

Psychological Impacts on the Travel Behavior Post-COVID-19

Vikram Singh, M. Tech.

Department of Civil Engineering
Indian Institute of Technology Roorkee, Roorkee-247667, India
Email:vikram_s@ce.iitr.ac.in

Kamini Gupta, M. Tech.

Traffic Engineering and Safety Division
CSIR-Central Road Research Institute, New Delhi
Email:marut.kamini@gmail.com
ORCID:[0000-0001-8112-7430](https://orcid.org/0000-0001-8112-7430)

Amit Agarwal, Ph.D., Corresponding author

Department of Civil Engineering
Indian Institute of Technology Roorkee, Roorkee-247667, India
Email:amitfce@iitr.ac.in
ORCID:[0000-0002-3352-0227](https://orcid.org/0000-0002-3352-0227)

Neelima Chakrabarty, Ph.D.

Traffic Engineering and Safety Division
CSIR-Central Road Research Institute, New Delhi
Email:neelima.chakrabarty@gmail.com

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Abstract

Coronavirus is one of the contagious viruses that the world has seen in this century. Consequently, the travel restrictions have been imposed for an extended period, and people are left without any social life, leisure, sports activities, as well as the shift to work from home. The present study investigates the psychological effect of COVID-19 and its impact on travel behavior, primarily on the workforce in Delhi, India. An online questionnaire survey is formed, and the information regarding travel patterns, working, mental health and psychological stress are obtained. The results show that a significant number of persons shift from transport modes where space is shared to a private mode of transport after COVID-19 due to the increased priorities to physical-distancing, use of masks, etc. About 28.7% of persons who change their modes are likely to use it for a longer period, which points to higher congestion for an extended

period. Due to lockdown, 67% of persons are working from home, and only 35% will continue to do so after COVID-19. More than half of the respondents have reported an increase in the psychological burden due to lockdown/ quarantine. Among all PT users, more women are likely to have health issues than men. Due to the current scenario, about 80% of the persons will have anxiety and tension, which is likely to impact their driving behavior (e.g., rash-driving, distraction, insecurity).

Keywords: COVID-19, travel behavior, Psychological impact, Anxiety

1 Introduction

1.1 Background

Presently, Severe Acute Respiratory Syndrome associated Coronavirus (commonly known as SARS CoV-2, nCoV-19 or COVID-19) has achieved pandemic status worldwide. Today, most of the persons are occupied by assessing the impact of the ongoing pandemic on physical health, livelihood, the economy of the family, and the nation. In 2003, a similar disease (SARS-CoV or SARS-CoV-1) was identified and first reported. The SARS-CoV-1 infected more than 8000 persons, of which more than 750 lives were lost [1]. Though, many researchers are attempting to study the propagation of the virus, epidemic modeling with respect to transport [2], physical-distancing in public transport [3], contact duration [4], future transport policy after-COVID-19 [5], etc., the psychological impact of the pandemic situation is understudied.

1.2 Psychological burden

Today, most of the countries are battling from a psychological crisis that is not yet fully explored and well researched. Globally, living in a state of constant fear due to the chances of getting infections accompanied with no assurance of safety, etc., is resulting in the life of the people in mental trauma and anxiety, which are likely to have an adverse impact on the mental health of the people and their well-being. The outbreak of Coronavirus has affected different group of persons differently; for instance, (a) COVID-19 infected persons face issues like loneliness, anxiety, panic, post-traumatic stress (PTSD) disorder, panic, depression, (b) health care providers might have issues like guilt, burnouts, depression, guilt, uncertainty, PTSD, etc., [6]. To curb the transmission of the virus, the major part of the world population is restricted to their homes as a consequence of nation-wide lockdown that can put a psychological burden on human mental health [7, 8]. Keeping this thing in view, the World Health Organization has provided several guidelines to the general public, healthcare workers, people in isolation, children, older people, and people with an underlying health condition to support mental and psychological well-being [9].

Looking at the impact of COVID-19 on the world population, there are various ways in which this pandemic will affect people's mental health [10]. Person et al. [11], Siu [12] show that the persons who were infected from the SARS outbreak found it difficult to follow their typical day to day routine years after virus exposure, and healthcare workers are more prone to such issues. Similar to many countries, a nation-wide lockdown was imposed in India to control the spread of the COVID-19 virus, and the travel restrictions have been imposed for an extended period [13]. Residents of containment zones are left without any social life, leisure, sports activities. In addition to that, most of them are required to work or study from home. At the same time, a significant number of persons are also sent for quarantine due to variety of reasons (e.g., coming from containment zones, close contact with an infected person, showing symptoms, etc.), and that results in a variety of psychological problems such as high levels of anxiety, anger, depression, panic disorder, emotional disturbance, and post-traumatic stress [14, 15]. These mental problems get elevated post quarantine due to many reasons like financial

loss, an insufficient supply of essentials, the progression of the virus, and misleading information [14, 15].

