STUDY ON THE IMPACT OF COVID 19 ON TRANSPORT SECTOR IN INDIA

PROJECT REPORT

Submitted to the School of Maritime Management,

Indian Maritime University, in partial fulfilment of the requirements for the award of degree of "Master of Business Administration" in International Transportation and Logistics Management

By

Ajith Rajan

(Reg No : 1905305005)

Under the supervision of

Dr. Yogamala H.L

(Assistant Professor, School of Maritime Management,

Indian Maritime University, Cochin)

SCHOOL OF MARITIME MANAGEMENT

INDIAN MARITIME UNIVERSITY, COCHIN

(A Central University, Government of India)

CERTIFICATE

This is to certify that this report entitled "**STUDY ON IMPLICATION OF COVID 19 ON TRANSPORT SECTOR IN INDIA"** submitted to the School of Maritime Management, Indian Maritime University in partial fulfilment of the requirement for the award of the degree, MBA in International Transportation and Logistics Management is bonafide work of **Ajith Rajan** under my supervision. I certify further that to the best of my knowledge , the work reported herein does not form part of any project or dissertation on the basis of which a degree/diploma or award was conferred on an earlier occasion on this or any other candidate.

Dr. Yogamala H.L

(School of Maritime Management,

Indian Maritime University, Cochin)

DECLARATION

This is to certify that the work presented in the dissertation "**STUDY ON IMPLICATION OF COVID 19 ON TRANSPORT SECTOR IN INDIA "** in partial fulfilment of the requirement of award of degree of Master of Business Administration (International Trade and Logistics Management) from Indian Maritime University, Cochin is the place where the authentic work carried out under my supervision. To the best of my knowledge, the content of this dissertation does not form a basis for the award of my previous degree to anyone else.

Ajith Rajan

(Reg no :1905305005)

Date:

Place: Cochin

ACKNOWLEDEMENT

I received valuable guidance and encouragement from many quarters for the successful completion of my project report . I take this opportunity to thank them all.

Firstly, I thank **God the Almighty** for his blessings without which I could not have completed this successfully.

I am thankful to Indian Maritime University and My guide **Dr Yogamala.H.L** , whose valuable comments are incorporated into the project, and whose motivation was a constant source of inspiration towards the entire program.

I would like to express our heartfelt thanks to our academic guide **Dr. Jayan P.A.,** HOD, SMM for his meticulous guidance and constant encouragement.
I wish to express my profound senses of gratitude to my faculty members of School of Maritime Management, Indian Maritime University, Kochi Campus for giving me an opportunity to take this project.

Finally, I take the opportunity to show my gratitude to everyone who has contributed in this effort in numerous ways & their invaluable guidance & assistance through the entire phase of this project.

AJITH RAJAN

ABSTRACT

Title of Dissertation: Study on Implication of Covid 19 On Transport Sector in India

Degree: MBA in International Transportation and Logistics Management

Transportation and logistics are two of the key aspects of civilisation. The wheel is often described as the most important invention of all time – it had a fundamental impact on transport and later on agriculture and industry. Without proper modes of transportation, the entire human life will be in shambles. When Corona hit us in 2019, transportation was the industry which was hit the most and it was one among the first to find new methodologies to tackle this crisis. From rickshaw pullers to airlines, all have been affected economically by the pandemic. India's overall energy demand fell by 11% in March 2020. With this study we are trying to analyse the impact of COVID-19 on transportation and logistics and the changes it has brought in the industry. Some of the changes which came up are short term but some others are here for the long stay. When this pandemic end, whenever that is, the transportation industry would have undergone a lot of changes.

One of the key changes which came up was the vast use of delivery services, from metros to villages everyone started using different type of online stores for shopping. Even everyday essentials were brought from e-commerce sites; and we think that this trend is going to continue in future also. People shifted from public to private transport due to safety concerns, this caused an increase in LMV vehicle sales. For delivery management new technologies are being used when remote working became a necessity. For facilitating contact less delivery we strongly believe that robots will replace humans for delivery and other menial tasks in future. Through this project I have tried to explain the above-mentioned points in detail with the support of relevant data.

CERTIFICATE……

DECLARATION……..

AKNOWLEGEMENT……

TABLE OF CONTENT

NO.	TITLE	PAGE NO
1	CHAPTER 1	
1.1	INTRODUCTION	11
1.2	BACKGROUND	12
1.3	THE BASIC MODES OF TRANSPORTATION	13
1.4	PROBLEM IDENTIFICATION	16
1.5	OBJECTIVES	16
1.6	SIGNIFICANCE OF THE STUDY	17
1.7	DISSERTATION STRUCTURE	17
2	CHAPTER 2 REVIEW OF LITERATURE	19
3	CHAPTER 3 RESEARCH METHODOLOGY	24
3.1	RESEARCH METHODOLOGY	25
3.2	RESEARCH DESIGH	26
3.2.1	TYPES OF RESEARCH	26
3.2.2	DATA COLLECTION TOOL	27
3.3	QUALITATIVE STUDY	28
3.4	METHODOLOGY LIMITATION	28
4	CHAPTER 4 DATA ANALYSIS AND INTERPRETATION	29
4.1	IMPACT OF COVID 19 ON TRANSPORT SECTOR	30
4.1.1	IMPACT ON AIRLINE SECTOR	32
4.1.2	IMPACT ON RAILWAY SECTOR	35
4.1.3	IMPACT ON BUS TRANSPORT AND METRO SYSTEM	39
4.1.4	IMPACT ON PUBLIC TRANSPORT DUE TO COVID 19	40
4.1.5	ROAD ACCIDENTS REDUCED DUE TO COVID 19	43

4.1.6	IMPACT ON TRUCKING AND LOGISTICS SECTOR	46
4.2	TOLL COLLECTION PROCEDURE	48
4.3	COURIER SERVICES	50
4.4	SECOND COVID WAVE IMPACTING TWO-WHEELER SALES	52
4.5	COVID 19 IMPACT : SALE OF USED CAR BIKES AND NEW CARS	54
4.5.1	IMPACT OF CORONAVIRUS: STUDY SUGGESTS 53% RESPONDENTS INTEND TO BUY CAR	54
4.6	REVENUE FROM PUBLIC TRANSPORT TOWARDS GOVERNMENT	55
4.7	INTER-STATE MOVEMENT/FLOWS OF GOODS	57
4..7.1	SEA-BORNE TRADE	57
4.7.2	AIR-BORNE TRADE	58
4.7.3	RIVER-BORNE TRADE	59
4.7.4	RAIL-BORNE TRADE	60
4.7.5	ROAD-BORNE TRADE	60
4.8	TOURISM DEPARTMENT	61
4.9	THE SHORT-TERM TRENDS WHICH EMERGED DUE TO CORONA	63
4.10	RESPONSE TO THE CRISIS	65
4.11	4.3 THE LONG-TERM TRENDS WHICH EMERGED DUE TO CORONA	67
5	CHAPTER 5 CONCLUSION AND FINDINGS AND SUGGESTIONS	70
5.1	CONCLUSION	71

5.2	FINDINGS AND SUGGESTIONS	72
5.2.1	FINDINGS	72
5.2.2	SUGGESTIONS	72
	REFERENCE	73
	BIBLIOGRAPHY	74

LIST OF ABBREVIATION

- WHO- WORLD HEALTH ORGANISATION
- MHA - MINISTRY OF HOME AFFAIRS
- AIAHL - AIR INDIA ASSET HOLDING COMPANY LIMITED
- ICRA- INFORMATION AND CREDIT RATING AGENCY
- IRCTC- INDIAN RAILWAY CATERING AND TOURISM CORPORATION
- IAO - INTERNATIONAL AIRLINE ORGANISATION
- AIMTC - ALL INDIA MOTOR TRANSPORT CONGRESS
- RFID RADIO FREQUEENCY IDENTIFICATION
- NHAI - NATIONAL HIGHWAY AUTHORITY OF INDIA
- RTC- ROAD TRANSPORT CORPORATION
- MVT- MOTOR VEHICLE TAX
- GDP - GROSS DOMESTIC PRODUCT
- DHL- DALSEY HILLBLOM LYNN
- LMV- LIGHT MOTOR VEHICLE
- TCI - THOMAS COOK INDIA
- MMT MAKE MY TRIP
- SARS COV 2 - SEVERE ACUTE REPIRQTORY SYNDROME CORONAVRS 2
- CIWTCI - CENTRAL INLAND WATER TRANSPORT CORPORATION OF INDIA
- FAITH- FEDERATION OF AASSOSIATION IN INDIA TOURIAM AND HOSPITALITY
- DGCIS DIRECTORATE GENERAL OF COMMERCIAL INTELLIGENCE AND STATISTICS

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

COVID-19 belongs to the category of coronaviruses, which are highly contagious respiratory pathogens. From the initial outbreak in Wuhan, China transportation is one of the major sectors which has been severely affected by the impact of the COVID-19 pandemic. A survey was conducted by the Centre for Public Policy Research (CPPR) from June to July 2020, among experts from the transportation sector to understand their perception of the effects of the pandemic on the sector in India. A total of 15 experts consisting of academicians, practitioners, policy makers and researchers, from different parts of the country, who were closely working with the transportation sector were interviewed

The Covid-19 crisis has profoundly affected all spheres of our private and public lives, including how we travel and how goods reach their final destinations. During the first phases of the pandemic, closing of borders and national lockdowns significantly reduced passenger and, to a lesser extent, freight traffic. As confinement periods ease, physical spacing imperatives and quarantine requirements have drastically reduced available transport capacity, both within cities as well as for regional and international travel. Moreover, fear of contagion has led many to avoid returning to public transport or taking long-distance trips. Both of these factors have compromised the financial viability of transport operators and transport systems.

The Covid-19 crisis in the transport sector necessitated a strong policy response from governments. First, governments reacted to the pandemic by ensuring that transport networks were organised in a way that would limit the spread of the virus. Second, they devised plans and support programmes to help the transport sector reboot mobility during the pandemic. Finally, as the world recovers from the pandemic, governments will need to focus on how to reshape the transport sector to provide connectivity in a safe, sustainable, resilient, and inclusive way.

Since the beginning of the Covid-19 crisis, the ITF served as a global platform for sharing information and policy insights on the transport sector’s responses to Covid-19-related

challenges. The ITF published a number of briefs on key topics related to Covid-19, organised a series of closed webinars for member countries, and held a special informal Ministers' Roundtable on Transport and Covid-19. In addition, numerous exchanges between ITF and other international organisations have taken place on this topic, both in formal and informal settings.

As the country continues to live with the pandemic and an unforeseeable end to the crisis, many questions arise regarding the future of the passenger transportation sector in India.

• How long will the transportation sector be affected?

• How will the pandemic change the travel behaviour of commuters?

• What is the future of public transportation in our country?

The study tries to find answers to the above questions by evaluating the views and opinions of the experts who work closely with the transportation sector.

1.2 BACKGROUND

World Health Organisation *(WHO)* declared **Co**rona **Vi**rus **D**isease 2019 *(COVID-19)* as a global pandemic on 11th March, 2020. Presently, world is facing an unprecedented crisis due to the above referred novel corona virus. It is emphasized by the governments across the globe that one can avoid infection by maintaining basic personal hygiene and physical distancing from infected persons. In India, the first COVID-19 case was detected on 30th January 2020 in the southern state of Kerala which happened to be a student who had returned from Wuhan, China. Since then, it has spread to various states of the country and the total *(cumulative)* number of confirmed infected people in India 29,935,221and death 388164 and recovered 28,844,199 as of 21 June 2021 across the India

To address the above pandemic situation caused due to COVID-19, many countries across the globe have adopted different strategies aimed at arresting its impact on human health by imposing strict mobility restriction measures in the form of lockdown. Realising the pandemic situation, the Honourable Prime Minister of India, Mr. Narendra D. Modi initially ordered a nationwide lockdown for 21 days *(termed as Lockdown 1.0 in this report)* starting from 25.3.2020 to limit the movement of 1.30 billion population aimed at arresting the spread of COVID-19 in India.

Central to India's lockdown strategy is a complete shutdown of the entire transportation systems from 25.3.2020 which included airports, Indian Railways, Metros, buses and all forms of private vehicular movement stopping in tandem. This formed the backbone of lockdown in India with the sole exception of allowing only the movement of all types of essential services, medical emergency and other associated emergencies. Since the above Indian lockdown strategy was much tighter and at a higher scope than anywhere in the world, it paid its dividends during the initial phase as the rate of spread was somewhat less. Due to the above unprecedented scenario in the country, vast network of roads remained in an unusual state of calmness instead of the usual traffic chaos and associated reduction of environmental pollution witnessed in all the major metropolitan cities of India.

1.3 THE BASIC MODES OF TRANSPORTATION

ROAD TRANSPORTATION

Road is defined by The Organisation for Economic Co-operation and Development as – ― Line of communication (travelled way) employing a stabilized base aside from rails or air strips receptive public traffic, primarily for the utilization of road cars running on their own wheels…Included are bridges, tunnels, supporting structures, junctions, crossings and interchanges. Toll roads are included. Excluded are dedicated cycle paths‖. Roads is simply defined as an identifiable route way or path between two or more places. This mode of transport helps to transfer the products and passengers from one place to a different place by road using various kinds of motorcars like cars, buses, trucks, and other suitable factors. Road infrastructures are large consumers of space with rock bottom level of physical constraints

among transportation modes. However, building has substantial additional costs to beat physiographical constraints like rivers or ruged terrain. Initially 6the roads were used for non – motorized sorts of transportation, it had been the motorization of 20th century that shaped the event of contemporary road transportation.

Road transportation has a mean operational flexibility and flexibility. Road transport systems have high maintenance costs, both for the vehicles and infrastructures. They‘re mainly linked to light industries and freight distribution where rapid movements of freight in small batches are the norm. The road transportation has become an important link in freight distribution.

RAIL TRANSPORTATION

First invented to be used within the early 19th century, rail transport quickly became vital for the expansion of the western world and has played a pivotal role within the realm of logistics for over two centuries. In modern practice, rail is employed more exclusively for the most important and heaviest payloads (bulk cargo) traveling across land. The overwhelming majority of railway infrastructure connects highly populated areas with large unpopulated strips of land between them making rail ideal for long-distance and race hauls. Railways are composed of a traced path on which wheeled vehicles are bound. In light of recent technological developments, rail transportation also includes monorails and maglev. They need a mean level of physical constraints and a coffee gradient is required, particularly for freight. Heavy industries are traditionally linked with rail transport systems, although containerization has improved the flexibleness of rail transportation by linking it with road and maritime modes. The rail vehicle isn't influenced by traffic, points of diversion, and switch offs between modes. This makes the rail the foremost dependable mode for creating long hauls across land with minimal damage. Trains commonly carry bulk cargo items like coal, corn, iron, ore, and wheat, items that might be uneconomical to ship by truck. 7

MARITIME TRANSPORTATION

Shipping by water has been practiced for thousands of years and remains pivotal to today‘s global trade. 90% of all international trade is accomplished through maritime transportation. With physical properties like buoyancy and limited friction, maritime transportation is that the best mode to manoeuvre large quantities of cargo over long distances. Cargo ships travel on almost every major

body of water and have capacity to move the best volume of freight of any mode of transportation at rock bottom cost. Main maritime routes are composed of oceans, coasts, seas, lakes, rivers, and channels. Many routes used today are used for hundreds of years. However, new routes are still being sought out and tested for optimal supply chain efficiency.

The greatest disadvantage of maritime cargo ships is that the speed at which they operate. By far, maritime is that the slowest mode of transportation. It is, however, the foremost efficient for the quantity of cargo it's capable of carrying. Maritime transportation has high terminal costs since port infrastructures are among the foremost expensive to create, maintain and operate. These high costs also relate to maritime shipping where the development, operation, and maintenance of ships are capital intensive. Quite the other mode, maritime transportation is linked to heavy industries, like steel and petrochemical facilities adjacent to port sites. the arrival of containerization in maritime shipping has played a pivotal role in globalization, allowing trading a good range of products and commodities.

