



#startupindia



# TRANSPORT 4 ALL

DIGITAL INNOVATION CHALLENGE

## Analysis of Public Transport Needs in Indian Cities

A Publication on Findings of Transport4All Stage-1 Surveys





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01

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# Transport4All Challenge Overview

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# VISION

The Transport4All Challenge—an initiative of the Ministry of Housing and Urban Affairs of the Government of India—aims to bring together cities, citizens, and startups to develop solutions that improve public transport to better serve the needs of all citizens.

At the core of the Challenge are citizens who will not only define the problems for which solutions shall be created but also help startups and cities to refine the solutions to meet their needs.

The first edition of the Challenge focuses on digital innovation. Cities and startups will receive guidance to develop and test various solutions, learn from them, and scale them to build people's trust in public transport and enhance their mobility.

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The solutions will make public transport—formal as well as informal— safe, convenient, and affordable for all.

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# CHALLENGE TEAM

## HOST & CONVENOR



Ministry of Housing and Urban Affairs  
Government of India



- Host the Challenge
- Encourage cities to participate
- Give awards to startups

## TECHNOLOGY PLATFORM PARTNERS



- Engage with Startups
- Assist in evaluating prototypes and solution scale-up
- Provide a platform for startups to engage with a panel of experts

## CO-HOST & CHALLENGE COORDINATOR

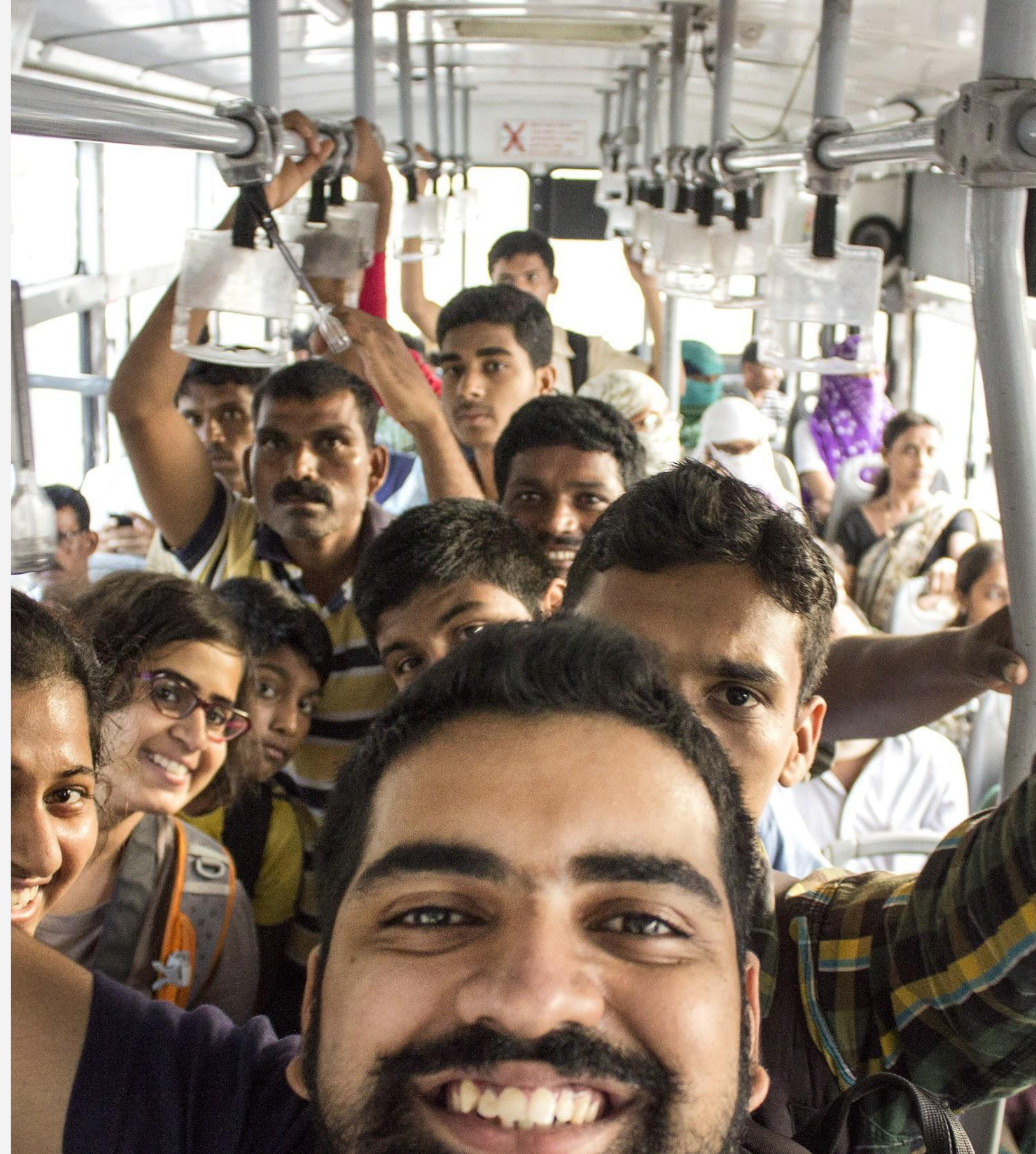


- Facilitate engagement between cities and startups
- Guide cities and NGOs on outreach and citizen engagement
- Support cities in reforming procurement framework
- Organise capacity building workshops
- Conduct Challenge outreach

## KNOWLEDGE PARTNER



- Bring global technical expertise in digital innovation to provide guidance to startups and cities
- Assist in evaluating prototypes and solution scale-up



# CHALLENGE STAGES



01

## PROBLEM IDENTIFICATION

Cities, with the support of NGOs, identify key recurring problems that citizens and public transport operators face



02

## SOLUTION GENERATION

Startups develop prototypes of solutions to improve public transport with inputs from cities and NGOs



03

## PILOT TESTING

Cities engage startups for large-scale pilots and refine the solutions based on citizen feedback

02

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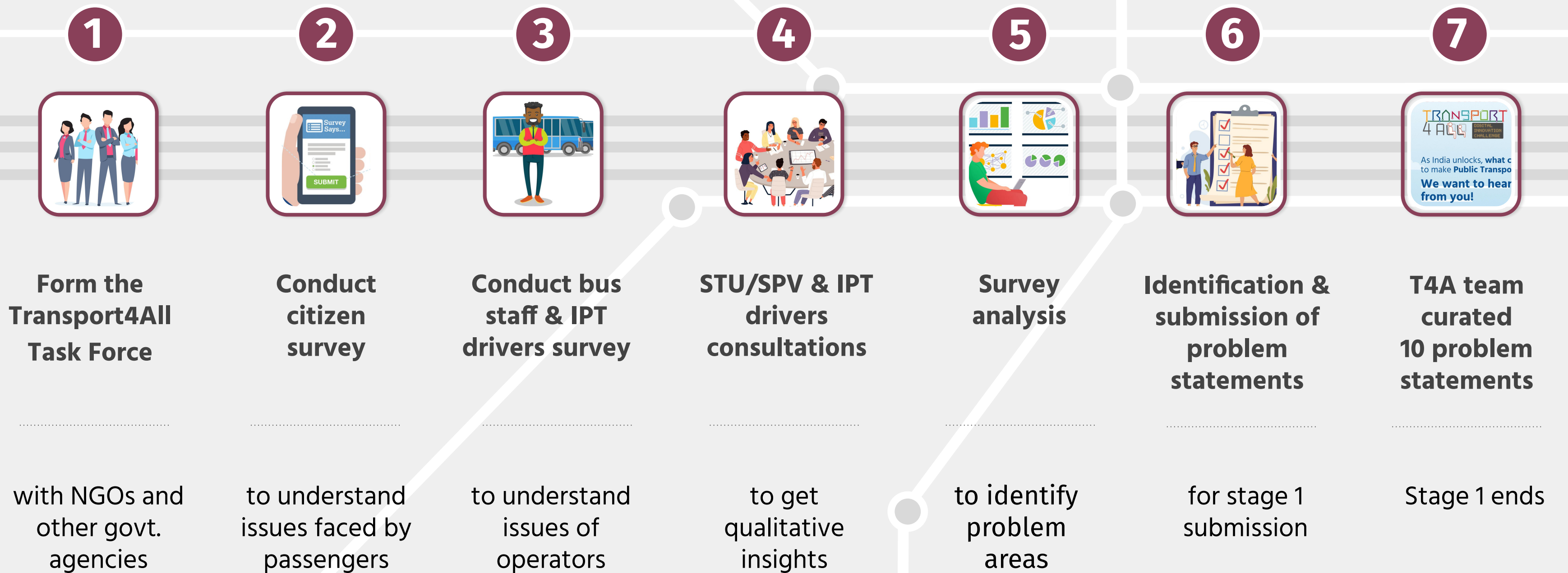
# Key Achievements of Stage 1

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# STAGE 1 ROADMAP



STAGE 1

# 130 CITIES

## LIST OF CITIES PART OF THE TRANSPORT4ALL CHALLENGE JOURNEY

### Andaman & Nicobar

Port Blair

### Andhra Pradesh

Amravati  
Guntur  
Kakinada  
Tirupati  
Visakhapatnam

### Arunachal Pradesh

Itanagar  
Pasighat

### Assam

Guwahati

### Bihar

Bhagalpur  
Bihar Sharif  
Muzaffarpur  
Patna

### Chandigarh

### Chattisgarh

Bilaspur  
Nava Raipur, Atal Nagar  
Raipur

### Dadra & Nagar

#### Haveli

Silvassa

### Daman & Diu

Diu

### Goa

Panaji

### Gujarat

Ahmedabad  
Dahod  
Gandhinagar  
Rajkot  
Surat  
Vadodara

### Haryana

Faridabad  
Gurgaon  
Karnal

### Himachal Pradesh

Dharamsala  
Shimla

### Jammu and

#### Kashmir

Jammu  
Srinagar

### Jharkhand

Bokaro Steel City  
Dhanbad  
Jamshedpur  
Ranchi

### Karnataka

Belagavi  
Bengaluru  
Davanagere  
Gulbarga  
Hubbali-Dharwad  
Mangaluru  
Mysore  
Shivamogga  
Tumakuru

### Kerala

Kannur  
Kochi  
Kollam  
Kozhikode  
Tiruvananthapuram  
Thrissur

### Ladakh

Leh

### Lakshadweep

Kavaratti

### Madhya Pradesh

Bhopal  
Gwalior  
Indore  
Jabalpur  
Sagar  
Satna  
Ujjain

### Maharashtra

Akola  
Amravati  
Aurangabad  
Bhiwandi  
Greater Mumbai  
Kalyan-Dombivali  
Kolhapur  
Malegaon  
Meera Bhayandar  
Nagpur  
Nanded Waghala  
Nashik  
Navi Mumbai  
Panvel  
Pimpri Chinchwad  
Pune  
Sangli  
Solapur  
Thane

Ulhasnagar  
Vasai Virar City

### Manipur

Imphal

### Meghalaya

Shillong

### Mizoram

Aizawl

### Nagaland

Kohima

### New Delhi

### Odisha

Bhubaneswar  
Cuttack  
Raurkela

### Puducherry

### Punjab

Amritsar  
Jalandhar  
Ludhiana

### Rajasthan

Ajmer  
Jaipur  
Kota  
Udaipur

### Sikkim

Gangtok  
Namchi

### Tamil Nadu

Chennai  
Coimbatore  
Erode  
Madurai  
Salem  
Thanjavur  
Thoothukudi  
Tiruchirapalli  
Tirunelveli  
Tiruppur  
Vellore

### Telangana

Hyderabad  
Karimnagar  
Warangal

### Tripura

Agartala

### Uttar Pradesh

Agra  
Aligarh  
Bareilly  
Ghaziabad  
Gorakhpur  
Jhansi  
Kanpur  
Lucknow  
Meerut  
Moradabad  
Prayagraj  
Sahranpur  
Varanasi

### Uttarakhand

Dehradun

### West Bengal

New Town Kolkata

# 200+ NGO Partners

REGISTERED TO SUPPORT  
130 CITIES



All civil society  
organisations



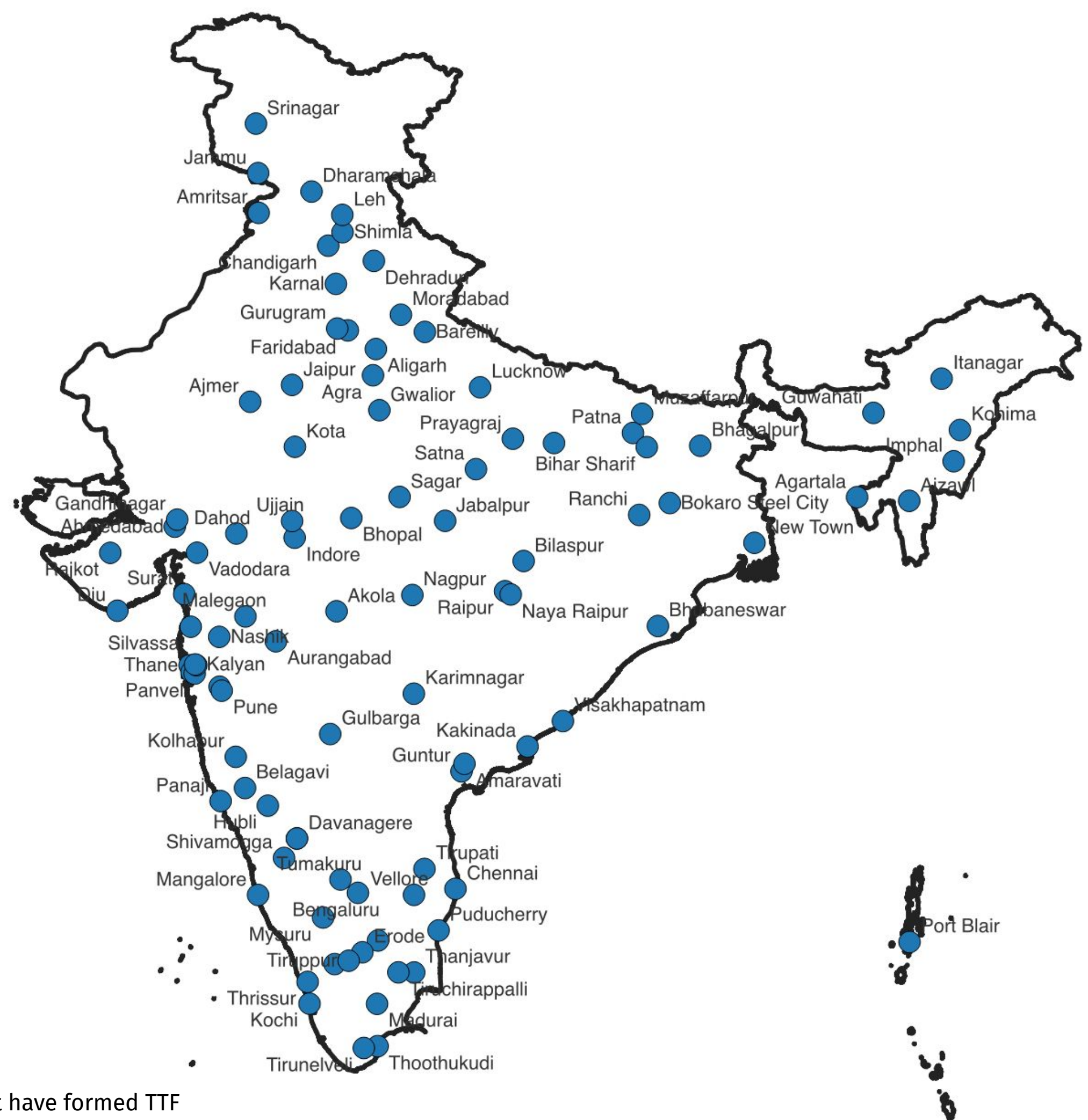
Research  
Organizations



Educational  
Institutes

**100**  
Cities

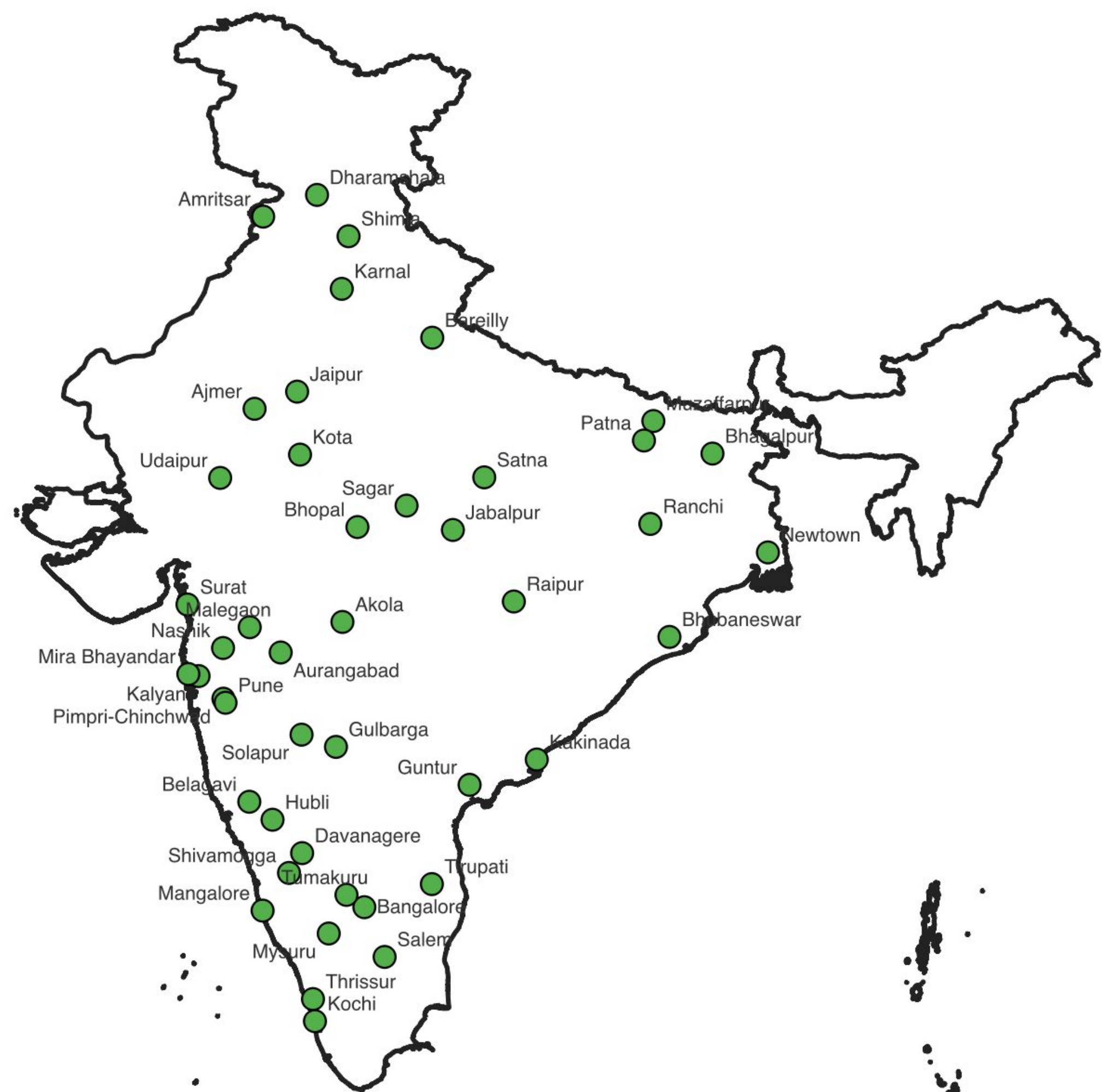
have formed the  
**Transport4All Task Force (TTF)**  
in the T4A Challenge.





