

Mumbai Dabbawalas: Excellent Model of Sustainable Transport



Unfolding the needs of one of the oldest livelihood cyclists



- **Team Waatavarán**

Bhagwan Kesbhat, *Founder & CEO*

Supriya Koli, *Project Manager*

Rahul Sawant, *Campaigner*

Sayali Rane, *Manager - Partnerships & Communication*

Laxman Singh, *Communication Strategist*

Mohsinkhan Pathan, *Project Associate*

Rasika Nachankar, *Project Associate*

- **Perception Study Conducted by**

Rasika Nachankar, *Project Associate*

Shubhankar Mote, *Volunteer*

Geeta Gawade, *Volunteer*

Aishwarya Rokade, *Volunteer*

- **Data Analysis and Report by**

Mohsinkhan Pathan, *Project Associate*

- **Study supervised by**

Supriya Koli, *Project Manager*

INDEX

Sr. No.	Particulars	Page No.
1	Cycle: Mode of transport	01
2	Current status of cycling in Mumbai	01
3	Livelihood Cycling	02
4	Mumbai Dabbawala and their unique sustainable delivery model	03
5	Context of perception study	03
6	Objective of perception study	04
7	Methodology	04
8	Mumbai Dabbawala perception study data analysis	04
9	Profile of Mumbai Dabbawalas	
	Age	04
	Work tenure as Dabbawala	05
	Locations of Service	05
	Length of travel for delivery of tiffin	06
	Mode of transportation used for delivery of tiffin	06
10	Perception of Mumbai Dabbawala	
	Benefits of using cycle for delivery of tiffin	07
	Problems encountered while using cycle for delivery of tiffin	08
	Impact of road traffic on efficiency of Dabbawalas	09
	Separate cycle tracks / lanes	09
	Safe and secure parking spaces	10
	Cycle inclusive railway infrastructre	10
	Use of cycles for delivery by other delivery partners	11
	Improvement in air quality due to use of cycles	11
11	Way forward	12
12	Annexure	14

Cycle: Mode of Transport

Cycling as a mode of transport is a low-cost, health-improving way to travel and offers environmental benefits for the cities that promote it. It is only recently, though, with concerns over climate change, pollution, congestion, and obesity among others, that cities throughout the world have begun to implement policies to promote cycling.

Cycling has become popular for a variety of reasons. It helps to reduce the risk of many diseases like diabetes, some forms of cancer, cardiovascular diseases and depression. **Research**¹ from the United Kingdom found that cycling can lower the risk of developing cancer by 45%, and the risk of cardiovascular disease by 46%, compared to commuting by fossil fuelled vehicles. Cycling boosts physical fitness and is an efficient way to prevent obesity. Switching from a car to a bicycle saves 150 g of carbon dioxide per kilometre. Each 7 km travelled by bicycle will save an emission of 1 kilogram of carbon dioxide as compared to the same distance covered by car. Cycling does not only have health, social and environmental benefits but also it saves both time, money and space. Parking lots have enormous environmental and financial impact, particularly in urbanised areas. The more cycles you can get on the road, the fewer parking spaces you need to build.

A report “**Benefits of Cycling in India**”² published by The Energy Resource and Resources Institute (TERI) with support of All India Cycle Manufacturers Association (AICMA) in 2018 estimates that if 50% trips of motorised (cars and two-wheelers) trips within the distance of 8 km can be replaced by cycles then it could yield an annual benefit of INR 1.8 trillion.

Current Status of Cycling in Mumbai

Cycling, though, has been a part of Indian culture for decades. Apart from people across strata in smaller towns and villages, in cities, mill workers, newspaper delivery boys, milk vendors and bread sellers have always used the bicycle. Today, the resurgent popularity of the bicycle isn't so much as a practical mode of commuting as it is a way towards fitter lifestyles and eco-friendliness.

[1]The bmj(2017)Association between active commuting and incident cardiovascular disease, cancer, and mortality: prospective cohort study(online).(Available at):
<https://www.bmj.com/content/357/bmj.j1456>

[2]TERI(2018).Benefits of cycling in India(PDF).(Available at):
http://aicma.org/wp-content/uploads/2016/09/Benefits%20of%20Cycling%20in%20India_Final%20Report_061118.pdf

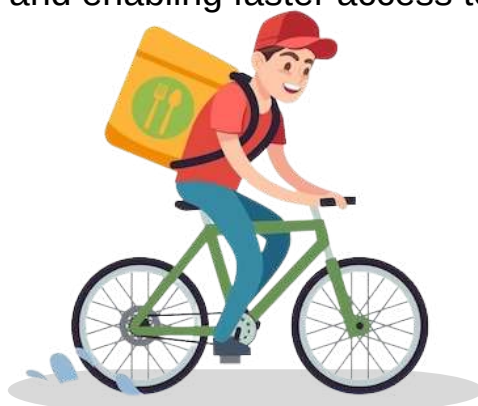
Cycling has become a part of the culture in the big cities of the west; and many cyclists in Mumbai have and are embracing it despite the fact that Mumbai hardly has the infrastructure for it. Cycling to become the part and parcel of the city transport system would require separate cycling tracks and cycle friendly infrastructure that would ensure accident free cycling. It can ensure hassle free movements instead of being stuck in the traffic encouraging people to use cycles for commuting on a regular basis.

The Comprehensive Mobility Plan (CMP) For Greater Mumbai (2016) prepared by Brihanmumbai Municipal Corporation (BMC) had strongly advocated for Non-Motorised Transport (NMT) i.e. cycling and pedestrianisation. The plan had proposed to have an NMT policy to promote cycling, cycle sharing, creating parking spaces for cycles and walking. However, there is scope of further work in this regard.

Livelihood Cycling

Cycling to work is the third preferred choice of commute to work, after walking and public transport. (2011 Census). No doubt cycling is one of the most sustainable modes of transport with zero dependence on fossil fuels, zero emissions making it an affordable transport option.

