

The Contemporary State of Transportation in India after COVID-19 Spread – The Travelers' Perspective

Kuldeep Singh^A

Received: May 2021 | Accepted: July 2022

DOI: 10.5937/turizam26-32307

Abstract

In the process of unlocking India after the COVID-19 outbreak, the travel and tourism industry is resuming to revive the economy. It is substantial to examine the contemporary state of transportation in India and travelers' perspectives post COVID-19 spread. The descriptive study is aimed to investigate the effect of COVID-19 on travel patterns of Indians, their tour plans, readiness for availing transportation services, and perspectives regarding the reoperation of transportation services in India. For this study, an online survey was conducted to gather primary data. A total of 212 responses were collected through convenient sampling. This study revealed that COVID-19 has extremely affected the perspectives and choices of people regarding different transportation services. They consider transportation a major cause of spreading the Corona virus and the railway was considered the riskiest. Although half of the respondents reported their readiness to avail public transportation and stated that reoperation of transportation services was done on time. However private vehicles were their priority not only for their regular travels but for future tours also. Travelers were doubtful about the effective implementation of rules and regulations in public transportation in India. The study provides useful understandings to the tourism & transportation authorities and operators regarding the travelers' perspective concerning transportation amid COVID-19. For further research, the perspective of transportation operators can be investigated for valuable insights and longitudinal research can also provide in-depth understandings.

Keywords: transportation, traveller, COVID-19, tourism, revival, India

Introduction

India very early had shut down the transportation completely due to COVID-19 but now after unlocking India, the transportation system is also reviving. Consequently, there is a need for ramping of the transportation system swiftly (Verma et al., 2020, June 15). With the enforcement of lockdown in the whole nation on 24th March (Meena, 2020), the daily routine of people came to a halt resulting in economic downfall (Ponkshe, 2020). In a country's gross domestic products transportation contribution is about 5.2% (Rodrigue, Notteboom 2020) and the

^A School of Hospitality & Tourism. G.D. Goenka University, Gurugram, India; singh911kuldeep@gmail.com

use of transportation services for mobility has been a cause for virus spread, which in turn, hampered transportation system (Ali et al., 2020).

The traditional ways of transportation are about to see changes after the pandemic (The Times of India, 2020). There will be a decline in the Delhi metro users within six months after lockdown, the percentage of people using cars, bikes, cycles, and walk will increase, and people will intend to buy personal vehicles for safety purpose (Ponkshe, 2020; The Times of India, 2020, 2020). As per the physical distancing norms, there is a high demand for an additional fleet of buses (The Times of India, 2020). The increased vehicles on road will create issues in maintaining security (Ponkshe, 2020).

Since the uplifting of lockdown in India on May 17, 2020 (Meena, 2020) a big challenge before the transportation operators have been the reopening of services amid the COVID-19 crisis while maintaining safety and security and financial endurance, especially when the majority of the population is dependent on the public transportation in India (Olliver, Gupta, 2020). Further, the lack of proper guidance from the transport operators is creating issues in travel planning. Another challenge in the safe operation of transportations is the closed environment of the vehicle (Nishiura et al., 2020; Qian et al., 2020) due to the high chances of living of infectious aerosols in indoor air (Prather et al., 2020). This upsurges the need for monitoring air filtration, natural and frequent ventilation apart from maintaining hygiene & cleaning (Centers for Disease Control and Prevention (CDC, 2020). However, Verma et al., (2020) purposed that as most of the Indian metro rails routes are smaller in distance, the AC couches cannot be considered much risky. There is still a need of more detailed research on understanding the modality of the novel Corona virus transmission through public transportation. Around the world, the transport operators are doubtful in establishing their guidelines due to lack of knowledge (Verma et al., 2020) and uncertainty of transportation demand (Olliver, Gupta, 2020). However, rules, regulations, and protocols are being formulated considering the safety of staff and passengers. It is not practical without understanding the viewpoint of the travelers regarding transportation operations amid COVID-19 spread in India. There is a need to investigate the travel behaviour, perspectives, travel habits through travelers' responses (Jenelius, Cebecauer, 2020; Huang et al., 2020). As very limited studies are done on the Corona virus effect on public transportation (Jenelius, Cebecauer, 2020), research is required in the sectors at stake in the crisis, like transportation (Tirachini, Cats, 2020). Passengers' readiness for availing transportation services and their outlook about the provisions taken against COVID-19 will benefit in understanding the demand of travelers and their behaviour.

This study aims to investigate the effect of COVID-19 on routine travels of Indians and investigate their travel plans, highlighting readiness to avail transport services. Further, it sought to explore the perspective of travelers regarding re-operation of the transportation in the country. This study is an effort to provide practical implications to transportation operators and policymakers for better functioning during the crises.

In the following sections, a background of the study is provided with a focus on the contemporary state of transportation in India with special consideration to COVID-19 and initiatives taken by transport sectors. Further, the methodological approach is defined followed by results and discussions. This paper is concluded with major implications, and scope for future research.

Study Background

COVID-19 has imparted changes in travel planning, travelers' perceptions, behaviour, travel determinants, and the new trends which are being explored (Ioannides, Gyimóthy, 2020; Wachyuni, Kusumaningrum, 2020; Meena, 2020). Through the data obtained from the traffic counters, traffic camera, ticket sales counter, public transport GPS Aloi et al., (2020) conducted the study about Spain. With the help of data obtained from Google, Apple and Moovit the effect of COVID-19 on mobility has been studied (Tirachini, Cats, 2020). Based on roadside observations, Dzisi Jr. and Dei (2020) have examined people's tendency to wear masks and following social distancing. Huang, et al., (2020) examined people behaviour and preferences regarding transportation, travel, destination during the pandemic using data from web mapping platform in China. Meena (2020) investigated the travel patterns of Indian people at three phases; before the pandemic, before lockdown, and post lockdown and found that people feel anxiety in public vehicles. People are likely to opt for short distance tour, with less mobility and prefer leisure activities (Ioannides, Gyimóthy, 2020). Wachyuni and Kusumaningrum (2020) acknowledged that Indonesian residents have a positive attitude for travel and tourism and they consider travel as an essential activity of their lives. hang, McAleer and Ramos (2020) presented a charter to pursue after the pandemic, in the process of resuming and recovering of travel & tourism industry that focuses on the implementation of social distancing, travel intention and entry restrictions, use of personal protection equipment, monitoring medical and health situation, rules and regulations for accommodation, transport systems, and various type of tourism, and also emphasized on transforming future crisis into an opportunity for sustainability.