**46**  
**Cities**

have **completed** the Citizen,  
IPT drivers and Bus drivers  
and conductor surveys.



● Cities that have completed all the 3 surveys

# THREE T4A SURVEYS



## Citizen Survey

More than **2 Lakh** citizen voices captured



## Bus Staff Survey

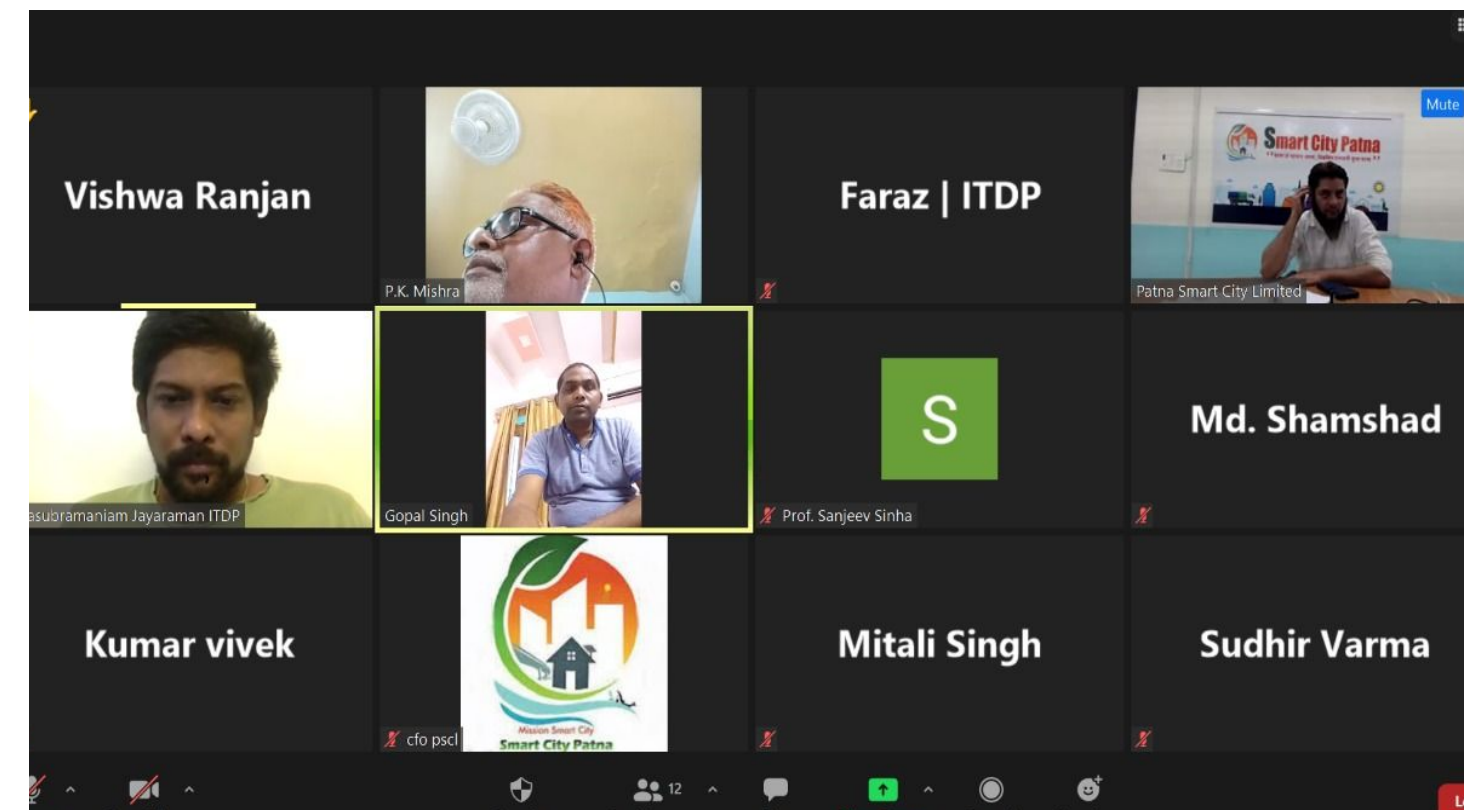
More than **15,000** drivers and conductors interviewed



## IPT Survey

More than **22,000** IPT drivers interviewed

Cities discussed the survey data with the Transport4All Task Force to draft the problem statements



06

Workshops & T4A Clinics

10+

Toolkits prepared

500+

One-on-One Calls with Cities



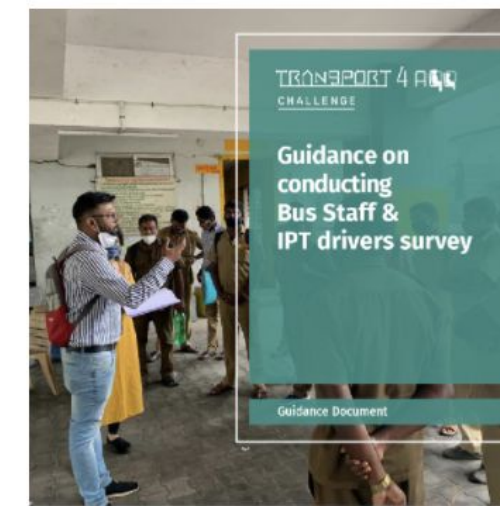
Guidance on conducting IPT/PT consultations, Survey data analysis and Identification of problem statements

[10/12/2021](#) // Presentation, Templates & Guides



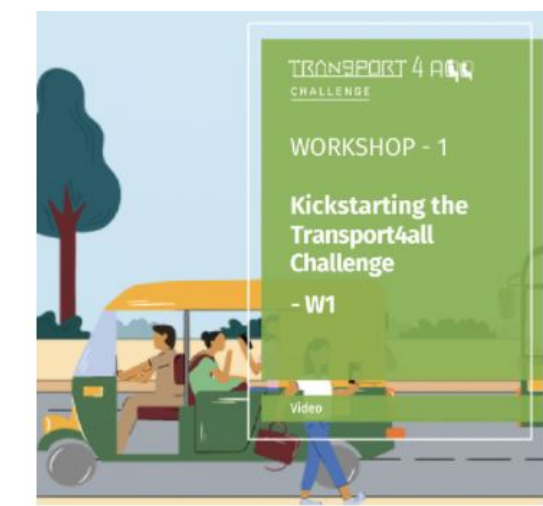
Generating Problem Statements through Data Analysis

[10/12/2021](#) // Videos



Guidance on conducting Bus Staff and Informal Public Transport Drivers Survey

[25/08/2021](#) // Templates & Guides



Kickstarting the Transport4All Challenge- Workshop 1

[02/07/2021](#) // Videos



Guide to check citizen survey data quality - Workshop 2

[28/07/2021](#) // Templates & Guides



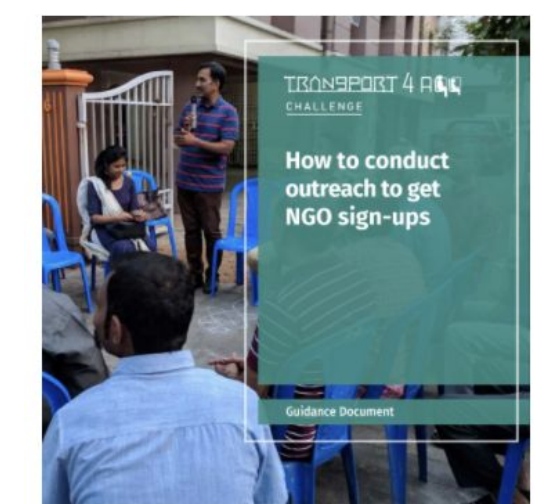
Guidance on conducting and verifying in-person surveys - Workshop 2

[27/07/2021](#) // Presentation



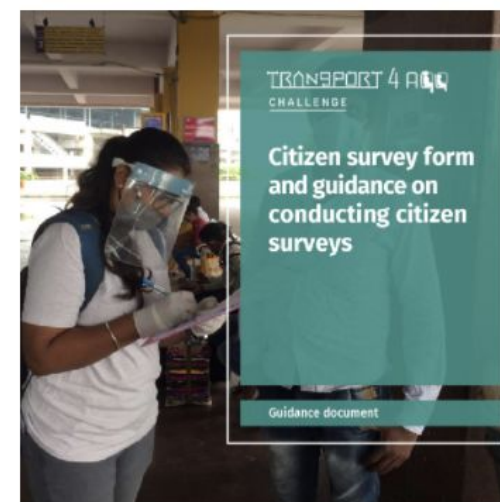
Capturing citizen's voices through surveys - Workshop 2

[27/07/2021](#) // Videos



Guidance document to conduct outreach to get the support of NGOs

[02/06/2021](#) // Templates & Guides



Citizen survey form and guidance on conducting citizen surveys

[07/07/2021](#) // Templates & Guides



Citizen Engagement and Outreach - Workshop 1

[02/07/2021](#) // Presentation



Introduction to Transport4All Challenge- Workshop 1

[02/07/2021](#) // Presentation



Formation of the Transport4All Task Force

[25/05/2021](#) // Templates & Guides



# Transport4all STAGE 1

## “Champions”

### Andhra Pradesh

Guntur  
Kakinada  
Tirupati

### Bihar

Bhagalpur  
Muzaffarpur  
Patna

### Chattisgarh

Raipur

### Gujarat

Surat  
Rajkot

### Haryana

Karnal

### Himachal Pradesh

Shimla  
Dharamshala

### Jharkhand

Ranchi

### Karnataka

Belagavi  
Bengaluru  
Davanagere  
Gulbarga  
Hubbali-Dharwad  
Mangaluru  
Mysore  
Shivamogga  
Tumakuru

### Kerala

Kochi  
Thrissur

### Madhya Pradesh

Bhopal  
Jabalpur  
Sagar  
Satna

### Maharashtra

Akola  
Aurangabad  
Kalyan-Dombivali  
Malegaon  
Meera Bhayandar  
Nashik  
Pimpri Chinchwad  
Pune  
Solapur

### Odisha

Bhubaneshwar

### Punjab

Amritsar

### Rajasthan

Ajmer  
Jaipur  
Kota  
Udaipur

### Tamil Nadu

Salem

### Uttar Pradesh

Bareilly

### West Bengal

New Town Kolkata



# CHALLENGE TIMELINE

## STAGE 1 (May '22)

Identify problems  
citizens face

Launch of Challenge and registration  
opens for cities and NGOs:  
**15th April '21**

Cities register by: **15th May '21**

Cities submit problem  
statements by: **March '22**

Problem statements curated by T4A  
team: **May '22**

## STAGE 2 (Nov '22)

Develop solutions &  
prototypes

Startup registrations open: **June '22**

Startups register with a concept note by:  
**June '22**

Announcement of screened startups:  
**July '22**

Startups and cities submit prototype testing  
results and plan of action by: **Oct '22**

Announcement of winners: **Nov '22**

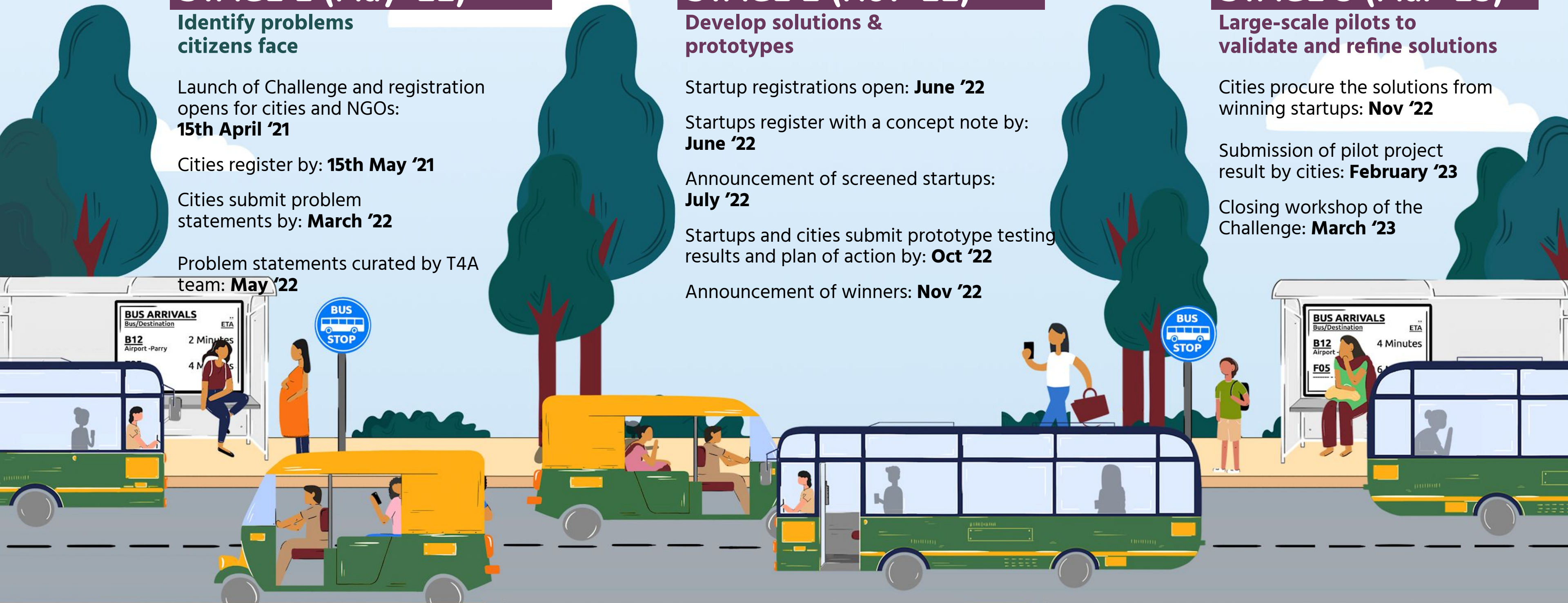
## STAGE 3 (Mar '23)

Large-scale pilots to  
validate and refine solutions

Cities procure the solutions from  
winning startups: **Nov '22**

Submission of pilot project  
result by cities: **February '23**

Closing workshop of the  
Challenge: **March '23**



03

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# STAGE 1

## Survey Analysis

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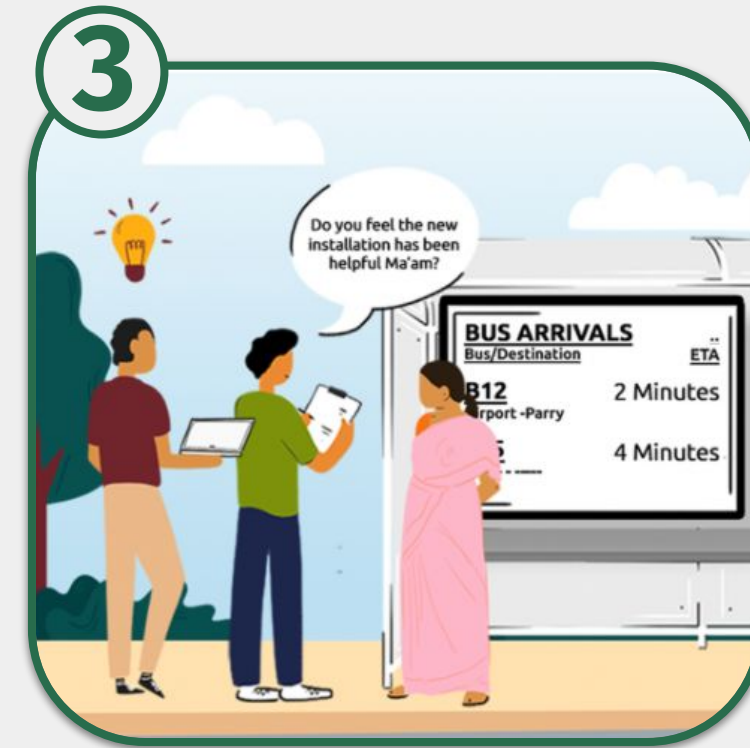
# How will the survey analysis help the city?



