-quarter (23%) of respondents indicated they walked more during peak hours, compared to 14.4% who walked less at this time (Table 10). A total of 26.1% walked more during the middle of the day, compared to 15.7% who walked less. In addition, 15.3% of respondents walked more at night, while 16.8% walked less at this time. When examining the weekends, almost one-third of respondents walked more (30.3%) while 14.4% walked less. Walking as a means of transportation on weekdays was also reported more often by 29.4% of respondents, and 15.3% walked less on weekdays.

29.4% respondents reported walking more often as a means of transportation during the weekdays.

Table 10: Walking habits during the pandemic

	More often	No change	Less often	N
Walking during peak hours (6:30-9:00 am/3:30-6:00pm)	23%	40.2%	14.4%	2,097
Walking in the middle of the day	26.1%	41.9%	15.7%	2,261
Walking at night	15.3%	35.2%	16.8%	1,814
Walking on weekends	30.3%	43.1%	14.4%	2,368
Walking on weekdays	29.4%	43.3%	15.3%	2,376

The bicycling habits of both drivers and non-drivers were explored. There were 8.6% of respondents who biked more during peak hours, compared to 9.1% who biked less at this time (Table 11). During the middle of the day, 9% of respondents biked more during the pandemic, compared to a similar percentage (8.9%) who biked less. Only 5.8% of respondents biked more at night while 9.1% biked less at this time during the pandemic. On the weekends, 11.6% of respondents reported biking more during the pandemic compared to 8.7% who biked less. Similar results were found on weekdays when 9.7% biked more and 8.8% biked less at this time during COVID-19.

Table 11: Biking habits during the pandemic

	More often	No change	Less often	N
Biking during peak hours (6:30-9:00 am/3:30-6:00pm)	8.6%	24.2%	9.1%	1,129
Biking in the middle of the day	9%	25.2%	8.9%	1,161
Biking at night	5.8%	20.9%	9.1%	966
Biking on weekends	11.6%	26.1%	8.7%	1,253
Biking on weekdays	9.7%	26.3%	8.8%	1,207

All respondents were asked about their transportation habits using an electronically powered bicycle (Table 12). Just 6% of respondents used an e-bike more during peak hours compared to 6.1% who used their e-bike less at this time. During the middle of the day, 6% of respondents used their e-bike more during the pandemic compared to a similar percentage (6.2%) who used their e-bike less. There were 4.4% of respondents who used their e-bike more at night while 7% used their e-bike less at this time during the pandemic. On the weekends, 6.7% of respondents reported e-biking more during the pandemic compared to 6.4% who e-biked less. Similar results were found on weekdays when 5.6% used their e-bike more and 6.1% e-biked less at this time during COVID-19.

Table 12: E-biking habits during the pandemic

	More often	No change	Less often	N
E-biking during peak hours (6:30-9:00 am/3:30-6:00pm)	6%	6.1%	19.2%	841
E-biking in the middle of the day	6%	6.2%	20%	868
E-biking at night	4.4%	7%	16.7%	760
E-biking on weekends	6.7%	6.4%	19.4%	877
E-biking on weekdays	5.6%	6.1%	20.2%	860

Effects of the pandemic on perceptions of safety

All respondents (N=2,700) were asked to indicate how safe they felt as a pedestrian and/or cyclist during the pandemic, compared to before COVID-19. The question was asked on a scale from 1 (far less likely) to 5 (far more likely); for scoring purposes, responses were coded as less likely to feel safe if respondents chose a one or two. Respondents who chose a three were coded as no change, and those who chose a four or five were coded as more likely to feel safe.

Feelings of safety as an active road user. A total of 18.2% of Canadians indicated they were less likely to feel safe as a pedestrian and/or cyclist during the pandemic, as compared to how they felt before COVID-19. The majority of respondents (67.6%) reported no change in their perceptions of safety and 14.2% indicated they were more likely to feel safe as a pedestrian and/or cyclist during the pandemic compared to before COVID-19.