Bicycles have always played an important role in the informal sector, especially in supporting the livelihood and mobility among urban poor. 11% of the population uses cycles as their main mode of transport to work, with about 2.5 million bicycle trips a day. (Ministry of Urban Development, 2008). It is an easy transport option and allows people to carry out their business with low expense outlay making it accessible to people who work for security agencies, household service providers, delivery companies, vendors and individuals like factory workers, sweepers, newspaper distributors, petty shops, service boys and others. Bicycles can play a significant supportive role in providing better and equitable access to jobs and economic activity, providing livelihoods, increasing school enrollments, gender empowerment and enabling faster access to health facilities.





Mumbai Dabbawala and Their Unique Sustainable Delivery Model

The Mumbai Dabbawala is an essential part of the life of Mumbai. Founded in 1890, Mumbai Dabbawalas are the men dressed in traditional white outfits with Gandhi caps delivering home-cooked food to Mumbaikar from home to office daily. Dabbawalas deliver around 20,000 to 30,000 meals daily and have been doing this for 130 years. They deliver food every day from the home to the workplace and they do it with minimal technology, processes, or structure.

The Mumbai Suburban Railway, one of the most vast and mainly used urban commuter lines worldwide, plays a vital role in the dabbawalas' operations. Its basic layout requires delivery people with cycles and handcarts to travel between the railway stations and customers' offices and homes.

Post Covid-19 the number of dabbawalas across Mumbai has reduced from around 2000 to 500. Impact of outbreak of novel coronavirus, increase in last mile delivery companies are some of the reasons for decrease in number of dabbawalas.



Context of the Perception Study

Mumbai is the 7th largest city in terms of population with 12 million people. A thriving metropolis with a diverse economy, it has meticulously developed to ensure mobility and last mile connectivity. This rapid urban growth demands a robust transportation system, especially when it comes to road transport, with India having the second largest road network in the world. But by emitting 4.5 million tonnes of CO₂e, the transportation sector has become the second-largest contributor of emissions, 19% of the city's total emissions. Ranked as the second-most congested city in the world, traffic congestion remains a major contributor to air pollution, high travel time and fatalities in Mumbai. (The Tom Tom Traffic Index 2020).

The tiffin delivery done by Mumbai dabbawalas is an excellent model where the dabbawalas use sustainable transport for their livelihood. To celebrate their unique style of using sustainable transport and understand the challenges they face, the study is conducted so that they continue the use of their unique model for the deliveries.



Objective of the Perception Study

To understand the conditions of cycling infrastructure, to recognize the problems Mumbai Dabbawalas face while using cycles as a livelihood cyclist and the important motivators for use of cycling as the primary mode of transport. The study also aimed to understand the needs of Dabbawalas in Mumbai, to understand their concerns regarding traffic on the roads, parking facility and other infrastructure.

We expect the insights from the study to provide guidance for the design of relevant cycling infrastructure and suggest potential solutions for the concerns expressed by Dabbawalas as livelihood cyclists.

Methodology

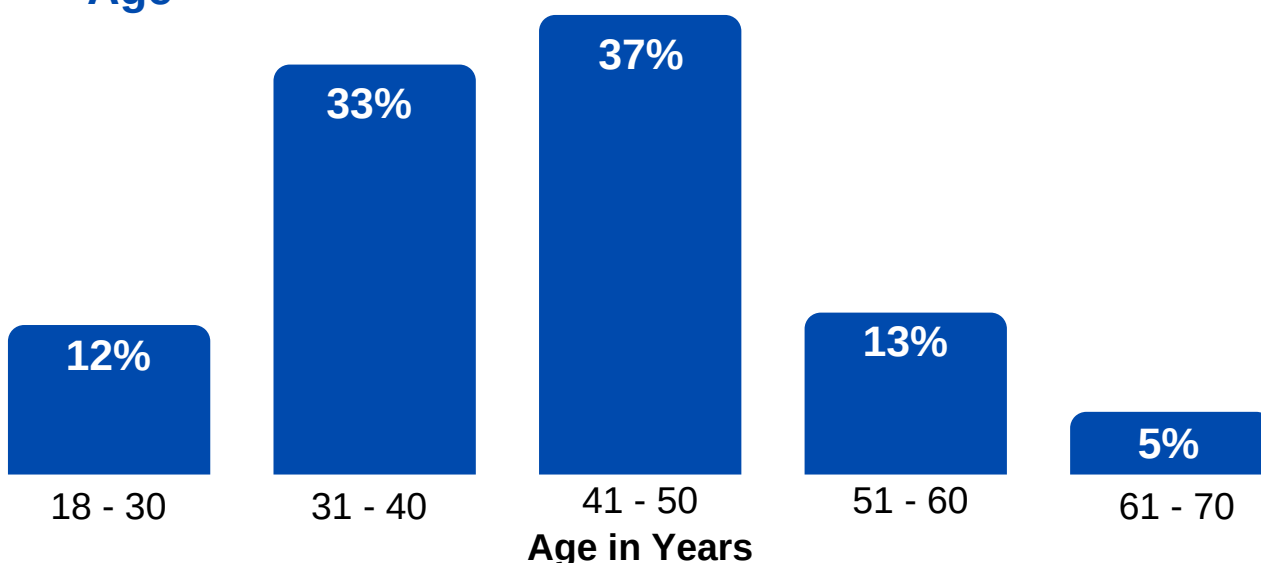
An online questionnaire was generated along with a QR code. The data from about 220 dabbawalas was collected in person in the month of October, 2022. The dabbawalas were interviewed from 9 different locations in Mumbai which are considered as crucial work places i.e. Churchgate, Grant Road, Andheri, Parel, Bandra, Mulund, Ghatkopar, Dadar and Marine lines.

Mumbai Dabbawala Perception Study Data Analysis

The data obtained from the perception of dabbawalas was analysed to understand the needs and required solutions.