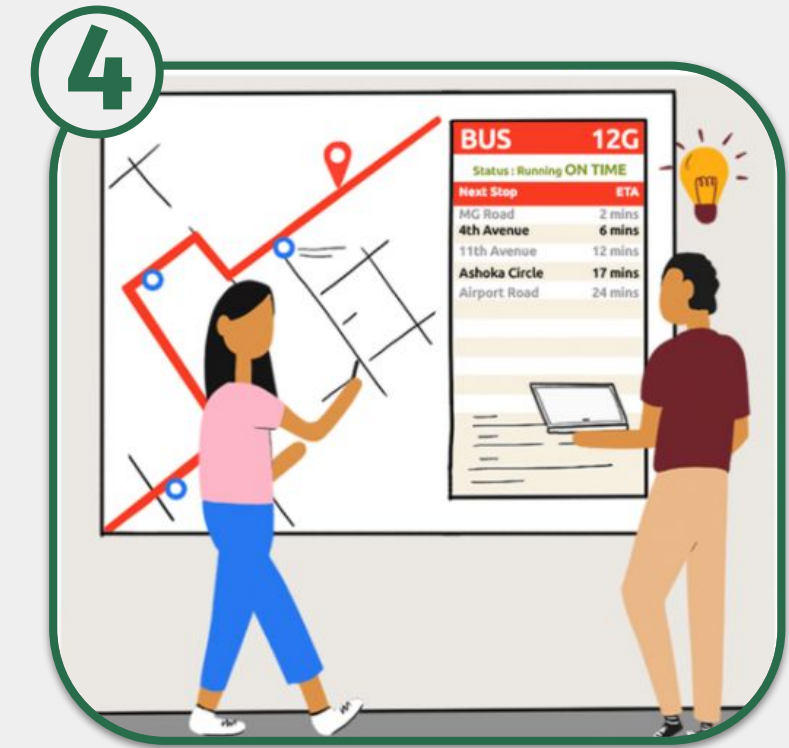
**Understand the mobility problems**  
citizens and operators  
face



**Use the findings to improve public transport and for future mobility planning decisions**



**Develop problem statements and get solutions developed for the problems from startups**



**Evaluate the success of the initiatives**  
by comparing the results of the surveys in the future

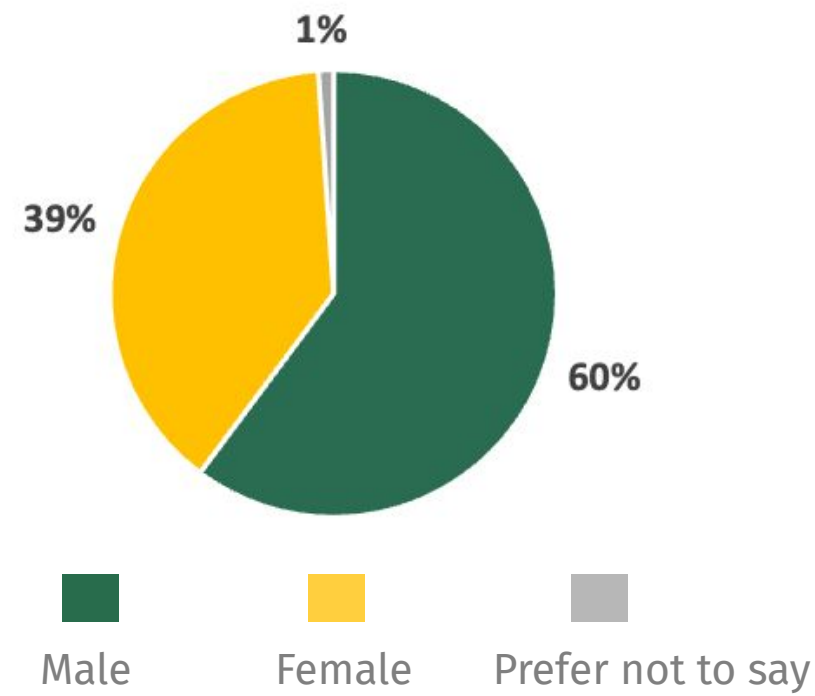
# Citizen Survey Overview

**2+**  
**Lakhs**

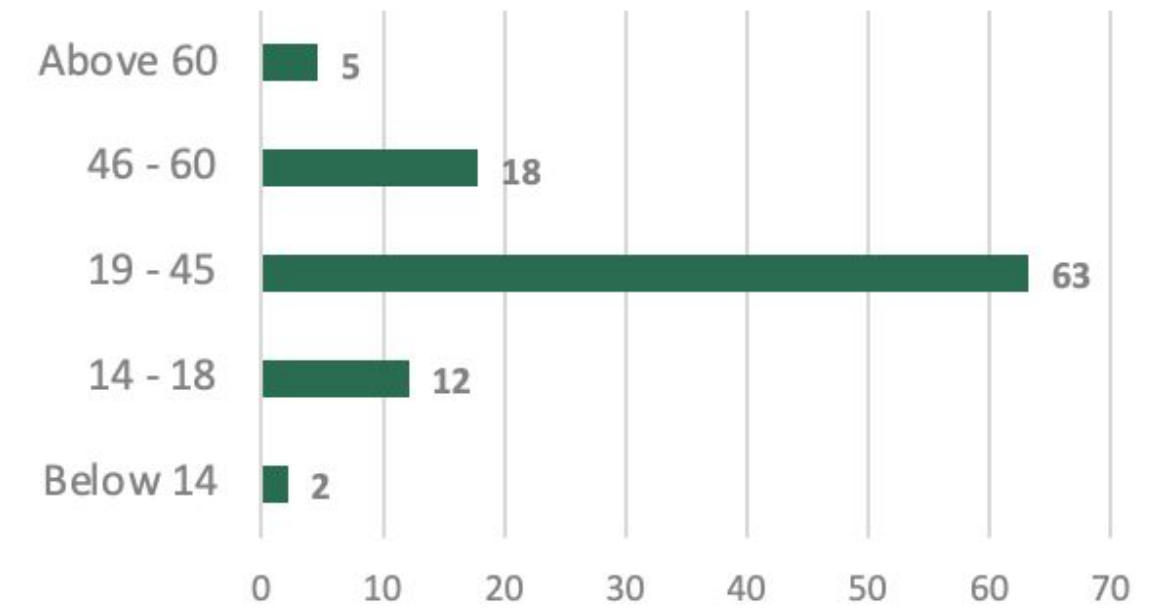
**Citizens surveyed  
across 46 cities\***

\*Each city were given a sample size of 2000 offline surveys and 1000 online surveys to capture voices of people who do not have access to technology.

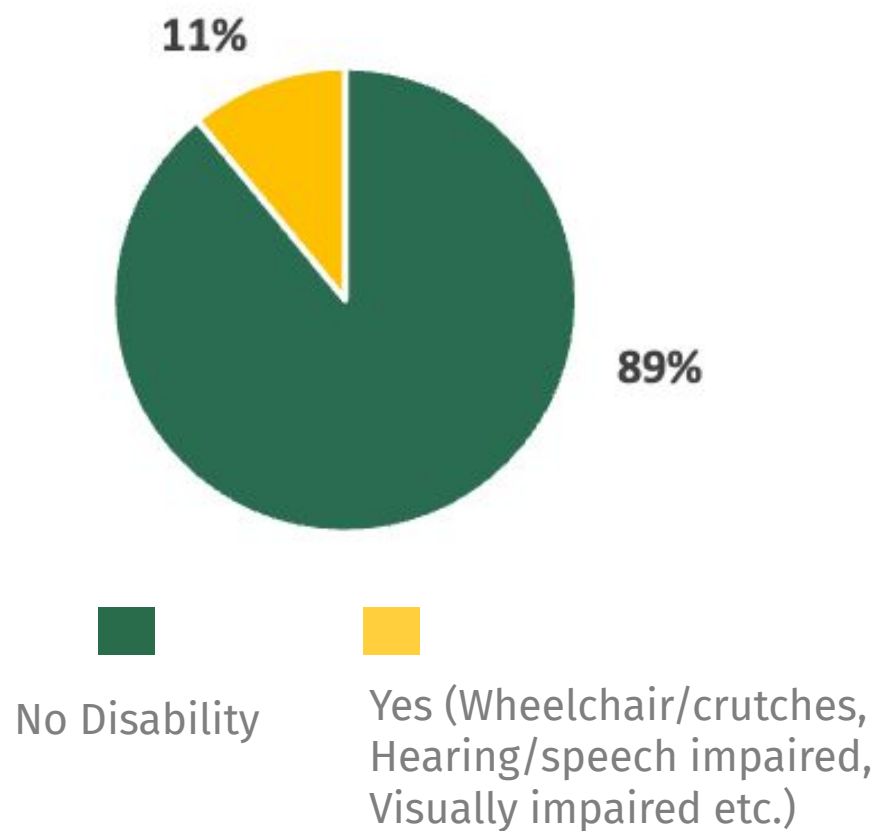
### % of Responses Received by Gender



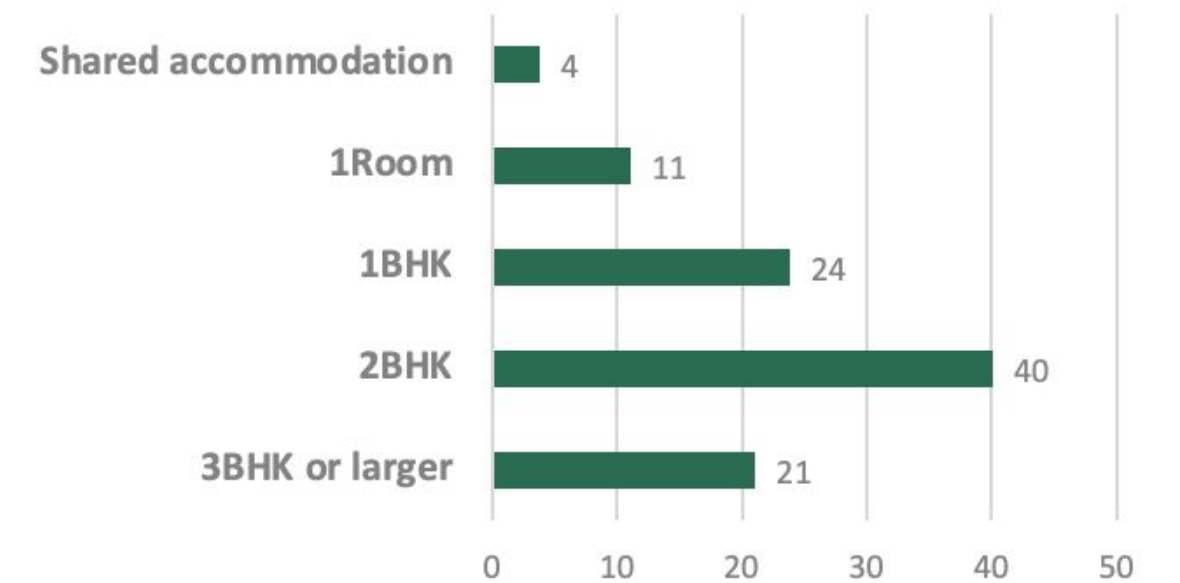
### % of Responses Received by Age



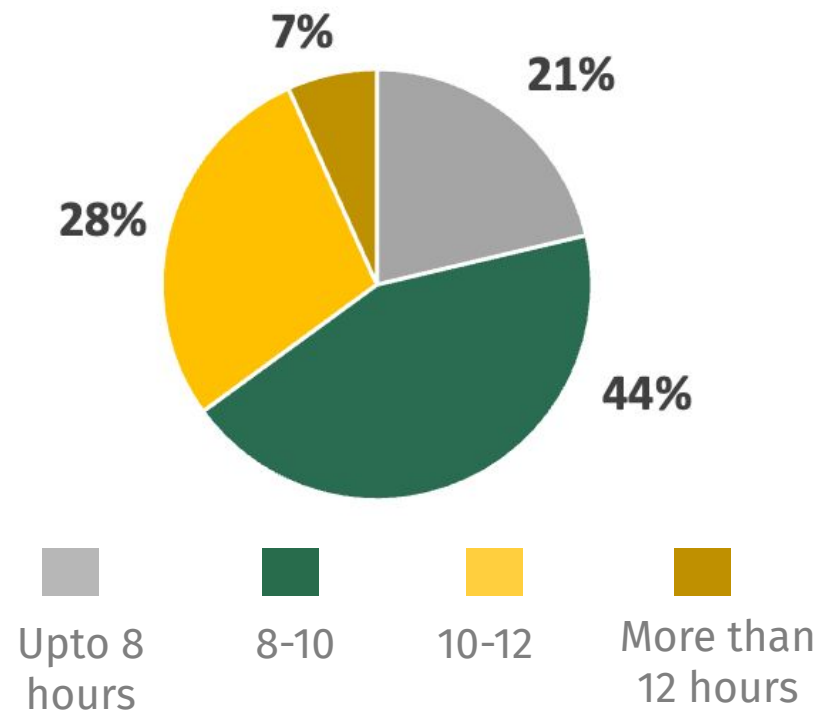
### % of Responses Received by Ability



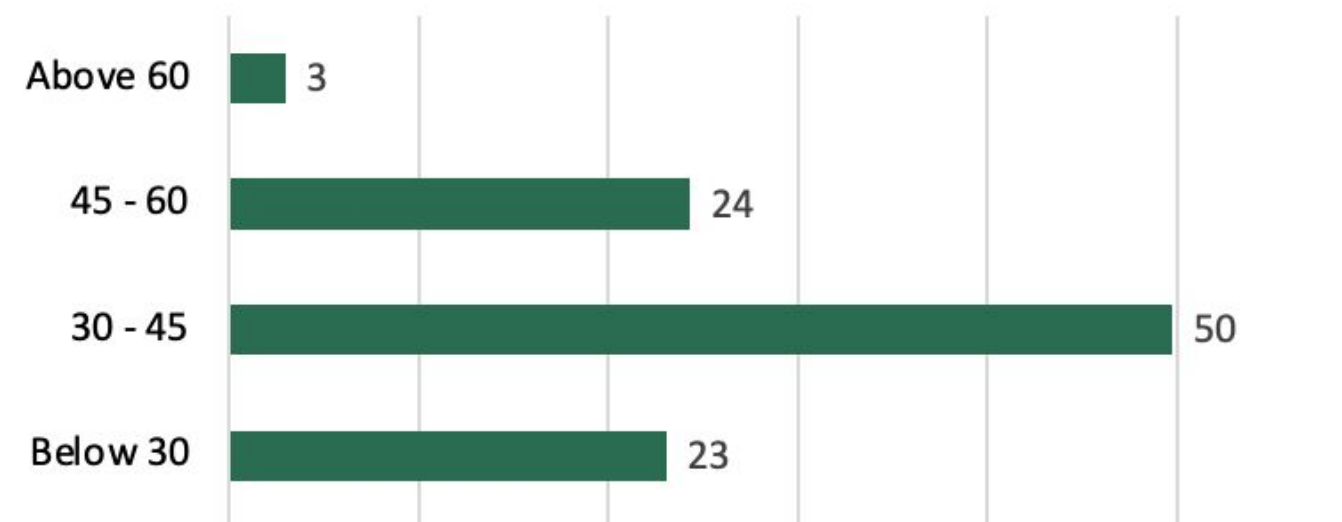
### % of Responses Received by Housing Typology



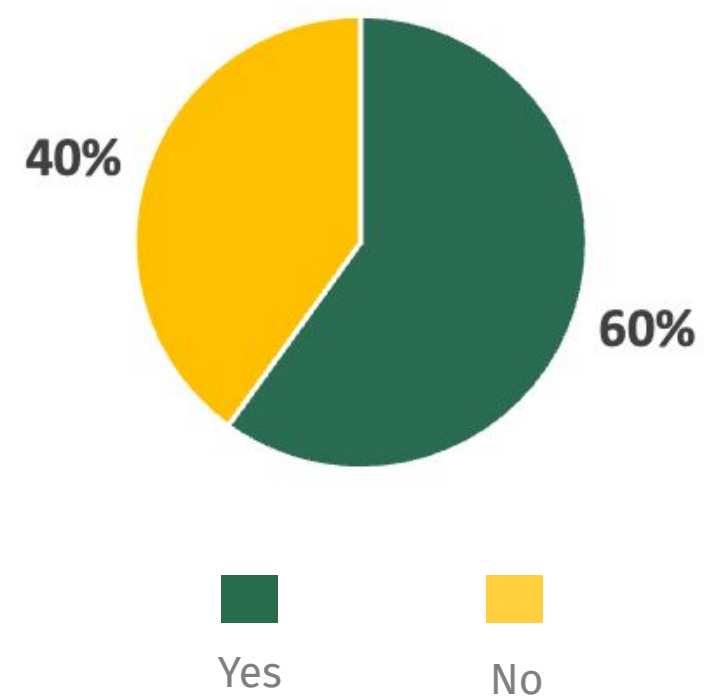
**% of Responses by Average Working Hours**



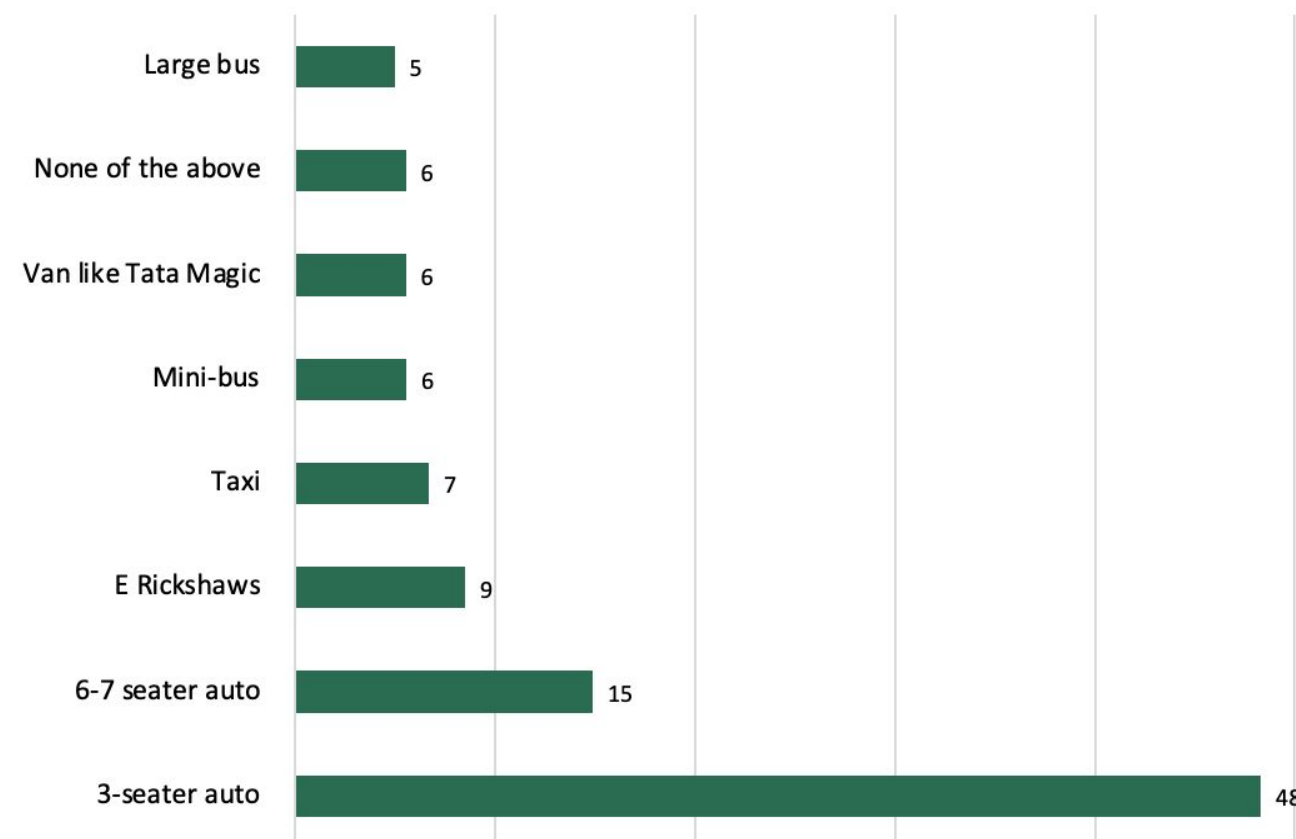
**% of IPT drivers interviewed by Age**



**% of Responses Received by Ownership of IPT Vehicles**



**% of IPT drivers Interviewed by Vehicle Type**



# IPT Survey Overview

22K

**IPT drivers surveyed across 46 cities\***

\*Each city were given a sample size of 500 surveys equally distributed between all the shared IPT modes.