1.3 Impact of COVID-19

Many previous studies have discussed and showed that there are many types of psycho-social effects that can affect the common people. There is mass fear among people due to the uncertainty of the character of COVID-19 that has led to negative psychological reactions. It has been reported that the perceived risk of infection can generate ill-adapted behaviors, emotional distress, and avoidance reactions among common people [16]. A Chinese study conducted in January and February 2020 showed that 54% of respondents had mild to extreme symptoms, 29% had mild to severe anxiety symptoms, and 17% had moderate to severe symptoms of depression [17]. Another survey based on 53,000 respondents showed that 35% of people had psychological distress, 29% of whom had mild to moderate symptoms, and 5% had severe symptoms [18].

There have been some studies in India that show how Indian People are coping up with the psychological stress of COVID-19. An online study was conducted with 1000 respondents in 64 cities in India during the initial phase of the pandemic, focusing primarily on the psychological effects of COVID-19. The results reveal that almost one-third of respondents are affected by the psychological impact. Younger age people and female gender with some diseases are most affected [19]. A similar online survey was conducted in West Bengal at the end of March, and the results showed that about 72% of respondents were worried, and about 25% were depressed by the prevailing situation of the last two weeks. Approximately 70% of respondents were concerned about the financial situation and loss that occurred during the lockdown period, and 65% admitted that COVID-19 had affected their mental health [20]. Nearly 35% of respondents were found to have started avoiding media exposure to keep their anxiety level stable [21]. Besides, there have been studies that involve college students in China and show that the level of anxiety among students is comparatively higher and has been positively associated with the delay in academic activities and a shift in daily lifestyles [22]. Like Females, young age persons, students, persons having higher educational status had symptoms like dizziness, myalgias, and coryza [17].

1.4 Impact on children and older persons

Apart from healthcare workers, the most affected group of peoples are children and old peoples, and this is probably the most crucial and overlooked issue [23]. Closure of various facilities, such as schools, parks and playgrounds, etc., has a serious impact on children's routines, which can potentially lead to distress and confusion. Moreover, several other factors, such as frustration of the physical-distancing with friends, loss of personal space at home, and financial losses of family incurred during the lockdown, may influence children emotionally and increase their mental stress [23]. Unlike children, older people with certain critical illnesses are more vulnerable to COVID-19 as it raises their risk of death, thereby causing fear among them [24]. Additionally, other psychological effects, such as irritability, anxiety, and excessive stress or frustration, can also affect the elderly [12].

1.5 Impact on working persons

To control the spread of the Coronavirus, not only public spaces but industries, workplaces were also closed. The employees were asked to work-from-home if it is possible remotely. To compare the behavior of the working persons before and during the COVID-19, a study was conducted during the lockdown in the Netherlands [25]. Based on 2800 samples between 27th March to 4th April 2020, the authors find that working routine of more than half of the workers had changed; for instance, (a) 24% of the respondents changed their working times, (b) 16% reduced their

working hours, (c) about 10% temporarily stopped working, (d) about 65% reported home as a comfortable place to work, etc. Similarly, a study from the U.S. exhibits that more than 35% of the people worked from home in May 2020 up from 8.2% in Feb. 2020 [26]. About 44% of the working persons who commuted in Feb. 2020, continued to do so in May 2020. Another study reveals that about 37% of the workers continued to commute amidst the pandemic [27]. Further, 15% of the people working remotely before-COVID-19. About 12% of persons who were working about a month before-COVID-19 outbreak reduced their working hours or not working at all. A European study focuses on living and working during the COVID-19 period [28]. Data collected from 27 European countries show that 5% of respondents lost their jobs permanently, while 23% lost their jobs temporarily. Apart from this, in terms of job security, 16% of workers are likely to lose their job in near future. The working time of the workers had been decreased and results indicate that 50% of the working population had reduced their working time and on the contrary to this 7% workers reported that their working time had been increased. The countries where the largest proportions of workers were working from home are Finland (close to 60%), Luxembourg, Belgium, Netherlands and Denmark (above 50%) and more than 40% in Austria, Italy and Sweden. For India, Thombre and Agarwal [5] find that about 66% of the persons from mega-cities¹ and 57% of persons from other cities were working/ studying remotely during the lockdown. Surprisingly 88% of persons experienced stress/ anxiety/ fear while teleworking. Interestingly, in the post-COVID-19 situation, only 12% of the persons from mega-cities and 19% of persons from other cities reported to work/ study from home.