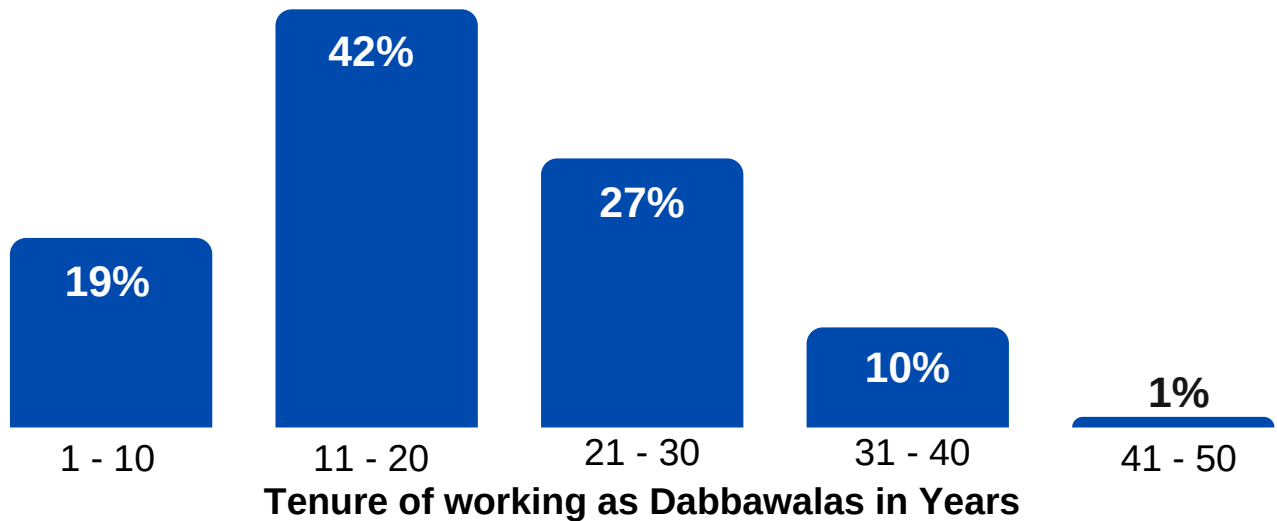
Profile of Mumbai Dabbawalas

- Age



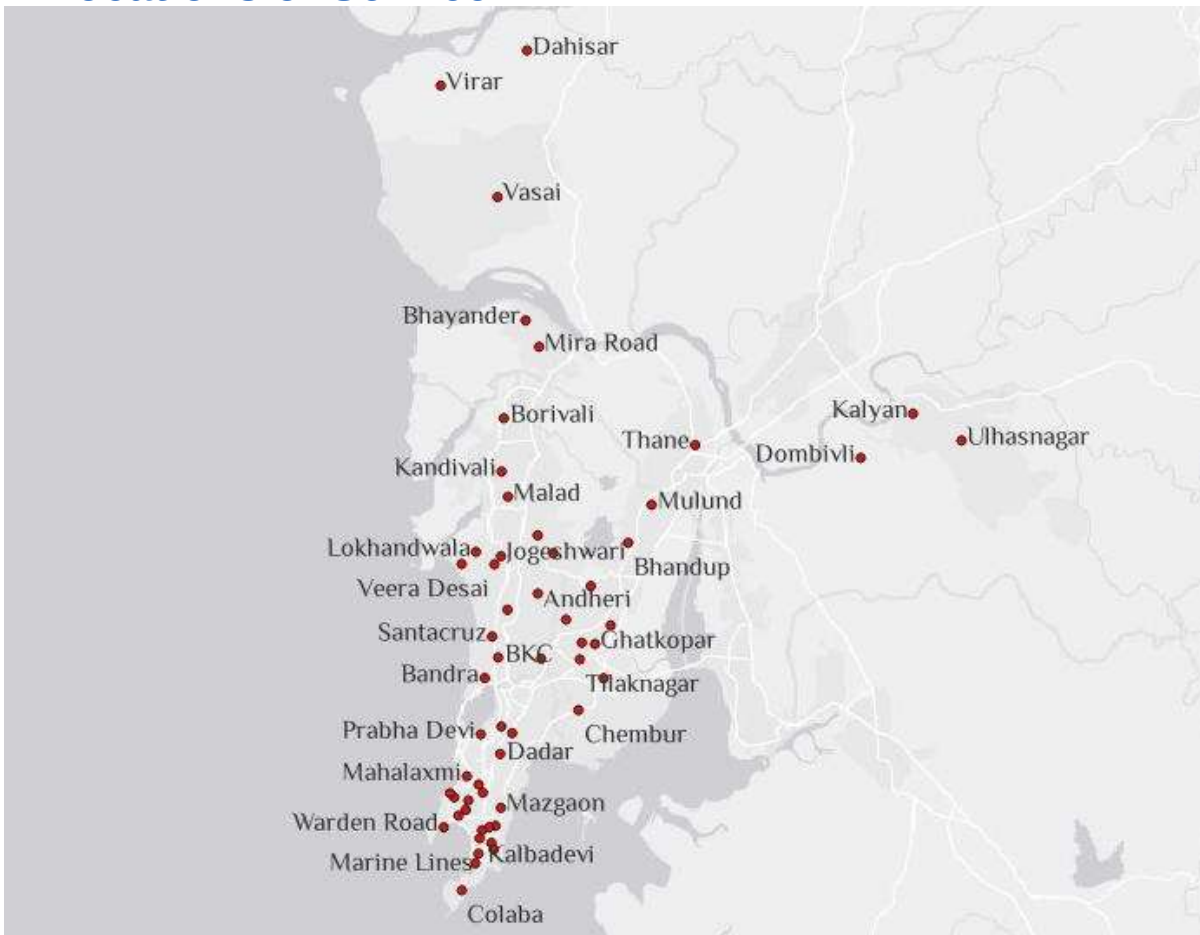
The average age of dabbawalas is 42 years, while the minimum age is 18 years and maximum age is 70 years. About 70% of the respondents are in the age group of 31 to 50 years.