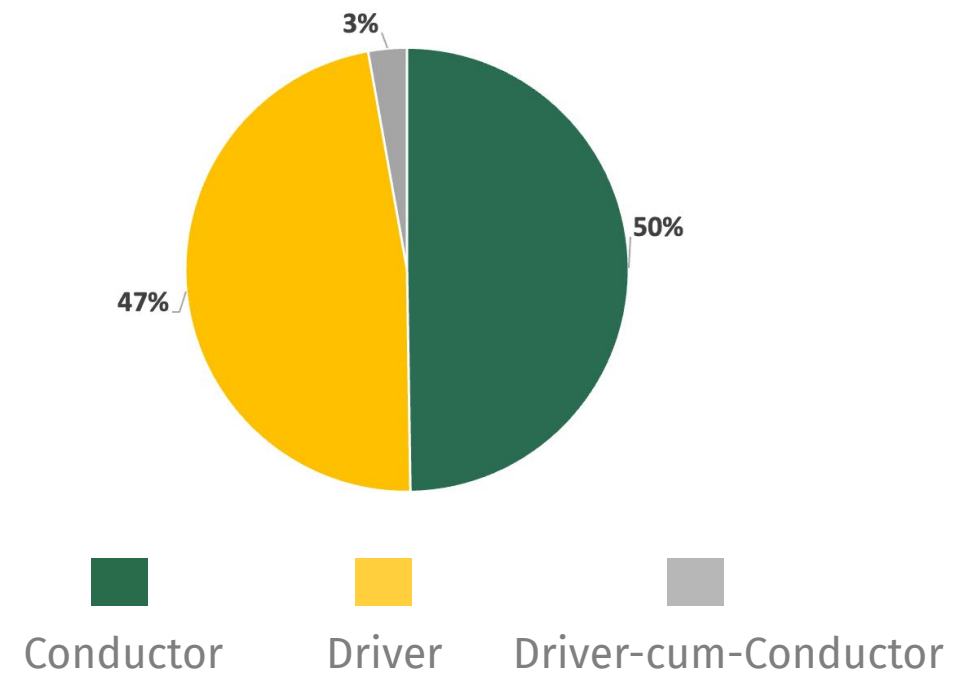
# PT Survey Overview

15K

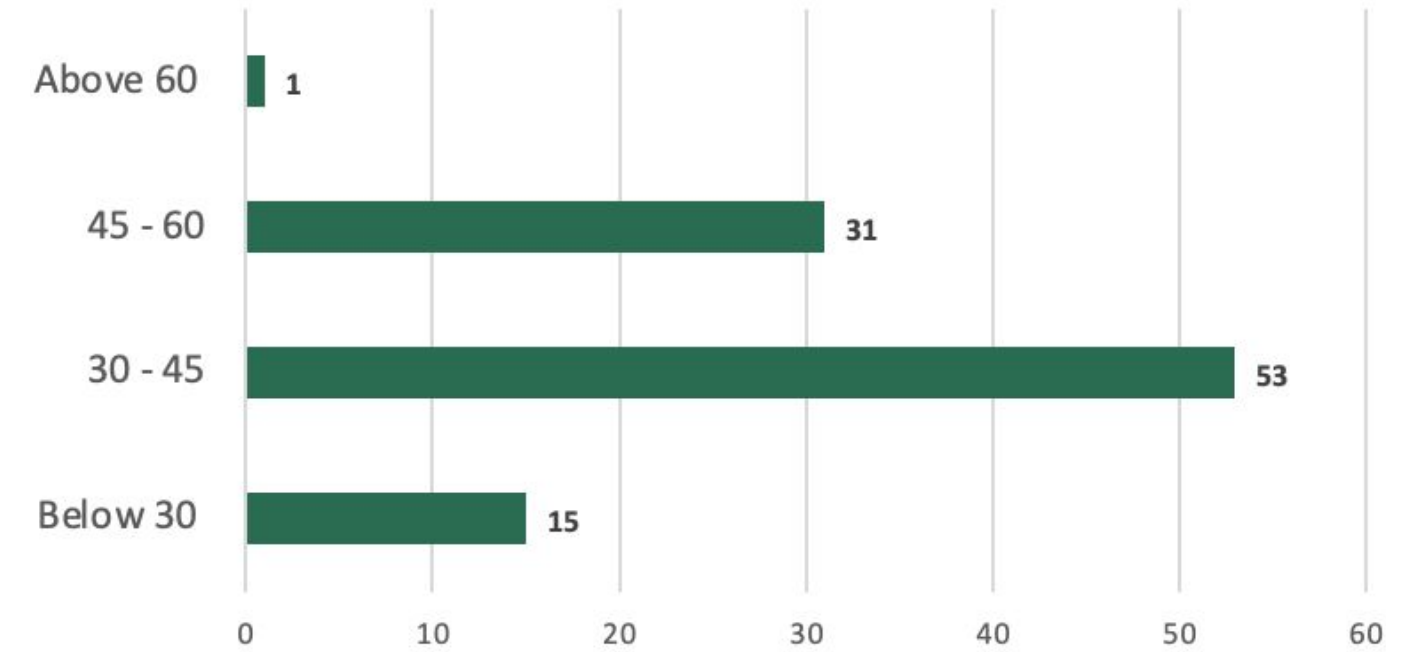
Bus drivers & conductors surveyed across 46 cities\*

\*Each city were given a sample size of 500 surveys distributed equally between bus drivers and conductors.

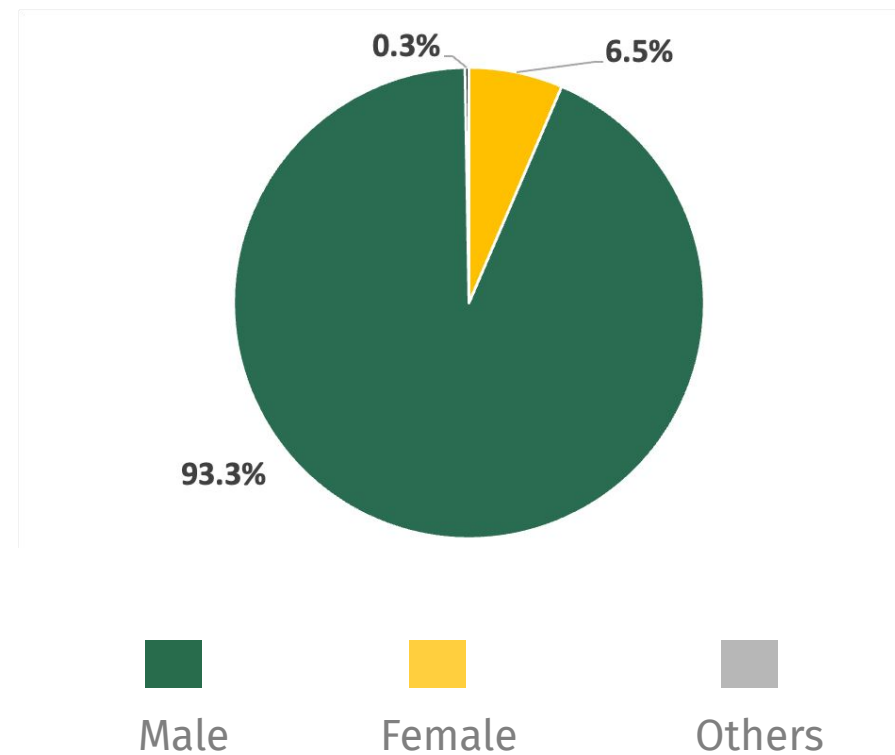
### % of Responses from Bus Drivers & Conductors



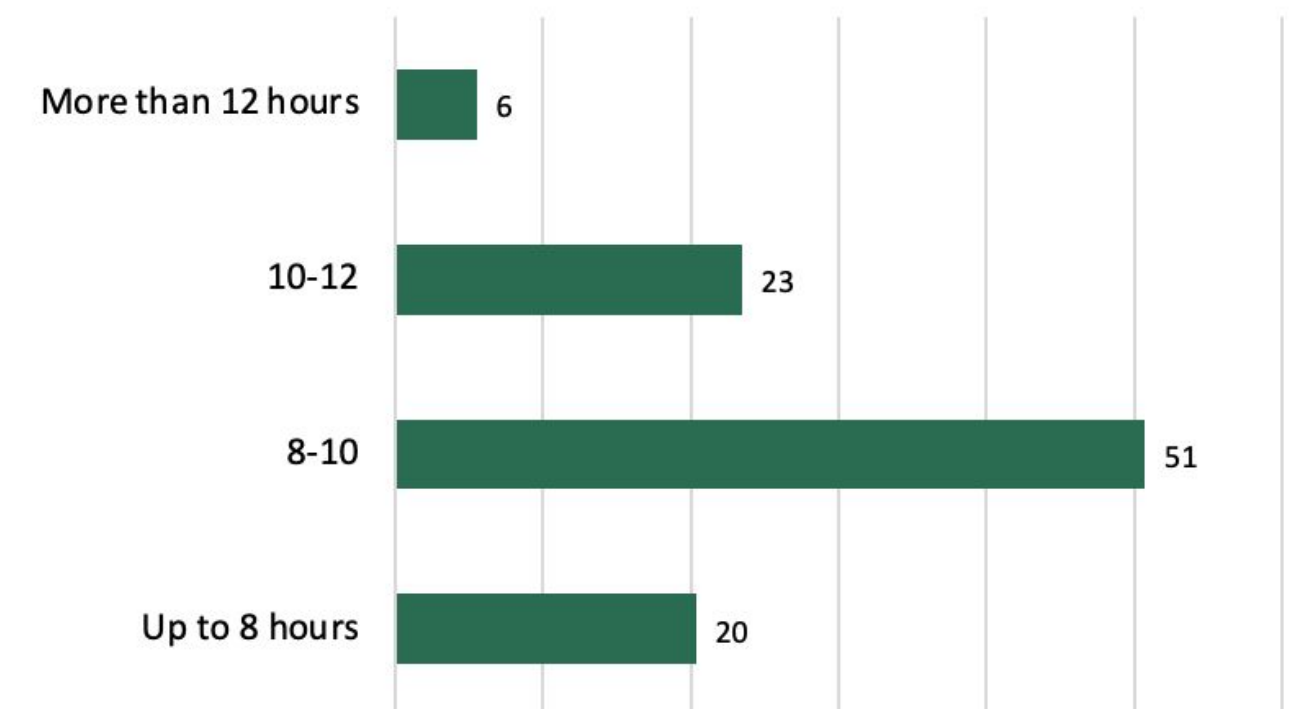
### % of Bus Drivers & Conductors by Age



### % of Responses by gender from Bus Drivers & Conductors



### Average Working Hours of Bus Drivers & Conductors (%)







# పట్టణ జీవనోపాదుల కేంద్రం [CITY LIVELIHOOD CENTRE]

నల్లచెరువు  
మెప్పా - నగర పాలక సంస్థ, గుంటూరు.



1

Problem Identification

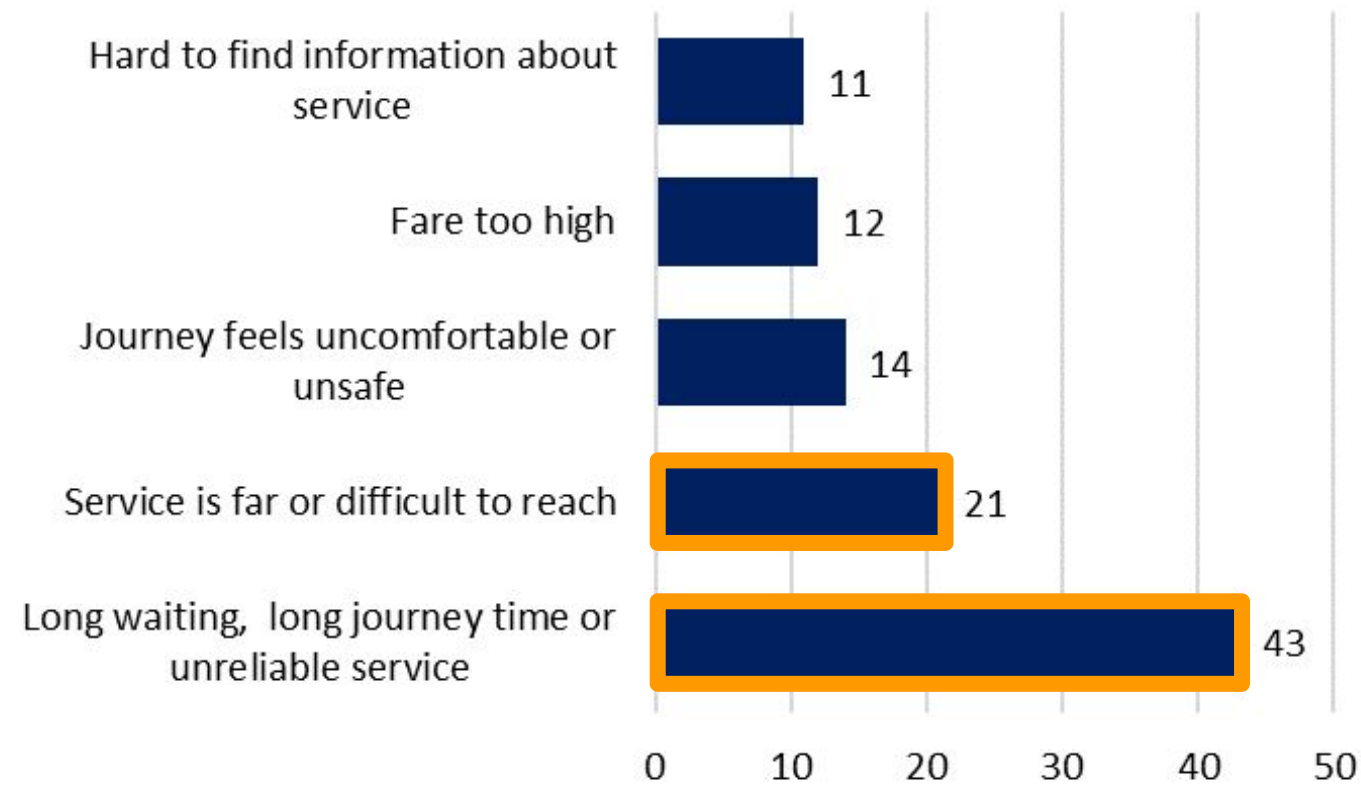
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# Biggest Concerns with Public Transport System

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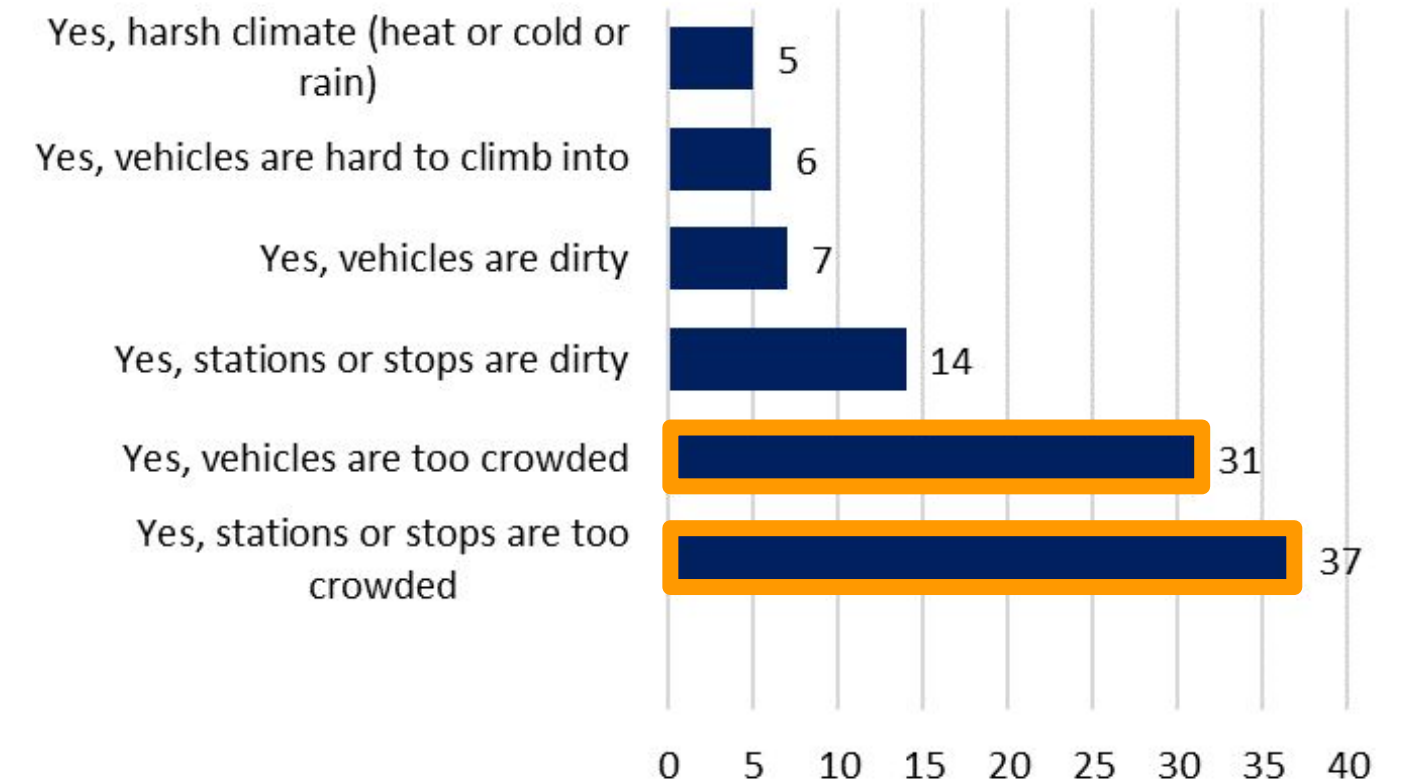
# Biggest Concern for Citizens with Public Transport

## Biggest Concern with Public Transport (%)



**64%** of respondents have raised concerns about long waiting time, long journey time and unreliable or inaccessible public transport