AIR TRANSPORTATION

Airplanes have become increasingly important in domestic and international trade. With continually improving technologies and practically unlimited route possibilities, shipping is that the fastest growing and most time efficient shipping mode. As travelling has become increasingly advanced and dependable, more companies are trusting airplanes with high value freight and goods. The increasing popularity of flight as a preferred thanks to travel also makes shipping by air more convenient as shipments regularly piggyback on passenger planes, further making air an economic thanks to transport goods. Transport is that the closest alternative to maritime shipping; however, we can appreciate current technological setbacks, air won't be absorbing maritime for international shipping anytime soon. In its current state, transportation remains, by far, the foremost expensive than ships. Also, because of the character of aviation, weight and volume of freight must stay minimal to make sure the security of the flight. The degrees of emissions produced by transport are the best of any mode.

INTERMODAL TRANSPORTATION

Concerns a spread of modes employed in combination so the respective advantages of every mode are advantaged. Although intermodal transportation applies for passenger movements, like the usage of the various, interconnected modes of a transportation system, it's over freight transportation that the foremost significant impacts of intermodalism are observed. Containerization has been a strong vector of intermodal integration, enabling maritime and land transportation systems to interconnect.

1.4 PROBLEM IDENTIFICATION

Since the beginning of this pandemic in 2019 logistics and transport sectors faced many challenges; loss of revenue, psychological impacts, health hazards, difficulties in finishing the tasks etc, are just few of them. We are trying to analyse the above through this project.

1.5 OBJECTIVES

- To analyse impact of covid-19 on different transport modes
- To analyse the trends in transport during corona times
- To analyse the changes or improvement occurred due to covid on transport
- To study the future of public transport in India
- Study and analyse different modes of transport and its safety during corona times
- Short-term and long-term impact of corona

1.6 SIGNIFICANCE OF THE STUDY

The study is conducted to find out the impact of covid on the transport sectors .Corona has changed the life style of people in many ways. Businesses and all other activities across the globe have been adversely affected which in return is affecting the economy. The demand-supply gaps are clearly visible in every sector. A large portion of public shifted from public to private vehicles for travel.

People started to choose safer travel options in face of corona . Through our analysis which was based on research data , secondary data from websites we found out that corona have both short- and long-term effect on transport sector . Several industries tried different approaches to reduce the effect of corona. The first wave of corona was a major disaster and second wave had much more impact due to its wide spread .On premises of the upcoming third wave this study has a lot of relevance.

The effect of corona, how it will affect the transport sector and what will be the future of transport industry is discussed in detail here. In my opinion one of the main limitations of this study is that we have mainly concentrated our research on India.

1.7 DISSERTATION STRUCTURE

- Chapter one gives an overview of corona and its impacts, different type of transport , problem identification ,scope of the study and finally objectives
- Chapter two gives an overview of the literature review
- Chapter three shows the process of research, data collection, qualitative study methodology limitation and analysis approach.
- Chapter four shows the concept analysis and discussion of the impact of corona on various transport models such road ,rail ,air and marine transport ,etc
- Chapter 5 includes findings & suggestions and Conclusion

CHAPTER -2

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

1. Abdullah, M., Dias, C., Muley, D., & Shahin, M. (2020). Exploring the Impacts of COVID-19 on Travel Behaviour and Mode Preferences. Transportation Research Interdisciplinary Perspectives. Various measures were recommended or imposed by the governments to control the spread of COVID-19. Travel behaviors are significantly influenced due to such measures. However, people have various travel needs ranging from grocery shopping to work. This study examines the changes that occurred in travel behavior due to the COVID-19 pandemic. Data were collected through an online questionnaire survey that included questions on trip purpose, mode choice, distance traveled, and frequency of trips before and during COVID-19. 1203 responses were collected from various countries around the world.

2. 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 . The COVID-19 pandemic has changed travel behaviour and reduced the use of public transport throughout the world, but the reduction has not been uniform. In this study we analyse the propensity to stop traveling by public transport during COVID-19 for the holders of 1.8 million smart cards in Stockholm, Sweden, for the spring and autumn of 2020. We suggest two models for explaining the change in travel pattern, linking socioeconomic data per area and travel data with the probability to stop traveling.

3. Aloi, A., Alonso, B., Benavente, J., Cordera, R., Echaniz, E., Gonzalez, F., . . . Sanudo, R. (2020). Effects of the COVID-19 Lockdown on Urban Mobility: Empirical Evidence from the City of Santander (Spain). Sustainability, 12(9). This article analyses the impact that the confinement measures or quarantine imposed in Spain on 15 March 2020 had on urban mobility in the northern city of Santander. Data have been collected from traffic counters, public transport ITS, and recordings from traffic control cameras and environmental sensors to make comparisons between journey flows and times

before and during the confinement. This data has been used to re-estimate Origin-Destination trip matrices to obtain an initial diagnostic of how daily mobility has been reduced and how the modal distribution and journey purposes have changed. The impact on externalities such as NO_2 emissions and traffic accidents have also been quantified. The analysis revealed an overall mobility fall of 76%, being less important in the case of the private car. Public transport users dropped by up to 93%, NO_2 emissions were reduced by up to 60%, and traffic accidents were reduced by up to 67% in relative terms

4. Borkowski, P., Jażdżewska-Gutta, M., & Szmelter-Jarosz, A. (2020). Lockdowned: Everyday mobility changes in response to COVID-19. Journal of Transport Geography,

   This paper looks into the impact of the recent COVID-19 epidemic on the daily mobility of people. Existing research into the epidemic travel patterns points at transport as a channel for disease spreading with especially long-distance travel in the centre of interest. We adopt a different approach looking into the effects that epidemic has on the transport system and specifically in relation to short-distance daily mobility activities. We go beyond simple travel avoidance behaviours and look into factors influencing change in travel times and in modal split under epidemic. This leads to the research problems we posit in this paper. We look into the overall reduction of daily travel and into the factors impacting peoples' decisions to refrain from daily traveling. This paper focuses on modes affected and explores differences between various societal groups

5. Campisi, T., Basbas, S., Skoufas, A., Akgün, N., Ticali, D., & Tesoriere, G. (2020). The Impact of COVID-19 Pandemic on the Resilience of Sustainable Mobility in Sicily. Sustainability, 12(21), 8829. The unprecedented global shutdown that resulted from the COVID pandemic presents an opportunity to reconfigure future transport policy and practice for the benefit of the global environment and individual citizens alike. Before COVID, much of the emphasis in transport policy was on demand management, ‘smart’

technological interventions and sustainable mobility. The public health crisis has necessitated an urgent reconsideration of transport and its contribution to post-COVID economic recovery. In recognition of the importance of individual behaviour and collective responsibility in protecting both personal and public health during the crisis, this think piece proposes a new concept of *Responsible Transport* to help inform and shape transport policy and practice responses to COVID. The novelty of this proposal lies in the fact that it incorporates not only environmental considerations with respect to sustainability but also encompasses considerations of individual and community health and wellbeing. Moreover, it stresses the role of the individual as a responsible autonomous actor in delivering socially desired transport outcomes.

6. De Vos, J. (2020). The effect of COVID-19 and subsequent social distancing on travel behavior. Transportation Research Interdisciplinary Perspectives, 5, 100121. The spread of the COVID-19 virus has resulted in unprecedented measures restricting travel and activity participation in many countries. Social distancing, i.e., reducing interactions between individuals in order to slow down the spread of the virus, has become the new norm. In this viewpoint I will discuss the potential implications of social distancing on daily travel patterns. Avoiding social contact might completely change the number and types of out-of-home activities people perform, and how people reach these activities. It can be expected that the demand for travel will reduce and that people will travel less by public transport.

7. Finbom, M., Kębłowski, W., Sgibnev, W., Sträuli, L., Timko, P., Tuvikene, T., & Weicker, T. (Forthcoming). Public transport qualities and inequalities in pandemic times in B. Doucet, R. van Melik & P. Filion (Eds.), Global Reflections on COVID-19 and Cities: Urban inequalities and the pandemic. Bristol: Policy Press 28 In spring 2020, the advent of the COVID-19 pandemic instigated a mobility crisis. Municipalities and operators faced novel challenges in keeping public transport (PT) systems running. Media outlets and officials stigmatised PT as sites of potential infection, leading to unprecedented decrease of ridership, closure of transport networks, and gloomy

predictions about the “end of public transport” in the US (De La Garza, 2020), the UK (Clark, 2020) and Germany alike (Schwenn & Hauser, 2020).

8. Gkiotsalitis, K., & Cats, O. (2020a). Optimal frequency setting of metro services in the age of COVID-19 distancing measures. Public transport is one of the most disrupted sectors of the COVID-19 pandemic with reported ridership drops up to 90% in majorly affected countries. As many government authorities strive to partially resume activities, public transport operators are in an urgent need for models that can evaluate the impact of different social distancing policies on operational and passenger-related costs. In this study, we introduce a mixed-integer quadratic programming model for the redesign of public transport services considering the operational, passenger, and revenue loss-related costs by evaluating the effects of different social distancing policies. Our model is applied at the metro network of Washington DC and provides optimal redistribution of vehicles across lines for different social distancing scenarios. This model can be used as a decision support tool by other policymakers and public transport operators that are in need of evaluating the costs related to the implementation of different social distancing policies.

9. Gkiotsalitis, K., & Cats, O. (2020b). Public transport planning adaption under the COVID-19 pandemic crisis: literature review of research needs and directions. Transport Reviews, 1-19. The COVID-19 pandemic crisis has greatly impacted public transport ridership and service provision across the world. As many countries start to navigate their return to normality, new public transport planning requirements are devised. These measures imply a major reduction in service capacity compared to the pre-COVID-19 era. At the time of writing, there is a severe lack of knowledge regarding the potential impact of the pandemic on public transport operations and models that can support the service planning given these new challenges. In this literature review, we systematically review and synthesise the literature on the impacts of COVID on public transport to identify the need to adjust planning measures, and, on the other hand, the

existing methods for public transport planning at the strategic, tactical and operational level. We identify intervention measures that can support public transport service providers in planning their services in the post-shutdown phase and their respective modelling development requirements. This can support the transition from the initial ad-hoc planning practices to a more evidence-based decision making.

CHAPTER – III

RESEARCH METHODOLOGY

3.1RESEARCH METHODOLOGY

The process of the research will be divided into four (4) phases of work, namely (i) Preparation, (ii) Data collection, (iii) Analysis of data (iv)conclusion .Research methods that will be used in this research are a combination of the qualitative and quantitative method. Denzin and Lincoln (1998) defined "triangulation" as the combination of multiple methods in the study of the same object. Triangulation is a method used in qualitative research that involves cross-checking multiple data sources and collection procedures to evaluate all evidence and corroborate each other. Qualitative analysis of text is often supplemented with other sources of information to satisfy the principle of triangulation and increase trust in the validity of the study's conclusions. The purpose of multiple sources of data is corroboration and converging evidence. The use of triangulation as a technique will increase the researcher's scientific rigour because this technique may involve a variety of investigation techniques, theories or data. Furthermore, each phase will include several activities (tasks) to support the study.

1. **Preparation**

During this phase, the author will collect some preliminary data such as:

-What is corona ,what are the different modes of transport ,how different modes are affect due to corona

-literature related to covid on transport sector

2. **Data collection**

The data collected for the study is totally secondary. The source of data ranges from various government departmental reports, previous project reports, online publication, books, journals, government statistical reports and various other online resources

3. **Analysis of data**

In this phase, all primary and secondary data which had been obtained at the stage of data collection will be analysed using qualitative methods. The analysis includes:

- Analysis impact of the covid on road transportation
- Analysis impact of the covid on railways
- Analysis impact of the covid on airways
- Analysis the impact of covid on tourist sector , toll collection ,courier services, interstate movement of goods and public transport .
- Analysis of obstacles/problems in the short term and long term reduction in road accidents due to covid

4. Conclusion

In this phase the understandings gathered from the analysed data is consolidated and represented

3.2 RESEARCH DESIGH

For study researcher has collected data from the annual report and various magazine. After the review of various literatures and from the collected data researcher has design the research for the implication of covid 19 on transport sector .

3.2.1 TYPES OF RESEARCH

Type of research is descriptive in nature. Descriptive research is defined as a research method that describes the characteristics of the population or phenomenon that is being studied. This methodology focuses more on the “what” of the research subject rather than the “why” of the research subject

3.2.2 DATA COLLECTION TOOL

The research methodology which has been used for the above study is based on

secondary data collection.

Secondary data refers to data that is collected by someone other than the user. Common sources of secondary data for social science include censuses, information collected by government departments, organizational records and data that was originally collected for other research purposes. Primary data, by contrast, are collected by the investigator conducting the research.

Secondary data analysis can save time that would otherwise be spent collecting data and, particularly in the case of quantitative data, can provide larger and higher-quality databases that would be unfeasible for any individual researcher to collect on their own. In addition, analysts of social and economic change consider secondary data essential.

The data has been collected through following ways:

- Journals
- Books
- Past reports
- Online sources

3.3 QUALITATIVE STUDY

Qualitative research involves collecting and analysing non-numerical data (e.g., text, video, or audio) to understand concepts, opinions, or experiences. **Qualitative research** is the opposite of quantitative **research**, which involves collecting and analysing numerical data for statistical analysis.

The main methods used were data collection from websites, previously published papers and from experts who are currently working in the industry. The transport sector is one of the major sectors which is affected due to covid 19 . When safety became a huge concern, many of the MNCs moved to remote working. This significantly reduced the traffic in metros. Due to lockdown the overall traffic was reduced. Which in turn reduced the emission of greenhouse gases, pollution and thereby increasing the air quality index.

Many people started considering online shopping as the first option instead of going to shops directly, which was the case in pre pandemic period. From the data that we collected we came to the conclusion that this trend is going to stay. This has led to technology giants formulating new equations for logistics sector. In near future we will be able to see robots making deliveries. Even though freight movement and delivery are on the path of recovery, travel and tourism is still in the shambles. For that governments need to make new policies and corrective course of actions.