- **Work Tenure as Dabbawala**



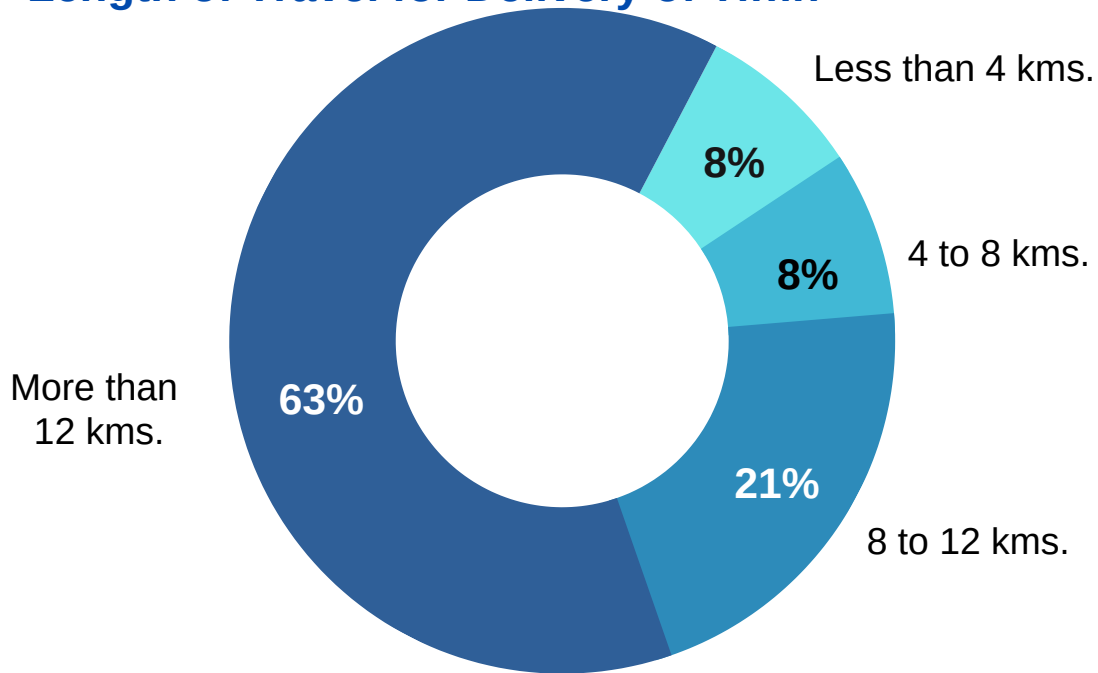
About 42% of respondents have worked as dabbawala for more than 11 to 20 years and about 27% of respondents have worked as dabbawala for more than 21 to 30 years.

- **Locations of Service**



The above map shows the locations where the dabbawalas function and provide tiffin delivery services. The dabbawalas provide their service throughout Mumbai and its neighbouring cities but the maximum number of services are provided in Andheri, Bandra, Borivali, Churchgate, Dadar, Ghatkopar, Grant Road, Kandivali, Marine Lines, Mulund, Parel.

- **Length of Travel for Delivery of Tiffin**

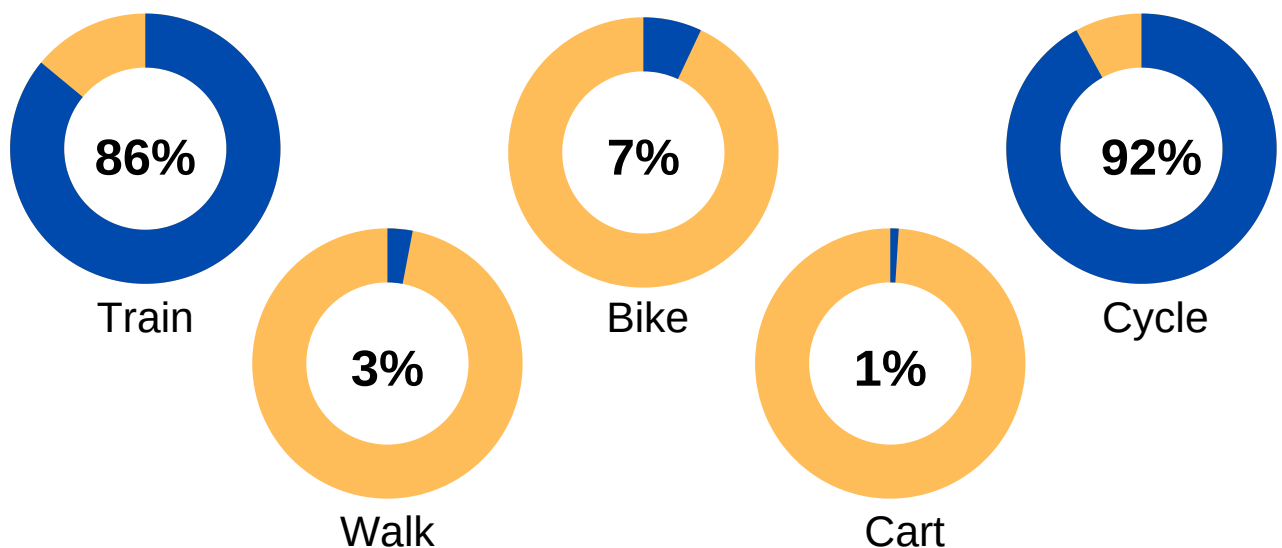


About 63% of dabbawalas travel more than 12 kilometres by cycle to deliver tiffin while 21 % travel 8 to 12 kilometres, 8% travel 4 to 8 kilometres and 8% travel less than 4 kilometres.