1.6 Impact on travel

As discussed above, the COVID-19 and lockdown have affected people of all ages and classes and brought lives to a standstill. People’s mental health has been affected due to the fear of getting infected and this psychological stress has been elevated during the lockdown. As a consequence, this psychological stress will affect travel behavior, as people may feel anxiety and fear in their minds when traveling in public transport (PT). Due to high psychological stress and responsibility to maintain the physical- distancing can affect people’s choice of mode and people might avoid PT [29]. Because of (a) high psychological stress many people may not travel at all (b) many persons may start working/ studying from home, and this is likely to bring down the overall travel demand [5]. Public transport usage is likely to see a sharp fall while concurrent use of private vehicles is expected to surge as people will like to travel alone or with their family members and friends [30]. Those who do not have any alternatives other than PT may try to avoid peak hours and start traveling in off-peak hours [31]. Bicycling and walking is becoming predominant mode of travel for short-distance trips and this can already be seen in many cities across the world (e.g., Berlin, Vienna, Philadelphia, Vancouver, Bogota, etc.) have turned car lanes into sidewalks and bike Lanes. This can be inferred from the rise in the bicycle sales during-COVID-19 [32].

There have been several online surveys and studies to determine the short term and long term effects of COVID-19 on travel behavior of people. An online study conducted in China during April reveals that most of the travelers are expected to make their first leisure trip between September-October. Further it was found the travelers that were willing to make the first trip were young, single and middle-class people [33]. Another study from China assesses the change in the behavior of people during peak and after recovering from COVID-19 pandemic [34]. The study shows that most people stopped working during peak periods, except for medical staff, and by the end of April, 78% of people started going to the office and 22% were working from home. In terms of the use of PT prior to the pandemic outbreak, 59 percent of people used PT and this number was reduced to 13 percent during peak and 49 percent were using PT at the end of April. Similarly, an online study was conducted in Spain to assess the Spanish citizen situation and

¹Delhi, Mumbai, Chennai, Kolkata, Bangalore.

their perceptions about the COVID-19 pandemic [35]. Over 1,56,000 respondents participated in the study and it was found that respondents mainly come out of the house to buy daily needs and about 10% did not leave their house at all. The private mode of transportation sees a surge as high as 84.5%. An online tracking survey is conducted by the U.S. travel association survey and MMGY travel intelligence team to know the impact of COVID -19 on travel behavior of U.S. citizens in various phases [36]. In its second report, released in the second week of April, indicates that 60% of the leisure trips have already been canceled and 33% of people have rescheduled their plans. From the report published on June 10, it was reported that people are most optimistic about travel as compared to the previous survey. For instance, the number of persons who would like to make a leisure trip increases from 36% to 66% from 4th to 5th reports (published in May and June respectively). People feel safer while making overnight leisure trips and about 33% still feel unsafe while taking overnight trips. This survey shows how people are becoming more optimistic with despite no reduction in the number of new cases in the United States, which indicates that travelers are becoming habitual due to the prolonged period of the pandemic.

In India, there have been similar trends but as expected, during the lockdown period, a huge drop in all types of trips are reported. One of the early studies released by the Institute of Energy and Resources in the middle of the lockdown by carrying out an online survey in April [30]. It has been reported that 35% of respondents are most likely to change their mode of travel to work after COVID-19. Post COVID-19, there will be a sharp decrease in the usage of PT and shared mobility. People may shift towards private transportation and intermediate PT and non-motorized transport (NMT) will increase for short-distance trips. Between 15th February and 30th April, retail and recreation were decreased by 73%, grocery and pharmacy by 51%, visit parks by 46%, transit stations by 66% and workplaces mobility were decreased by 57% [37, 38]. In addition to the immediate impact on the travel demand, it is likely to have a psychological impact on driver behavior due to COVID-19. For instance, a study shows that depression and anxiety are likely to increase the likelihood of crashes [39].