3.4 METHODOLOGY LIMITATION

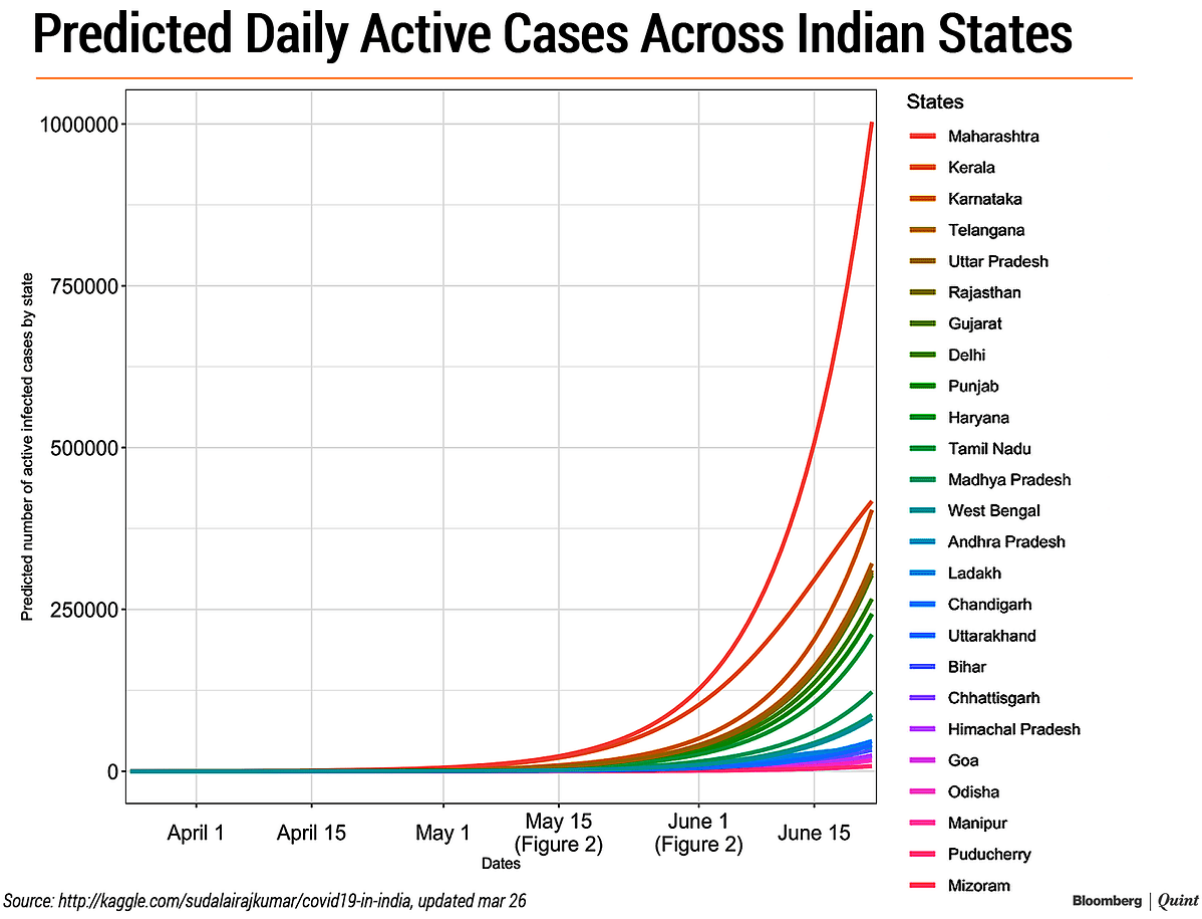
- The data is based on secondary sources.
- There can be variations between primary and secondary data for this report.
- Vast amount of data.
- Limited access to data.
- Time constrains.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

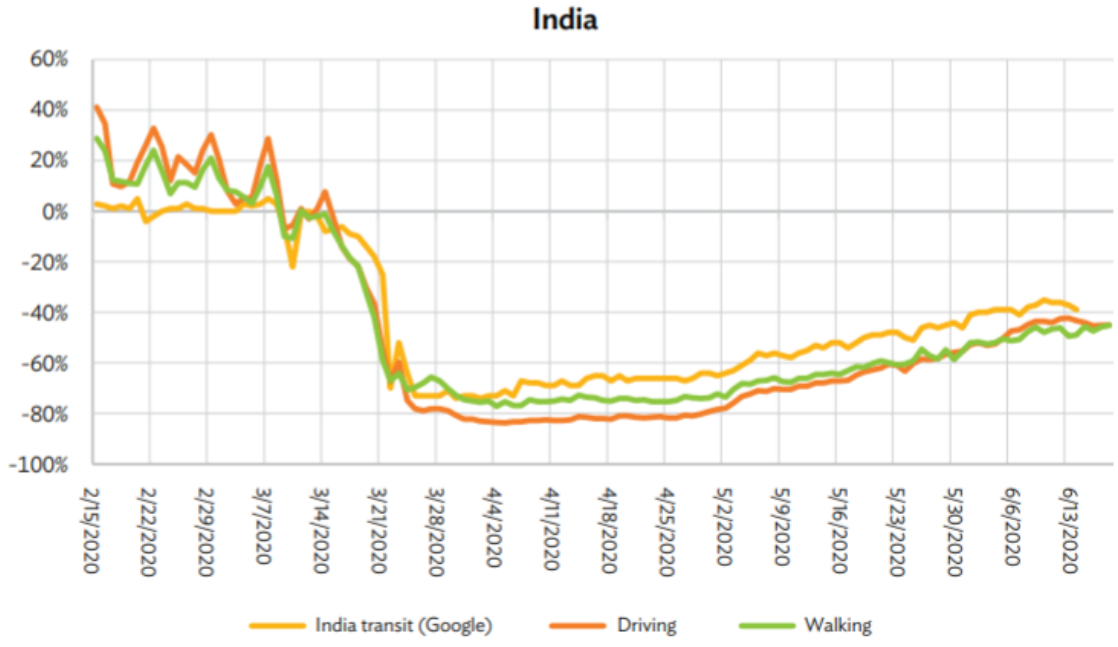
4.1 IMPACT OF COVID 19 ON TRANSPORT SECTOR

During the Covid-19 outbreak, the entire world is dealing with a myriad of new challenges. Businesses and all other activities across the globe have been adversely affected which in return is affecting the economy. The demand-supply gaps are clearly visible in every sector. The effect of Covid-19 can be seen in the usage of public transport also. Trade all across the globe is plunged as Covid-19 upends the global economy.



The coping mechanism to tackle COVID-19 varied from state to state. As mentioned earlier, MHA (Ministry of Home Affairs) had issued several guidelines which were inclusive of physical distancing and mandatory wearing of masks. For instance, the capital city of Delhi

had proposed several guidelines for movement of people in public transport in official as well as commercial complexes inclusive of physical distancing within public transport, curtailing of transit services and halting of metro services. In the case of Delhi metro (spanning a total length of 387 Kms) which got reopened on 9.9.2020 during the ongoing unlock 9.0, the ridership level is around 100,000 per day which is far lower than 480,000 per day during the pre-COVID level peak ridership. This could be attributed to both the physical distancing norms restricting the number of passengers per train as well as the fear psychosis which is still embedded in the minds of commuters about using the using the public transport. This is despite the fact that best safety norms are in place in the Delhi Metro as of now including frequent sanitization of the trains, concourse area, etc. The perceptions of safety with regard to public transport have been greatly varied during the COVID-19 times. For instance, in INDIA there were strict guidelines in place against the use of public transport during the initial stages of COVID. However, it is reported that Asian countries like China and Taiwan during the same time saw metro services running with limited capacity *(Tirachini and Cats, 2020)* by following the physical distancing norms. The succeeding sections will throw light on the status of the various forms of transport sectors in some of the Indian states and cities during COVID-19 and its impacts.



4.1.1 IMPACT ON AIRLINE SECTOR

The COVID-19 pandemic had a massive impact on the Indian aviation sector in 2020 and major airlines facing losses and challenging times laid off employees, sent them on leave without pay, or cut their salaries. The government also had to extend the deadline for submitting bids for Air India five times during the year. The Indian aviation industry is going to suffer a loss of USD 3-3.6 billion for the June quarter.

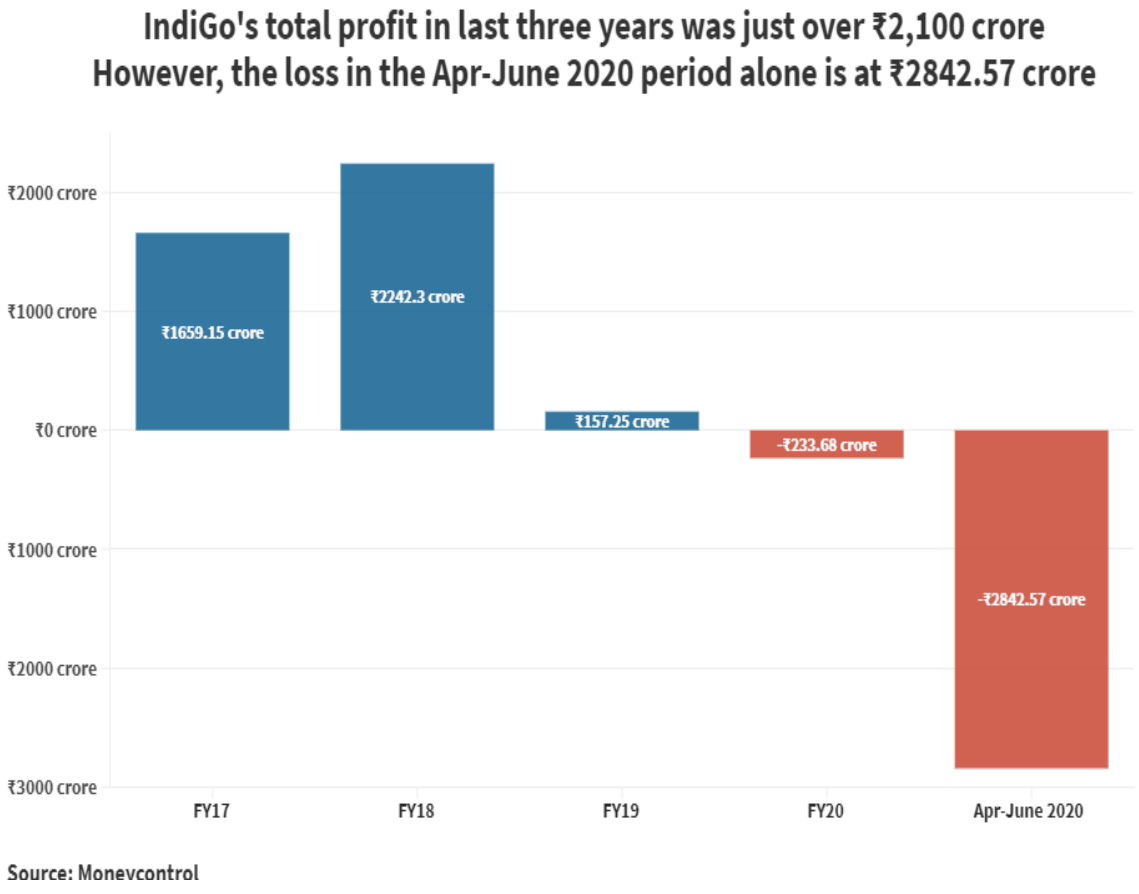
When the pandemic started spreading across the country, all scheduled international flights and domestic passenger flights were suspended from March 23 and March 25, respectively. Scheduled domestic flights were restarted in a limited manner from May 25.2020 .The effect of this disruption can be gauged by the loss figures of India's two largest airlines. IndiGo incurred net losses of ₹2,884 crore and ₹1,194 crore in Q1 and Q2 of this fiscal respectively. SpiceJet posted net losses of ₹600 crore and ₹112 crore in Q1 and Q2, respectively

The government, meanwhile, permitted special international passenger flights under Vaned Bharat Mission since May and air bubble arrangements were formed with around 24 countries since July. However, scheduled international flights remain suspended in India. "The revival of overseas travel is expected to be slower and more challenging than domestic. This will hurt Air India in particular as around 60 per cent of its revenue was earlier generated from international operations," said aviation consultancy firm CAPA in October. It estimated that just 50-60 million passengers -- 40-50 million domestic and less than 10 million international travels in 2020-21.

In 2019-20, approximately 205 million air passengers -- 140 million domestic and 65 million international -- travelled in India. CAPA India projected in October that the Indian aviation industry lose a combined USD 6-6.5 billion in FY21, of which airlines will account for USD 4-4.5 billion. As a result, the government's plan to sell Air India has been hit.

Air India's debt was ₹58,255 crore as on March 31, 2019. Later in 2019, ₹29,464 crore of this debt was transferred from Air India to a government-owned special purpose vehicle called Air India Assets Holding Company Limited (AIAHL). While Air India was unable to get a private owner in 2020, bankrupt airline Jet Airways was able to find one.

When Jet Airways went bankrupt in April 2019, its slots and rights were temporarily given to other Indian carriers by the government so that they can start new flights and fill the supply gap. Now, as other airlines have added planes and started flights considering these slots and rights will remain with them, it is not clear what decision the government will take on this matter in DEC 2021.



Source: Moneycontrol

To survive the pandemic-induced crisis, all airlines took cost cutting measures like firings or pay cuts in 2020. In April, GoAir sent the majority of its employees on leave without pay. Air India had in April cut the salaries of its employees by 10 per cent.

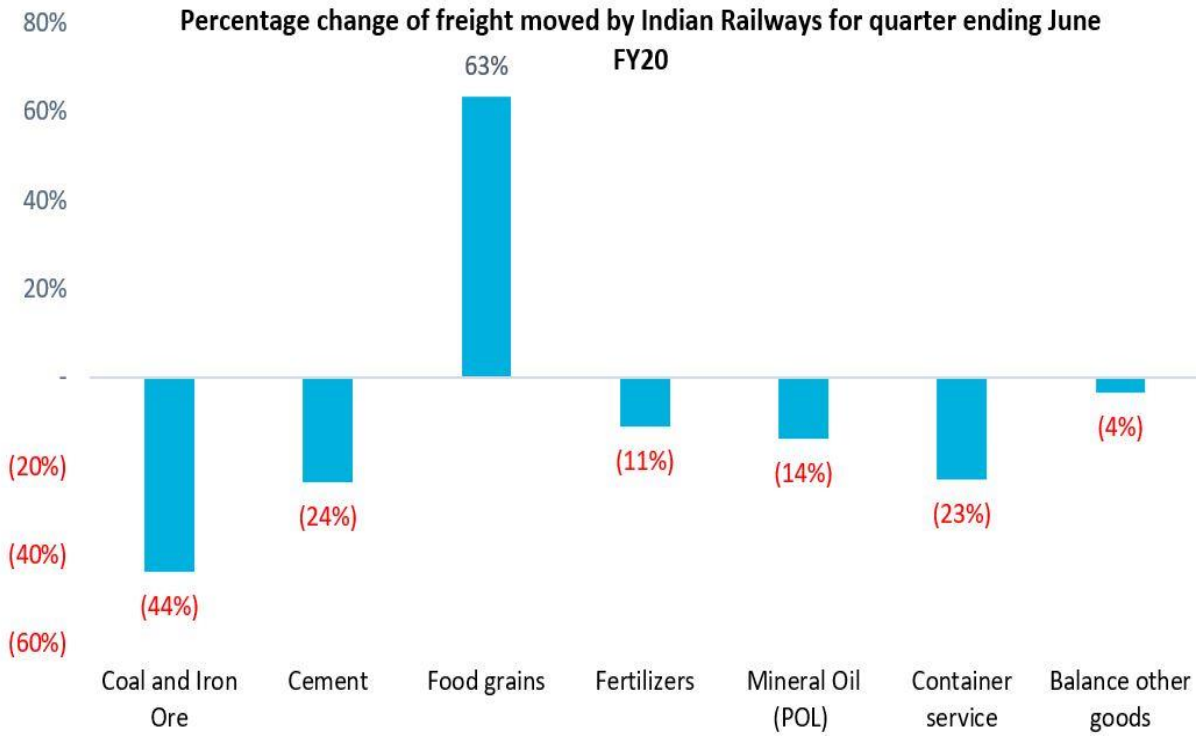
At the same time, SpiceJet and IndiGo cut the salaries of all employees by 10-30 per cent and 5-25 per cent, respectively. In July, IndiGo also laid off 10 per cent of its workforce. AirAsia India in April has cut the salaries of its senior employees by up to 20 per cent. Starting April, Vistara implemented a leave without pay program for its employees based on seniority.

Currently, the Indian airlines are operating domestic flights at around 80 per cent of their pre-COVID levels. The domestic services are expected to reach their pre-COVID levels by March 2021.With the anti-coronavirus vaccination begin from 2021, the Indian aviation sector thought it will have better year as compared to 2020.But ICRA Research projected that the Indian aviation industry would suffer losses worth Rs 21,000 crore in the current fiscal. The ratings agency, in its latest report on the Indian aviation industry's capacity and passenger growth, maintained a negative credit outlook on the Indian aviation industry, owing to the coronavirus crisis.