## Discomfort in Public Transport (%)



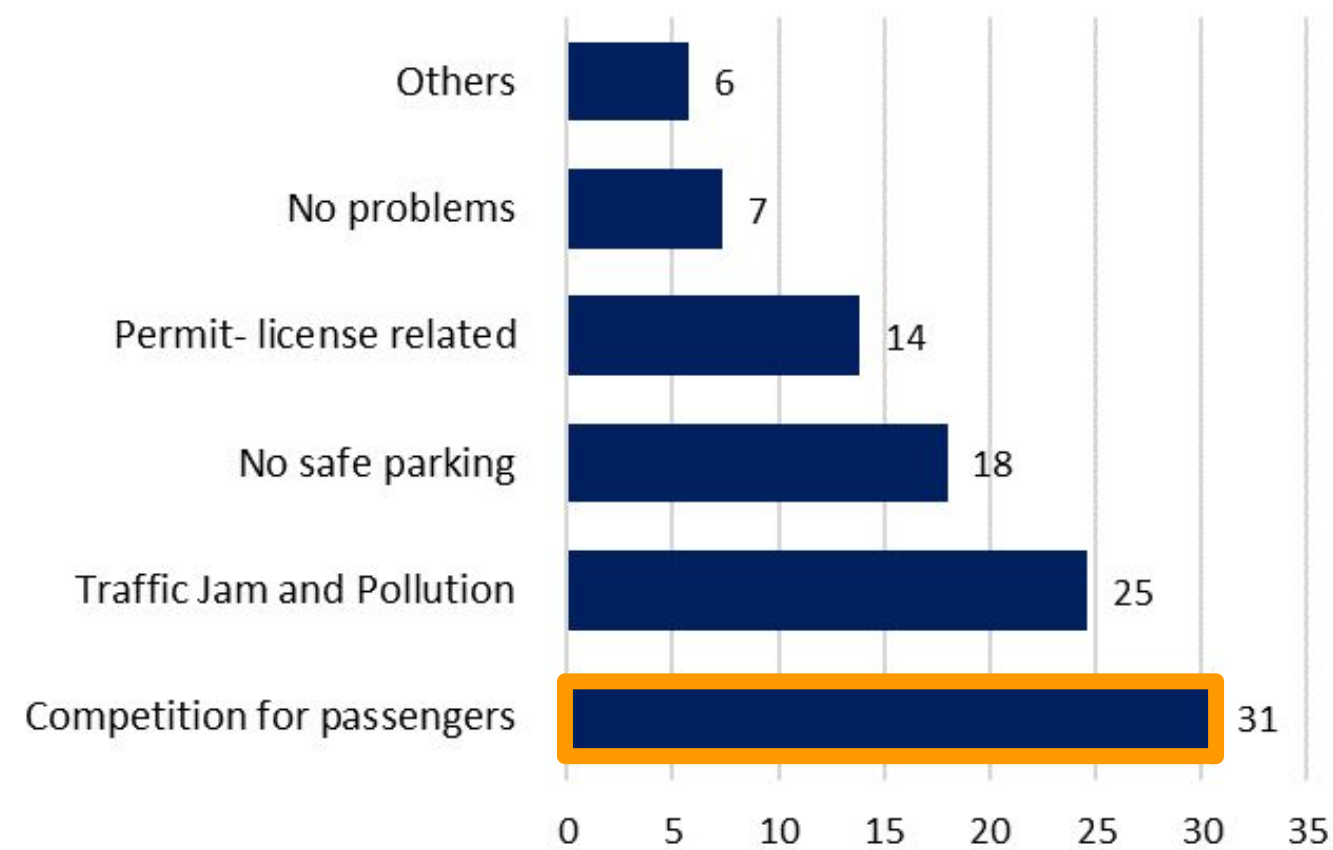
**68%** of respondents highlight overcrowding within the buses or at the bus stops as the reason of discomfort.

## Problem Areas

Route rationalisation | Shortage of buses | Low frequency of buses | Poor scheduling |  
Delay due to traffic congestion | Lack of monitoring

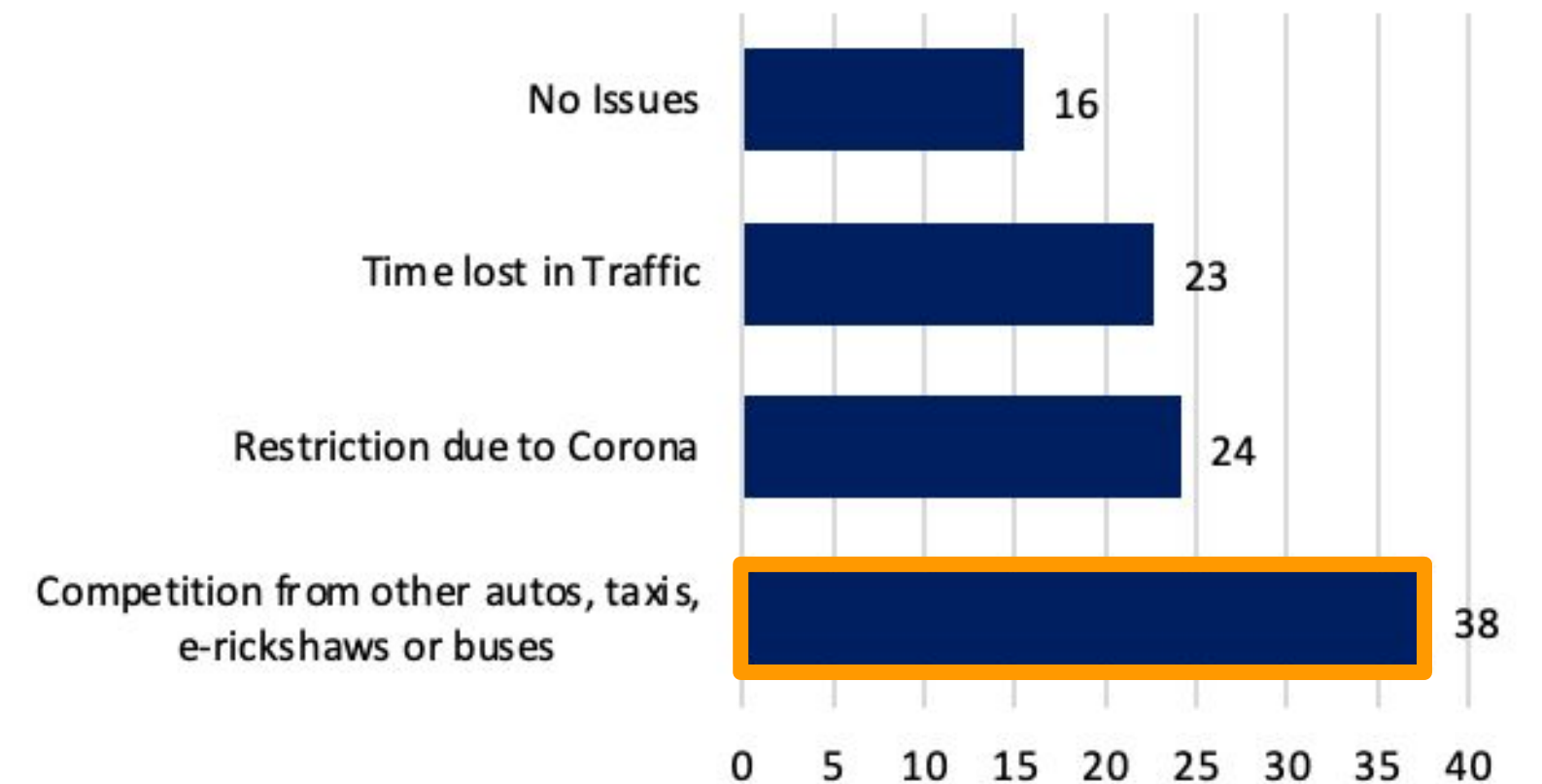
# Biggest Concern for IPT Drivers

## Biggest Concern for IPT Drivers (%)



**31%** of IPT drivers raised competition for passengers as their major concern

## Reasons for Not Getting Enough Passengers (%)



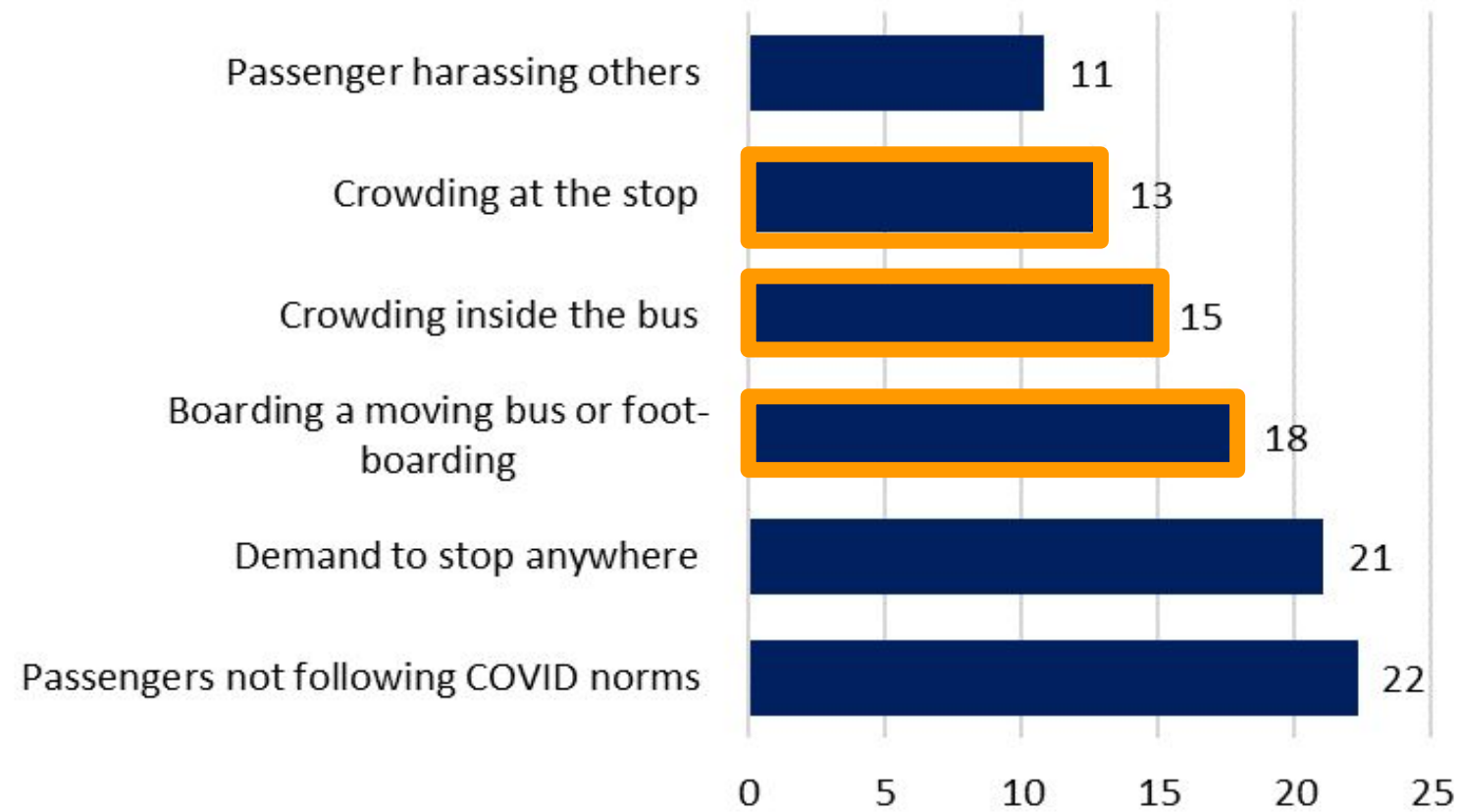
**38%** of IPT drivers highlighted competition from other modes of public transport as the major reason for not getting enough passengers

## Problem Areas

Route rationalisation | Lack of standardized fare for distance/ routes |  
Unregistered/no cap on the number of vehicles operating in the city than demand

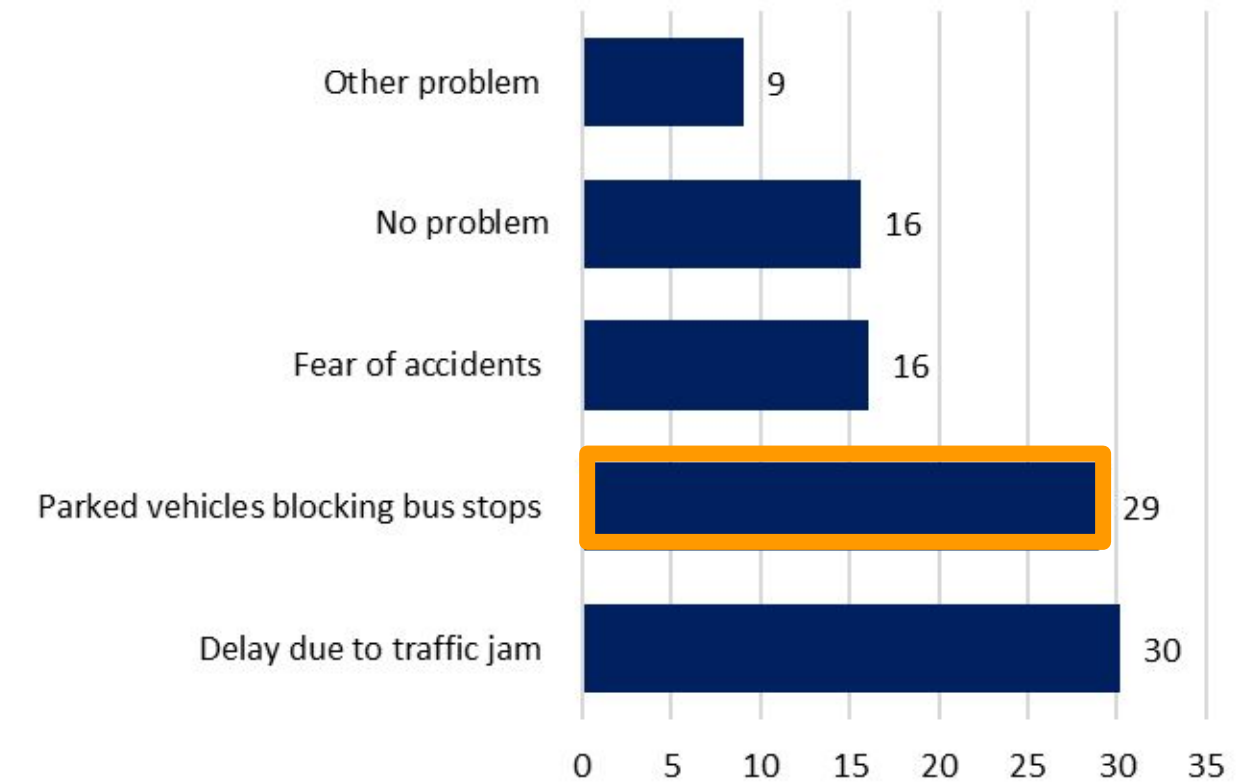
# Biggest concern for **Bus drivers & conductors**

## Major Concerns with Passengers (%)



**46%** of the bus drivers and conductors have raised **overcrowding** as a major concern.

## Major Concerns with Driving (%)



**29%** of the bus drivers have raised parked shared autos/autos blocking the bus stop as a concern.

### Problem Areas

Shortage of buses | Low frequency of buses | Poor bus scheduling | Lack of monitoring & enforcement | Lack of Public Information System (PIS) |  
Poor bus stop/bus design | No parking management

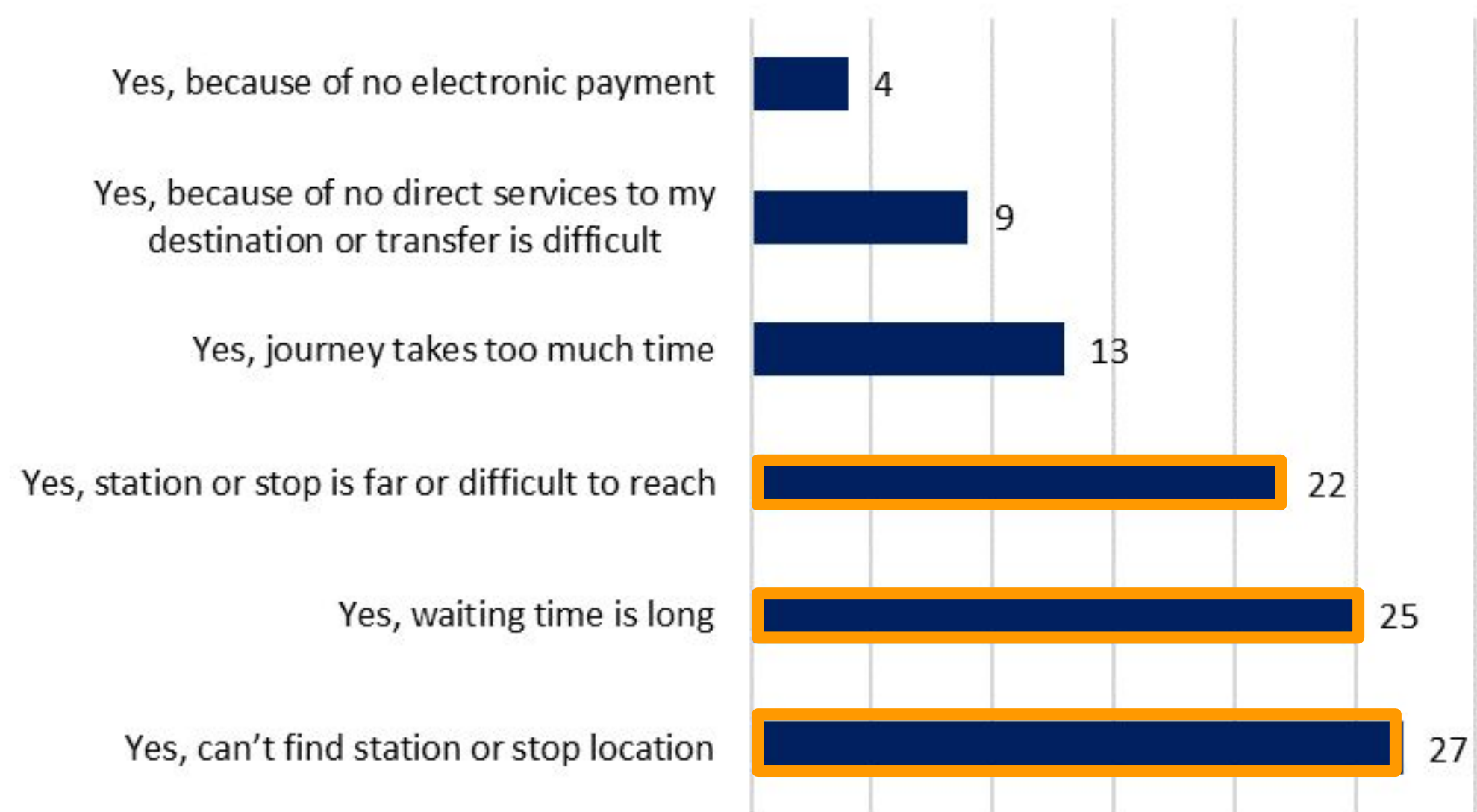
# Major Reasons for Inconvenience in Public Transport

**52%** of the respondents highlighted inconvenience of waiting time and difficulty in identifying the station/stop location as the major issue. While 22% highlighted the issue of stations/stop being too far or difficult to reach.