1.7 Problem statement

Although there have been many pandemics and epidemics such as SARS, MERS, Ebola in the past few decades, the world has faced no such pandemic, which has such an enormous impact on persons around the world. Therefore, it becomes imperative to assess the psychology of people that plays an important role in human decision making and, thereby, on their activities and actions. The literature review described above has been presented in two parts, the first part is about the psychological impact of COVID-19 on people of all ages and groups and the second part is about the effect of COVID-19 on travel behavior. The literature lacks in studies that show how adverse psychological impacts can lead to a change in travel behavior. Therefore, this study attempts to bridge the gap by analyzing the psychological impacts due to COVID-19, and its correlation with the change in travel and driver behavior.

2 Data collection

2.1 Survey questionnaire design

A cross-sectional and observational study is conducted in the capital city of India, Delhi, to capture psychological impact due to the ongoing pandemic due to Coronavirus and associated changes in the travel behavior. An online structured questionnaire is developed using Google Forms² and then floated through (a) e-mails to public and private organizations in Delhi and (b) personal messages to persons working and residing in the Delhi NCR (National Capital Region).

²<https://www.google.com/forms/about/>

Organizations are encouraged to float this questionnaire to their employees, family members and friends working and residing in Delhi, NCR. In order to capture responses from lower-income employees who are not comfortable in English, a bilingual survey is created (English and Hindi). The survey is designed in the second week of June and the questionnaire comprises of questions on basic information, mental health and psychological stress before COVID-19 & during the lockdown, travel activity before COVID-19 & during the lockdown, and after COVID-19. Respondents are then asked about the parameters while choosing the transport mode before COVID-19, during the lockdown and after COVID-19 and also about change in transport mode as a consequence of COVID-19. Then respondents are also asked about their travel plan post-lockdown. The questionnaire comprises questions related to working efficiency during the lockdown, willingness to work from home/ university/ workplace after lockdown and about preferences for flexible working hours. Regarding psychological impact, the respondents are asked about their mental health during the ongoing-situation and measures they are taking to alleviate the issues. The whole questionnaire is structured in such a way that the information regarding travel patterns, working, mental health and psychological stress are obtained. Behavioral changes in terms of psychological impact on travel behavior are measured by comparing the behavior of travelers' pre-, during and post-COVID-19.

2.2 Responses

Given the ongoing pandemic situation, convenience sampling is used, which has resulted in a total of 210 responses, which are used for further analysis. The typical time to complete the survey is 6 – 8 minutes. Section based branching (i.e., questions display based on the answer of a previous question) is used to reduce the efforts required by the respondents. No private information is asked or recorded.

3 Results

3.1 Demographic attributes

About 54% male, 45% female, have responded to the survey. A good mix of working population is recorded i.e., 23% belongs to [18, 24) year, 35% belongs to [24, 35), 15% belongs to [35, 45) and 23% belongs to [45, 60) age categories. About 42% of respondents are single and 56% of respondents are married. Approximately 26% of the respondents are government employees, 38% work in a private companies, 6% are in business and 18.6% are students. About 4.8% of total respondents are students who are getting stipend (e.g., MHRD or any other fellowship). The respondents are categorized into three categories, namely, lower (up to ₹30,000), middle (₹30,000 to ₹80,000) and high-income groups (₹80,000 and above). Total responses recorded in these three categories are 44.76%, 30.95% and 24.29% respectively.

3.2 Impact on travel behavior

During the survey, the lockdown was relaxed via 'Unlock 1.0' in which within the district, travel during the daytime is permitted except for containment zones. During 'Unlock 1.0', PT services are not in operation. The after-COVID-19 situation is referred to as the time when the risk of getting the infection is negligible and there is no restriction on travel. The study reveals that before the COVID-19, the preferred mode of travel in Delhi was PT and private mode of transport. From Figure 1, *it can be observed that due to the risk of the getting infection, the modes where space is shared, has decreased substantially (e.g., metro, bus, carpool, etc.). On the other hand, the share of the car (drive), dropped by a family member, the taxi has increased remarkably.* In terms of NMT, the share of the walk is likely to increase whereas the share of the bicycle is likely to drop. The negative perception of using a bicycle has lead to a decrease in