4.1.2 IMPACT ON RAILWAY SECTOR

In 2021, the pandemic has hit again with a second wave, taking a heavy toll on human lives and affecting the global economy like never before. Indian Railways has suffered a loss of Rs 6,500 crore on revenue earned from ticket sales (during the first two phases of lockdown itself).

India is facing great social and economic disruption, with several industries severely impacted, including transportation, entertainment, tourism and sports, to name a few. When the central government announced a nationwide lockdown on 24 March 2020 to curb the spread of the virus, it seemed that the entire country had come to a halt. For the first time in its 167-year history, Indian Railways had to shut down all of its passenger services. The national transportation lifeline, which ferries almost eight billion passengers daily in almost 13,500 trains, was suspended as part of government directives to stall public transportation to contain the spread of COVID-19 infections.



However, the ban was not applicable to cargo trains from day one. This is to ensure that the important supplies reach the different parts of the country. Indian Railways primarily operated

about 9000 number of goods trains during the lockdown period till 31st May, 2020. Moreover, railways had also made railway parcel vans available for quick mass transportation for e-commerce entities and other customers including state governments to transport certain goods. These include medical supplies, medical equipment, food, etc. in small parcel sizes.

With this suspension, a great logistical challenge to meet the massive demand in supply gaps emerged. With the supply chain across the entire nation disrupted and the transfer of essential goods and services badly affected, the national transporter emerged as a beacon of hope amid the national crisis. Through its three-pronged approach, Indian Railways has revealed its ability to resist and recover quickly from the effects of the pandemic in an efficient manner, for the continuation of its essential public transport and freight services. Below are three initiatives undertaken by Indian Railways.

Indian Railways mobilised its own resources (IRCTC) and effectively collaborated with other NGOs to cater to the food and safety requirements of these passengers. Between 1 May 2020 and 26 June 2020, Indian Railways carried approximately 6.3 million migrants across the country on 4,594 Shramik trains. The trains were diverted dynamically by analysing congestion on the routes due to increased freight movement. It was the diligence and commitment of the frontline workforce of the organisation who went beyond the call of duty that made this possible.

Indian Railways has seen this crisis as an opportunity to grow its freight traffic. While the crisis created supply chain disruption in the transfer of essential goods across the nation, the freight business showed remarkable resilience. As the demand for the transportation of core commodities – such as coal, cement and iron ore – declined due to economic slowdown, demand for new commodities emerged.

The additional capacity created by the temporary suspension of passenger services provided an opportunity to capture new traffic and customers. Indian Railways operated special parcel trains that have been instrumental in transporting 5.2 million tonnes of food grains across the

country. Scheduled parcel trains and container cargo trains have been helping courier services and the ecommerce industry in the transportation of goods. Dedicated freight trains – such as Kisan Rail and Doodh Duronto – have enabled farmers to transport their produce (including spices, fruits, vegetables, milk and dairy products) to demand centres in record time during the pandemic.

Indian Railways' freight business has played a key role in connecting the demand-supply centres for different medical equipment, personal protective equipment (PPE) kits and even ventilators to supplement the efforts of the health care delivery system in India. The recent initiative to operate 'Oxygen Express' trains to safely transport Liquid Medical Oxygen through green corridors from oxygen plants (located in suburban areas far from the cities) to hospitals across the country as India battles its second wave is a perfect example of Indian Railways' agility and ingenuity. As an organisation, we are leaving no stone unturned in our collective fight against COVID-19. Indian Railways needs to further its efforts to form a powerful supply chain and capture more markets and business opportunities that have emerged as a result of the COVID-19 crisis.

India's health care system has faced a shortage of workers, hospital beds and equipment, Indian Railways has used the power of its significant asset base and skilled workforce to support the healthcare industry. Railway hospitals and the entire railway medical fraternity has jumped into action. Railway buildings have been converted into quarantine centres. Furthermore, in a bid to address the lack of hospital beds amid rising COVID-19 cases, Indian Railways has deployed nearly 5,600 isolation coaches with more than 70,000 beds. With minor modifications to a conventional coach carried out at Indian Railways' coach factories, Indian Railways has deployed nearly 5,600 isolation coaches with more than 70,000 beds.. These mobile hospital units have been a big help in treating patients in remote areas of the country where many hospitals are not available.

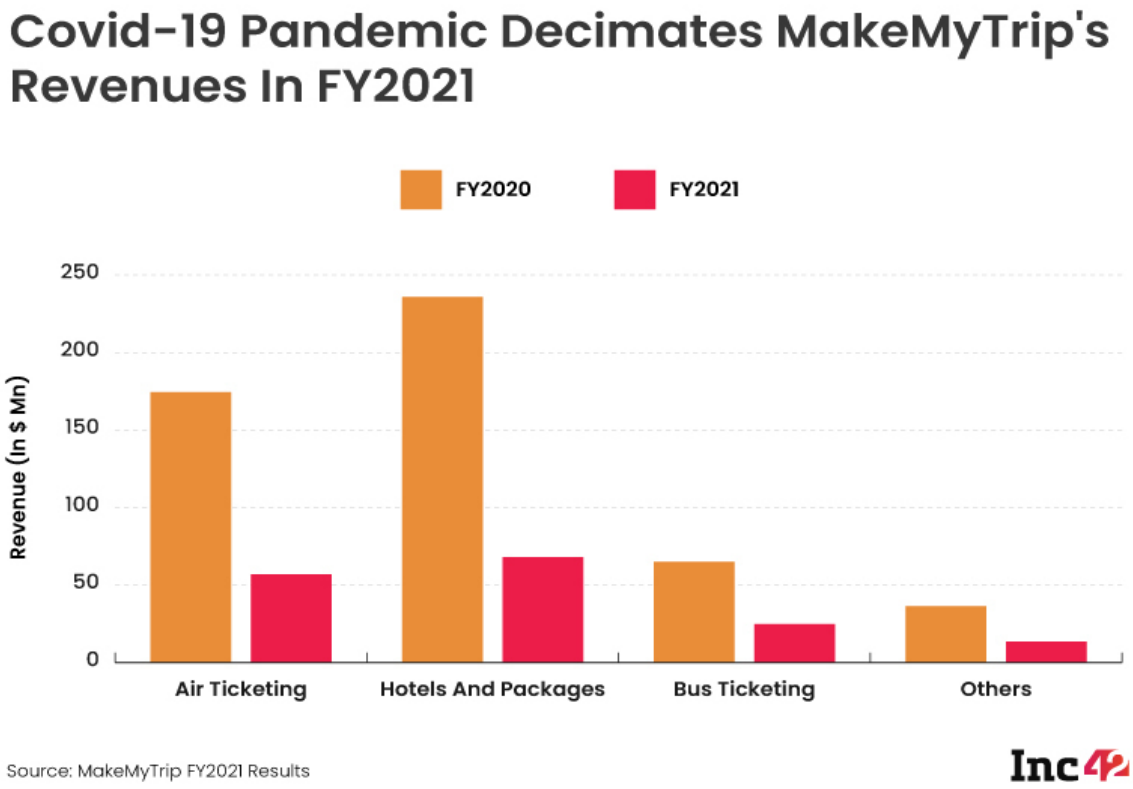
Indian Railways has mobilised its resources to manufacture PPE kits, HAZMAT suits and coveralls, sanitisers, sanitiser dispensing machines, sample collection booths, hospital beds and furniture, oxygen concentrators and even ventilators. This has been made possible by effective

resource management, sheer determination, resilience and the innovation of the dedicated workforce at railway production units and workshops.

As the coronavirus pandemic continues to evolve, India is facing a bigger challenge to treat sick patients and meet the storming healthcare demands. While help is coming from every sector, small to medium businesses, the government and private bodies, Indian Railways – as the national transporter – will continue to find new ways and revamp old ways to not only revive the Indian economy, but also serve as a lifeline to the nation and save as many lives as possible

4.1.3 IMPACT ON BUS TRANSPORT AND METRO SYSTEM

India where BUS TRANSPORT is always crowded and infrequent. To properly enforce social-distancing, additional fleets with larger frequency would be required to adjust the restricted number of commuters in each fleet The central government is preparing measures for metro rails by maintaining spaces between 2 passengers, zone-wise queuing, screening and controlling crowds at the station

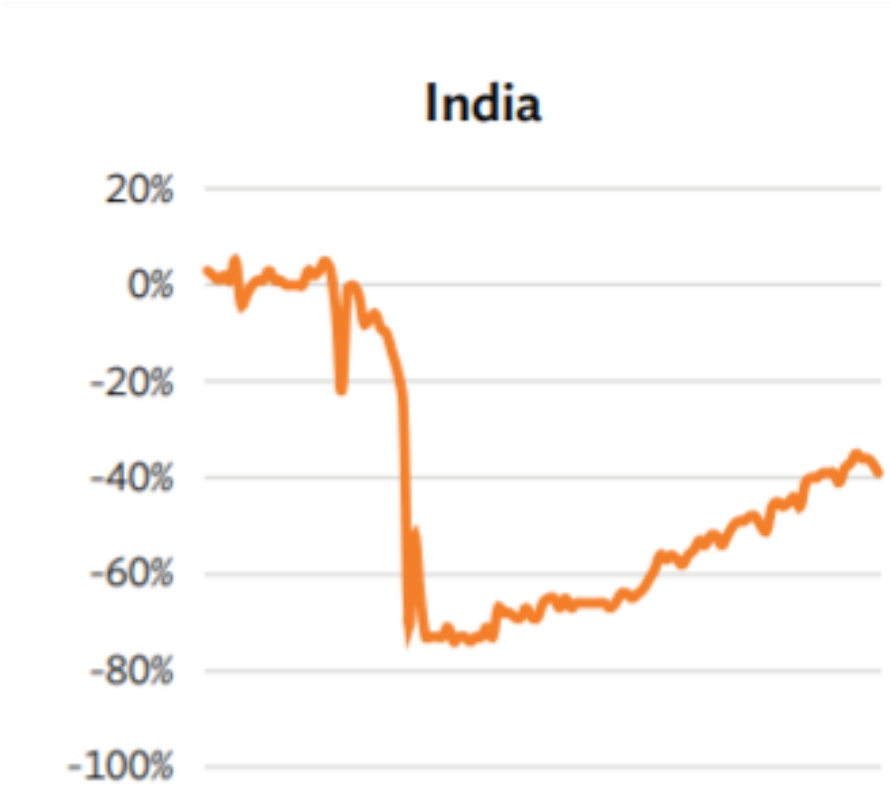


It is to be borne in mind that the Indian population has less than 1 bus for every 10,000 citizens whereas developed countries like USA, UK, Australia and Japan have more than 2 buses for every 1,000 citizens which leads to overcrowding in Indian buses. As mentioned earlier, metro operations have been grounded in Indian cities since the start of the lockdown, the bus sector came to the rescue for the travel of essentials service workers. However, COVID-19 induced lockdown and additional measures such as physical distancing and need for frequent cleaning has put an additional financial burden on the bus operators which risks the long-term sustainability of the sector. So where do buses stand now and going forward? This will be discussed in the succeeding section.

4.1.4 IMPACT ON PUBLIC TRANSPORT DUE TO COVID 19

Most of the public transport, rental services companies suspended their services during the lockdown tenure. Automobile executives also found that people would prefer to buy their own vehicles in the future because the perception of the people towards hygiene will change.

Public transport provides an alternative to private cars and has become an important part of sustainable transport policies. Public transport benefits the whole community financially, for each coin invested during this sort of transport tons of cash in economic returns are generated. Public transport ferries incorporate more people into a little space compared to an individual vehicle and hence reducing the traffic jam, vehicular pollution as well as reducing the carbon footprints



CHANGES IN PUBLIC TRANSPORT STATIONS

Different types of public transport used in India are auto-rickshaws, taxis, railways and buses. The biggest challenge in the public transport sector would be to implement social distancing in

a country like India where public transport modes are always crowded and infrequent. To properly enforce social-distancing, additional fleets with larger frequency would be required to adjust the restricted number of commuters in each fleet. If digital payments are made mandatory to ensure minimum contact, we would also have to think about people who are not privileged enough to have smartphones.

Indian Railways has suffered a loss of Rs 6,500 crore on revenue earned from ticket sales (during the first two phases of lockdown itself. The Indian aviation industry is going to suffer a loss of USD 3-3.6 billion for the June quarter. The International Airline Organization (IATA) has announced that coronavirus pandemic is expected to affect more than 29 lakh jobs in the Indian aviation and dependent industries.

In Ola and Uber rides, it is suggested that both rider and driver must wear a mask. Every time we ride, we should confirm that we have taken specific safety steps and even drivers are required to complete a similar checklist. Guidelines released by the WHO should be followed. All high contact surface area should be cleaned with sanitizer before and after each trip. Drivers should have daily temperature check-up and if the driver has a high temperature, above the normal temperature then, he should stop driving and take rest.

Both Ola and Uber are taking precautionary measures, which is a good initiative by both brands. As they are widely used for traveling all across the globe, these companies have come up with a unique feature called face cover technology.

Most of the buses are incorporating very few people to maintain physical distancing. The central government is preparing measures for metro rails by maintaining spaces between 2 passengers, zone-wise queuing, screening and controlling crowds at the station.

All preventive measures are taken by the airlines as well, towards the health and safety of air crew and passengers. Best available Personal Protective Equipment (PPE) kits are provided for the safety of cabin crew in all the airlines. It is compulsory for all the passengers to wear masks

and they have to go through thermal scanning and those with high temperature are not allowed to travel.

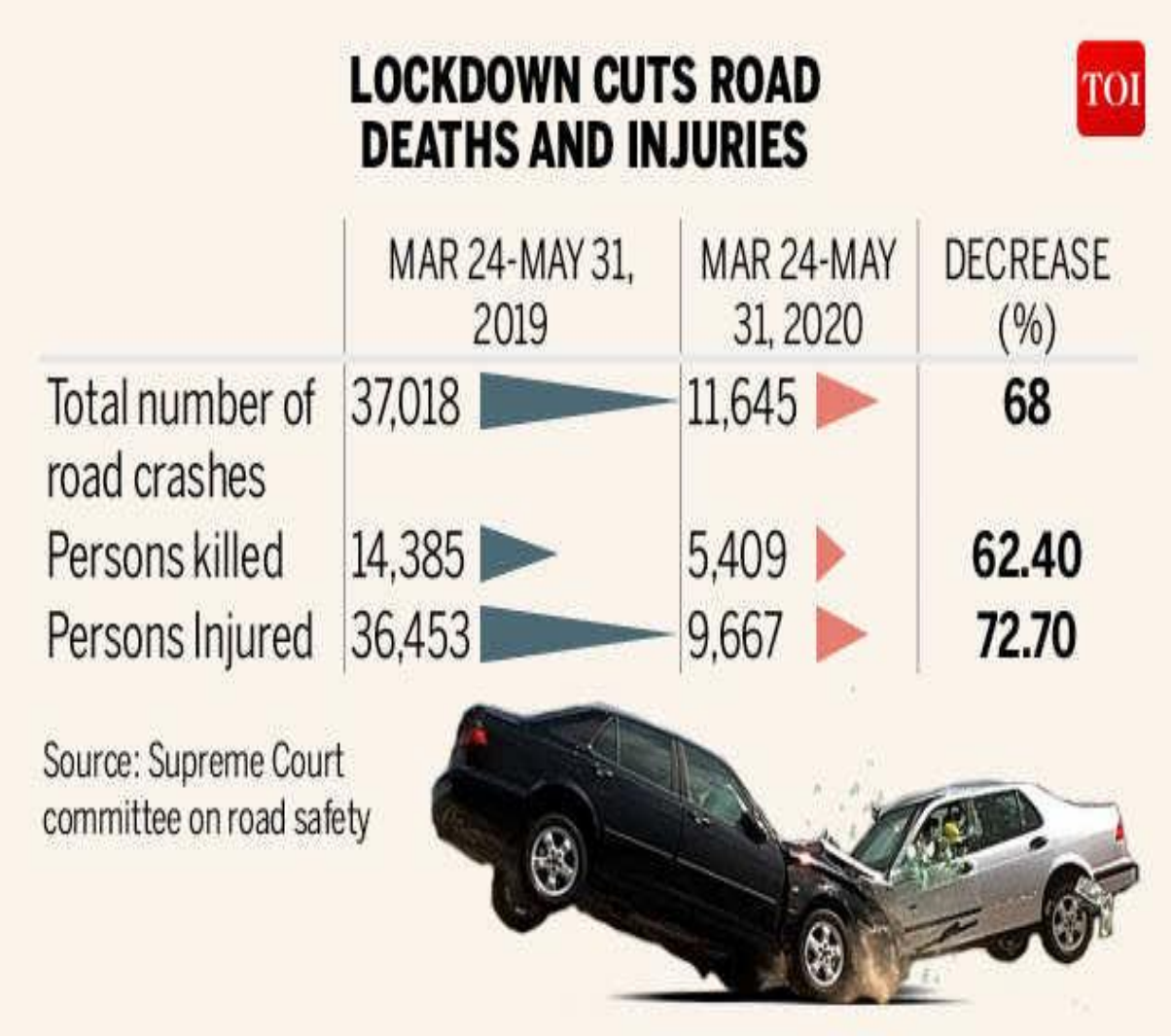
Such initiatives will help to gain the confidence of the customers. People will travel because they will be having the satisfaction that they will be travelling in a clean vehicle which is sanitized and has minimal or no physical contact.