Effect of COVID-19 on Tourism and Transportation

According to United Nations World Tourism Organization (UNWTO, 2020) in April 2020, around the world half of the nations had closed their boundaries for tourists, resulting in a decrease of 22% in international arrivals and loss of USD 80 billion loss in receipts in the tourism industry. As per Ministry of Tourism (2020) with a growth rate of -22.6%, foreign tourist arrivals were only 24,62,244 during January-March 2020 in India and Rs.44, 203crores were the Foreign Exchange Earnings with a -15.6% growth rate. According to the Director General of Civil Aviation (DGCA, 2020), domestic airlines in India have to face a great degree of decline in passengers. The domestic flights, as well as international flights, were put off on March 24 and 22, 2020 respectively by Indian Govt. Again, 401.17 lakhs passengers were carried by Indian domestic airlines in Jan-Aug 2020, with a monthly growth of -75.99%.

As per the International Air Transport Association (IATA), the airlines operating for the Indian market have to bear over Rs, 85,000 cores revenue impact and over 29 lakhs of jobs in the Indian aviation sector are at risk (Inventia, 2020). Incorporation with the International Association of Public Transport (UITP), the public as well as the private bus operators were surveyed by Olliver and Gupta (2020). The authors stated that with the COVID-19 pandemic, more than 98% of the bus services in India were at a standstill and around 07 billion dollars loss every month is faced by the bus transportation sector. The bus operators have to face numerous problems such as revenue loss, paying salaries to staff, paying the loan, and meeting the expenses accruing in maintenance or other operations.

Role of Indian Transport Sectors during COVID-19

COVID-19 has greatly affected the travel patterns and transportation industry in India. But the transportation authorities and the state and central govt. of India are regularly taking initiatives to monitor the services and formulate guidelines. Ministry of Health and Family Welfare, Indian govt. (MOHFW, 2020a) issued consolidated travel advisory, additional travel advisory guidelines for domestic travel (air/train/inter-state bus travel) international arrivals concerning COVID-19.

Indian railway, aviation industry and road transport authorities are constantly working to revive the transportation in India. On 1st May, Shramik Special Trains were started in India. Till 18 June 2020, 4,594 Shramik Special trains had been operated to take 62.8 lakh, migrant labourers and passengers back to their resident states amid pandemic (Indian Railways, 2020). For the passengers 1.85 crore meals and 2.12 crore packed drinking water was made available free of cost. Essential commodities of 225 million tonnes have been transported by railways from 1st April 2020 to 25th June 2020 (Indian Railways, 2020). For the migrants and others, 08 lakh man-days of employment chances are created by the Indian railway. It has also converted 5231 coaches into COVID Care centers with 83,696 births. Special attention is paid by Indian Railways under Swachh Bharat, Swachh Railways initiative for a clean environment, and better travel experience (Indian Railways, 2020).

For transporting the people under the Vande Bharat Mission, started on 7th May 2020, flights of Air India, Air India Express, and Indigo were operated during the crisis (Ministry of Civil Aviation - MoCA, 2020a). As per MoCA (2020b), by October 3rd, 2020, a total of 5,20,949 passengers were brought back to India by 3063 inbound flights while a total of 3,063 outbound flights carried 2,83,361 passengers to their respective countries by Air India Group. MoCA also transported 708 tons of medical and essential cargo under the Lifeline UDAN Initiative during the COVID-19 pandemic (Airport Authority of India -AAI, 2020). To deliver essential items such as medical supplies, food grains, fuel, etc. the vessels and ports were operating amid the COVID-19 crises. Instructions were provided to all major and minor ports by the Ministry of Shipping, Govt. of India to provide services considering the health safety and environment (MOHFW, 2020b).

It is to be noted that due to pandemic there is a huge impact on the sustainability and tourism related activities. The pandemic of COVID-19 resulted in an exponential increase in research articles about tourism's effects (Bratic et al., 2021).

Status of Transportation

To cater the growing demand of passengers in India, the various transportation authorities are investing in infrastructure development and passenger services.

Aviation: As per the report of India Brand Equity Foundation (IBEF, 2020a) there are 66 domestic airports, 17 international and 7 customs airports in India. For the infrastructure development, US\$ 3.58 billion are planned to invest by the AAI in the next 5 years. While in 2019, 55 airports under AAI were announced to be single-use plastic-free airport terminals. Under the Union Budget 2020-21, US\$ 543.43 million have been allocated to the civil aviation ministry. US\$ 710.38 million are allocated to DGCA, US\$ 7.62 million to the Bureau of Civil Aviation Security. As per the IATA forecast, by 2024, India will be at position 3rd from 7th in the aviation market (IBEF, 2020a).

Railway: At present, according to IBEF (2020b), the Indian Railways possesses 13,452 passenger trains and 141 freight trains. As of 2017-18, the Indian Railway has around 68,442 km. of a network on which more than 22,300 trains are operating on daily bases. It possesses 11,764 locomotives, 71,825 coaches and 0.278 million wagons. More than 23 million passengers travel via train in India per-day. The Ministry of Railways has received US\$ 10.33 billion under the 2020-21 Union Budget. Indian railway is planning to run fully on electricity by 2024 as well as by 2030, it is preparing to run with a net-zero emission network (IBEF, 2020b).

Road: With more than 5.8 million km, the Indian road network is the second largest in the world. State and national highways respectively comprise 03% and 02% of the total roads. Through the roadways, 64.5% of India's goods and 90% of total passengers are transported (IBEF, 2020c). The Ministry of Road Transport and Highway received US\$ 13.14 billion from the Indian Govt. under Union Budget 2020-21. National Highway Authority of India, in June 2020, has become fully digital (IBEF, 2020c).

This study is an attempt to investigate the travelers's perspective regarding transportation services in India amid COVID-19 crisis. For this research, responses are collected from travellers. The following section elaborates the methodology followed by results and discussions.

Methods

The study is designed to examine the perspective of Indian travelers regarding the transportation sectors amid COVID-19. Being fast and enabling comparisons of agreement and disagreement among the participants, quantitative research is chosen (Yauch, Steudel, 2003, 473). To attain the purposes of the study, data was collected during the COVID-19 pandemic through online survey from 16 July 2020 to 20 September 2020. Further, other secondary sources such as government reports of the country, research papers, articles, official websites were also studied. Due to the discouragement of human contact & mobility, convenient sampling was used to accumulate the responses from people who were conveniently available (Zikmund, 2003). As the survey tool, a self-administered fixed choice questionnaire was developed. A total of 212 responses were analysed using SPSS 20 as Hair, Black, Babin, Anderson, and Tatham (1998) had stated that a minimum sample size of 200 is required for statistical analysis. Descriptive statistics like simple percentage and frequency were calculated to investigate the effect of COVID-19 on travelers, their tour plans, their readiness for availing transportation services, and prospective regarding the reoperation of transportation services.