## Problem Areas

Shortage of buses | Low frequency of buses | Poor bus scheduling | Route rationalization | Lack of public information system | Lack of last mile connectivity | Lack of integration of different modes of public transport

## Inconvenience in Public Transport Modes (%)



106

- BLK 283
- BLK 289E
- YUSOF ISHAK SEC SCH
- BURGUNDY HILL

SHENTON WAY TER 10:23

2016



Come 2016, we can look forward to better bus services and a better journey for all.

Please move to the rear

Emergency Exit  
紧急出口处  
Pintu Keluar Kecemasan  
අදාලයාලි අවදානම අවදානම

BUS STOPPING  
SMB3053M

**2**

Problem Identification

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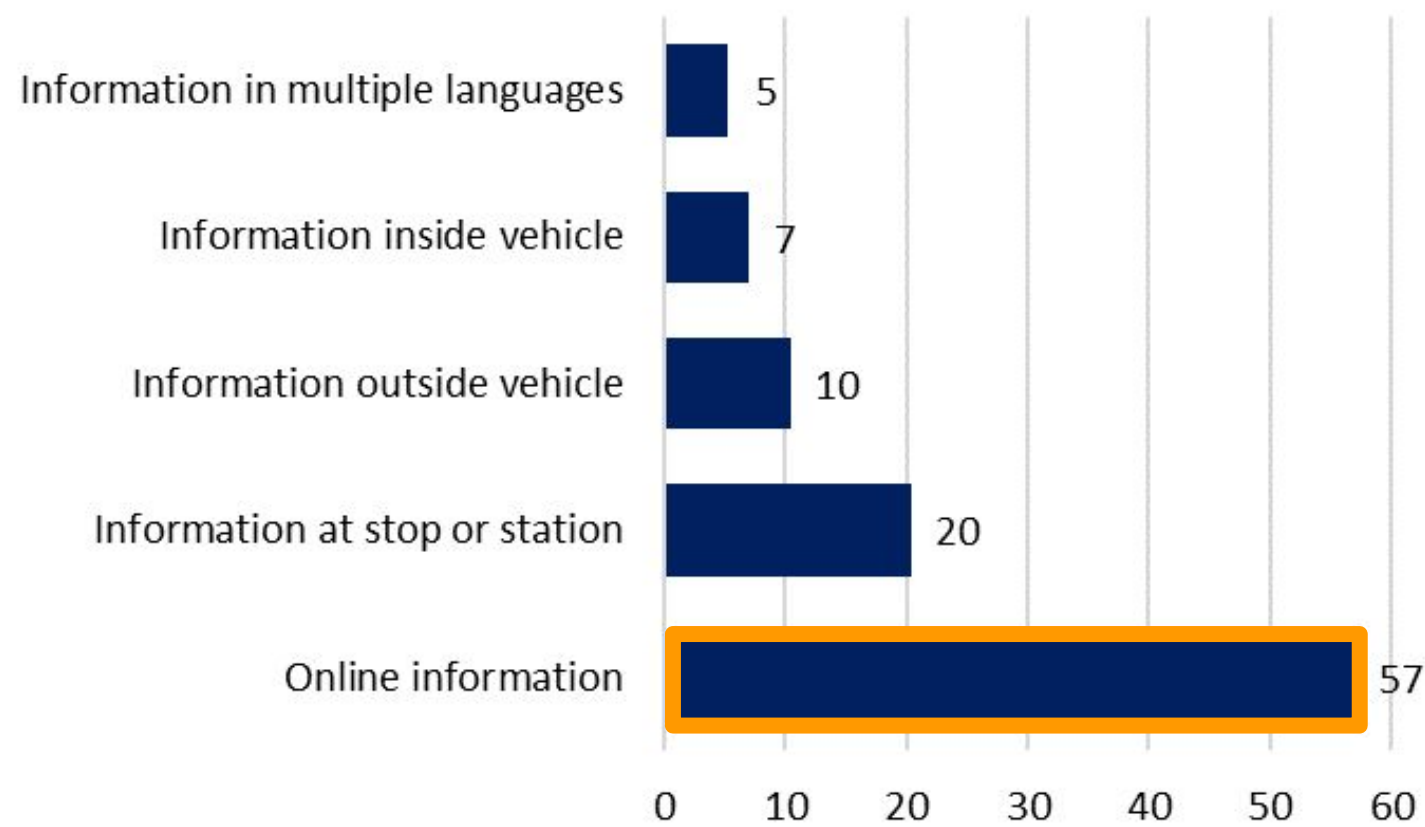
# Concerns with Digital Information & Cashless Payments

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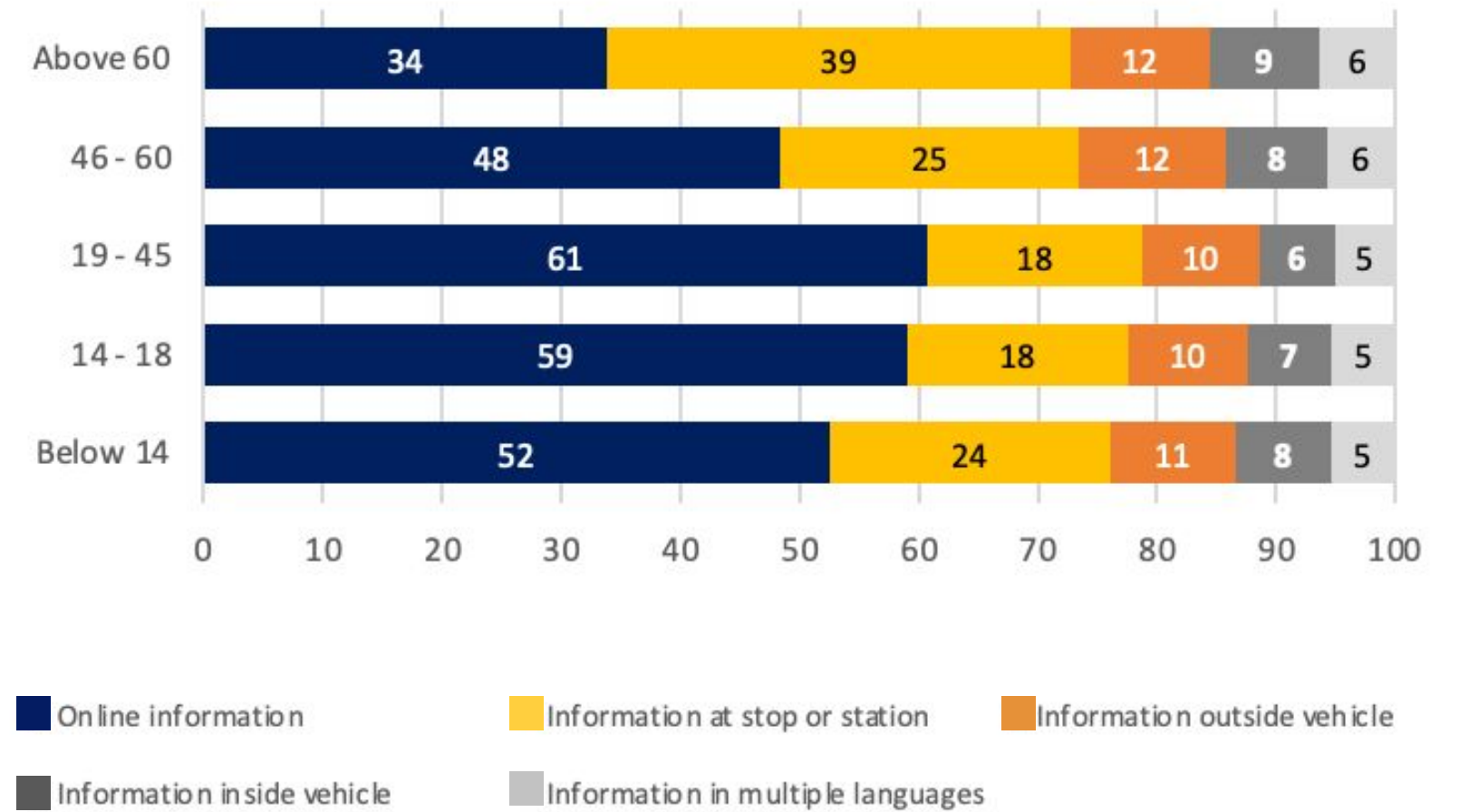
# Citizens prefer Digital Information

## Preference for Information Delivery (%)



**57%** of the respondents would like to receive the information about routes, timetable and stops by online means.

## Preference for Information Delivery by Age (%)



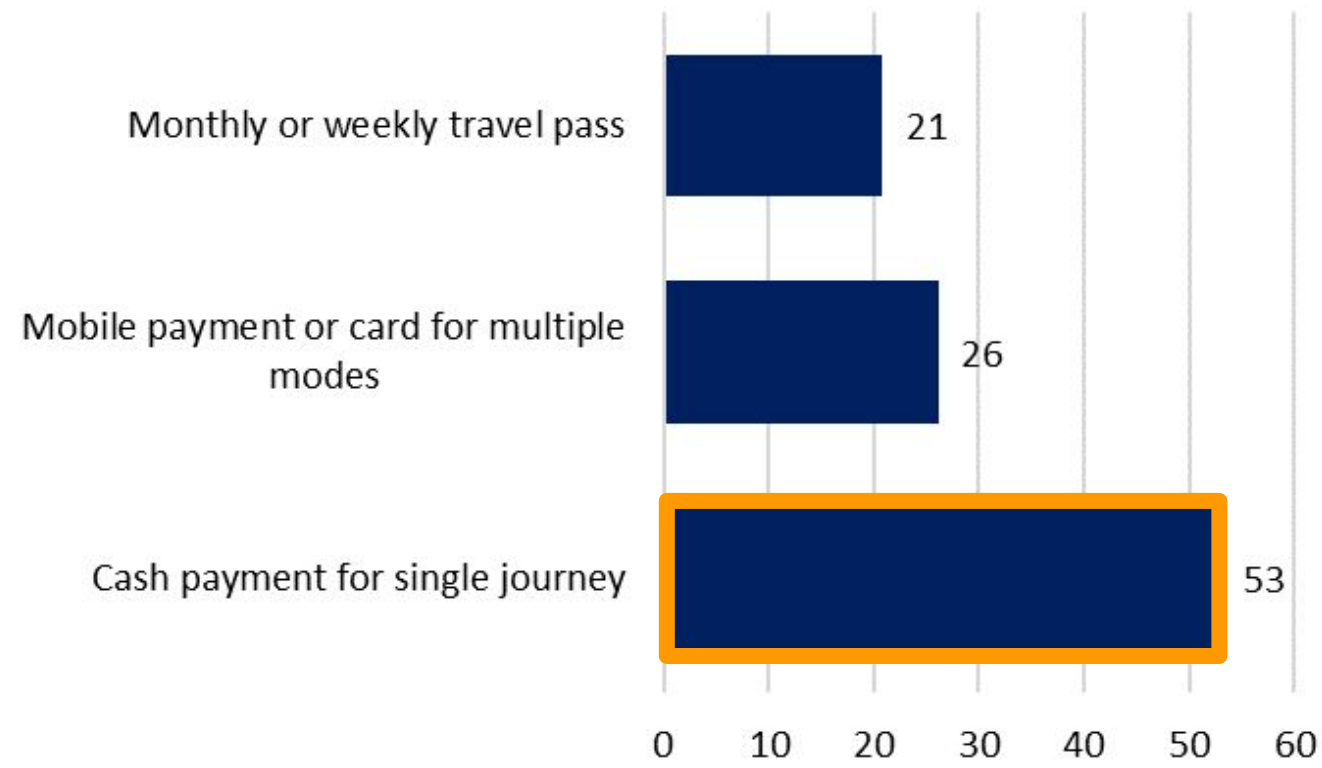
Preference by age:  
**Below 60** : Online information  
**Above 60** : Information at stops/stations

## Problem Areas

Lack of Passenger Information System (PIS)  
Online (apps, websites etc.) & Offline (at stations/stops, outside and inside vehicle)

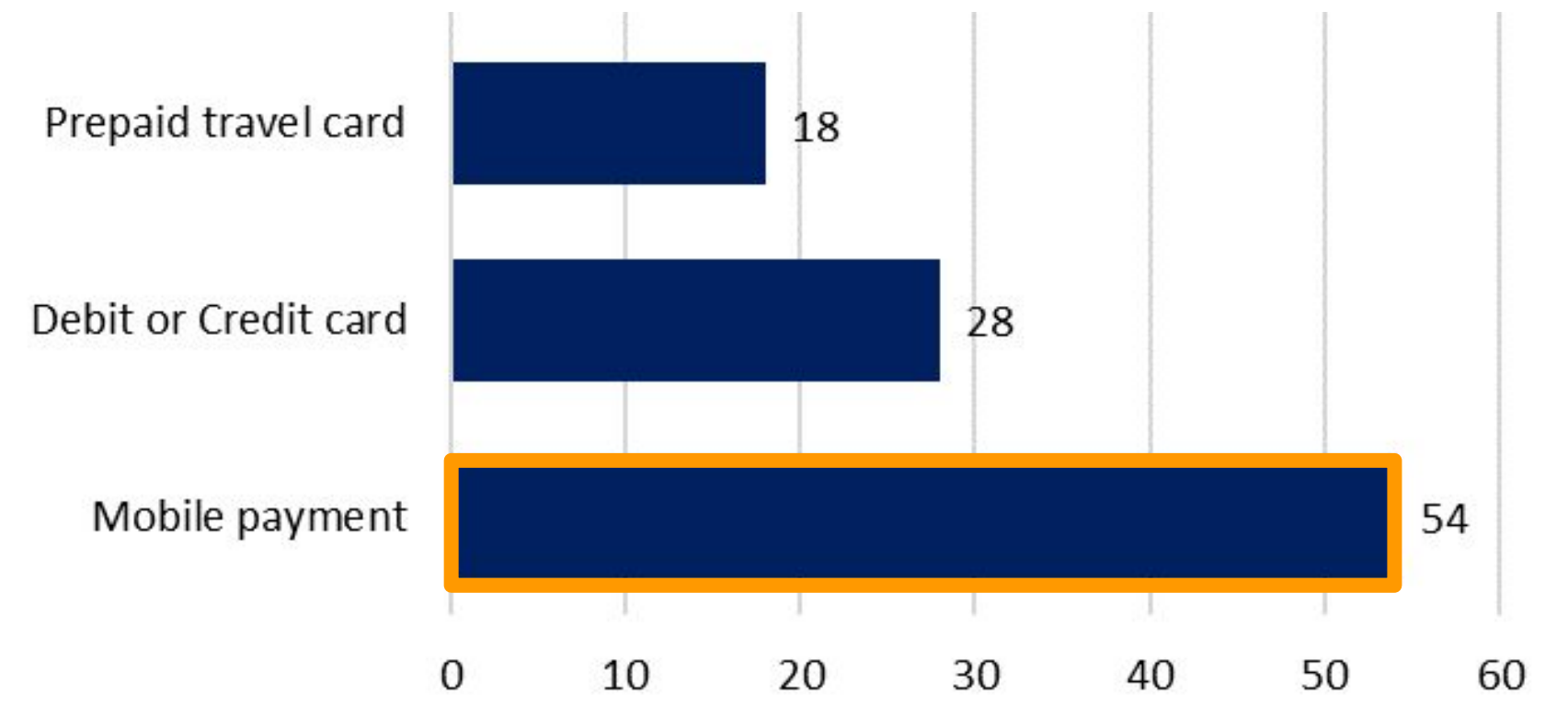
# Citizens prefer **to Pay in Cash**

## Preference for Different Modes of Payment (%)



**53%** of the respondents prefer cash payment for the single journeys

## Cashless Payments - Preference for Different Modes (%)



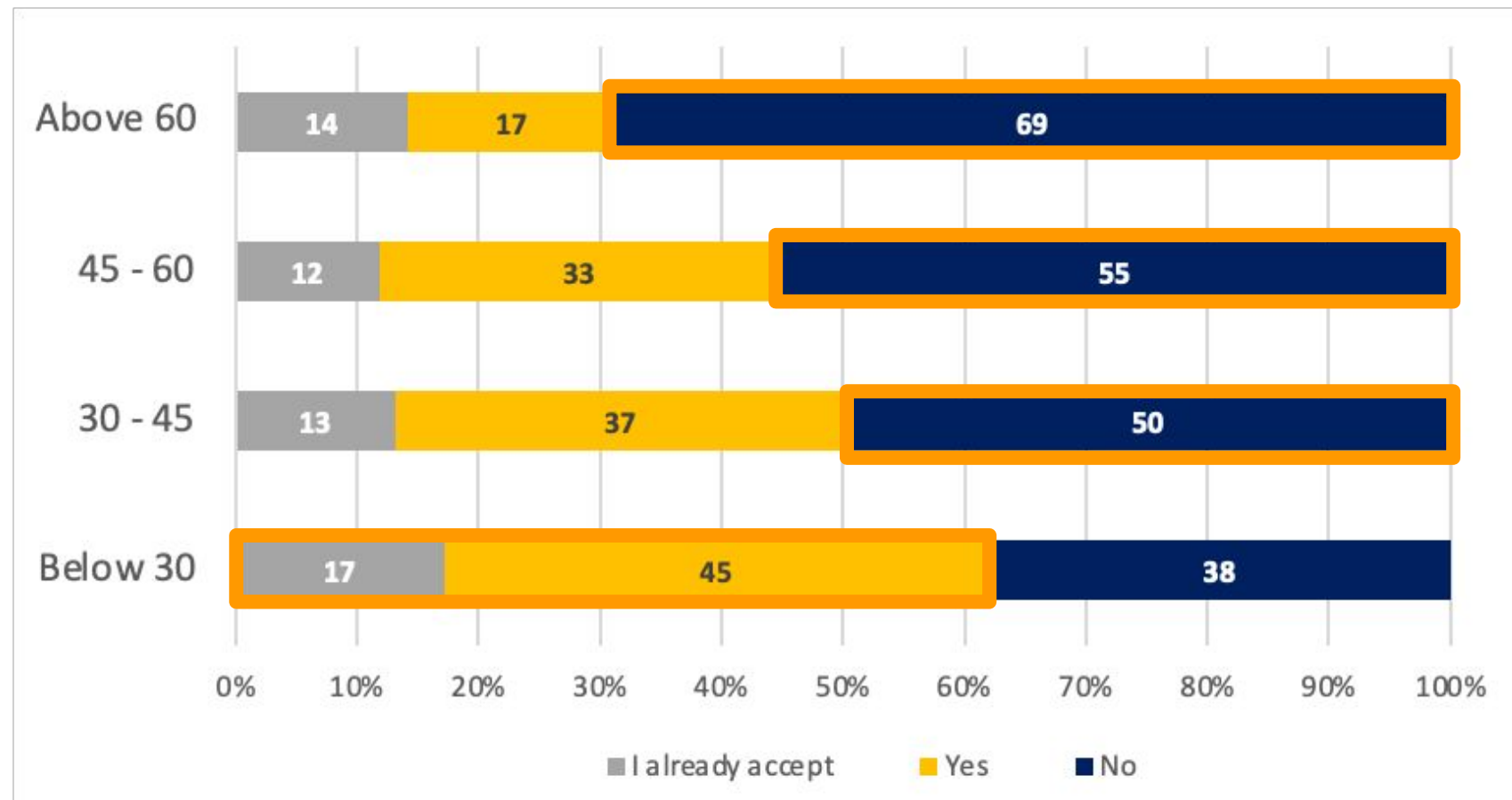
Out of the respondents preferring digital payment, **54%** prefer mobile payment.