The psychology of people also plays an important role here. Most people will avoid travelling but only those will travel who can't avoid it.

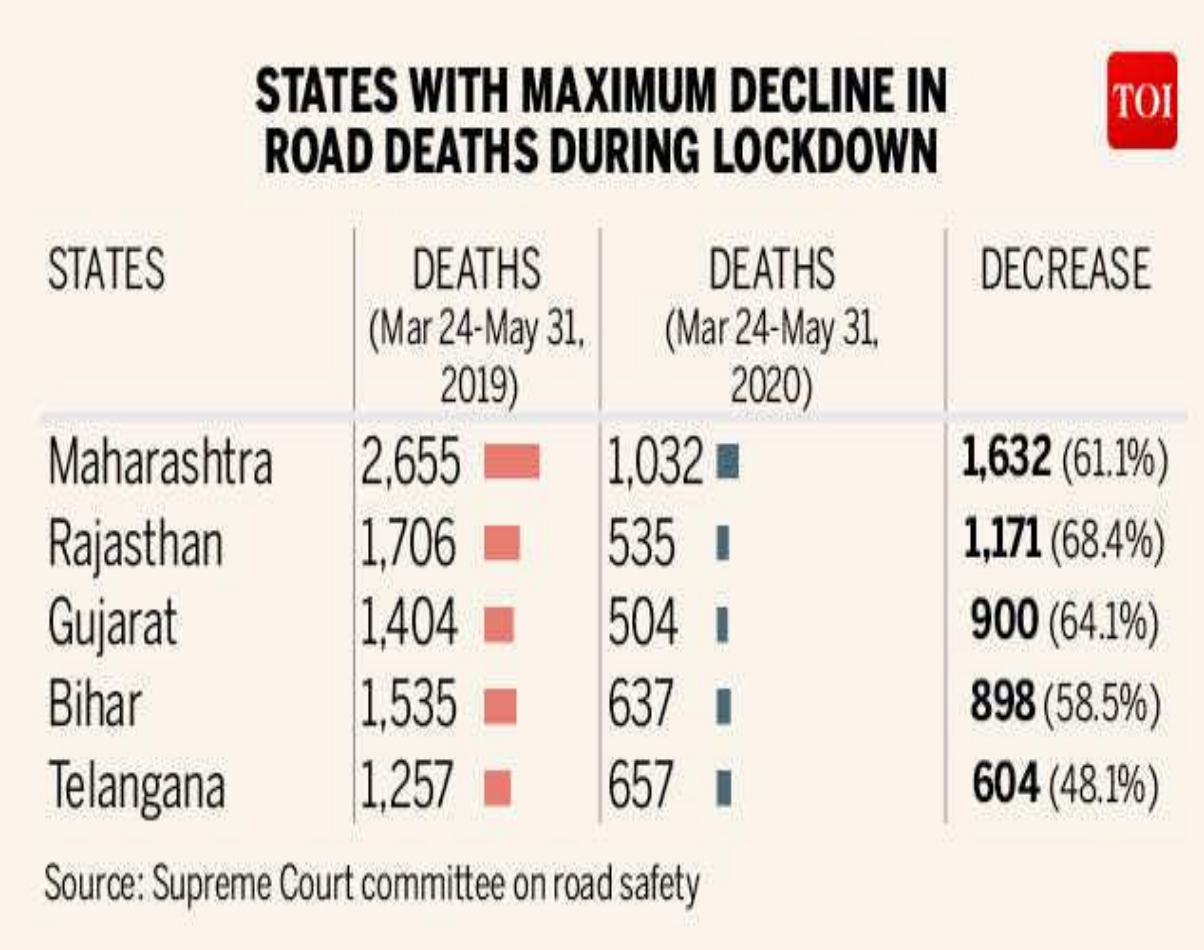
Corporate offices are providing separate cabs for employees in Delhi & NCR with a concept of physical distancing kept in mind. Such mini travellers can incorporate 5 people maximum. Even most of the state buses are incorporating 20 people at a time and sanitizing it regularly and a conductor is providing sanitizer to passengers. Such initiatives will help to raise the market slowly and steadily

4.1.5 ROAD ACCIDENTS REDUCED DUE TO COVID 19

Road deaths reduced by 62% during the lockdown between March 24 and May 31, according to data provided by 24 states and UTs to the Supreme Court Committee on Road Safety. During this period, these states reported 8,976 less fatalities, over 25,000 fewer crashes and nearly 26,000 less persons were left injured as compared to the corresponding period in 2019.



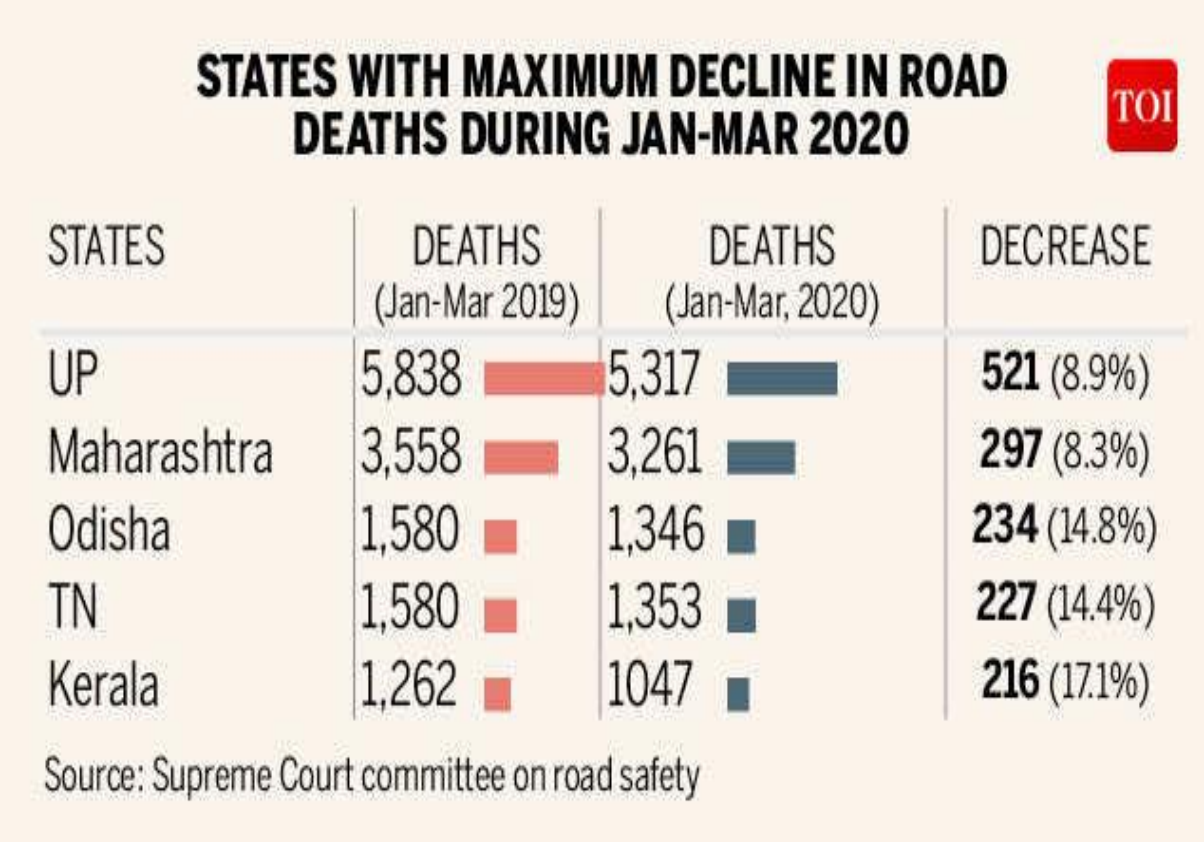
Maharashtra saw the maximum decline of 1,632 road fatalities followed by Rajasthan (1,171), Gujarat (900), Bihar (898) and Telangana (604). Chandigarh and Daman and Diu reported no road deaths.



Among states, Uttarakhand saw the maximum decline in these fatalities in percentage terms (-90%) followed by Kerala registering 88.7% reduction.
Four major states which have not yet submitted the data for this period are Uttar Pradesh, Tamil Nadu, Karnataka and Madhya Pradesh. Delhi has also not provided the details. Analysis of the data also shows that the severity of road crashes, which is deaths per 100 crashes, was higher during these 69 days as compared to last year. While last year 39 persons were killed in every 100 crashes during the same period, it increased to 46 during this year.

Though road deaths have come down significantly across the globe during the Covid pandemic and lockdowns, the first quarter of 2020 too saw a drop in fatalities and injuries in crashes in India as compared to January-March period of last year. Overall, there was 8% decline or 3,089 less fatalities during the first three months of the current calendar year. Barring, West Bengal, Goa, Tripura, Puducherry and Ladakh, all other states and UTs reported fewer fatalities. UP reported maximum reduction of 521 road deaths followed by Maharashtra (297), Odisha

(234), Tamil Nadu (227) and Kerala registering 215 less fatalities as compared to last year. Delhi registered 285 fatalities, 157 less than last year. The data has highlighted the importance of intensifying the message "road deaths are preventable and not a will of God", say road safety activists.



"Road users, policy makers and infrastructure providers must accept that road crashes have nothing do with fate. It's also evident from these data that stronger motor vehicle laws and better enforcement had brought some positive results in the first quarter," said K K Kapila, former president of International Road Federation

4.1.6 IMPACT ON TRUCKING AND LOGISTICS SECTOR

The world's biggest lockdown has brought transportation of goods in India to a near halt, even though the central government has exempted the sector from restrictions to halt the spread of coronavirus. Daily movement of trucks has collapsed to less than 10% of normal levels, according to All India Motor Transport Congress, an umbrella body of goods vehicle operators representing about 10 million truckers. Road transport accounts for about 60% of freight traffic in India and 87%
Trucking has emerged as a major choke-point in global supply chains for everything from food to medical supplies as governments take stringent steps to contain the pandemic, restricting the movement of vehicles and people to drive them. The collapse in India, where Prime Minister Narendra Modi imposed a three-week lockdown on the nation's 1.3 billion people March 25, is a harbinger of the damage the measures are wreaking on the economy amid forecasts the country could see its first contraction In at least two decades

Though the government has allowed movement of both essential and non-essential goods, the situation is very different at the ground level," said Naveen Kumar Gupta, secretary general of AIMTC, the largest grouping of transporters in India. The transport of goods by road was included as one of the essential services exempt from restrictions but the government is making frequent clarifications, causing confusion on the ground

One haulage company that's a member of AIMTC had 20 trucks stranded in northern India, according to Gupta. Officials were stopping the vehicles at every checkpoint just a few kilometres apart. They were only allowed to cross the provincial border when the owner went to see the officials in person and showed them several government circulars and notifications, he said A spokesman for the transport ministry couldn't immediately comment.

There are some signs of improvement, though. The movement of trucks at ports is easing after efforts taken to restore operations and maintain critical cargo shipments, Gupta said. Traffic to and from ports is about 50% of normal levels, he said, though labour constraints could be a future setback.

The decline in road transport is another major major drain on fuel demand in the world's third

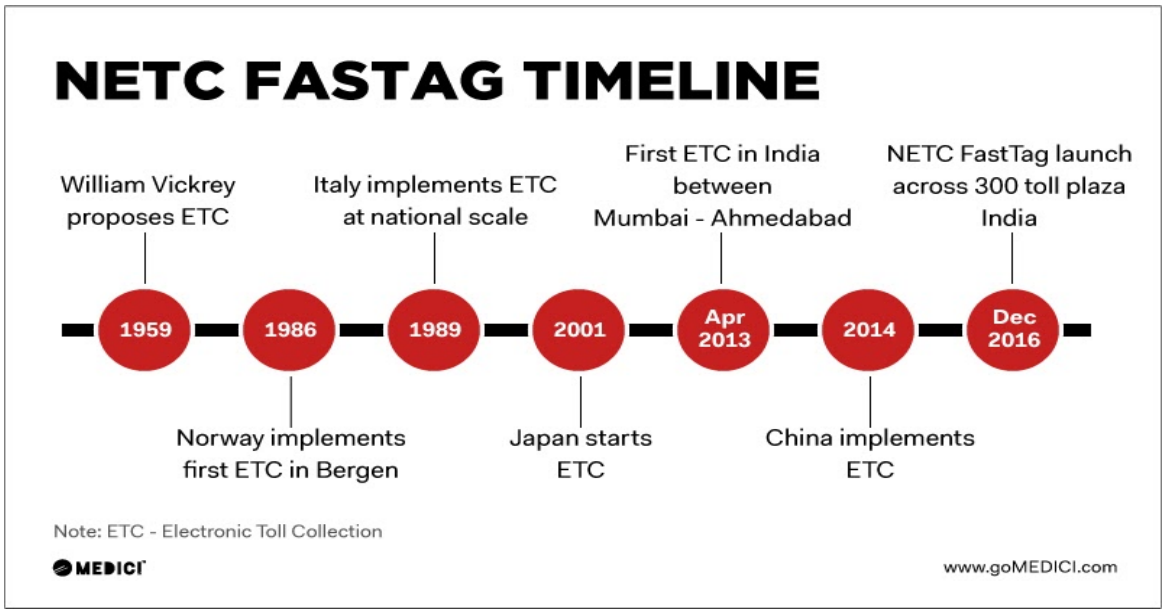
biggest oil market, which has already been hit by the collapse in air travel. Diesel and gasoline sales in March by India's three biggest state-run fuel retailers shrank by an estimated 26% and 17%, respectively, and the lockdown only came into effect at the end of the month. Jet fuel sales plunged 33%.Limited freight activities will drag diesel demand to a 15-year low of 680,000 barrels per day in April, according to Senthil Kumaran, an oil markets consultant at Facts Global Energy. "The nationwide lockdown has completely halted industrial activities, thereby resulting in a sharp pullback in freight movements country-wide," he said.

One of the major problems facing truckers is loading and unloading because of a shortage of labour, according to AIMTC. And with the lockdown shutting highway food establishments and workshops, truckers can't get the services they need even if they are on the road.