For collecting the responses, the respondents were informed about the objective of this study and an informal agreement was obtained from them. Their participation was voluntary. The Questionnaires were distributed to the tourists after taking their permission

Extended Methodolgy according to reviewer comments

In this study researchers used different type of social media platform like facbook, instagram, Gmail etc. Most of the respondents are Indian travellers and their views about transporation service during COVID -19 have been taken. In such convenient, non-probability sampling, Indian participants details have been taken and their experiences in their travel patterns were noted down.

A self administered questionnaire with total 2 parts (Part A, consist of 5 items related to personal details), (Part B , consist of 23 items related to questions related to transporta-

tion during COVID 19). These items of the questionnaire were taken from previous literature review like (Tirachini, Cats, 2020 , Olliver, Gupta 2020, Wachyuni, Kusumaningrum, 2020). Most of the questions are close ended and researcher used Google forms to create questionnaire with multiple question types.

Results and Discussion

To gain a better understanding of COVID-19 effect on the travel behaviour of Indians and their transportation preferences and perspectives are examined .The following segment of this study describes the results and discussion.

Demographic Information of Respondents

A total of 221 questioners were collected for this study, out of which 09 were found inappropriate resulting in final data of 212. The demographical profile of the respondents is given in table 1.

Table 1. Demographic Profile

Demographic Profile	Number of Respondents	Percentage of Respondents
Age of respondents (in years)		
Below 20 and 20	14	6.6
21-30	124	58.5
31-40	54	25.5
41-50	12	5.7
51 and above	8	3.8
Gender		
Male	126	59.4
Female	86	40.6
Marital Status		
Single	133	62.7
Married	75	35.4
Others (Divorced/ Widowed)	4	1.9
Education		
Up to 12 th	17	8.0
Graduation	62	29.2
Post-Graduation	90	42.5
Above PG	43	20.3
Occupation		
Student	78	36.8
Govt. Sector	45	21.2
Pvt. Sector	52	24.5
Self -Employed	21	10
Others	16	7.5

Demographic Profile	Number of Respondents	Percentage of Respondents
Annual Income		
Nil	63	29.7
Less than 2,00,000	43	20.3
2,00,001-4,00,000	50	23.6
4,00,001-6,00,000	29	13.7
More than 6,00,000	27	12.7
Total	212	100

Source: Survey Output

Table 1 presents the demographic profile of the respondents. Male respondents were 59.4%, 62.7% were single and 35.4% were married. Further, 58.5% of respondents were of the age group 21 to 30. The majority of the respondents (62.8%) were Post Graduated and above. Further, 36.8% of respondents were students and 45.7% were working as Govt. and private employees. The respondents having no means for earning were 29.7% while 26.4% had an annual income of more than 4 lakh (US\$ 5,480).

Perspectives of Travelers Regarding Transportation Amid COVID-19

Effect of COVID-19 on Routine Travel

Figure 1 shows that 65% of the respondents sturdily believed that the transportation sector has been a major cause of transmission of the Corona virus while 25% had moderately agreed. The results supported the statements of Ali et al., (2020).

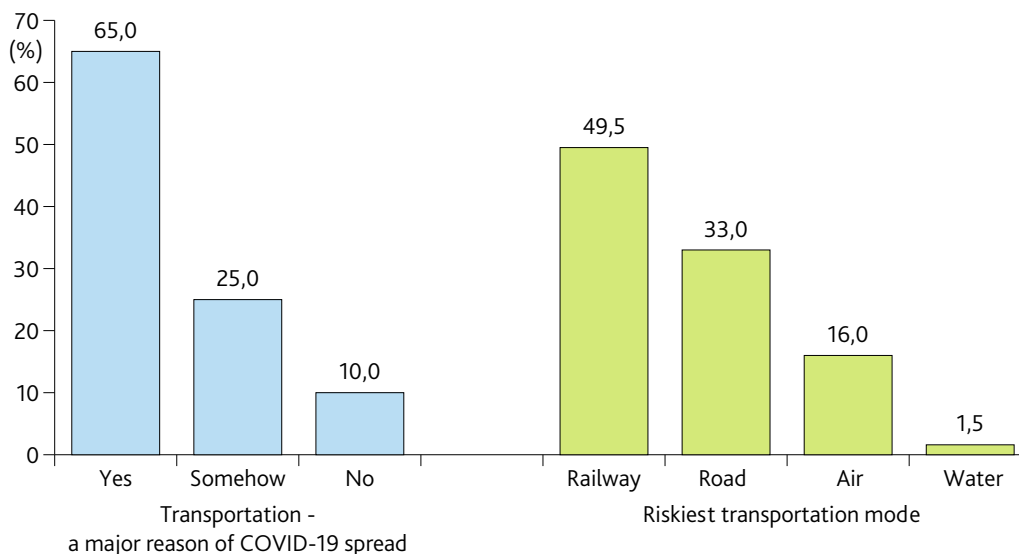


Figure 1. Transportation and COVID-19

Source: Author's Survey

Half of the respondents considered railways the riskiest mode. The public vehicles and stations are considered more prone to spread the virus due to high occupancy of the public at a limited area, lack of control over identifying the infected people, and high chances of virus transmission from surfaces like vehicle doors, seats, handrails, and ticket counters (UITP 2020).