- **Modes of Transportation used for Delivery of Tiffin**

The following percentages represent modes of transport used at least once throughout the journey to deliver the tiffin.

NB: Multiple choice response, where pi chart percentage is not rational.



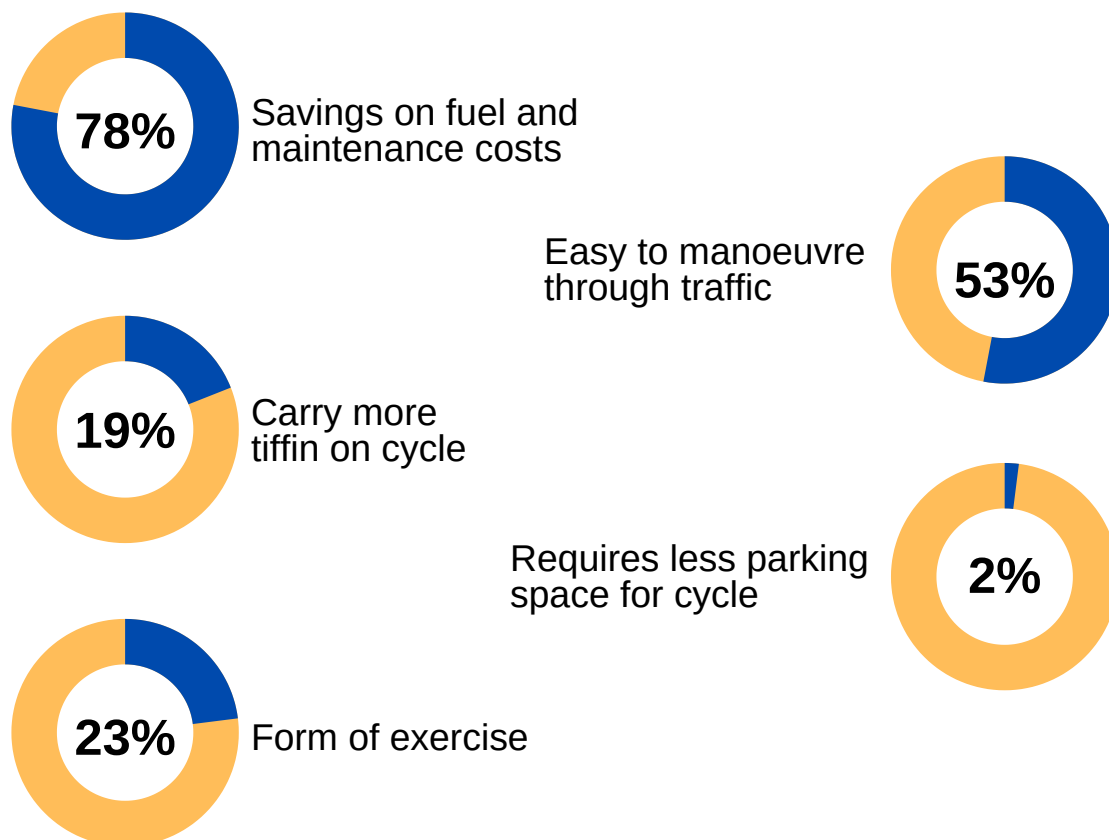
The data indicates the highest mode of transport used is cycle and train. Out of all respondents, 92% of the respondents use cycle and 86% of the respondents use trains at least once for the delivery of tiffin. About 74% respondents use the combination of train and cycle for deliveries of tiffin. Very few dabbawalas at Churchgate station and Andheri use handcarts for deliveries and some do deliveries by walking.

Few respondents also shared that the electric cycle is a better option than a bike as the maintenance and fuel cost of an e-cycle is very less compared to a bike. Another added we neither can afford a bike nor the fuel cost. Cycle is the only affordable mode of transport for most of us.

Perception of Mumbai Dabbawalas

• Benefits of Using Cycle for Delivery of Tiffin

NB: Multiple choice response, where pi chart percentage is not rational.