Since the 2nd and 3rd day of lockdown in March, 2020 *i.e. during Lockdown 1.0,* the commodity traffic movement across the country reduced by as high as 90 to 95 % excepting the transport of essential commodities. Since the end of May, 2020, there was respite in the form of allowing the movement of all types of cargo movement across the country

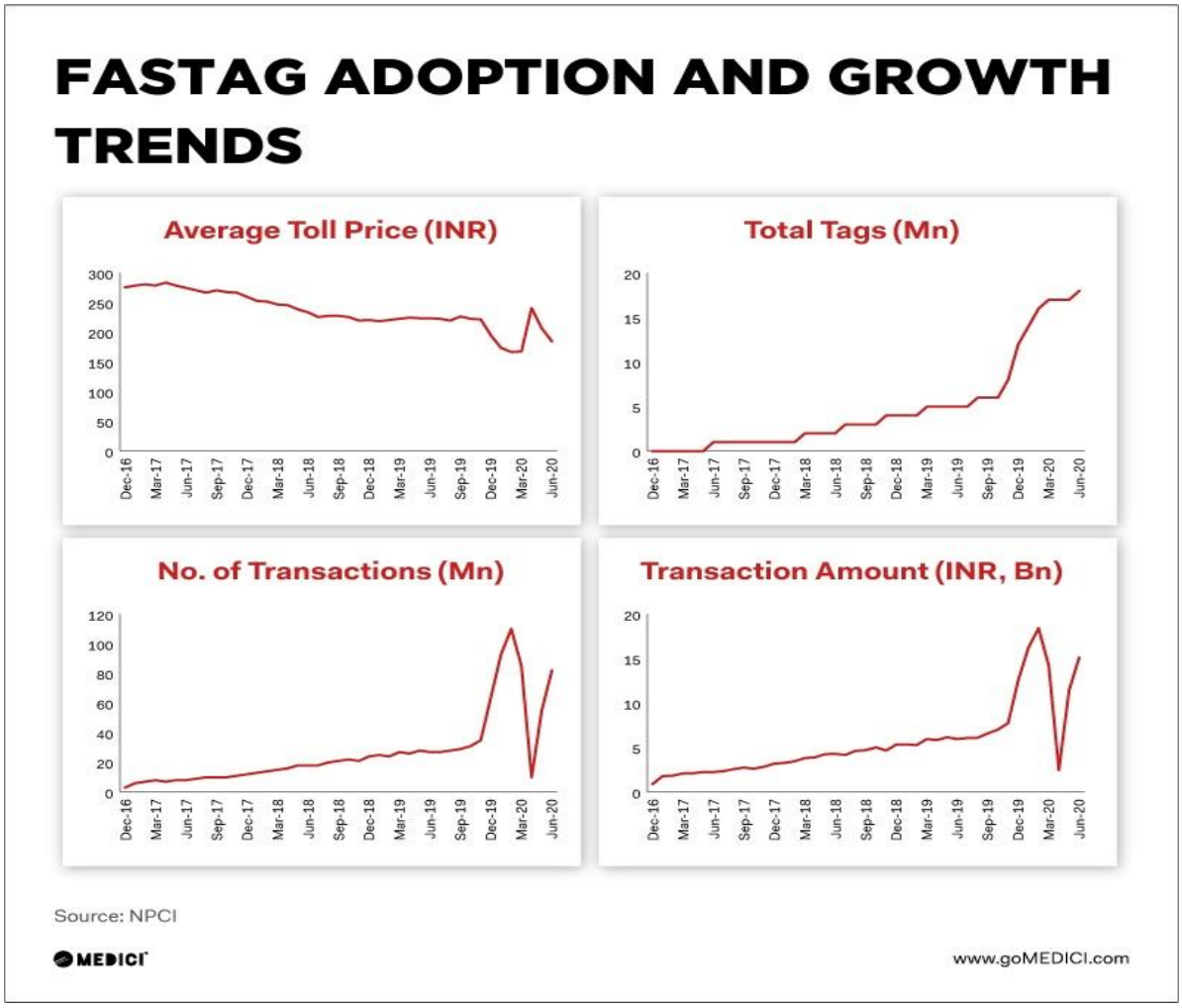
4.2 TOLL COLLECTION PROCEDURE

Toll collection is collected directly from check post .Due to corona it has been changed to FASTag, India's electronic toll collection chip for national highways, is mandatory for all vehicles. ... Already, over 80 per cent of all toll collected across national highways is through FASTag .It is the perfect solution for a hassle-free trip on most national highways. FASTag is currently operational at more than 420 toll plazas across India including National and State Highways According to an estimate by the rating agency ICRA, toll collections for FY 2021 would decrease in the range of 6.5 per cent to 8 per cent in FY 2021.



The toll collection may reach Rs 34,000 crore by March 2021 and by using GPS for toll collection, the income in next five years will be Rs 1.34 trillion. The use of technology will mean that there won't be leakages in collection of the levy and the money transfer can happen in a transparent manner. To enable seamless toll collection at the plazas, the government introduced RFID (radio frequency identification) tags. According to an official statement by the National Highways Authority of India (NHAI), RFID-enabled FASTags contribute nearly three-fourth of the total toll collection (till November).The daily collection stood at Rs 92 crore compared to Rs 70 crore a year ago. The government rolled out FASTag-based electronic toll collection mechanism from December 15, 2019, across all toll plazas of the NHAI. The ministry of road transport and highways expects the total yearly toll collection to reach up to Rs1, 34,000 crores in the next three to four years. Total toll collection on national highways is expected to reach Rs34,000 crore for the financial year ending on 31 March 2021, minister for road transport and highways. According to data compiled by National Highways Authority of

India (NHAI), total toll collection on national highways stood at Rs26,851 crore during 2019-20.



Rating agency Icra had in January said in a report that toll collections in India are likely to grow 14%-15% in 2021-22, while maintaining a stable outlook for the Indian road sector. Toll collections witnessed a marked improvement on the back of increased movement of both passenger and commercial vehicles, which has picked up significantly over the last three months, thereby surpassing the pre-covid-19 levels, the Icra report said."In FY2022, the traffic is expected to increase by 5% and toll rates (WPI linked) by 3-4% resulting in an overall increase in toll collections by 14-15% on a low base in FY2021 (given the impact of toll suspension in first 20 days of April 2020),".

4.3 COURIER SERVICES

The coronavirus pandemic has profoundly affected our world this year. It has caused many unexpected disruptions, accelerated some existing trends and forced us to make some changes to how we work and live. Some of these changes will likely last even after COVID-19 is no longer a threat to public health. Many of these transformations will be for the better — such as expanded delivery options for consumers and businesses alike. Easier accessibility of goods and services could make everyone's lives run more smoothly.

Emerging Trends in Delivery Services for Consumers:

The rising popularity of delivery services is not exactly a new trend. Even before COVID-19 started making headlines, Indians were falling in love with the convenience of delivery services.

Life is busy, and getting a magazine, coffee or bag of groceries delivered to your front door makes your daily routine a little easier. As more people turn to e-commerce sites, food delivery platforms, and other types of delivery services, they are realizing how easy it is to obtain their favourite products and brands without having to leave the comfort of their home or office. Benefits such as convenience and efficiency are what sparked the initial rise to popularity, we've seen in delivery services. However, the emergence of COVID-19 in 2020 has generated even more demand for delivery services, and for new reasons.

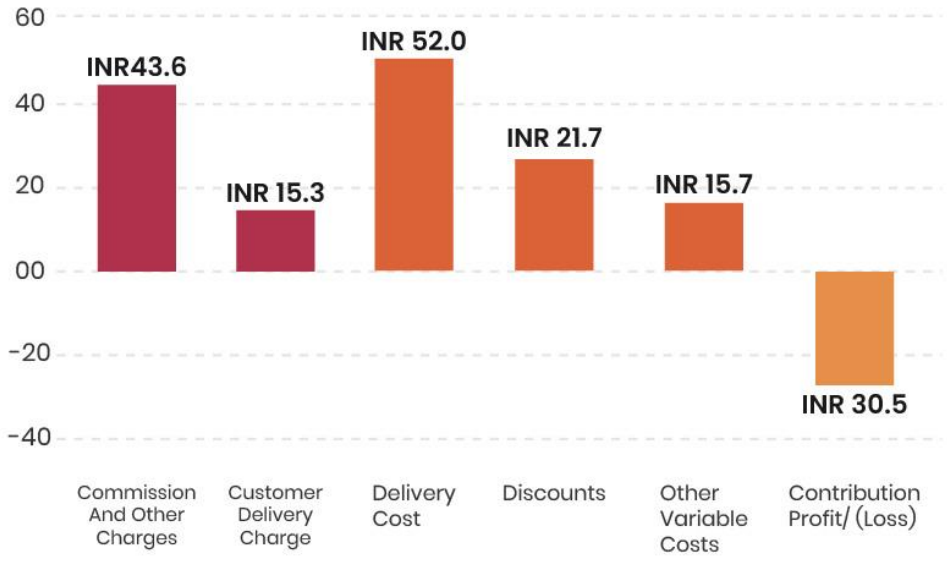
Delivery Services for Safety, Not Just Convenience

As cities locked down to slow the spread of COVID-19, people turned to delivery services as more than just a convenience. It became a means of staying safe and healthy at home without being cut off from necessities like food and hygiene products. ., the popularity of grocery delivery services increased by as much as five fold during the height of the pandemic.

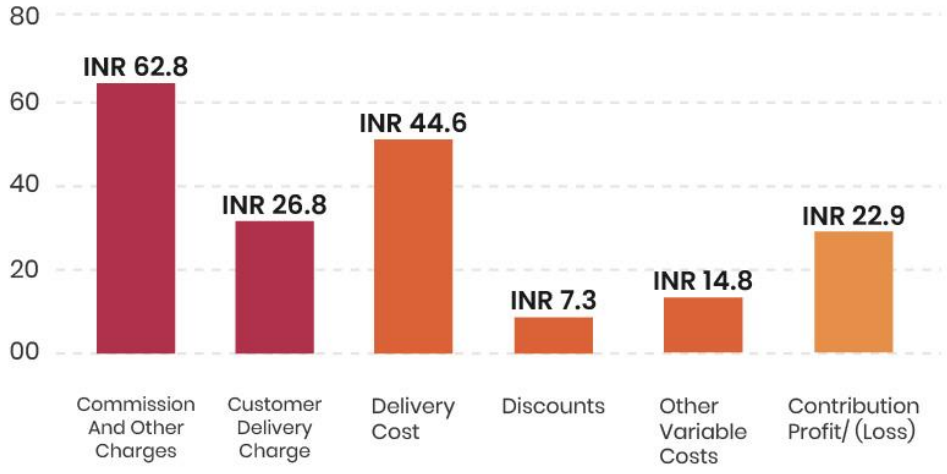
Those who live in metropolitan centers can also use on-demand delivery services to have newspapers and magazines brought to their door, making it easier to keep up with news and enjoy some entertainment while stuck at home. Enjoying your favourite drinks, foods, or reading materials without needing to risk your health can restore a sense of normalcy during a difficult time.

How Zomato's Unit Economics Stacks Up

Fiscal 2020 Unit Economics (INR)



9M Fiscal 2021 Unit Economics (INR)



Source: Zomato's DRHP

Inc42

4.4 SECOND COVID WAVE IMPACTING TWO-WHEELER SALES

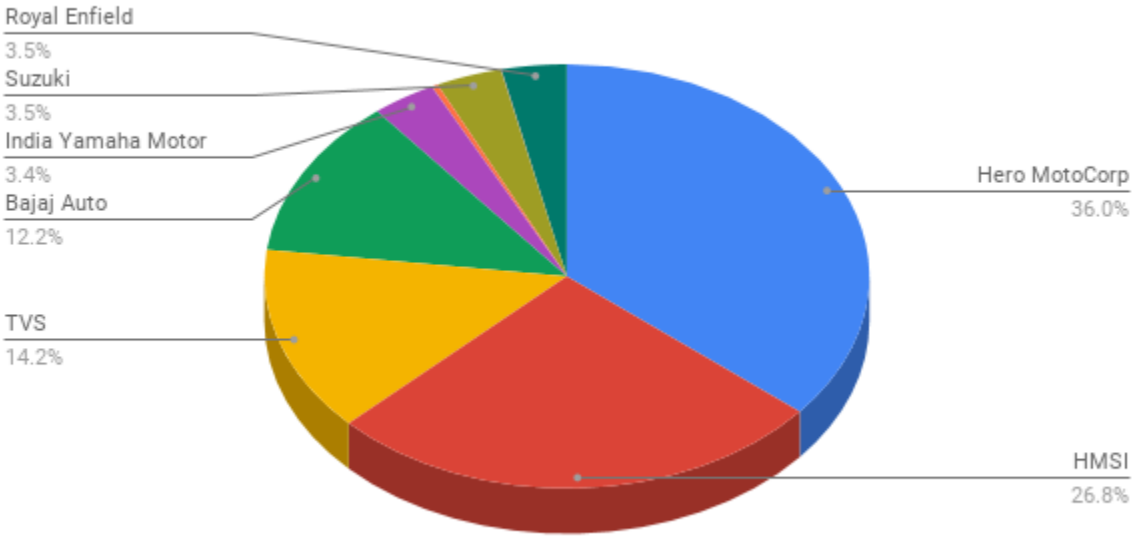
The second Covid wave has impacted the two-wheeler markets harder than the earlier one with sales declining by 30-50 per cent so far in April despite a mini festive season during the month, according to a report. Smaller cities are seeing the impact of the second wave (unlike the first wave), amid the cases reported in the second week of April surpassing the peak of September last year, brokerage firm Motilal Oswal Financial Services

Dealers commenced April with high inventory owing to factors such as the year-end push and high sales expectations from the festive and wedding season (northern and central India) and also rural demand from the rabi harvest,

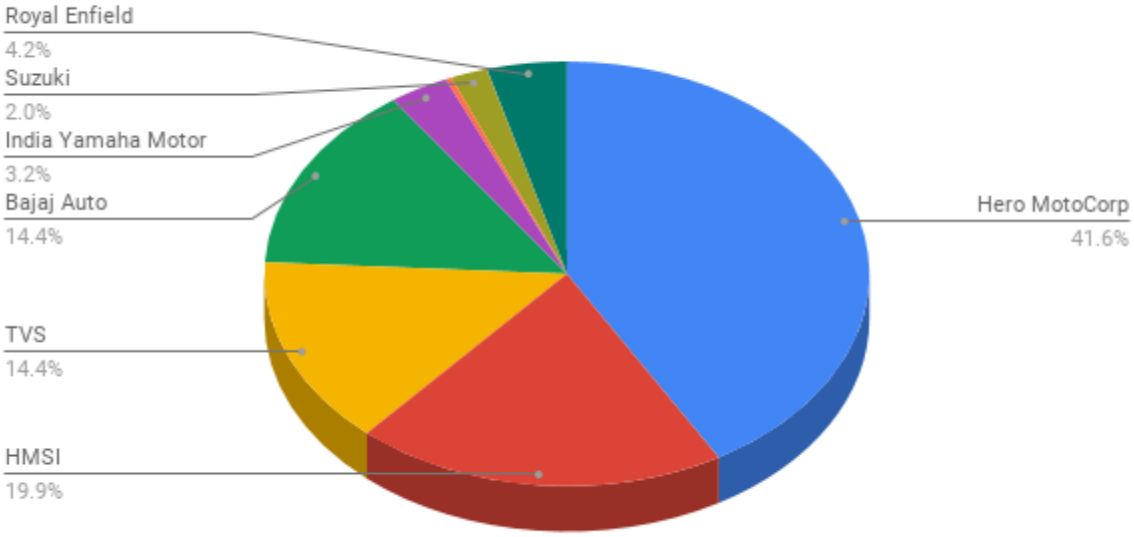
However, according to the report, sales were much lower from the festive season and the rabi harvest with expected two-wheeler demand recovery during this period is yet to play out and is much lower than normal. . However, people have lesser savings amid the second wave as a consequence of a slow economic activity in the current fiscal coupled with minimal cash inflow from migrant relatives and high medical bills. Therefore, at the current rate of increase in Covid cases, recovery is expected to be more back-ended,
On the wholesales side, while FY21 wholesales were down 12 per cent, retail registrations were down 32 per cent. This implies 23 per cent of wholesalers were used to stock up on inventory post the BS6 transition, which is not likely to be the case this time around,

It also said that since April 2020, OEMs are gradually taking price hikes post the BS6 launch to cover the increase in commodity prices as well as recover contribution margins on cost inflation. The two-wheeler OEMs took a price hike of 5-8 per cent up to April this year (since April 2020). This is adding to the hyper cost inflation of around 25 per cent seen in 2Ws over April'2018- April 2020, which has also served as a deterrent

Two wheelers: Q1 FY2019-20 Market Share



Two wheelers: Q1 FY 2020-21 Market Share



4.5 COVID-19 IMPACT: SALES OF USED CARS, BIKES AND NEW CARS

Sales of pre-owned cars and entry-level motorcycles and scooters may increase in the aftermath of the covid-19 pandemic as commuters will likely prefer private conveyance but financial constraints may hamper purchases of new vehicles, according to a survey conducted by Cars 24, a digital platform for buying and selling used cars.