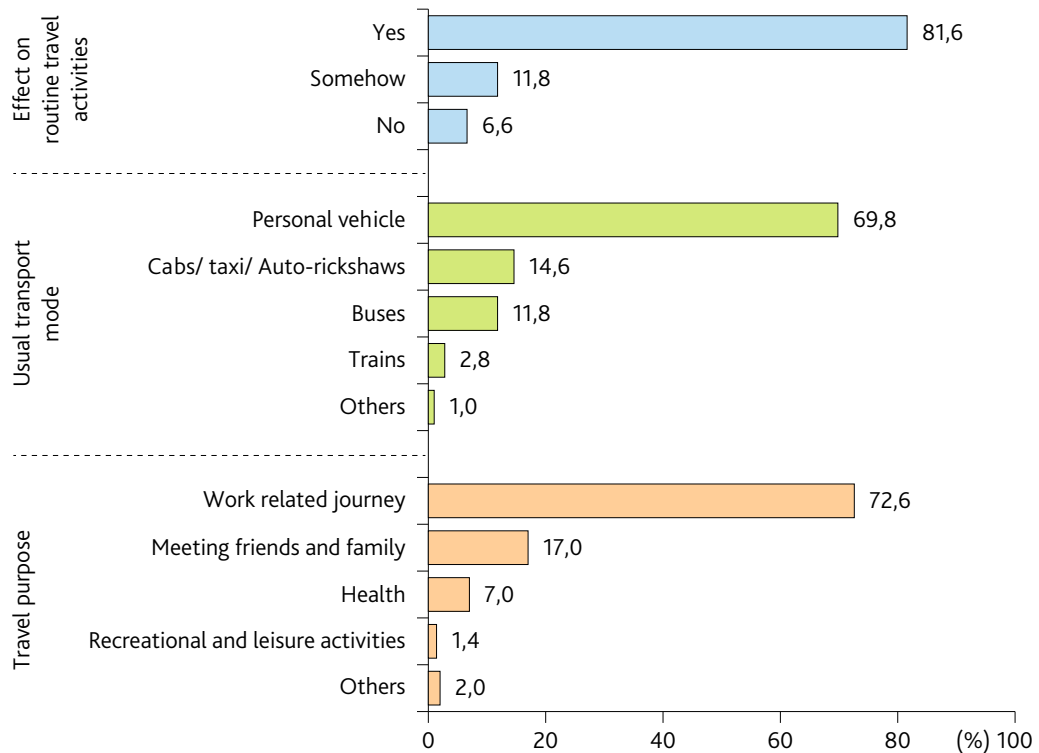


Figure 2. COVID-19 Effect on Routine Travel

Source: Author's Survey

Around 90% of the world population were highly affected due to the regulations like stay-at-home, work-from-home, the closing of educational institutions, travel restrictions; cancellation of events, and public gatherings (Gössling et al., 2020). As per Figure 2, 81.6% of the respondents acknowledged that the COVID-19 outbreak has affected their routine travels and other functions.

Around 70% of respondents reported that after COVID-19 spread they are using personal vehicles for routine traveling while 26.4% of respondents have started using auto-rickshaws, taxi, or bus services for traveling. People with lower income and less option available to them will prefer mass-transportation modes (Meena, 2020).

People generally avoid traveling during the pandemic and 72.6% of respondents stated that work is a major reason for engaging in travel for them. Most of Indian quite their leisure, recreation, shopping plans and non-mandatory travels (Meena, 2020).

Table 2. Travel Issues during COVID-19

Travel Issues	Frequency
Rise in prices	104
Change in routings	95
More Traffic	55
More rules breaking on roads	53

Source: Author's Survey

Table 2 shows that 104 times the respondents highlighted that the transportation amid COVID-19 has become costlier in India. They had to pay a higher amount for availing services due to hike in fare, petroleum or diesel prices. Further, the majority of respondents specified that their routings were changed because of blockage to contentment zone. Further, 55 times the traffic issue was highlighted by respondents as the majority of people prefer personal vehicles. This indicates overburden on road infrastructure, problems of congestion, pollution, and heightened responsibilities on human resources.

Tour Plans Post-COVID-19 Spread

As shown in Figure 3, COVID-19 has not only affected the daily travels of people but their tour plans are also hit adversely. Respondents reporting a shortage of transportation services for travels were 30.7%. Modifications in tour plans and bookings cancellations were done by 28.8% and 26.9% respectively.

While investigating their future tour, 35.4% stated that they will resume their tours in 2021 while 30.2% were not ready to engage in tourism activities until the vaccination is developed. Respondents specifying their desire of visiting within India were 63.2%. Merely 13.2% were ready for engaging in international tourism. UNWTO (2020) had also reported the possibility of faster retrieval of domestic tourism than international.

Further, 85% of respondents opted for only private and personal vehicles for their future tours. This implies the growing demand for private and customized travel services. Safety and security are the greatest concern to Indians while selecting transportation services followed by travel cost, convenience, time, and comfort. The Times of India (2020) also confirmed that post lockdown health safety was the first concern of people while selecting the mode of transportation.

Readiness to Avail Transportation Services after COVID-19 Spread

The adoption of transportation and travel patterns of people are influenced by the societal factors, the external catalyst affecting a person's life and psychological factors like sentiments, motivations, habits (Ali et al., 2020). While investigating the Indians' readiness to avail services of different transportation modes, it was observed that more than half of the respondents were prepared to use airways, railway as well as public road transportation. Public road services were already used by 23.6% of respondents while 34% of respondents' agreed that railway services will be availed only after the vaccination development. The education, age, income, workplace (Almlöf et al., 2020), profession, distance from home to the nearest station, pre-COVID-19 transportation mode choice, and risk (Tan, Ma, 2020) are the key indicators affecting the inclination of using public transport.