Respondents were also asked how they perceived the behaviours of other drivers during the pandemic (other drivers driving distracted, other drivers exceeding the speed limit). The questions were asked on a scale from 1 (far less likely) to 5 (far more likely); for scoring purposes, responses of four and five were coded as the perception of other drivers being more likely to engage in a risky driving behaviour. A response of three was coded as no change, and responses of one and two were coded as the perception of other drivers being less likely to engage in a risky driving behaviour.

Excessive speeding. A total of 39.7% of Canadians perceived other drivers as more likely to excessively exceed the speed limit during the pandemic as compared to before COVID-19. A slight majority of drivers (51.4%) perceived no change in other drivers' speeding behaviour, and 8.5% perceived other drivers as less likely to excessively exceed the speed during the pandemic as compared to before COVID-19.

Distracted driving. A total of 33.7% of Canadians perceived other drivers as more likely to drive distracted during the pandemic, as compared to before COVID-19. The majority of drivers (57.4%) perceived no change in other drivers' level of distraction, and 8.9% perceived other drivers as less likely to drive distracted during the pandemic as compared to before COVID-19.

Conclusions

This fact sheet summarizes attitudes and practices of Canadians related to the effects of COVID-19 on travel behaviour and road safety. These findings are based upon data from TIRF's RSM, and a special edition COVID-19 RSM.

An examination of the effects of the pandemic on risky driving behaviours shows the majority of drivers did not change their behaviour as a result of the pandemic. An important caveat to this is the sub-group of drivers indicating no change in their behaviour is that it includes drivers who drove safely before the pandemic as well as those who did not. A sizeable proportion of drivers indicated they were less likely to engage in risky driving behaviours during the pandemic and behave more cautiously than they did before COVID-19. Moreover, the proportion of drivers indicating this increased from 2020 to 2021. Conversely, a small but notable proportion of drivers indicated they were more likely to engage in risky driving behaviours during the pandemic as compared to before COVID-19 across all the behaviours queried. Notably, with respect to alcohol-impaired driving and drugged driving there was an almost two-fold increase in the percentage of drivers indicating they were more likely to drive within two hours of using an impairing substance.

Ultimately, both those who reported being more cautious and those who reported taking more risks provide relevant insights into the effects of the pandemic on road safety. It is possible those who were less likely to engage in risky driving behaviours were adopting protective behaviours as a result of the pandemic. Several reports have demonstrated how individuals became more conscious of their health and well-being during the pandemic, and individuals acknowledged being more likely to act prudently in efforts to reduce the burden on the healthcare system (VidaHealth 2021; GlaxoSmithKline 2021). Moreover, as lockdown measures directly reduced road travel, a subset of these individuals who said they were less likely to engage in risky driving behaviour may have answered as such simply due to driving less often. Conversely, those who admitted being more likely to engage in risky driving behaviours may have consisted of two types of drivers: those who previously drove dangerously and did so more often during the pandemic, and those who did not engage in risky driving before and took the pandemic as an opportunity to take more risks on the road. It is presumed this sub-group was responsible for the increases in speeding, stunt driving, and impaired driving observed by enforcement and in other sources of traffic data during the pandemic.

Common factors associated with most of the dangerous driving behaviour included age, traffic tickets, and level of agreement with a risk-based statement. Consistently, older drivers were less likely to report these risky behaviours than younger drivers. Those with two or more tickets had greater odds of saying they were more likely to engage in these risky driving behaviours. Also, agreement with the following risk-based statement "I feel that I can take more risks as a driver because there are fewer vehicles on the road during the pandemic" corresponded to greater odds of drivers saying they were more likely to engage in dangerous driving behaviours during the pandemic. In support of this finding, a recent study found risk-taking attitudes were a critical factor in predicting reductions in human mobility and social confinement during the pandemic, and that risk-taking regions were generally more determined to maintain mobility throughout the pandemic (Chan et al. 2020). Other factors that had an impact on the risky driving behaviours included sex of the driver. In our previous results, sex was not a significant factor in any of the risky driving behaviours, which was a notable finding since under normal circumstances, data indicate males are typically more likely to engage in risky driving behaviours such as alcohol-impaired driving, drug-impaired driving, and distracted driving (Woods-Fry et al. 2020; Lyon, Vanlaar, & Robertson, 2020). In the current results, sex was not associated with speeding, distracted driving, fatigued driving, or seatbelt use. However, it was associated with the three types of impaired driving behaviours (alcohol, drug, and polysubstance use), as males had significantly higher odds of engaging in these risky driving behaviours compared to females.