According to the survey, 46% of respondents said the pandemic has reduced their budget for fresh purchases and of that 50% said they will purchase pre-owned cars once the lockdown is over. Also, around 22.5% of respondents who were planning to buy a new car last year would now prefer to buy a pre-owned car because of limited budgets

4.5.1 IMPACT OF CORONAVIRUS: STUDY SUGGESTS 53% RESPONDENTS INTEND TO BUY CAR

As the population prepares to embrace the post-COVID-lockdown era as the 'new normal', one thing has become rather certain that people will want to move about the city in personal modes of transportation. Consumer preferences are expected to change and a boost of car and bike sales could be imminent in the very near future. In a recent study conducted by Cars24, 53 percent of the respondents said they intended to purchase a car within the next six months.
: According to the survey, 46% of respondents said that they have decreased their budget due to the global pandemic, out of which, 50% said that they will be purchasing pre-owned cars once the lockdown is over. In another interesting finding, 22.5% of the consumers who were planning to buy a new car last year would now prefer to buy a pre-owned car because of their limited budgets.

In addition to the reduction in the budget of the buyers due to the global pandemic, family requirements and the risk of Infection have emerged as the major reasons for buying a car amongst the consumers. The report further revealed that while 42% feel that they now need to buy a car for the family, 53% of the consumers think of buying one within the next six months. However, unlike metros where consumers intend to buy cars increased by 41%, respondents from non-metro cities feel that they would like to switch to two-wheelers instead. The analysis

further revealed that 55% of the consumers who were using cabs as their primary mode to commute before COVID would now like to shift to private cars while 15% said that they will switch to 2-wheelers.

Conducted using various digital platforms, the survey interviewed over 3600 consumers in 11 metros and 37 non-metro cities to understand their sentiments towards car ownership in the post COVID world. Comprising over 59% of the respondents from the metro cities and 41% of respondents from the non-metro cities, 30% of the respondents, interestingly, do not own a car. The report comprised 83% male responders and 27% female responders.

4.6 REVENUE FROM PUBLIC TRANSPORT TOWARDS GOVERNMENT

According to ICRA, the most significant challenge ahead for the RTCs after the lockdowns are fully lifted would be to increase passenger movement while containing the spread of the virus, through various measures like regular sanitisation of the buses and provision of protective gear for the staff.

Revenues of road transport corporations will contract by 35-40 percent in the current fiscal due to the coronavirus pandemic-induced challenges,

The complete shutdown of operations due to COVID-19 from March 23, 2020 and the subsequent extension of the lockdown across the country have resulted in significant financial losses for the Road Transport Corporations (RTCs), it said in a statement.

According to ICRA, the most significant challenge ahead for the RTCs after the lockdowns are fully lifted would be to increase passenger movement while containing the spread of the virus, through various measures like regular sanitisation of the buses and provision of protective gear for the staff.

"As per ICRA’s estimates, measures, including buses operating with a cap of 50 percent occupancy level and the perceived risk of travelling in a public bus by passengers at large, will lead to a revenue contraction of 35-40 percent in FY2021 for the sector,” the statement said.

Given the expected shortfall in revenues, the rating agency said many RTCs would need financial support from the respective state governments till their operations ramp up fully after the lockdowns are completely lifted in order to meet the operational expenses, especially the high fixed costs.

The financial support typically provided by several state governments like the deferment of the Motor Vehicle Tax (MVT) and the reimbursement of fixed costs like employee salaries to avoid any significant cash flow shortfall, emphasise the importance of the RTCs to the respective state governments

The financial support typically provided by several state governments like the deferment of the Motor Vehicle Tax (MVT) and the reimbursement of fixed costs like employee salaries to avoid any significant cash flow shortfall, emphasise the importance of the RTCs to the respective state governments

Jayanta Roy, Senior Vice-President & Group Head, Corporate Sector Ratings at ICRA said that even when the operations resumed from May 2020 onwards, passenger demand remained significantly low compared to the pre-COVID levels due to the various social distancing measures introduced by the state governments to curb the spread of the disease.

"If occupancy levels remain low during the coming quarters, meeting employee costs would be the biggest challenge for the sector, as such costs typically account for over 50 percent of the total operating costs of a state RTC,"

He also said that the virus outbreak will lead to heightened financial stress on the RTCs and that states will have to extend further direct/ indirect support to such entities.

which is permissible, and non-essential goods be done away with, will be taken up with individual States.

"A Control room is being set up to monitor the issues of internal trade, manufacturing, delivery and logistics of essential commodities during Covid pandemic

4.7 INTER-STATE MOVEMENT/FLOWS OF GOODS

The inter-state trade between the various States of India is commonly known as Inland Trade, which involves movement of goods by five modes namely, (a) sea, (b) air, (c) rail, (d) river, and (e) road. Information on entry of goods, which add to the stock of material resources, and exit thereof, which depletes the stock of the State, forms the basis of Inland Trade Statistics. The entry and exit of goods from a State are commonly known as inward and outward movements. But the movements of goods within the boundaries of any State do not come under the purview of inland trade. Inter-State Trade Statistics provides an idea about the demand of commodities produced in a State along with flow thereof to other States. There has been a substantial growth in the Inter-State Trade but the system of data collection in this field has not developed to get the comprehensive coverage.

4.7.1 SEA-BORNE TRADE

Sea-borne Inland Trade data is published by the DGCI&S in the publication entitled, Statistics of Inland & Coasting Trade Consignment of India .This is an annual publication and the issue for 1998-99 has been released in August 2000. The basic documents for compilation of these statistics are received from customs authorities in the form of Coastal Daily Trade Returns. Compilation of Sea-Borne Inland Trade, which is also commonly known as Coasting Trade, is done by recording the inward and outward movements of all goods classified into around 500

items between 12 maritime blocks. These maritime blocks correspond to an equal number of maritime States or Union Territories of India, which are as follows:

Andaman and Nicobar Islands

Andhra Pradesh

Goa

Gujarat

Karnataka

Kerala

Laccadive, Minicoy and Amindivi Islands

Maharashtra

Orissa

Pondicherry

Tamil Nadu

West Bengal

In the publication both inward and outward movements of goods are shown separately for each maritime block besides a separate presentation for internal movements among the ports within a block. In the case of maritime blocks, a further sub-division into two or more trade blocks have also been made to identify the importance of the chief ports, the minor ports and the remaining ports of the State or Union Territory.

4.7.2 AIR-BORNE TRADE

Air-borne Trade data is published by the DGCI&S in its annual publication, Inter-State Movements/Flows of Goods by Rail, River and Air which shows gross weight of cargo moved by air from airport to airport within the country. Besides this, the State-wise total movements

of air cargo are also indicated. Only the quantities expressed in gross weight (kgs.) as figuring in the invoices submitted to the Indian Airlines are compiled in respect of the cargo moved. No information is furnished on the values of air cargo moved since the value figures do not find place in the invoice. Compilation of Air-borne Trade is done on an outward consignment basis, i.e. the consignment from a block airport as reported by the reporting agency along with the destination. The source of air cargo data is the Indian Airlines who collects the airway bills from the consignor or consignee and compiles airport-wise cargo movements and supplies data to the DGCI&S in the standard format on financial-year basis for publication. Commodity-wise details of the cargo moved are not furnished by the Indian Airlines to the DGCI&S. Further, the information on cargo moved by private airlines is also not made available to the DGCI&S. Amongst all the modes of transport, air transport has the advantage of taking the least time for carriage and handling high valued and perishable goods. The disadvantages are comparatively high transportation cost and unsuitability for transportation of bulk commodities. The carriage of goods in Inter-state Trade by air vis-à-vis other modes of transport is primarily governed by factors such as unit value of commodities, need or adherence to delivery schedule, perishability of the commodity, location of destination with respect to the point of origin, etc.

4.7.3 RIVER-BORNE TRADE

River-borne Trade data is published annually by the DGCI&S in its publication, Inter-State Movements/Flows of Goods by Rail, River and Air . But since the share of River-borne Trade in the total trade is very insignificant the same is not shown separately but clubbed with Rail-borne Trade data.

The statistics of River-borne Trade cover the river-borne consignments between the trade blocks of Eastern India consisting of Assam, Bihar and West Bengal carried by Central Inland Water Transport Corporation of India (CIWTCI) Ltd., Kolkata. The basic documents for the statistics are the invoices relating to consignments of the selected commodities dispatched from each steamer station to trade block other than the one in which it is situated. Each steamer company consolidates the figures in respect of the steamer stations with which it is concerned

and submits returns to the CIWTCI Ltd. and, in turn, the CIWTC Ltd. sends the consolidated statements to the DGCI&S at the end of each month.

4.7.4 RAIL-BORNE TRADE

Statistics by rail, India has been divided into 38-trade blocks. Each block or a select group thereof normally corresponds to a State of the Union of India. Thus, all railway stations in a particular State are included in the same trade block even if some of them may belong to different administrative zones according to the railway authorities. In the presentation of Inland Trade data in respect of commodities only important ones are given a separate identity and the rest are classified into several homogeneous groups. The DGCI&S is receiving data on inter-State movement for about 1000 commodities, which are for convenience of presentation, classified into 78 commodity groups. Besides State-wise total movements, inter block movement for each commodity or commodity group in a matrix form is also published. This matrix gives an idea about the inter-State movement of each commodity or commodity group within India. As per the existing arrangement, the basic information is entered by the zonal railways and a hard copy of the information is provided to DGCI&S on a quarterly basis. For this purpose, an amount of about Rs.57 lakhs is paid at present by the DGCI&S to the Railway Board as the annual service charges. The DGCI&S, however, compiles manually the required format for presentation of these data from the computer printouts furnished by the railway authorities.

4.7.5 ROAD-BORNE TRADE

Railways and road transport dominate the multi-mode transportation system in the country. These two modes together account for a significant portion of the passenger and freight movement. The share of the remaining modes, namely, inland water transport, shipping, air transport, pipelines, ropeways, etc. is insignificant. Several studies conducted so far show that the share of passenger and freight between road transport and rail transport has changed, in fact reversed, in favour of the former over the period since India attained independence. Thus,

indicating the emergence of road transport as the prime mode of transport and the trend in favour of the road is rising undoubtedly. While the railways, air transport, shipping, etc. due to their centralised ownership and administrative set-up have a statistical system for data generation, the goods carried by road transport are characterised by a poor database. This is, because the goods road transport is mainly in the private sector, dominated by lakhs of micro-truck operators. These operators mostly do not maintain road transport operational statistics partly due to limited resources, a poor understanding of the provisions of the Motor Vehicles Act, income-tax phobia, etc. and also do not like to part with whatever information they have.

4.8 TOURISM DEPARTMENT

Recently disclosed earnings data for India's travel and hospitality service providers highlights the damage that the pandemic is wrecking on the vast sector. Thomas Cook India's (TCIL) consolidated FY21 loss, for instance, ballooned to Rs 416 crore from Rs 69 crore in FY20.

"The performance was impacted due to the pandemic," said the company, whose operations range from providing leisure and corporate travel packages to running properties such as Sterling Holiday Resorts.

However, TCIL added that it continues to maintain short-term liquidity and balance sheet strength "given the uncertain environment" with a continued focus on cash conservation. The company boosted its cash reserves by securing fresh funding of Rs 435.7 crore from its parent Fair bridge Capital (Mauritius) Limited during the year.

Gurugram-based online ticketing giant MakeMyTrip’s (MMT) revenue fell by a whopping 68 per cent year-on-year in FY21 to USD 163 million and it reported a USD 56 million loss during the financial year.

MakeMyTrip is India's largest online travel agency and has an over 50 per cent market share in all the verticals. The company pointed out that the pandemic has severely impacted travel demand by affecting consumers' sentiment and their willingness to travel.

This caused airlines and hotels in India and around the world to operate at significantly reduced service levels throughout much of calendar year 2020, it added. The Federation of Hotel & Restaurant Associations of India (FHRAI) estimates that the Indian hotel industry has taken a hit of over Rs 1.30 lakh crore in revenue for the fiscal year 2020-21.

Likewise, Hotel Association of India (HAI) said more than 40 per cent of hotels have shut or are on the brink of closure, while 70 per cent of overall jobs are now in danger directly or indirectly. "We currently expect the impact of the second wave on our financial results to be greater in the first quarter of FY22... travel demand has been significantly impacted during April and May 2021," said MMT.The sector is now pinning its hopes on a relief package from the government.

Tourism fy21

The Federation of Associations in Indian Tourism and Hospitality (FAITH), has sharply raised the estimated industry's losses for FY21 to ₹15 trillion owing to the covid-19 pandemic. This is a threefold increase from ₹5 trillion loss estimated in March.

A recovery is not possible for the next five months as the pandemic is still raging and tourism supply chains have broken down, the industry body said. "This makes the total impact to a minimum of nine months (till the end of the year) starting from March this year," said FAITH, which represents all national associations in the tourism, travel, and hospitality industries.

The direct and indirect economic contribution of the tourism industry is estimated at 10% of India's GDP, which is roughly around ₹20 trillion. At least three quarters of tourism business will be affected by the pandemic.

The industry covers the whole tourism value chain from airlines, travel agents, hotels, tour operators, tourism destinations restaurants, tourist transportation and guides. Each of these segments of tourism is non-performing or underperforming and will stay that way for many months of this year,
The cumulative job losses for the full year in the organized and the unorganized category of tourism could be as high as 40 million.

FAITH has urged the government to set up a tourism fund that can be used by enterprises to take care of employees and a multi-year moratorium by the Reserve Bank of India (RBI) on principal and interest payments for tourism, travel and hospitality businesses.

4.9 THE SHORT-TERM TRENDS WHICH EMERGED DUE TO CORONA

The impact of COVID-19 was first felt in China due to the role it plays in global manufacturing (with Wuhan, the epicentre of the pandemic, playing a particularly significant role—more than 200 of Fortune Global 500 Firms have a presence there). China is also a major consumer of global commodities and agricultural products.

Disruptions to manufacturing in China rippled through global supply chains. Cargo was backlogged at China's major container ports, travel restrictions led to a shortage of truck drivers to pick up containers, and ocean carriers cancelled (or blanked) sailings. The resulting shortage of components from China impacted manufacturing operations overseas. Major industries

around the world, including automotive, electronics, pharmaceuticals, medical equipment and supplies, as well as consumer goods, were affected.