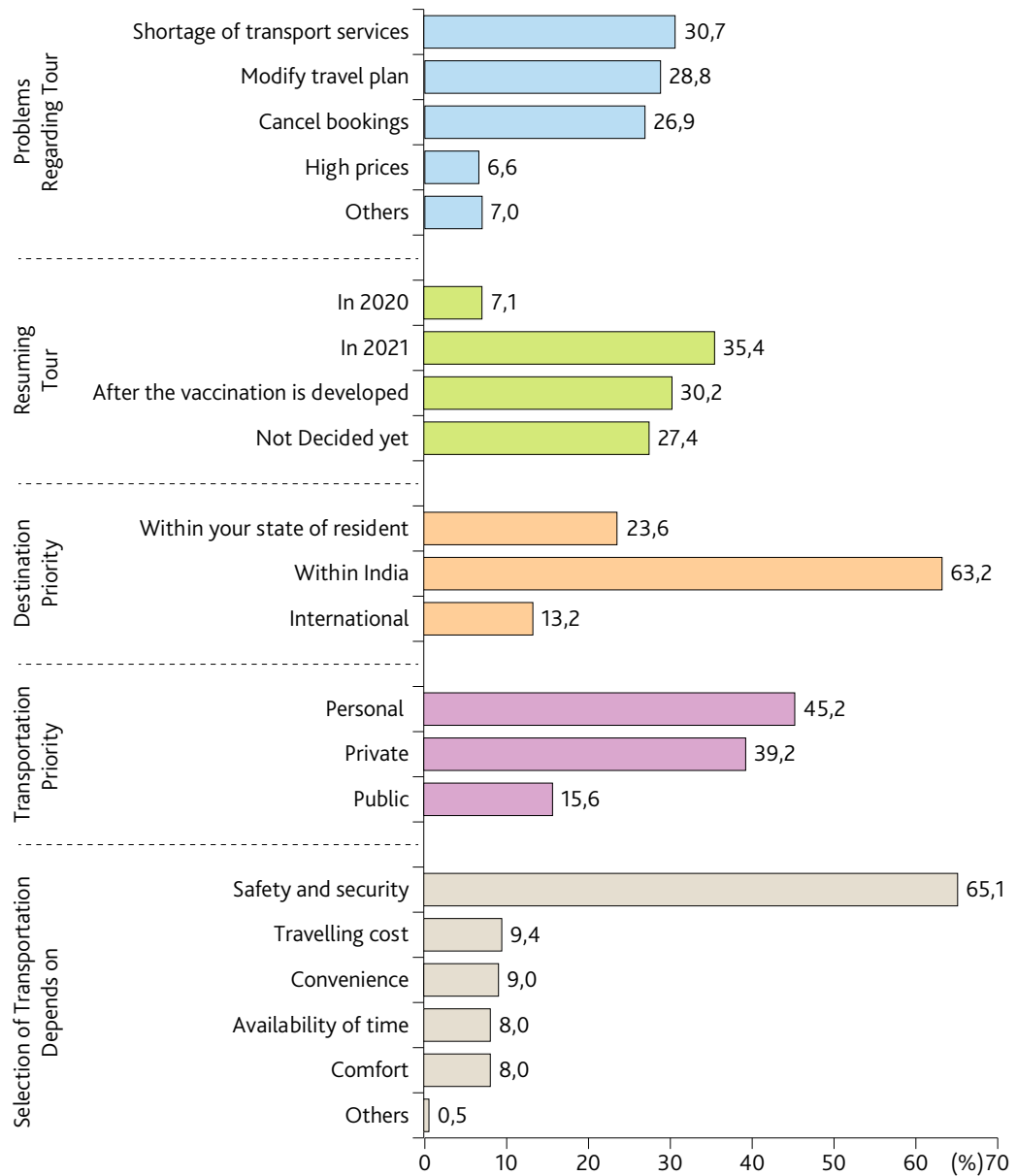


Figure 3. Tour Plans after COVID-19 Spread

Source: Author's Survey

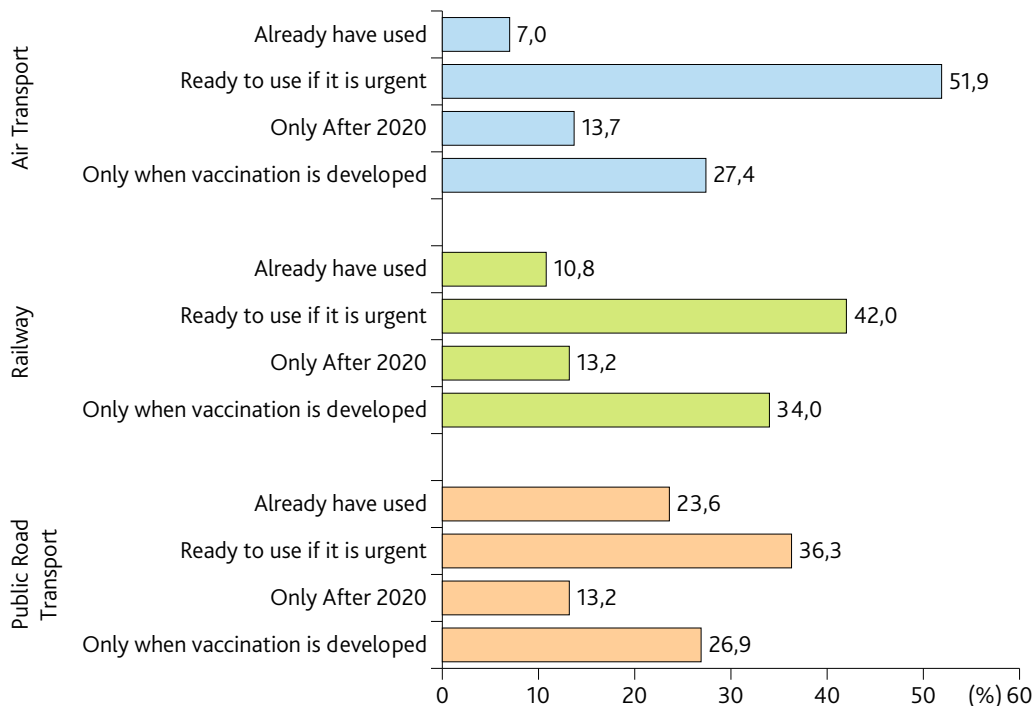


Figure 4. Readiness to Avail Transportation Services

Source: Author's Survey

Re-operation of Transportation amid COVID-19

The Figure 5 presents the perception of respondents about the re-operation of various transportation sectors. Around 50% of respondents stated that the airlines and public road services were started on time by the Indian government while 28% deliberated that it was done earlier. As travelling via railways is comparative longer, 34.4% conveyed that re-operation of Railways services was also done earlier.