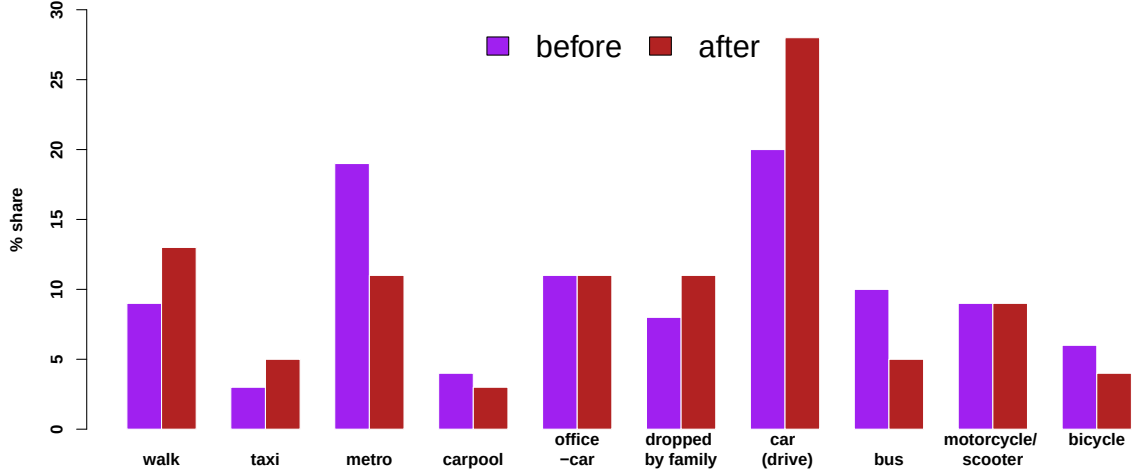


Figure 1: Modal share before and after-COVID-19

the bicycle share. Moreover, it is found that among the persons who are using PT, more women are likely to have health issues than men.

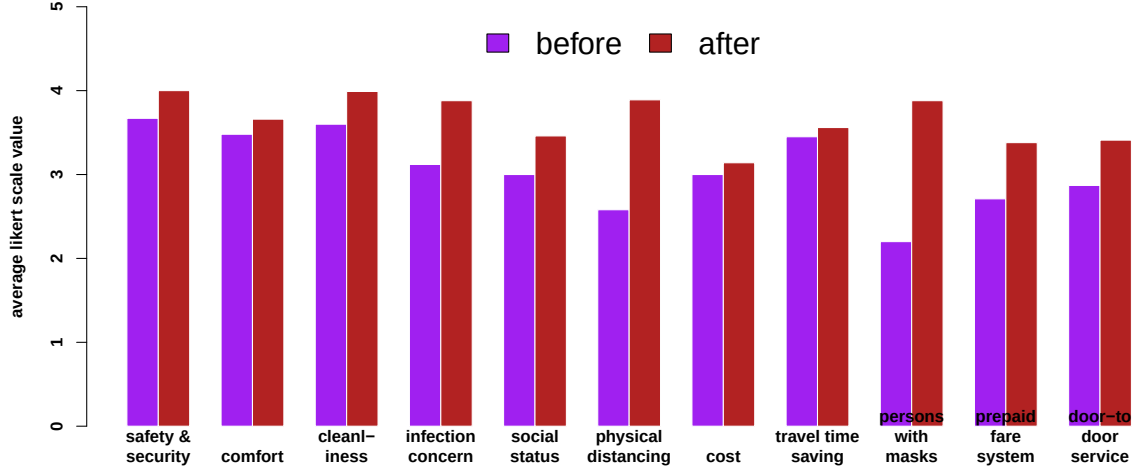


Figure 2: Priorities for the persons who are likely to switch from shared/ public transport to private vehicles after-COVID-19

In order to understand the mode choice behavior, the priorities of the respondents are recorded on a Likert scale (1 to 5 in the increasing order of preference). The responses of the travelers who switch from a vehicle with shared space (e.g., bus, metro, carpool) to a private vehicle (e.g., car, walk, bicycle, motorcycle, taxi) are filtered and used for the analysis. The results are shown in Figure 2. It can be observed that after COVID-19, respondents give higher weights to the risk of getting the infection, physical-distancing, passengers with masks, prepaid fare system, etc. As expected, cost, travel time savings, comfort have priority almost similar to the situation before COVID-19. About 28.7% of the persons who reported to change their mode are likely to use it for a long period, whereas 43% are unsure of it. This points to the increase in the severity of congestion in Delhi for a longer period. Further, *this also entails the*

sustainable transport policies to attract more PT and NMT trips.