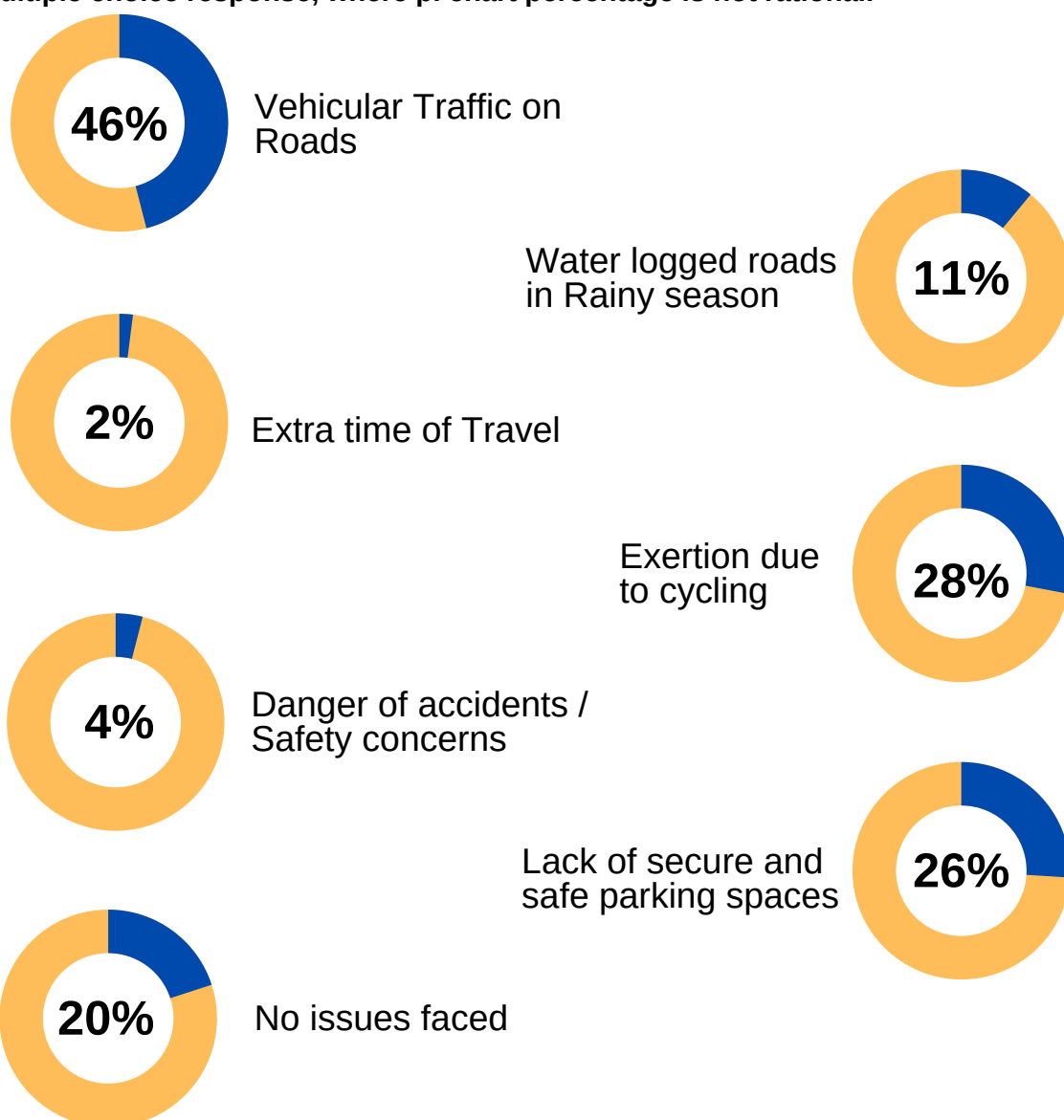
Cycling is an inexpensive mode of transportation with low maintenance costs. The dabbawalas shared a similar opinion. 78% of respondents think they save on fuel and maintenance costs.

Most of them added the cycle is a more convenient mode of transport than other motorised transport as 53% respondents say that use of a cycle helps them to move through the traffic easily. 23% dabbawalas think using cycles for delivery of tiffin is a form of exercise which keeps them healthy and fit for work.

One of the dabbawala, a 46 year old cyclists proudly said that cycling has helped him to be fit for years which is not the case with these young dabbawalas who are using motorbikes nowadays.

- **Problems Encountered while Using Cycle for Delivery**

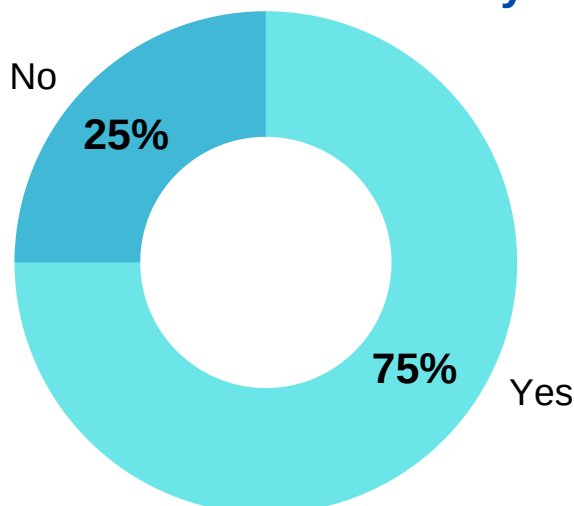
NB: Multiple choice response, where pi chart percentage is not rational.



The main problems associated with using cycle for delivery of tiffins are traffic, tiredness due to cycling, absence of safe parking spaces. About 46% of the respondents think traffic as a major problem they face while delivering tiffins. 28% of the respondents think exertion due to cycling is one of the problems. It can be observed that most dabbawalas aged more than 35 shared they are exerted using cycles. 26% of the respondents think that lack of safe and secure parking spaces is an issue. Interestingly 20% dabbawalas don't face any issue while using a cycle for delivery of tiffins.

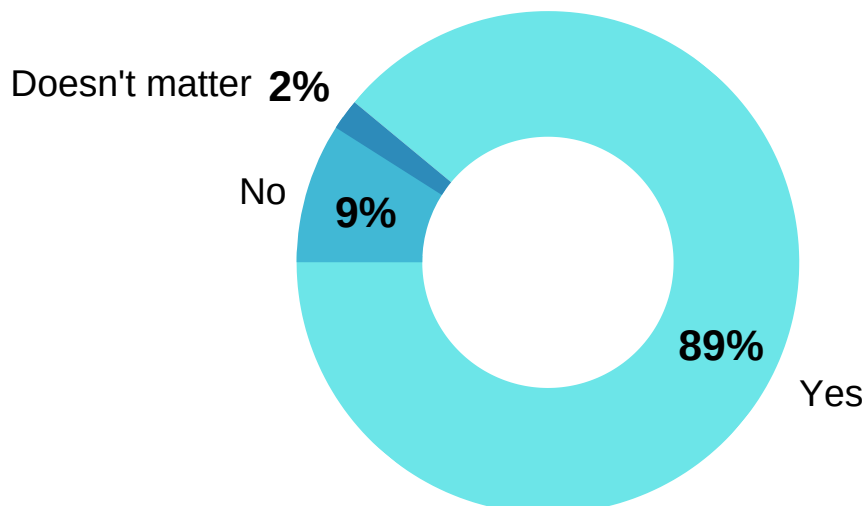
Most of them shared that they faced other problems while using cycles for deliveries which includes robberies of cycles, breaking down of cycles and non availability of puncture shops nearby. One of the dabbawalas cited that his colleagues lost 5 cycles recently after the pandemic resulting in great loss.