### Problem Areas

Lack of capacity development around usage of card/mobile payments | Inconvenience with current digital modes of payment for public transport | Lack of fare integration

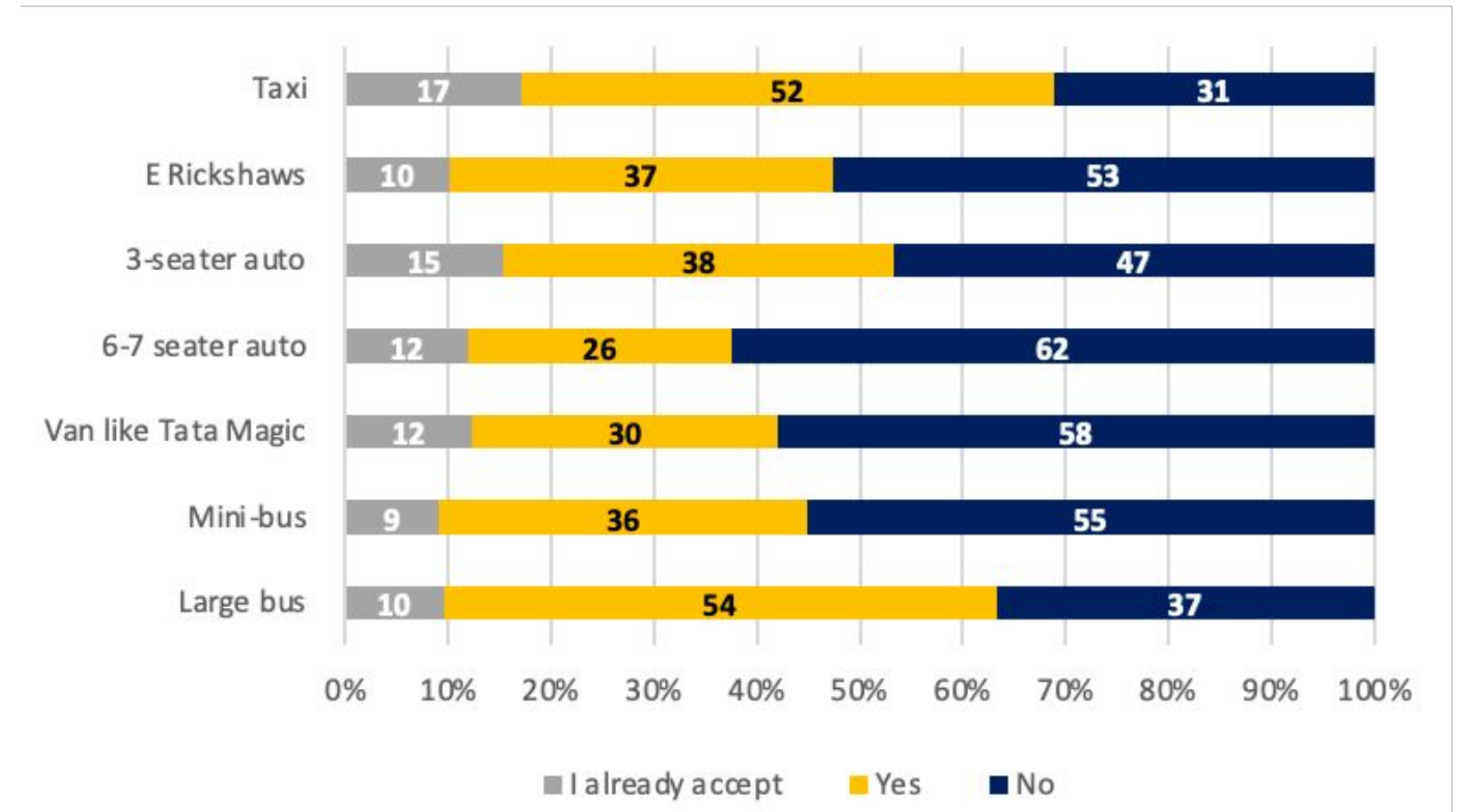
# But IPT Drivers **do not prefer** Cashless Payments

Willingness to Access Cashless Payment by Age (%)  
(Paytm/Gpay or similar)



**Above 30** : Preference towards Cash  
**Below 30** : Preference towards Digital Payments

Willingness to Access Cashless Payment by Vehicle Type (%)  
(Paytm/Gpay or similar)



Most of the IPT drivers across all the modes are not willing to shift to cashless payments

Problem Areas explored on the next page

3

Problem Identification

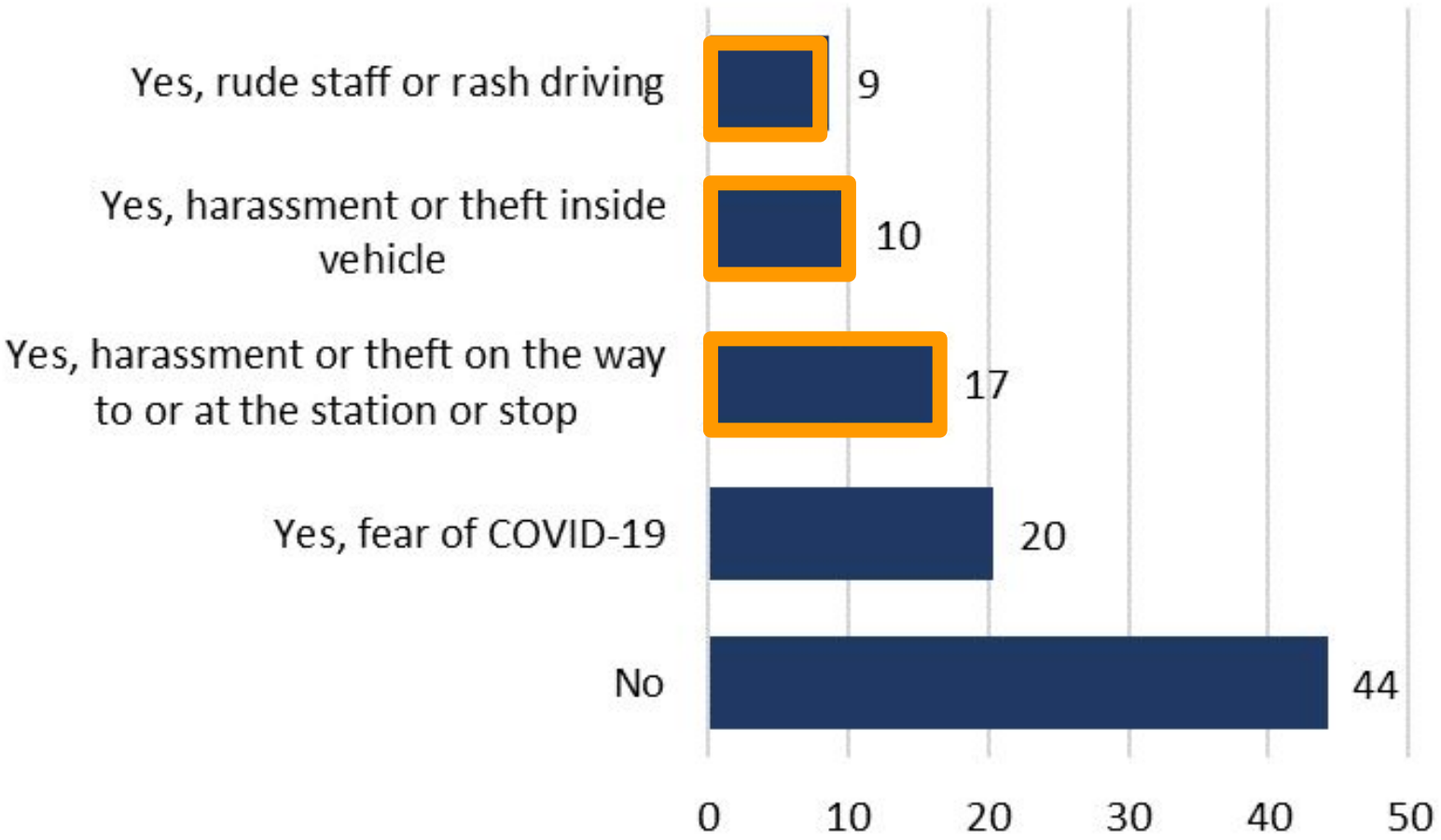
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# Safety in Public Transport

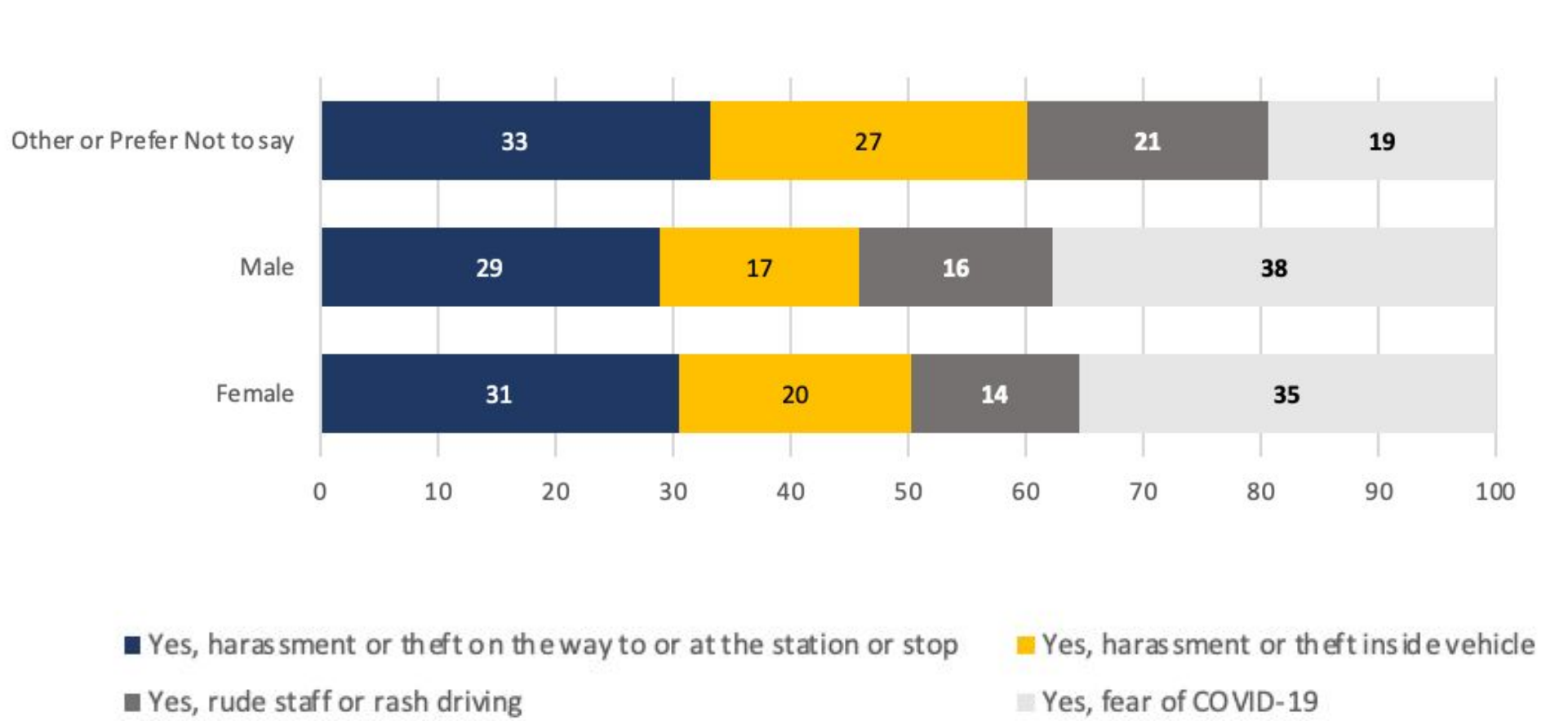
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# Reasons for Feeling Unsafe in Public Transport Modes

### Safety in Public Transport Modes (%)



### Safety in Public Transport Modes by Gender (%)



**36%** of commuters have raised concerns related to safety while travelling in public transport.

### Problem Areas

Lack of monitoring and enforcement | Lack of effective grievance redressal system

4

Problem Identification

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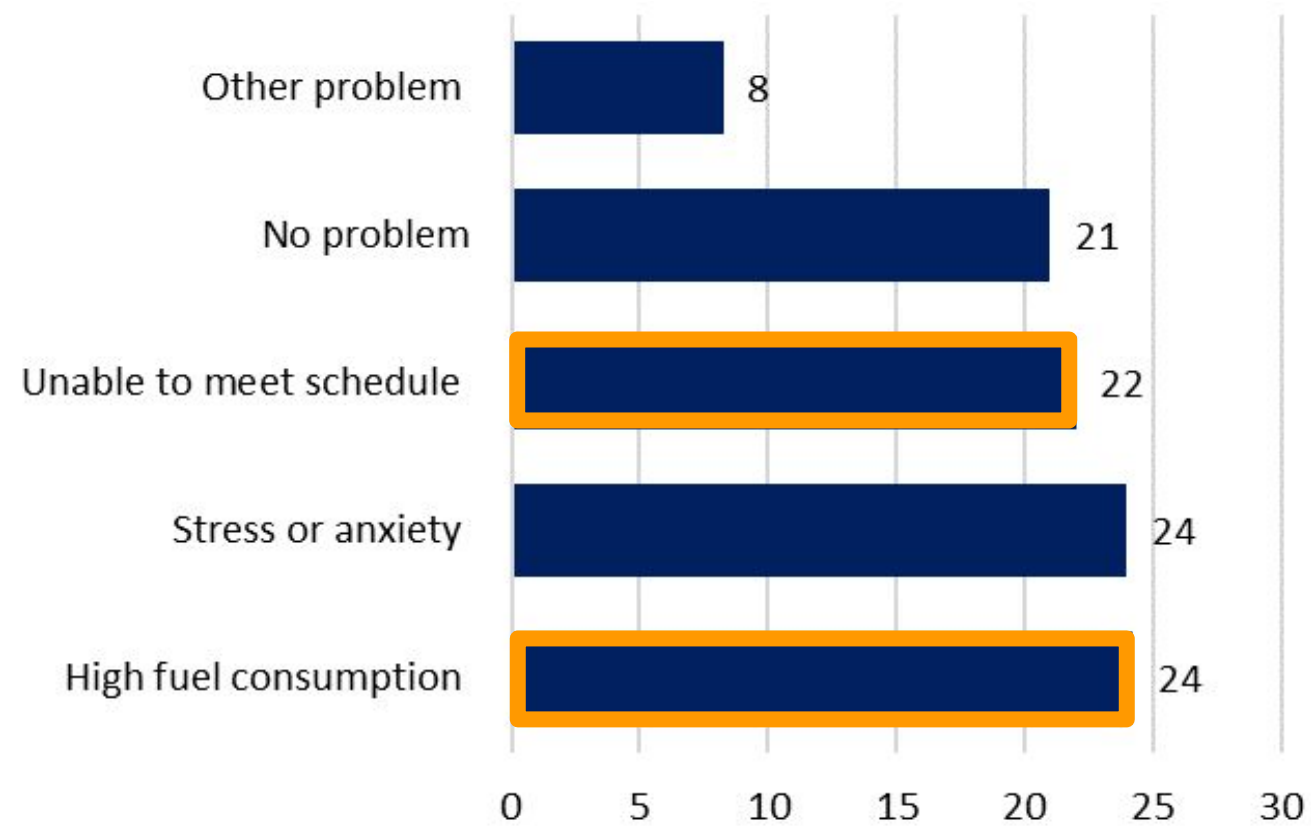
# Impacts of Traffic congestion & Health Care Facilities

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*(For Bus Staff & IPT drivers)*

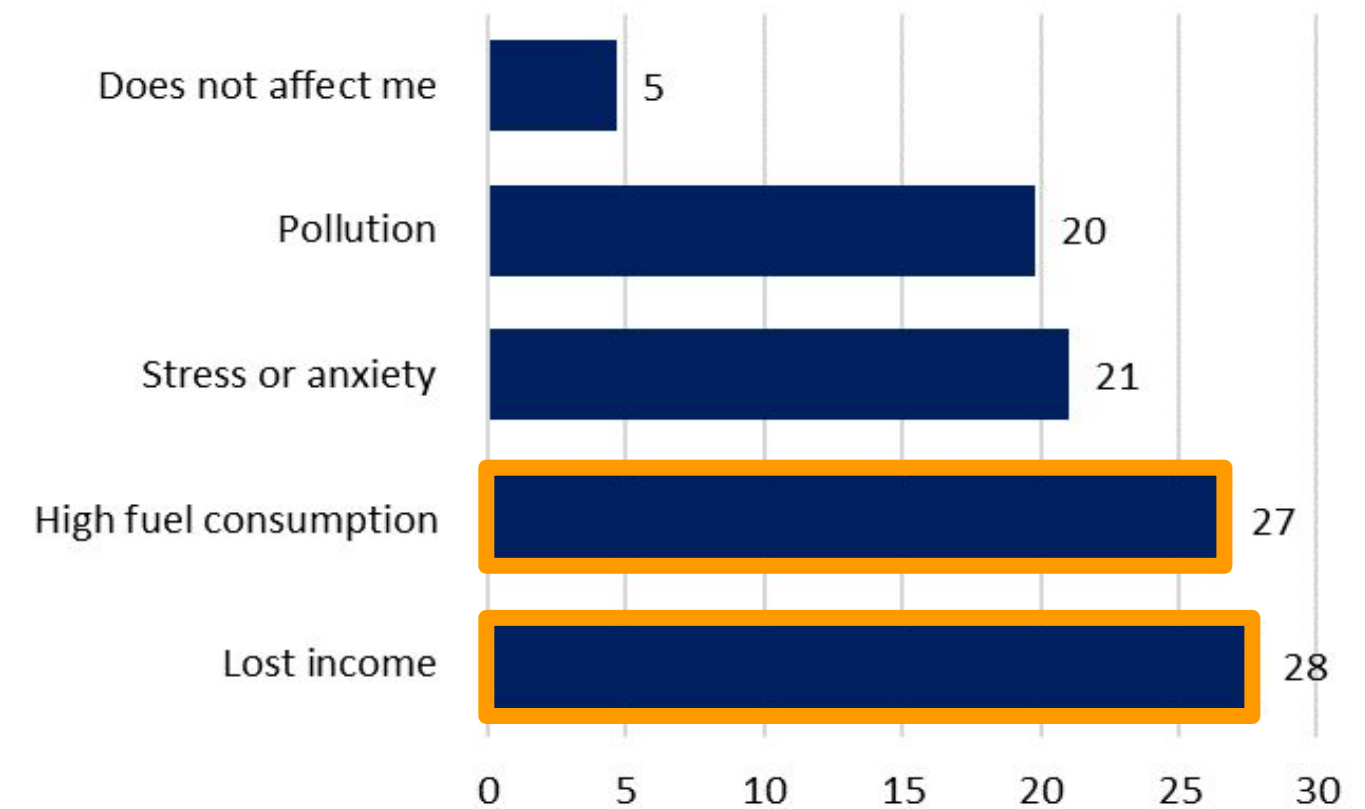
# Impacts of **Traffic Congestion** on bus staff & IPT drivers

## Impact of traffic jam on bus drivers (%)



**46%** of bus drivers are not being able to meet their daily target of **schedule and fuel consumption** because of the congestion.