Further effects of the COVID-19 pandemic on mobility were observed in the current results. To illustrate, just over one-quarter of Canadians reported their preferred method of travel changed during the pandemic with an increasing proportion of Canadians who indicated this from our previous results. In terms of the effects on specific modes of travel, walking demonstrated the greatest increase, growing as a preferred method of travel by 261% from before the pandemic. Personal vehicle use also increased during the pandemic, and one-quarter of both drivers and non-drivers agreed they perceived driving as more appealing due to lower traffic volumes on the roads. However, public transit use experienced the largest decline, decreasing by 82%. Moreover, results showed 4 in 10 Canadians would not go back to using public transit or ridesharing until after the pandemic was over, and a smaller number of Canadians indicated they would not return to using these forms of transportation even after the pandemic. These effects of the pandemic were observed in the ridership data of most transit operators. For example, the Toronto Transit Commission (TTC) reported a more than 80% decrease in ridership at the beginning of the pandemic. In December 2020, ridership was still 69.3% lower than December 2019 (Doucet 2021).

In terms of mobility patterns, the time of day and day of the week when Canadians drove appears to have been altered by the pandemic. The majority of drivers generally drove less often at all times of the day/day of the week compared to before the pandemic. However, the largest proportion of drivers reported driving less often during the peak rush hours and at nighttime. It may be the case that as more employers adjust to offering their employees the freedom to work remotely, driving patterns may continue to be altered, especially with respect to peak commuting hours. Canadians also walked more often during the day and on weekends, and bicycling was reported more often on the weekends as well.

Overall, changes to mobility with respect to a preferred mode of travel and travel patterns have been significant as a result of the COVID-19 pandemic. Going forward, strategies to help re-establish public transportation use post-pandemic are essential to curb the surge in personal vehicle use. The potential impact of travel patterns that are more dispersed throughout the day is significant, and transportation planning will play a crucial role in continuing to facilitate a shift towards active modes of travel.

The sweeping impact of COVID-19 on road safety seems to have also affected perceptions of road users with respect to their personal safety, and their perceptions of drivers' unsafe behaviours. It appears a greater proportion of road users felt less safe during the pandemic. Also, a greater proportion of road users perceived speeding as more prevalent among drivers compared to the issue of distracted driving. These results reflect police data demonstrating a large increase in speeding tickets and stunt driving charges. Although both represent significant road safety issues, it may also be that speeding behaviour was simply easier to observe than distracted driving.

Collectively, these findings suggest the effects of the pandemic must continue to be carefully monitored. Despite a large proportion of drivers who indicated they did not change their behaviour or were more cautious, increasing proportions of drivers admitted to being more likely to engage in risky behaviours during the pandemic as compared to their behaviours under normal circumstances. Moreover, the profile of risk-taking more seems to have shifted, at least for some of the risky driving behaviours examined here, which has important implications for the development of countermeasures. These findings offer a unique and informative perspective about the change in drivers' self-reported behaviour during the pandemic and help guide further investigations into the determinants of risky driving behaviour during subsequent COVID-19 lockdowns.

About the poll

These results are based on the RSM, an annual public opinion poll developed and conducted by TIRF. A total of 2,700 Canadians completed the poll in May of 2021. Results can be considered accurate within plus or minus 1.9%, 19 times out of 20. The majority of the questions were answered using a scale from one to six where six indicated high agreement, concern, or support and one indicated low agreement, concern or support.