- **Impact of Road Traffic on Efficiency of Dabbawalas**



About 75% of the respondents think road traffic affects their efficiency to deliver tiffins. Even the 25% of the respondents who shared that traffic doesn't bother them at all because they think cycles help them move through footpaths and they can actually avoid the traffic by doing so. It is an unfortunate reality of Mumbai roads where traffic compels them to use footpaths in order to deliver their tiffin on time.

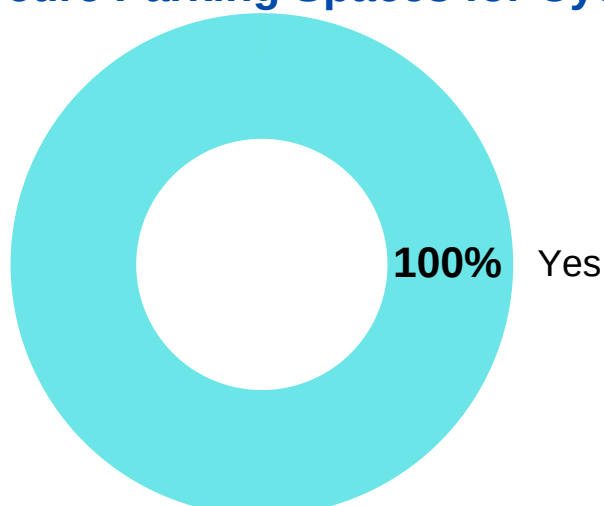
- **Separate Cycle Tracks / Lanes**



About 89% of the respondents think there should be a separate cycle lane for transit.

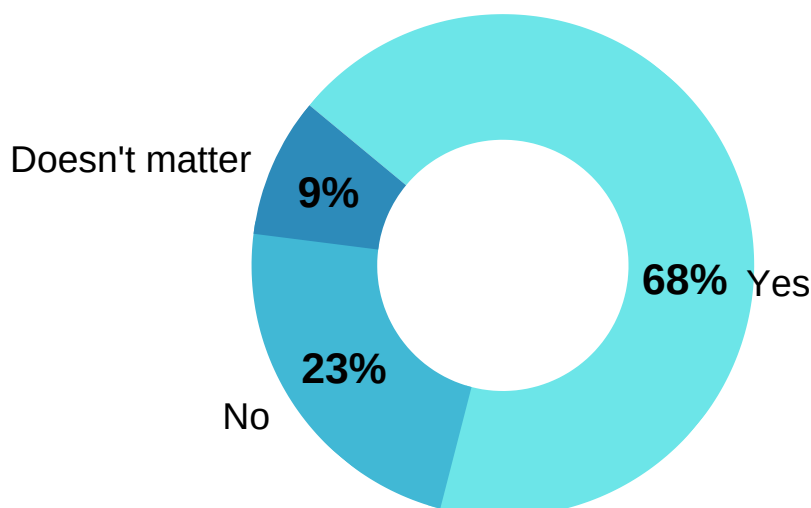
Most of the dabbawalas said that it would be good to get separate lanes for cycling because it will be much easier for them to deliver the tiffin on time and increase their efficiency also encouraging other people to use cycles for transit. Few dabbawalas said that considering Mumbai city's traffic they are all aware of the challenges to create separate cycle lanes in the city but are hopeful that it happens in the near future.

- **Safe and Secure Parking Spaces for Cycles**



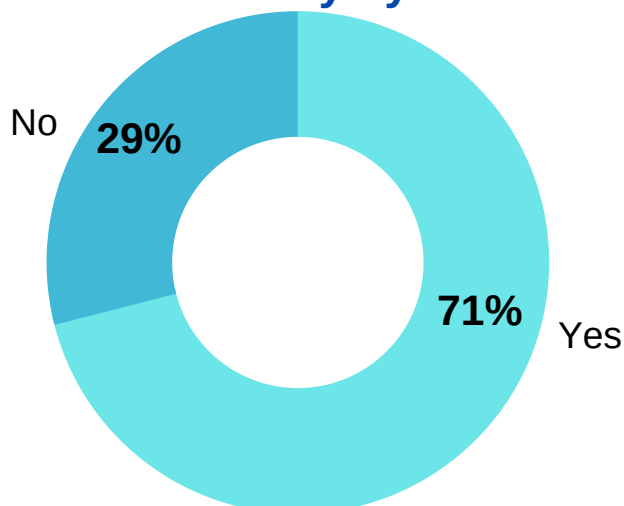
All the respondents think separate cycle parking spaces for outside all the railway stations should be provided. All dabbawala said that they need separate and secure parking spaces almost at all railway stations except Andheri station because the railway authorities at Andheri station have already provided parking space near the station. Many respondents said that their cycle gets stolen very frequently as they don't have secure parking spaces and then they have to bear the cost of a new cycle which affects their livelihood to a large extent. Hence cycle parking is the biggest problem they face.

- **Cycle Inclusive Railway Infrastructure**



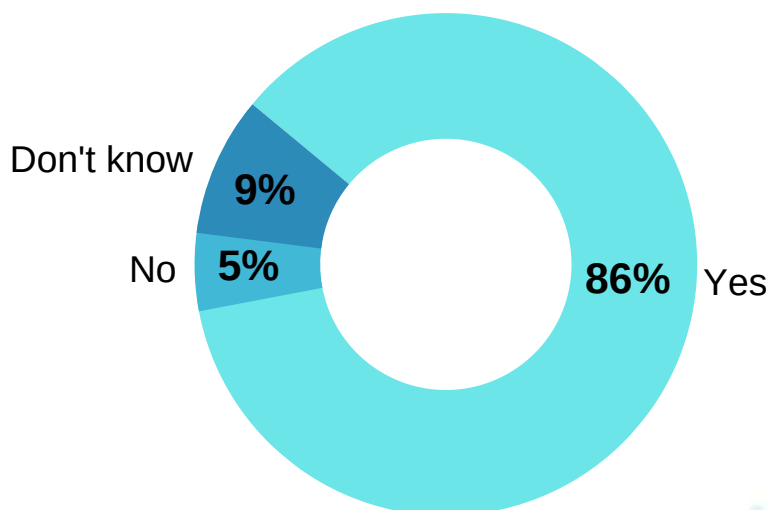
68% of respondents think that the railway infrastructure should be cycle inclusive. It should have ramps and separate wagons to transport cycles. On the contrary, 23% respondents said that it is not practically possible for them to carry tiffin-loaded cycles on trains. 9% of the respondents said it does not matter to them as they can carry tiffins in the luggage section of the train. Also, few respondents said that they have separate cycles at each station so no need for such a facility.