Although manufacturing picked back up—by end-February, about 70 percent of large industry had restarted operations—a return to full production capacity is unlikely in the short term because of the spread of the pandemic to China's trading partners. The long-haul trucking sector—which carries more than 80 percent of the country's goods— illustrates the effects of the lockdown on Chinese logistics. Between January 24 to February 26, 2020, the volume for long-haul trucking fell below 15 percent of 2019 levels before recovering to 50 percent by the end of February and 92 percent in March (see Figure 2). The rapid recovery was driven by the ability to contain the virus quickly and the government's policy towards trucking (such as waiving national highway tolls and quarantine requirements for trucks shipping essential goods).

The pandemic spread to the rest of the world, leading to lockdowns and border closures that restricted the movement of goods. Additional protocols (such as social distancing at warehouses) introduced to ensure the safety of workers contributed to bottlenecks for freight. For example, in the European Union, trucks formed 37-mile-long lines on the A4 highway after Poland closed its border with Germany in mid-March. In India, the lockdown created a shortage of truck drivers, which resulted in over 50,000 containers piling up in the ports of Chennai, Kamajarar, and Kattupalli.

FIGURE 2. **2020 FULL TRUCK LOAD (FTL) RECOVERY RATE**

● Ocean freight: Total container volumes handled at Chinese ports dropped by 10.1 percent in the first months of 2020. Agility Logistics reports considerable constraints to ocean freight around the world, impacting both key exporters, like Brazil, China, India, and Mexico, as well as importers like the European Union. According to DHL, weak demand will continue to affect routes between Asia and Europe, the United States, and Latin America. Consequently, additional blank sailings are expected in the coming weeks.

● Land freight: Unlike ocean and air transport, land transport has generally remained partially available globally as roads have remained in operation, except in countries under severe lockdowns, according to Agility Logistics' tracking tool. Trucking capacity is strained because of additional demand for their services—especially food and medical supply transportation—under lockdown, combined with reduced employee availability (due to COVID-19-related restrictions), leading to higher rates. Other economic sectors that require land transport, such as manufacturing, are generally not at full capacity because of lockdowns. As a result, spot road freight rates have fallen in some markets. Demand for rail services has grown because of higher air cargo freight rates, blank sailings, and longer transit time for trucks.

● Air freight: Volumes fell by 19 percent in March 2020 due to a sharp reduction in passenger flights (which carry freight as belly cargo) and the drop in manufacturing in China. However, as shippers and governments turn to air cargo for essential goods, air freight rates have increased—some carriers are seeing delays with increased congestion at airports. Mid-April saw an increase in capacity, as well as a recovery in volumes transported (although they are still down, year-on-year). The overall reduction in capacity is greater than the net reduction in demand, which supports higher air freight rates.

4.10 RESPONSE TO THE CRISIS

For the most part, governments have responded to the crisis by designating ports, shipping, and trucking services as essential—and thereby exempt from lockdown measures. For example, the Indian government exempted the movement of cargo through ports, supply chains, and the transport of essential commodities from lockdown rules. Although many airports around the

world are closed to passenger flights, most are still open to cargo, which can be essential to the COVID-19 response (for example, to transport medical supplies). Closer collaboration between governments and third-party logistics companies has also been necessary to address supply chain bottlenecks and facilitate clearances. Third-party logistics companies have adopted a range of responses to these uncertainties, including:

a. new safety protocols: To protect their staff's health, some companies have introduced new protocols on social distancing at warehouses, disinfecting work areas, or providing protective gear, while giving staff unlimited unpaid time off. However, these efforts, which come at a higher financial cost, cannot guarantee protection against outbreaks in confined warehouses.

b. Alternative modes of transport: Many companies are using creative alternatives to their go-to transport modes. Since the reduction of passenger flights has reduced airplane belly cargo capacity, companies such as DHL have used charter flights to transport shipments to and from China. Airlines are also repurposing passenger aircraft for cargo. Some observers are even forecasting a boom for the China-Europe rail as 60 percent of the air freight capacity between China-Europe has vanished.

c. Adapting service offerings to current demand and safety protocols: Some larger players have been playing an important role in delivering medical supplies. For example, UPS provided free air transport for two million masks and protective gear to Wuhan in February. Companies are also adapting to demand. Warehouses and retailers are focusing on grocery deliveries since demand is high for essential products, while companies in the last-mile segment are offering no-contact delivery options (some of which include robots).

Incise of travel, people are preferring private vehicles and are following the necessary safety precautions while using public transport

4.11 THE LONG-TERM TRENDS WHICH EMERGED DUE TO CORONA

The recovery and long-term impact of the pandemic on logistics may be affected by adaptions and factors, as described below:

- Increased dedicated air cargo capacity: The airline industry is already reallocating fleet to exclusively serve air cargo demand.

- Increased cargo inspections and cross border control protocols: Governments have responded to the crisis with temporary trade embargoes and export restrictions for sensitive cargo (such as medical supplies, pharmaceuticals). In the longer term, logistics costs may increase due to tighter cross-border processes and controls fuelled by concerns regarding the transmission of diseases.

- Technology and e-commerce rise: Logistics has been in the midst of a tech-driven revolution. Companies with robust digital capabilities that allow them to provide cargo visibility/traceability and do business online are at an advantage. This would entail investments in technology, such as the Internet of Things (IoT), cloud computing, automation, and data analytics. In the long term, robotics, drones, and autonomous vehicles might reduce logistics services providers' exposure to labour shortages.

- Reconfiguration of global value chains: The pandemic has exposed the vulnerability of extended and complex value chains to production disruptions, particularly in the East Asia Pacific region. As a reaction, many of these supply chains may shorten or diversify through reliance on alternative partners (for example, nearshoring) or intensified efforts to bring home (such as reshoring) strategic value chains. The shortening of supply chains may benefit countries with capable manufacturing

sectors and beneficial exports' policy (for example, Colombia, India, and Mexico) to partially substitute China over the medium term. There may also be a trend towards placing additional warehousing capacity or dry ports near demand centers to shorten the time to get goods to market.

- Recovery prospects will vary by country, subsector: As logistics is a diverse sector, recovery prospects will vary depending on the length of lockdowns and the duration of the subsequent economic crisis. Large companies with a diversified business (such as multiple clients, serving different sectors in various countries/states) will be better placed to weather the storm.

- Recovery prospects will vary by country, subsector: As logistics is a diverse sector, recovery prospects will vary depending on the length of lockdowns and the duration of the subsequent economic crisis. Large companies with a diversified business (such as multiple clients, serving different sectors in various countries/states) will be better placed to weather the storm.

- Since work from home will be a main option going forward the daily commute to office will be reduced. Since a lot of the people who have the flexibility to work from anywhere have shifted to rural areas due to many reasons in the last 2 years, this has reduced the traffic in metro cities to an extent
- Demand for LMV vehicles will be on the rise for the next few years

CHAPTER 5

CONCLUSION AND FINDINGS AND SUGGESTIONS

5.1CONCLUSION

Today the mobility of freight and people have become one of the greatest needs that have to be adequately satisfied in our society and economy at large. Transportation is referred to as the engine of the economy. Effective transportation is indispensable to economic progress. Extraction, manufacturing, merchandise and banking are also necessary, but these businesses also depend upon transportation. Transportation helps to bridge the gap between producers, suppliers and industrial users and individual commuters. In the developing economy, transport creates demands for the primary products and stimulates the consumption. Transportation and logistics exhibit an interdependent relationship that proper logistics management summons efficient transportation support.

Coronavirus disease 2019 (COVID-19) is a contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China in December 2019. The disease has since spread worldwide, leading to an ongoing pandemic.

Due to this pandemic the transportation and logistics industries have faced a lot of severe challenges. The whole travel structure was in ruins. Workers were scared to come to work even after the lockdown. This has led the companies to look for new technologies to aid in these sessions. There were a few good things which came out from this pandemic also:- Pollution was reduced, the overall air quality index increased, road accidents reduced, cleanliness became a priority for everyone and all legacy industries found new ways to stay afloat during these challenging times. For example, Indian railways started reusing their compartments as COVID isolation units, KSRTC remodelled many of its old buses as small cottages etc.

There is a surge in demand for truck drivers in transportation of essential goods. The increase in online grocery shopping and reduction in food orders are also a direct effect of corona.

Transportation has been a tool for territorial control particularly during the colonial era where resource-based transport system supported the extraction of commodities. Consequently, the importance of the sector as the gateway to the economy of nations cannot be overemphasized, especially because, there cannot be any meaningful communication without effective

transportation. Also, it is an essential service needed all over the world to move passengers, goods and services with safety and security as its fundamental objectives in delivering quality service. Coronavirus pandemic has opened a huge gap in the sector and it needs to be closed urgently so as to improve transportation system, well-regulated and monitored. The government can further regulate the use of motorbikes and tricycles; development of transport infrastructures and modern transport technological system in driving the sector, and the formulation of modern transport policies that suit our environment will also play a part in repositioning and the growth of the industry from the effects of the Covid-19 pandemic.

5.2 FINDINGS AND SUGGESTIONS

5.2. 1 FINDINGS

1. Tourism Industry Has Been Majorly Affected Due Closed Boundaries and Also Corona Transmission
2. Reduced The Emission of Green House Gases, Pollution and Thereby Increasing the Air Quality Index
3. Road Accidents Have Reduced Drastically Due to Lockdown Imposed by The Government Only a Handful of Emergency Vehicle Were Allowed
4. Public Vehicles Suffered Huge Losses and Drivers Were Jobless During Lockdown
5. Delivery Services for Essential Product Has Been Increased
6. Capacity Of People in Public Transport Reduced
7. 2nd Hand Market Bikes and Cars Has Been Increased
8. Online Delivery Website Growth
9. Boundaries Are Closed

5.2.2 SUGGESTIONS

- Allocate more protected lanes to buses to maximize fleet utilization and carrying capacity
- Implement long term strategies to augment integrated public transport and services
- Adopt measures like work from home, staggered timing etc to reduce unnecessary travel trips and move short trips to walking and cycling as much as possible.
- Need for emergency scaling up of protected footpaths and cycle lanes with flexible barriers to enable all income groups to access workplace and meet other needs within a reasonable radius.

- Rebuild public confidence in safe public transport with stringent implementation of hygiene and physical distancing measures

REFERENCE

www.livemint.com

https://www.teriin.org/article/effects-covid-19-transportation-demand

https://www.tandfonline.com/doi/full/10.1080/01441647.2020.1857886

https://www.google.com/search?q=airlines+graphical+profit+loss+in+inida+fy21&tbm

https://www.sciencedirect.com/science/article/abs/pii/S221067072100202X

https://www.google.com/search?q=impact+of+covid-19+on+railways+in+india

https://blogs.worldbank.org/endpovertyinsouthasia/rethinking-indias-public-transport-after-covid-19-lockdown-over

https://www.theigc.org/blog/impact-of-covid-19-on-public-transport/

https://economictimes.indiatimes.com/industry/transportation/airlines-/-aviation/air-india-fy21-loss-seen-at-rs-10000-crore-as-pand

https://www.intelligenttransport.com/transport-articles/21458/city-public-transportation-india/

https://journaljammr.com/index.php/JAMMR/article/view/30781

https://auto.economictimes.indiatimes.com/news/two-wheelers/motorcycles/second-covid-wave-impacting-two-wheeler-sales-harder-report/82147120

https://www.researchgate.net/publication/344803723_Impacts_of_COVID-19_on_the_Transport_Sector_and_Measures_as_Well_as_Recommendations_of_Policies_and_Future_Research_Report_on_India

BIBLIOGRAPHY

- Gutiérrez, A., Miravet, D., & Domènech, A. (2020). COVID-19 and urban public transport services: emerging challenges and research agenda. Cities & Health, 1-4.

- Hörcher, D., Singh, R., & Graham, D. J. (2020). Social Distancing in Public Transport: Mobilising New Technologies for Demand Management under the COVID-19 Crisis.

- Hu, M., Lin, H., Wang, J., Xu, C., Tatem, A. J., Meng, B., . . . Lai, S. (2020). The risk of COVID-19 transmission in train passengers: an epidemiological and modelling study. Clinical Infectious Diseases.

- "Trends And Applications of Resilience Analytics in Supply Chain Modelling: Systematic Literature Review in the Context of the COVID-19 Pandemic." *Environment Systems and Decisions*

- Narayanan, Latha, Mansi Pandit, Subhro Basu, Arijeet Karmakar, Vanshika Bidhan, Hrithik Kumar, and Kousheen Brar. 2020. "Impact of Lockdown Due to COVID-19 the Outbreak: Lifestyle Changes and Public Health Concerns in India.

- NCDC. 2020. *COVID-19 the Outbreak: Guidelines for Setting up Isolation Facility/Ward*. Ministry of Health and Family Welfare Government of India.

- 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,

- Lima, G., de Carvalho, G. S. D., & Figueiredo, M. Z. (2020). Incomplete contracts for bus service during the COVID-19 pandemic.
- Musselwhite, C., Avineri, E., & Susilo, Y. (2020). Editorial JTH 16 –The Coronavirus Disease COVID19 and implications for transport and health. Journal of Transport & Health,

- Park, J. (2020). Changes in Subway Ridership in Response to COVID-19 in Seoul, South Korea: Implications for Social Distancing. Cureus, 12(4), e7668.

- Pawar, D. S., Yadav, A. K., Akolekar, N., & Velaga, N. R. (2020). Impact of physical distancing due to novel coronavirus (SARS-CoV-2) on daily travel for work during transition to lockdown. Transportation Research Interdisciplinary Perspectives,

- Shamshiripour, A., Rahimi, E., Shabanpour, R., & Mohammadian, A. (2020). How is COVID-19 reshaping activity-travel behavior? Evidence from a comprehensive survey Transportation Research Interdisciplinary Perspectives, 7, 100216.

- Shen, J., Duan, H., Zhang, B., Wang, J., Ji, J. S., Wang, J., . . . Shi, X. (2020). Prevention and control of COVID-19 in public transportation:

- Suman, H. K., Agarwal, A., & Bolia, N. B. (2020). Public Transport Operations After Lockdown: How to Make It Happen? Transactions of the Indian National Academy of Engineering

- Sutherland, M., McKenney, M., & Elkbuli, A. (2020). Vehicle related injury patterns during the COVID19 pandemic: What has changed? The American Journal of Emergency Medicine.

- Tan, L., & Ma, C. (2020). Choice behavior of commuters' rail transit mode during the COVID-19 pandemic based on logistic model. Journal of Traffic and Transportation Engineering (English Edition).

- Tirachini, A., & Cats, O. (2020). COVID-19 and Public Transportation: Current Assessment, Prospects, and Research Needs. Journal of public transportation.

- Troko, J., Myles, P., Gibson, J., Hashim, A., Enstone, J., Kingdon, S., . . . Van-Tam, J. N. (2011). Is public transport a risk factor for acute respiratory infection? BMC Infectious Diseases.

- Wielechowski, M., Czech, K., & Grzęda, Ł. (2020). Decline in Mobility: Public Transport in Poland in the time of the COVID-19 Pandemic. Economies, 8(4), 78.

- Wilbur, M., Ayman, A., Ouyang, A., Poon, V., Kabir, R., Vadali, A., . . . Dubey, A. (2020). Impact of COVID-19 on Public Transit Accessibility and Ridership.

- Zheng, R., Xu, Y., Wang, W., Ning, G., & Bi, Y. (2020). Spatial transmission of COVID-19 via public and private transportation in China. Travel Medicine and Infectious Disease, 34, 101626-101626.

1) Brough, R., Freedman, M., & Phillips, D. C. (2020). "Understanding Socioeconomic Disparities in Travel Behavior during the COVID-19 Pandemic,". Working Papers 192007, University of CaliforniaIrvine, Department of Economics.