3.3 Impact on work

During the COVID-19 situation, about 67% of persons started working/ studying at home, which was much lesser before COVID-19. Of those who were employed before COVID-19, 2.7% lost the job, and 35% are not going office at all. Surprisingly, 25% reported that nothing changed and they are working as before. This category includes people who were working from home before COVID-19 (8%) or persons who are working in essential services (17%). The rest of the persons are going a few times or as on the requirement basis. Of people who are working from home during COVID-19, 9.2% have efficiency higher than 100%, 16.8% have an efficiency between 80-100%, and the rest of the persons has efficiency less than 80%.

Interestingly, *in contrast to 67% of persons working from home during COVID-19, only 35% of the persons will be working from home after COVID-19.* The primary reasons for the persons who would like to go to the office post-COVID-19 are efficiency is better in office, bored being at home, absence of proper facilities at home (e.g., personal space, internet speed) and presence of distraction at home. On the other hand, the majority of the persons who wish to work from home post-COVID-19 quoted reasons like the risk of infection or felt safer at home for this.

3.4 Psychological impact

In order to understand the psychological impact due to COVID-19, several questions are asked. About 51% of respondents have reported one or more psychological issues due to lockdown/ quarantine and COVID-19. Some of these issues are sleep and appetite change (36%), mood changes (31%), feeling disconnected (28%), problems in thought process (27%), fear (22%), nervousness, apathy, etc. Only 6% of persons reported that they were having a psychological issue before COVID-19. *As a consequence of COVID-19, 49% of healthy persons are having one or other psychological issue(s).*

Figure 3 demonstrates some important findings of the psychological behavior of travelers. For instance, (a) *the significant number of persons are likely to be anxious or insecure in a crowded place* which is likely to result in a change of transport mode which is also verifiable from the modal share analysis (Figure 1), (b) compared to 40% male, only 29.5% of female always or often feels secure alone in a vehicle i.e. *women are more likely to travel with co-passenger in a private vehicle or prefer public transport.*

3.5 Impact on physical activities, health and food habits

Figure 4 exhibits the physical activity patterns of the respondents before, during and after-COVID-19. It can be observed that no significant different between the physical activity patterns before and during-COVID-19. However, in comparison to before-COVID-19, *more number of persons are likely to look after their health/ fitness (79% before and 86% after) and healthy food habits (34% before and 47% after).* Though the number of persons who are exercising before and during-COVID-19 are almost the same (see Figure 4), the number of healthy persons grew from 57% before-COVID-19 to 67% during-COVID-19. This is happening *primarily due to change in food-habits (mostly switched from eating outside to healthy food at home).*

3.6 Impact on driver behavior

In a question, the majority of persons have reported that travel under the current circumstances is risky (32%), unsafe (27%), etc. Surprisingly, about 54% of persons have reported that it is not safe to travel for the rest of the year, 11% of persons say that it is fine to travel now. Moreover, the rest of the persons would like to start traveling once no more infected cases are present or even one month after that. Further, *most of the persons reported that they*