- **Use of Cycles for Delivery by Other Delivery Partners**



About 71% of respondents think that other delivery and courier partners should also use cycle for their deliveries. *Some of the dabbawalas insisted that the other delivery and courier partners should use cycles because it is good for the environment and health. Some prefer not to comment on this question saying that it is completely the company's lookout. Few dabbawallas acknowledged the challenges for other LMD partners and said that in many cases they do long distance deliveries in various locations and too many other things.*

- **Improvement in Air Quality due to use of Cycles**



About 86% of the respondents think that deliveries done on cycles can help in improving the air quality.

The respondents said fuel is not needed for the cycle, so it does not contribute to air pollution. Cycles are the most eco-friendly means of transportation.



Way Forward

● **Separate Parking space for cyclist**

Key issues such as bicycle thefts can be addressed through designated parking space outside railway stations, which is a major financial blow to any cyclist, especially so for people from low income categories.

● **Need of sanitation facilities near railway stations**

Many of them insisted on a separate clean space where they could put the tiffin safely. They keep the tiffin on the road. In the rainy season they face this difficulty to a large extent.

● **Separate cycle lane**

Several cities, both in India and abroad have been incorporating cycling as a sustainable mobility option even on very busy and congested roads. Goa, Udaipur, and Puducherry have dedicated cycle tracks (Travel Triangle, 2021) The Indian cities like Pune(100 km), Bangalore (30km) have dedicated cycle lanes. Considering the current status of roads of Mumbai we can pilot with Separate cycle lanes especially in areas like Churchgate, Parel, Andheri etc.

● **Collective and mindful efforts**

In many cities around the world cycling groups organise a “critical mass” cycling (rally). They aimed to make other commuters mindful of the cyclist. They also reinforce the idea of “safety in numbers”. It is often seen that cycle tracks are encroached upon by other vehicles, especially two wheelers. Having greater cycle traffic on these tracks will also act as self-enforcement. The Mumbai dabbawala is a renowned institution across the world. Having their critical mass along with other livelihood cycling groups on the road can be excellent examples. Thus, active efforts for cycling promotion by the city will not only help improve the modal share of cycling in the city but also help improve the safety of all cyclists.

● **Policies need to promote more and safer cycling, better infrastructure**

Mounting scientific evidence from cities throughout the world demonstrates the crucial need to provide physically separated, protected cycling facilities on major roads with high-volume and fast-moving vehicular traffic.

➡ Priorities the integration of public transport, para-transit, walking, and cycling in the existing transport system.

➡ Optimise the implementation of already existing sustainable transport systems and mobility plans.

- **Further need of research**

There is a lack of reliable and accurate data available in the public domain on the usage patterns, challenges and motivations of livelihood cyclists. The study also leaves room for future work in exploring the perception of other livelihood cyclists. A study of a statistically significant sample of the cycling population should be commissioned by BMC or by research/social organisations. Such surveys can lead to a set of programmes and projects, with appropriate budgetary allocations that will serve to promote cycling in the city in a time bound and targeted manner.

- **Changing the narrative around livelihood cycling**

People in cities that prioritise cycling see huge benefits, from faster commutes and easy connections to public transit, to improved air quality and health. Often cycling is perceived as a “poor person’s commute mode”. This needs to be changed to an “aspirational mode of commute”. This can be achieved by educating citizens on the health and environment benefits of cycling.




Annexure

Sr. No.	Indicators	Response in Value	Response in %
1.	Age: 18 - 30 31 - 40 41 - 50 51 - 60 61 - 70	26 73 82 29 10	125% 33% 37% 13% 5%
2.	Tenure of working as dabbawala in years 1 - 10 11 - 20 21 - 30 31 - 40 41 - 50	42 93 60 23 2	19% 42% 27% 10% 1%
3.	Length of travel in kilometres Less than 4 kms. 4 to 8 kms. 8 to 12 kms. More than 12 kms.	18 18 46 138	8% 8% 21% 63%
4.	Mode of transport used by dabbawalas Cycle Train Bike Cart Walk	203 189 7 1 3	92% 86% 16% 2% 6%
5.	Benefits of using cycle for delivery Savings on fuel and maintenance cost Easy to manoeuvre through traffic Carry more tiffins on cycle Requires less parking space for cycle Form of exercise	171 116 42 5 50	78% 53% 19% 2% 23%
6.	Problems encountered while using cycle Traffic Waterlogged Roads during Rainy season Extra Time of Travel Exertion due to cycling Danger of accidents/safety concerns Lack of secure parking spaces No issues faced	102 24 4 61 8 57 44	46% 11% 2% 28% 4% 26% 20%

Sr. No.	Indicators	Response in Value	Response in %
7.	Respondents who think the road traffic affects their efficiency to deliver tiffin.	164	75%
8.	Respondents who think there should be separate cycle lanes for transit.	195	89%
9.	Respondents who think there should be separate parking spaces for cycles outside railway stations.	219	100%
10.	Respondents who think the railway infrastructure should be cycle inclusive.	149	68%
11.	Respondents who think other LMD partners should use the cycles for delivery.	157	71%
12.	Respondents who think LMD being done on cycles will lead to improved air quality.	190	86%