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[1] The law defines stunt driving as driving more than 50 km/h over the posted limit.

[2] Respondents were asked to compare their behaviour in 2019 (before the pandemic) to behaviour from March 2020 to March 2021 (during the pandemic). Two subsequent reminders to specify this were given throughout this series of questions.

[3] The midpoint of this scale was *no change*, allowing participants to indicate they did not change the frequency of a given behaviour during the pandemic. This category therefore consists of responses from both those who did not perform a risky driving behaviour before the pandemic, and continued to act safely, as well as those who did perform a risky driving behaviour before the pandemic and did not change the frequency at which they performed this risky behaviour during the pandemic.

[4] For each mode of active transportation (walking, bicycling, e-bicycling), both drivers and non-drivers were asked if their pattern of use changed at different times of day and day of week (peak rush hour, daytime, nighttime, weekend, weekday). For each of the times of day/day of week queried, respondents could answer that they used the given mode of active transportation more/less/no change. Respondents were also given the option to indicate they did not use this mode of active transportation at the specified time of day/day of week. However, respondents who did not use a given mode of active transportation at all, were instructed to answer "I do not use this mode of transportation at this time of day/day of week" for all five time periods. Therefore, the sample size of respondents varies by time of day/day of week categories for each mode of active transportation.

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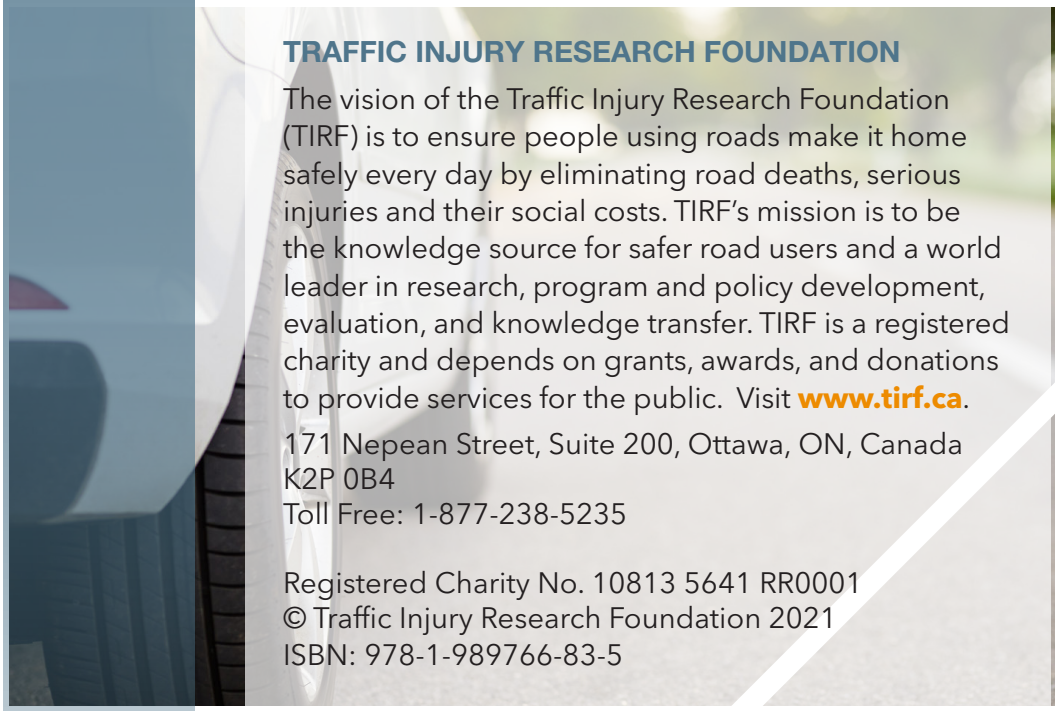

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171 Nepean Street, Suite 200, Ottawa, ON, Canada
K2P 0B4
Toll Free: 1-877-238-5235

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