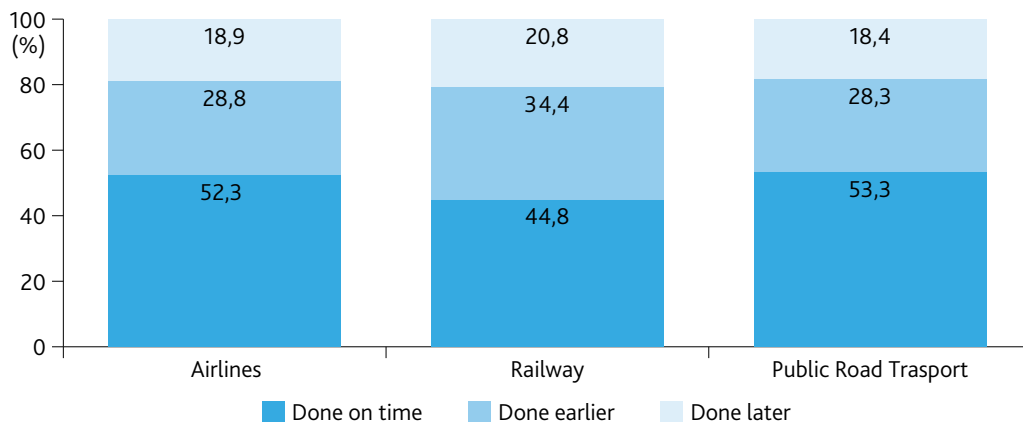


Figure 5. Perception Regarding Re-operation of Transportation

Source: Author's Survey

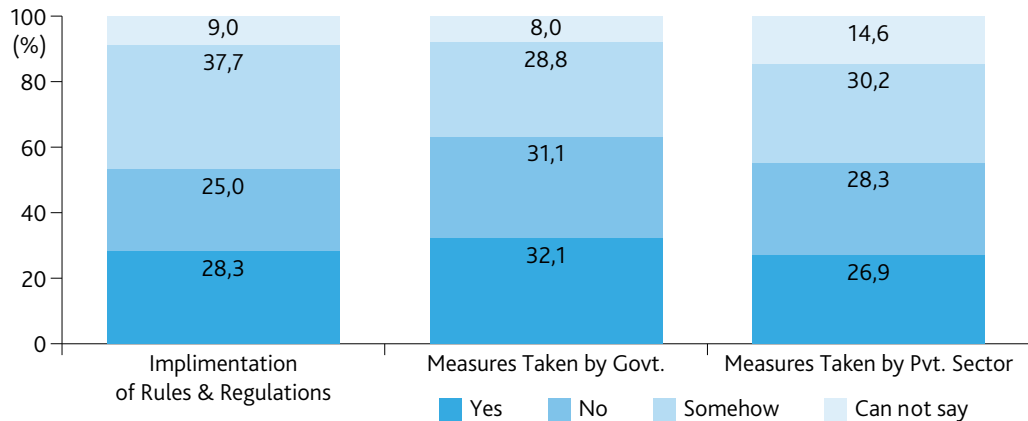


Figure 6. Actions Taken Against COVID-19

Source: Author's Survey

The countries following more strict government policies (Jinjarak et al., 2020), adopting stay-at-home policy (Yilmazkuday, 2020) have testified less Novel-Corona virus mortality growth rate. In a study conducted by Eno (2020) found that around 67% of the respondents believed that the aviation industry is taking required precautions against the virus. The perspective of respondents about the actions taken against COVID-19 spread regarding the transport sector in India provided mixed results. People don't have a clear vision regarding the consequences of COVID-19. The respondents who accepted the fact that rules and regulations regarding transportation have been implemented effectively in India after COVID-19 spread was 28.3 %, while 37.7% somewhat believed this fact. Further, the perspective regarding the statement about adequate measures taken by govt and private operators concerning transportation in India against the virus was contradictory. The lack of medical research in the area, the unlocking process in various areas along with the increasing number of cases every day, the asymptomatic patients, divergent views on the COVID-19, and lack of strict strategies can be the reason that people are not able to form a clear impression in this regard. There is need to regulate the spread of the virus through public transportation, as it is counted a major cause of transmitting the virus (Muller et al., 2020; Musselwhite et al., 2020).

Travel Precautions against COVID-19

Table 3 presents the effective measures that can help to minimize the virus spread. Around 168 times the respondents pointed out that there is a great need for limiting the number of passengers in public vehicles. The social distancing can be the major precaution. Further adoption of new, modern technologies, encouraging travellers for the online bookings, and payments, inspiring people to use self-reporting or location tracking mobile apps, CCTVs cameras inside vehicles and station premises can be effective measures. It is a positive sign that in India, more than 70% of the air tickets are booked online (IBEF, 2020d).

Table 3. *Travel Precautions against COVID-19*

Suitable and Useful Travel Precaution against COVID-19	Frequency	Effective Technology in Transportation Sector against COVID-19	Frequency
Limited passengers in Public Transportation	168	Cashless transactions and Online bookings	158
Adoption of New Technologies in transport sector	113	Self-reporting or location tracking mobile apps	120
Adjustment in travel plan	59	Sensor devices	78
Travel Insurance/ Medical certification	53	CCTVs	47
Others	1	Others	1

Source: Author's Survey

Conclusion and Implications

The study was designed to examine the contemporary state of transportation in India and exposed the perspectives and choices of people regarding various transportation services amid COVID-19. Indians considered transportation a major cause of spreading the virus. Maximum people were likely to use private vehicles for their regular travels and future tours. However, respondents also reported their readiness to use public transportation and agreed that reoperation of transportation services was done on time. Although, travelers were uncertain about the implementation of rules and regulations in public transportation and measurements taken against COVID-19. There is a need for gaining confidence and trust of public in the means of mass transportation (Verma et al., 2020). The following are the useful suggestions for transportation operators, policymakers and, Govt. authorities derived from this study that can be useful for reviving the transportation business:

There is need for paying more attention to technological advancements and making the travel system automated by using sensor devices, CCTVs cameras, and thermal cameras, automatic functioning of doors, and electronic cards, or token to minimize contact. Digitization at bus terminals, taxi stands, and railway stations and timely digital display of schedule, routing, services should be done (Olliver, Gupta, 2020; Ponkshe, 2020).

The private and public transporters should enhance their service frequencies with longer operating hours, in non-contaminated zones, longer routes, and rural areas, while maintaining a balance between demand and supply of transportation services. The entrepreneurs and small transportation operators can transform crisis into business opportunities through considering alternative options like catering the new segments for instant; office employees of an area, the medical staff of a hospital, providing services to rural, and developing partnership, or liaison with other operators. They can also adopt flexible approaches to attract tourists such as providing flexible travel dates, alternative transportation options, concessions and compensation, and promote the offbeat destination within India.

The carrying capacity of the public vehicle must be examined. Special attention should be given to senior citizens, patients (Ponkshe, 2020) and passengers having urgent need of transport like health workers, doctors, cleaning staff, and frontier staff (Huang et al., 2020). Extra staff and volunteers can be hired for managing services, maintaining social distancing, and enhancing public awareness (Verma et al., 2020). Special training can be imparted to them to work during the crisis. Enough amenities should be provided to staff and passengers such as PPE kit, sanitizing wipes, dustbins, contact less washbasins with soup dispenser. In all possible ways, the queue system should be strictly followed and momentary barites can be used to sep-

arate the transport operators and passengers (Ponkshe, 2020). Adopting a practical approach like fixing the seat of passengers, the prohibition of eating in vehicles, providing individual stacking space, keeping the doors open can be useful to prevent the virus spread. Issues like petroleum rate, higher travel cost, traffic jams, lack of appropriate roads, infrastructure, congested streets, and burden on human resources need to be considered while developing transportation strategies.