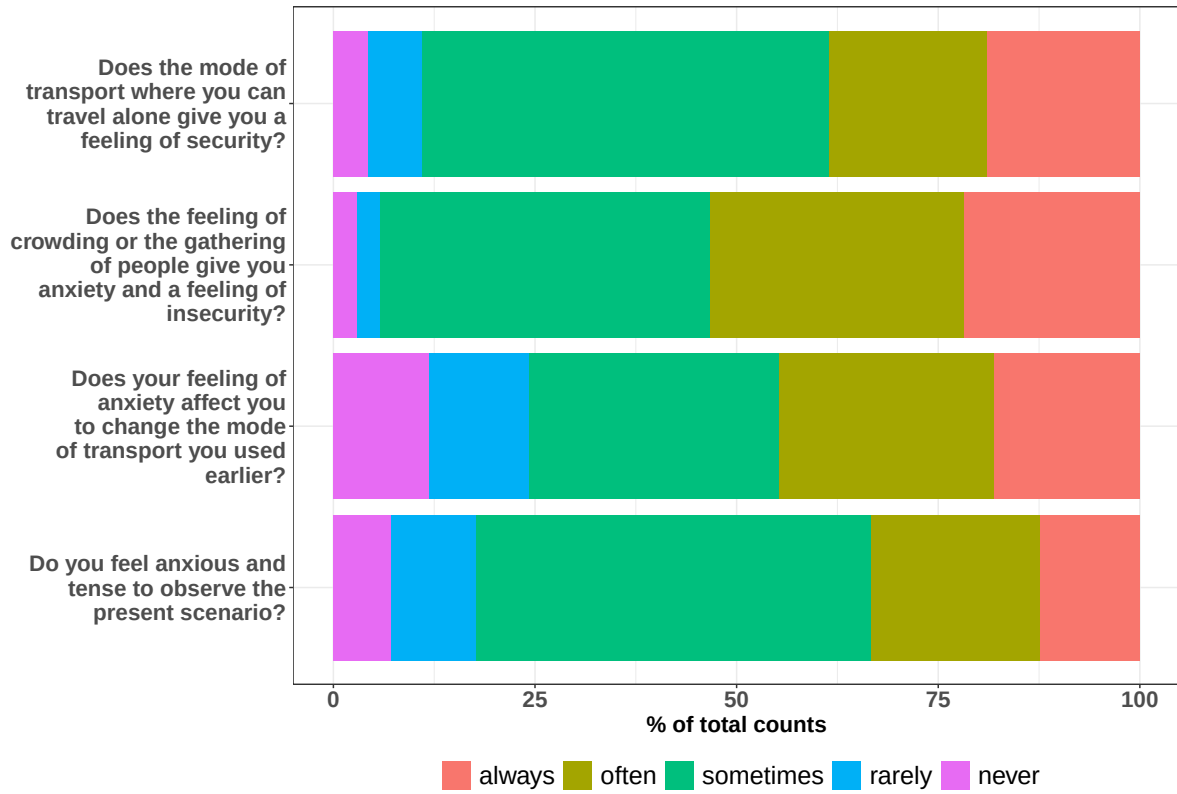


Figure 3: Psychological behavior of the travelers

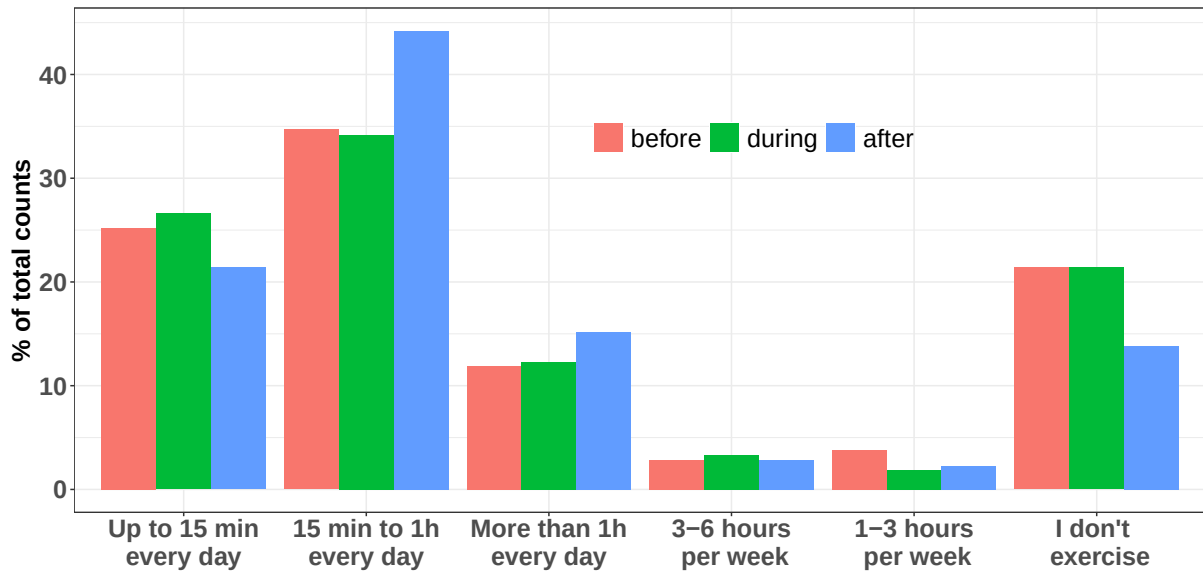


Figure 4: Physical activity patterns of the respondents

will be cautious while traveling and use a face mask, sanitizer, follow physical-distancing, avoid crowds, etc. Cautiousness, worrisome, anxiety, stress, nervousness, etc., are likely to increase the psychological burden and consequently impact behavior of a driver/ rider or a passenger. For instance, distraction, rash-driving, feeling insecure when driving/ sitting with a co-passenger. This happens because, under such conditions, sensory motors are not able to function properly and attention is diverted frequently. From Figure 3, it can be observed that a significant number of persons are likely to have anxiety due to the current scenario. Additionally, anxious persons

may consume alcohol to calm down and drive afterward. However, this can be dangerous and eventually, may result in a crash. Interestingly, (a) 71% persons are likely to be distracted in one or multiple travel modes (b) 67% are likely to undergo rash-driving, (c) 72% will be insecure while sharing a transport mode with other (e.g., bus, car, auto-rickshaw, etc.) and (d) 50% will feel secure after consumption of alcohol just before driving.