In countries like Hongkong, China, the United States monetary benefits are provided to the public transport operators for their survival in these crises (Olliver, Gupta, 2020). The Chile government has offered compensation to the bus operators having a loss of 80% in demand (DF, 2020). Governments of Sweden have also allocated financial assistance to the loss faced by the transportation sector (Sverigesradio, 2020). In India, to save the transportation operators from financial crises, the Govt. can come up with options like providing financial assistance to meet salary, rescheduling debts, extending the validity of various documents such as permits, insurance, other required certificates (Olliver, Gupta, 2020).

Managing working timings of different companies of an area, and inspiring people to travel in diverse peaks, and motivating bicycle use (Huang et al., 2020) can be useful steps. More sustainable mobility in travel is acquisitions worldwide in form of the adoption of cost-effective and environment-friendly modes of transportation such as e-bikes, e-scooter, e-rikshaws, walking, and cycling. There is a great need for planning to adopt and these implications successful in the crowded cities of India (Ponkshe, 2020).

It is not only the transport operators who have to consider the safety measures but the public too needs to play their part. If not managed properly, there are chances of travelers shifting to the private mode of transportation resulting in more pollution, accidents and more death than death due to COVID-19 (Verma et al., 2020). The government, transportation authorities as well as the public need to work in collaboration amid the situation.

Limitations and Future Directions

The study was based on the opinions of the participants collected through convenient sampling and online surveys only. It limits the prospects of generalizing the findings. For further research, the perspective of transportation operators, their functioning, issues faced by them during the crisis, marketing strategies can also provide valuable insights. Future studies can be focused on the specific transportation mode, area as well as the segment of travelers.

References

- Airport Authority of India (2020). *AAI Connect Quarterly Newsletter, Jan-March-2020*. Retrieved on June 23, 2020, from https://www.aai.aero/sites/default/files/aiiupload/AAI_E-connect_Jan-Mar_%28Vol-XII%29.pdf
- Ali, Y., Sharma A., Haque, M.M. 2020. *Transportation and a Pandemic: A Case Study of COVID-19 Pandemic*. In: *Indian Institute of Technology, National Institute of Disaster Management (eds) Integrated Risk of Pandemic: Covid-19 Impacts, Resilience and Recommendations. Disaster Resilience and Green Growth*. Springer, Singapore. https://doi.org/10.1007/978-981-15-7679-9_14
- Almlöf, E., Rubensson, I., Cebecauer, M., Jenelius, E., 2020. *Who Is Still Travelling by Public Transport During COVID-19? Socioeconomic Factors Explaining Travel Behaviour in Stockholm Based on Smart Card Data*. Preprint, available at SSRN. <https://doi.org/10.2139/ssrn.3689091>.

- Aloi, A., Alonso, B., Benavente, J., Cordera, R., Echániz, E., González, F., Ladisa, C., Lezama-Romanelli, R., López-Parra, Á., Mazzei, V., Perrucci, L., Prieto-Quintana, D., Rodríguez, A., Sañudo, R., 2020. Effects of the COVID-19 lockdown on urban mobility: empirical evidence from the city of Santander (Spain). *Sustainability* 12, 3870.
- Bratić, M., Radivojević, A., Stojiljković, N., Simović, O., Juvan, E., Lesjak, M., & Podovšovnik, E. 2021. Should I Stay or Should I Go? Tourists' COVID-19 risk perception and vacation behavior shift. *Sustainability* 13(6), 3573.
- CDC. 2020. Coronavirus Disease 2019 (COVID-19): COVID-19 Employer Information for Office Buildings. Centers for Disease Control and Prevention (CDC). Last Updated July 9, 2020. <https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html>.
- Chang, C. L., McAleer, M., Ramos, V. 2020. A charter for sustainable tourism after COVID-19. *Sustainability* 12(9):3671.
- DF. 2020. MTT agrees payment mechanism with former Transantiago operators due to drastic drop in revenue. *DiarioFinanciero*. Accessed May 22, 2020. <https://www.df.cl/noticias/empresas/industria/mtt-acuerdamecanismo-de-pago-con-operadores-del-ex-transantia-go-ante/2020-05-19/195247.html>.
- Director General of Civil Aviation [DGCA]. 2020. *Performance of domestic airlines for the year 2020*. Retrieved on October 03, 2020 from https://dgca.gov.in/digigov-portal/?page=jsp/dgca/InventoryList/dataReports/aviationDataStatistics/airTransport/domestic/airTraffic/Traffic_Repo820.pdf&main4264/4206/sericename
- Dzisi, Jr., E.K., Dei, O.A., 2020. Adherence to social distancing and wearing of masks within public transportation during the COVID 19 pandemic. *Transportation Research Interdisciplinary Perspectives* 7, 100191.
- Eno (2020) How might personal transportation behaviors change as a result of COVID-19, and what does that mean for policy? <https://www.enotrans.org/article/how-might-personal-transportation-behaviors-change-as-a-result-of-covid-19-and-what-does-that-mean-for-policy/>
- Gössling, S., Scott, D., Hall, M.C. 2020. Pandemics, Tourism and Global Change: A Rapid Assessment of COVID-19. *Journal of Sustainable Tourism* 1–20.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., Tatham, R. L. 1998. *Multivariate data analysis* 5/ 3. Upper Saddle River, NJ: Prentice hall.
- Huang, J., Wang, H., Fan, M., Zhuo, A., Sun, Y., Li, Y. 2020. Understanding the impact of the COVID-19 pandemic on transportation-related behaviors with human mobility data. In *Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining* (pp. 3443-3450).
- IBEF. (2020b). Railways June 2020. Retrieved on July 2020 from <https://www.ibef.org/download/Railways-June-2020.pdf>
- IBEF. (2020c). Roads June 2020. Retrieved on July 2020 from <https://www.ibef.org/download/Roads-June-2020.pdf>
- IBEF. (2020d). *Tourism and Hospitality June 2020*. Retrieved on July 2020 from <https://www.ibef.org/download/Tourism-and-Hospitality-June-2020.pdf>
- India Brand Equity Foundation [IBEF]. (2020a). *Aviation June 2020*. Retrieved on July 2020 from <https://www.ibef.org/download/Aviation-June-2020.pdf>
- Indian Railways. (2020, June). *Indian Railways June 2020*. Vol.64 No.3. Retrieved on July 18, 2020 from <http://www.indianrailways.gov.in/HindiMagazine/IRJune2020.pdf>
- Inventia. (2020, April), COVID-19 crisis likely to hit 29 lakh jobs in Indian aviation, dependent sectors: IATA. Retrieved on June 24, 2020, from <https://www.inventiva.co.in/trends/>