3.7 Flexible and staggering working hours

During the recovery period, when the number of cases might start declining, physical-distancing is likely to be a necessity. However, the infrastructure in most of the industries, organization, schools, universities is not suitable for that. This can trigger the staggered work/study-shits (50-50) or flexible work-hours. This will not only facilitate the physical distancing in the organizations with a lesser workforce but will also flatten the peak hour [5]. The respondents were asked about their preferences for such policies. Approximately 70% of respondents would like to have flexible working hours whereas, 62% of respondents would like to have staggered working hours. About 68% of the respondents who would like to have flexible workings hours say that it will reduce their stress and 20% say it may reduce their stress. Similarly, 65% of the respondents who would like to have staggered working hours say that it will reduce their stress and 18.6% say it may reduce their stress. This happens because staggered working hours (a) might be undesirable timings (e.g., early morning, late evening/ night) and (b) likely to have strict opening/ closing hours for better management. Therefore, together with work/study from home, *a flexible working hours policy can be adopted which is likely to not only give an opportunity (i) to manage the physical-distancing or reducing crowding at institute/ organization (ii) to reduce stresses and (iii) likely to flatten the peak hours.*

3.8 Travel locations post-COVID-19

Post-COVID-19 is a situation where no travel restrictions are enforced. Along the lines of Government of India, it can also be named as post-Unlock. An increase in the traffic is reported during various phases of lockdown and Unlock [38]. Apart from the primary activities (e.g., work, study), individuals will be traveling to religious places, sports center, entertainment center, restaurants etc. About 23% of persons won't visit eateries/ restaurants, 22% won't go to entertainment places, 20% won't go to religious places, 24% won't go to sports centers. Of those who will visit eateries/ restaurants, entertainment or religious places, 40% will visit to release tension or calm the mind. More people will travel to religious places (16%) or sports centers (16%) than eateries (11%) and entertainment centers (13%) to lessen their anxiety.

4 Conclusions

This work has presented the findings from a survey that was conducted in the second week of June. During the survey, the lockdown period was over and the 'Unlock' period was in progression. The study provided some valuable insights about the working population in Delhi, India. It was shown that due to COVID-19, the priorities of the travelers changed, which results in a substantial increase in the private mode of transport. About 28% of the mode-switchers are likely to continue using the new transport mode. This emphasizes towards the (a) 'new-normal' situation, which will have higher transport negative externalities and (b) need for sustainable transport policies in the long-run. During the lockdown period, 67% of persons started working from home. However, only half of them will continue to do so post-COVID-19. Compared to 70% of persons favoring flexible working hours, only 62% of respondents consented for staggered working hours. Most of these persons said that it would decrease their mental stress. Being in the state of fear of getting infected, losing the job, staying-indoor, etc., affected the human health (e.g., sleep and appetite change, mood swings, fear, nervousness, difficulty in thinking, etc.) and

about 51% of respondents have reported that they have one or more psychological which was only 6% before COVID-19 situation. On a positive note, healthy food habits have increased the number of healthy persons from 57% (before-COVID-19) to 67% during COVID-19. Further, the study also exhibited that a significant number of persons will be tensed and anxious, which will impact their driving behavior. For instance, 71% of persons are likely to be distracted in one or multiple transport modes, 67% are likely to undergo rash-driving, 72% will be insecure while sharing a vehicle with others etc. In a post-COVID-19 scenario, people are likely to visit eateries, restaurants, entertainment or religious places to release the tension, to calm the mind, to lessen the anxiety, etc. These findings will be helpful in tailoring the transport policies towards sustainable and resilient transport as well as interventions [6] to reduce the psychological burden on the drivers. At workplace, in addition to flexible working hours, counseling/ therapy, serological testing of antibodies to SARS-CoV2 may be adopted which will decrease the anxiety levels of the employees.

Author Contribution

The authors confirm contribution to the paper as follows: study conception and design: N. Chakrabarty, K. Gupta, A. Agarwal; data collection: K. Gupta, V. Singh, N. Chakrabarty; analysis and interpretation of results: V. Singh, A. Agarwal; draft manuscript preparation: V. Singh, A. Agarwal. All authors reviewed the results and approved the final version of the manuscript.

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