[inventiva/covid-19-crisis-likely-to-hit-29-lakh-jobs-in-indian-aviation-dependent-sectors-iata/](#)

- Ioannides, D., Gyimóthy, S. 2020. The COVID-19 crisis as an opportunity for escaping the unsustainable global tourism path. *Tourism Geographies* 22(3), 624-632. Doi:10.1080/14616688.2020.1763445
- Jenelius, E., Cebecauer, M. 2020. Impacts of COVID-19 on public transport ridership in Sweden: Analysis of ticket validations, sales and passenger counts. *Transportation Research Interdisciplinary Perspectives* 8, 100242.
- Jinjarak, Y., Rashad, A., Nair-Desai, S., Weining, X., Aizenman, J. 2020. Accounting for Global COVID-19 Diffusion Patterns, January–April 2020. NBER Working Papers 27185. National Bureau of Economic Research, Cambridge, MA, USA.
- Meena, S. 2020. Impact of novel Corona virus (COVID-19) pandemic on travel pattern: A case study of India. *Indian Journal of Science and Technology* 13(24): 2491-2501.
- Ministry of Civil Aviation [MoCA]. (2020a, May). *Detailed Monthly information for the month of May, 2020*. Retrieved on June 24, 2020 from https://www.civilaviation.gov.in/sites/default/files/MoCA_Monthly_Summary_May_2020.pdf
- Ministry of Health and Family Welfare [MOHFWa]. (2020). Travel Advisories. Retrieved on July 18, 2020 from <https://www.mohfw.gov.in/>
- MoCA. (2020b, October 03). *Vande Bharat Mission - Number of flight and passengers flown*. Retrieved on October 03, 2020 from https://www.civilaviation.gov.in/sites/default/files/flights_and_flawn_03-10-2020.pdf
- MOHFW. (2020b). *Instructions to all major and minor ports for dealing with novel coronavirus (COVID-19) pandemic - reg*. Retrieved on July 18, 2020 from <https://www.mohfw.gov.in/pdf/DGSOrdero4of2020.pdf>
- Ministry of Tourism, Govt. of India. (2020). *eNewsletter January-March 2020*. Retrieved on July 29, 2020 from <http://tourism.gov.in/sites/default/files/Newsletter%20Jan-Mar%2020-01062020.pdf>
- Muller, Sebastian Alexander, Michael Balmer, Andreas Neumann, and Kai Nagel. (2020). Mobility Traces and Spreading of COVID-19. medRxiv.
- Musselwhite, C., Avineri, E., Susilo, Y. 2020. Editorial JTH 16 –The Coronavirus Disease COVID-19 and Implications for Transport and Health. *Journal of Transport & Health* 16, 100853.
- Nishiura, H., Oshitani, H., Kobayashi, T., Saito, T., Sunagawa, T., Matsui, T., Wakita, T., Suzuki, M.. 2020. Closed environments facilitate secondary transmission of coronavirus disease 2019 (COVID-19). medRxiv. Preprint, April 16, 2020. doi:10.1101/2020.02.28.20029272.
- Olliver, G., Gupta, N. (2020, May 26). Rethinking India's public transport after the COVID-19 lockdown is over. Retrieved on July 18, 2020 from <https://blogs.worldbank.org/endpovertyinsouthasia/rethinking-indias-public-transport-after-covid-19-lockdown-over>
- Ponkshe, A. (2020, May 07). Steps to restart public transit after lockdown ends. Retrieved on July 18, 2020 from <https://www.orfonline.org/expert-speak/steps-restart-public-transit-lockdown-ends-65814/>
- Prather, K.A., Wang, C.C., Schooley, R.T. 2020. Reducing transmission of SARS-CoV-2. *Science* 368 (6498): 1422–24.
- Qian, H., Miao, T., Liu, L., Zheng, X., Luo, D., Li, Y. 2020. Indoor transmission of SARS-CoV-2. medRxiv. April 7, 2020.
- Rodrigue, J-P., Notteboom, T. 2020. Transportation and economic development. In: The geography of transport systems. Routledge, New York

- Sverigesradio. 2020. The government provides money so that public transport can run as usual. May 11, 2020. <https://sverigesradio.se/sida/artikel.aspx?programid=4916&artikel=7470922>.
- Tan, L., Ma, C., 2020. Choice behavior of commuters' rail transit mode during the COVID-19 pandemic based on a logistic model. *Journal of Traffic and Transportation Engineering (English Edition)*
- The Times of India. (2020, May 29). Use of public transport likely to reduce 6 months post-lockdown: CSE survey. The Times of India. Retrieved on July 18, 2020 from <https://timesofindia.indiatimes.com/india/use-of-public-transport-likely-to-reduce-for-6-months-post-lockdown-cse-survey/articleshowprint/76087704.cms>
- Tirachini, A., Cats, O. 2020. COVID-19 and public transportation: Current assessment, prospects, and research needs. *Journal of Public Transportation* 22(1), 1.
- UITP. 2020. "Management of COVID-19: Guidelines for Public Transport Operators." Fact-sheet, March 2020. International Association of Public Transport (UITP). Accessed May 4, 2020. <https://www.uitp.org/management-covid-19-guidelines-public-transport-operators>.
- United Nations World Tourism Organization [UNWTO]. (2020, May). *World Tourism Barometer*. Volume 18, issue2, Retrieved on July 29, 2020 from https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2020-05/UNWTO_Barom20_02_May.pdf
- Verma, A., Jayakrishnan R., Velmurugan S. (2020, June 15). Making public transport safe during COVID-19. *The Hindu*. Retrieved on July 18, 2020 from <https://www.thehindu.com/opinion/op-ed/making-public-transport-safe-during-covid-19/article31828057.ece>
- Wachyuni, S. S., Kusumaningrum, D. A. 2020. The Effect of COVID-19 Pandemic: How are the Future Tourist Behavior?. *Journal of Education, Society and Behavioural Science* 67-76.
- Yauch, C.A., Steudel, H.J. 2003. Complementary use of qualitative and quantitative cultural assessment methods. *Organizational research methods* 6(4), 465-481.
- Yilmazkuday, H. 2020. Stay-at-Home Works to Fight against COVID-19: International Evidence from Google Mobility Data. SSRN Electronic Journal.
- Zikmund, W. G. 2003. *Business research methods* (7th ed.). Mason, OH: Thomson/South-Western.