## Impact of traffic jam on IPT drivers (%)



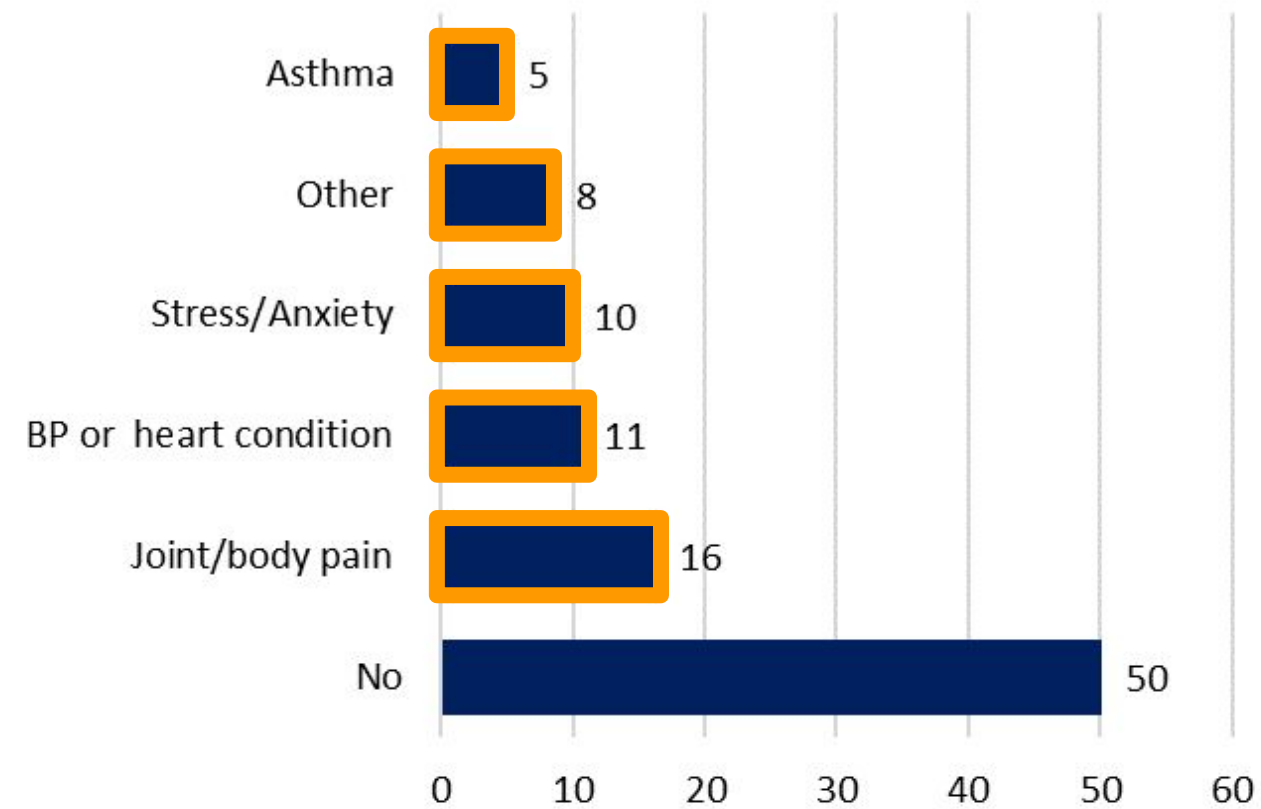
**55%** of IPT drivers are incurring loss of pay with **less patronage and high fuel consumption** because of the congestion.

### Problem Areas

Lack of prioritization of public transport | Overspeeding / Rash Driving | Poor bus scheduling

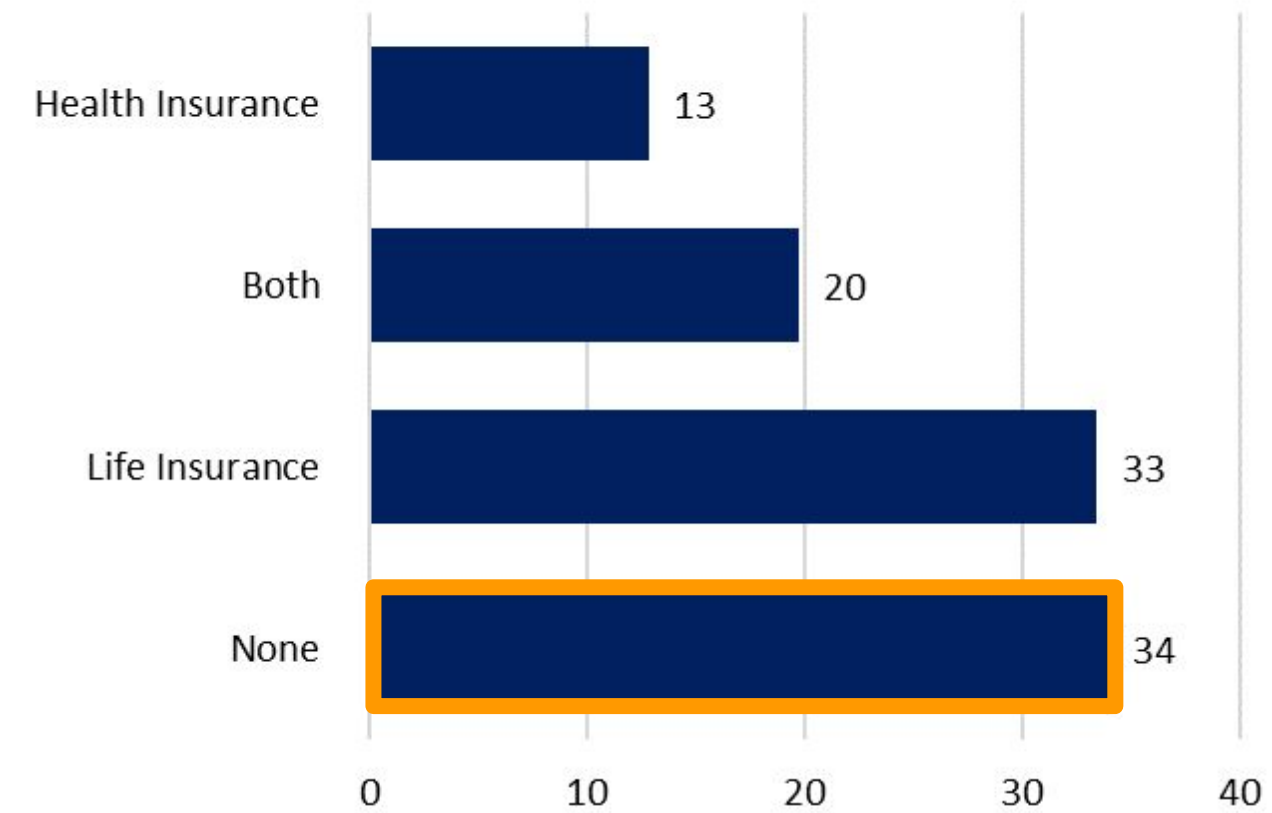
# Lack of Healthcare Facilities for Bus Staff

## Health Problems Faced by Bus Staff (%)



**~50%** of the bus staff are facing health problems

## Insurance Coverage (%)



**34%** of the bus staff drivers do not have any insurance.

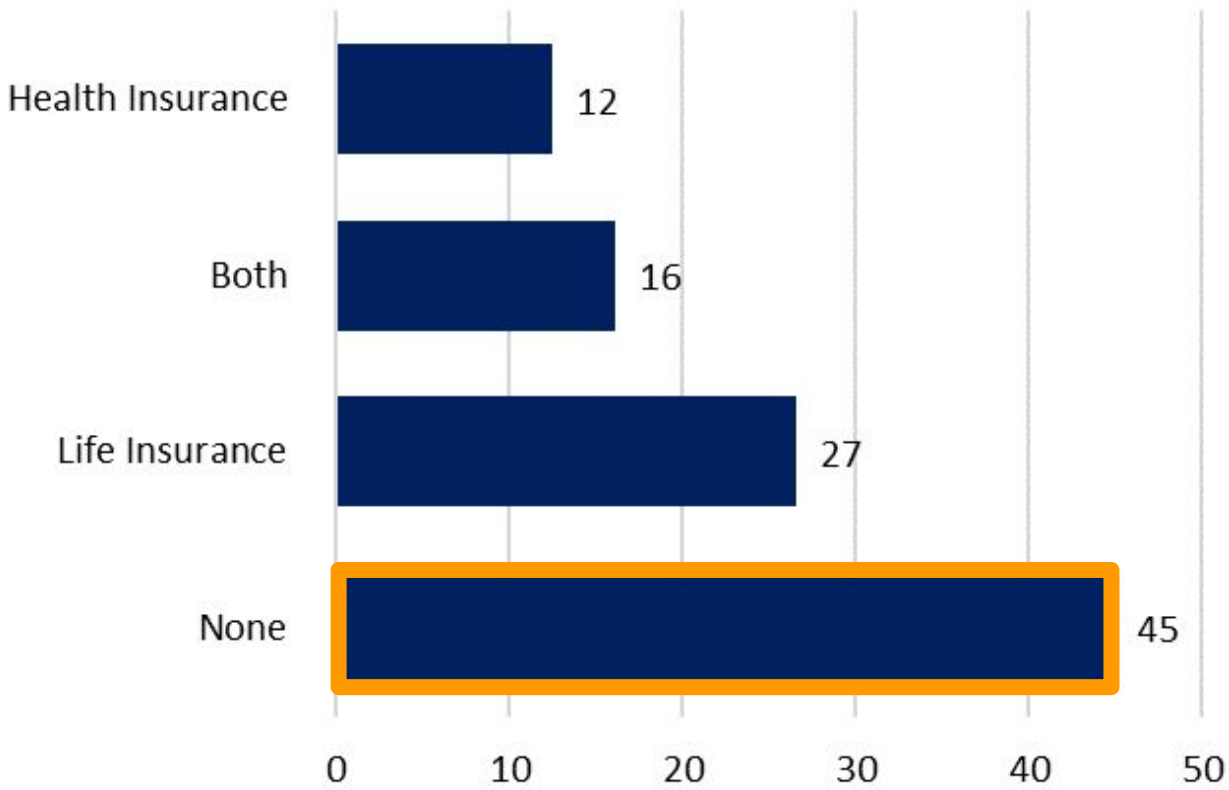
## Problem Areas

Lack of proper social benefit schemes for staff | Lack of regular health check-up camps | Lack of awareness



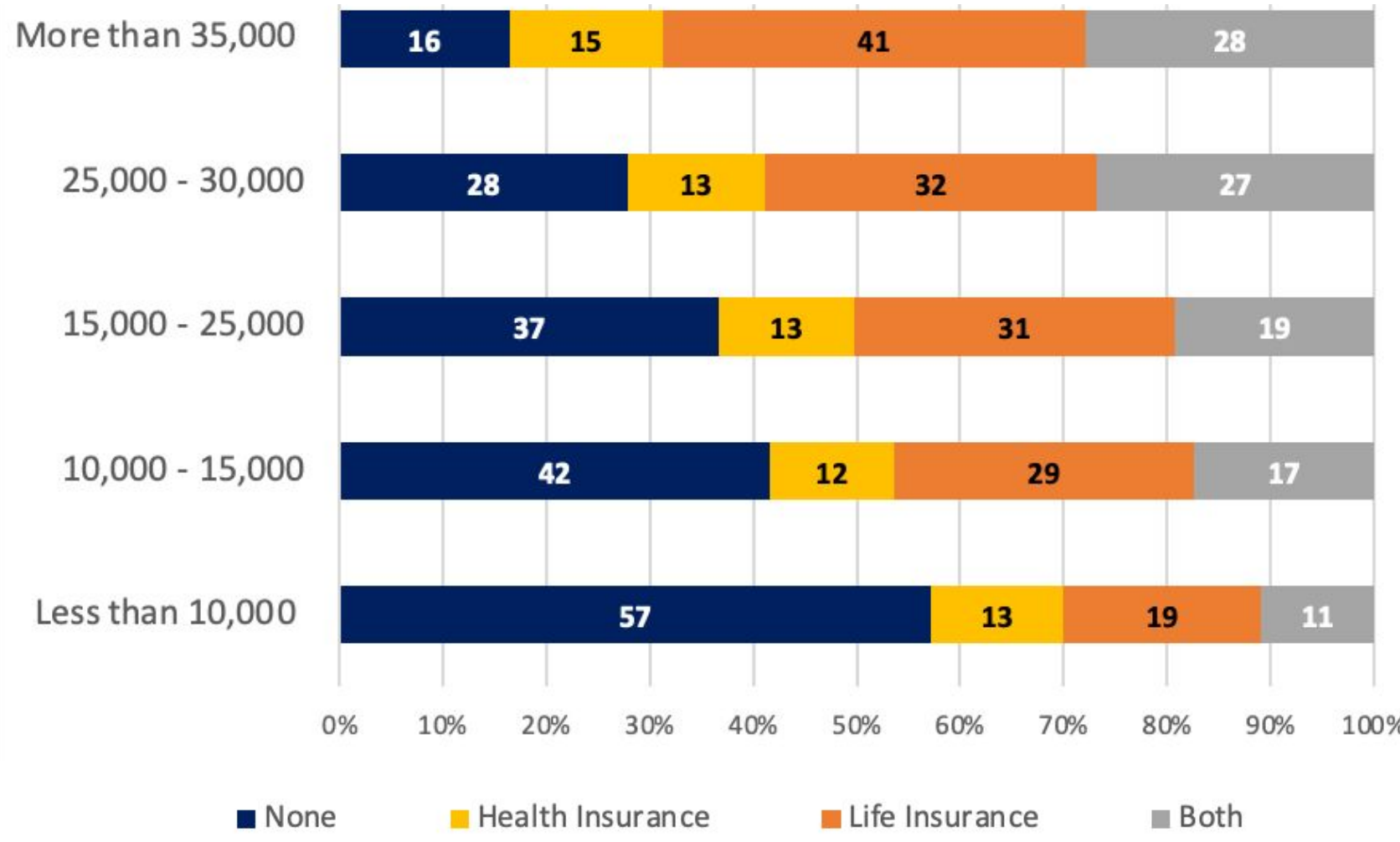
# Lack of Healthcare Facilities for IPT drivers

### Insurance Coverage (%)



**45%** of the IPT drivers are not able to afford any of the healthcare facilities.

### Insurance Coverage by Income (%)



As the income decreases, the proportion of drivers without insurance coverage increases.

### Problem Areas

Lack of proper social benefit schemes to ensure driver's health | Lack of regular health check-up camps | Lack of awareness

5

Problem Identification

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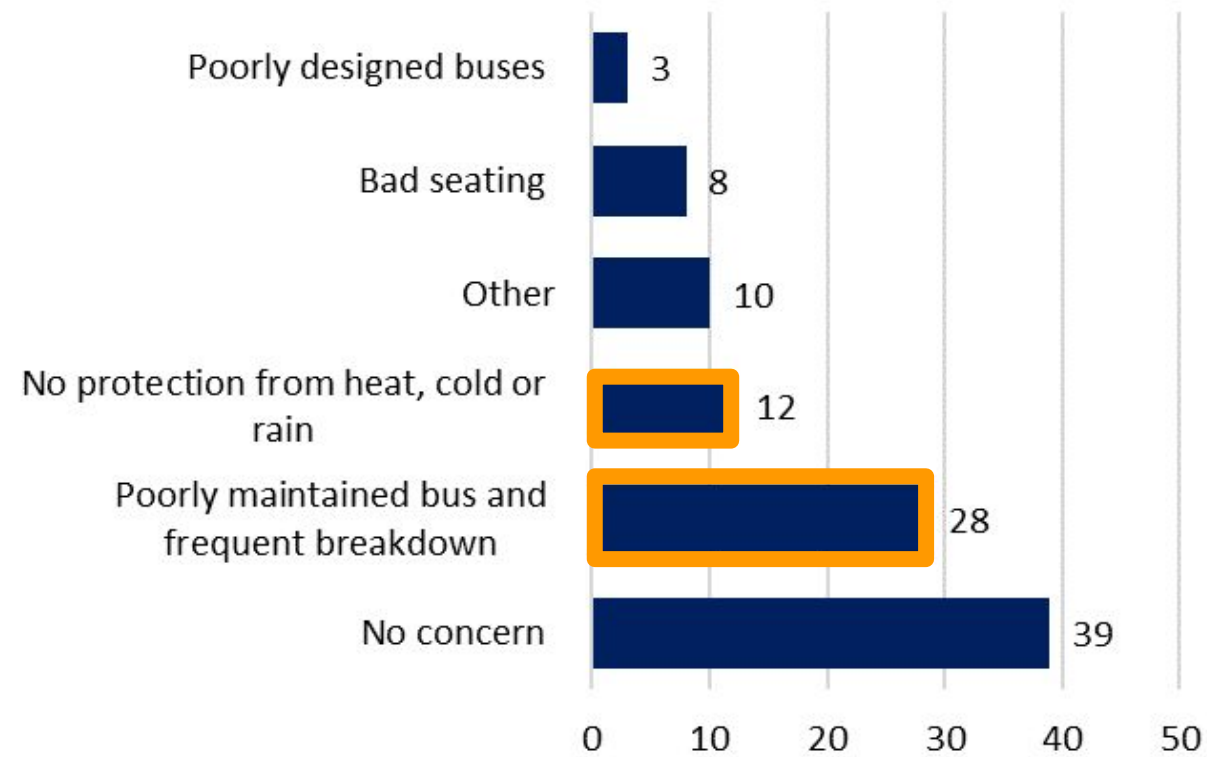
# Bus Staff & Maintenance Scheduling

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*(For Bus drivers and conductors)*

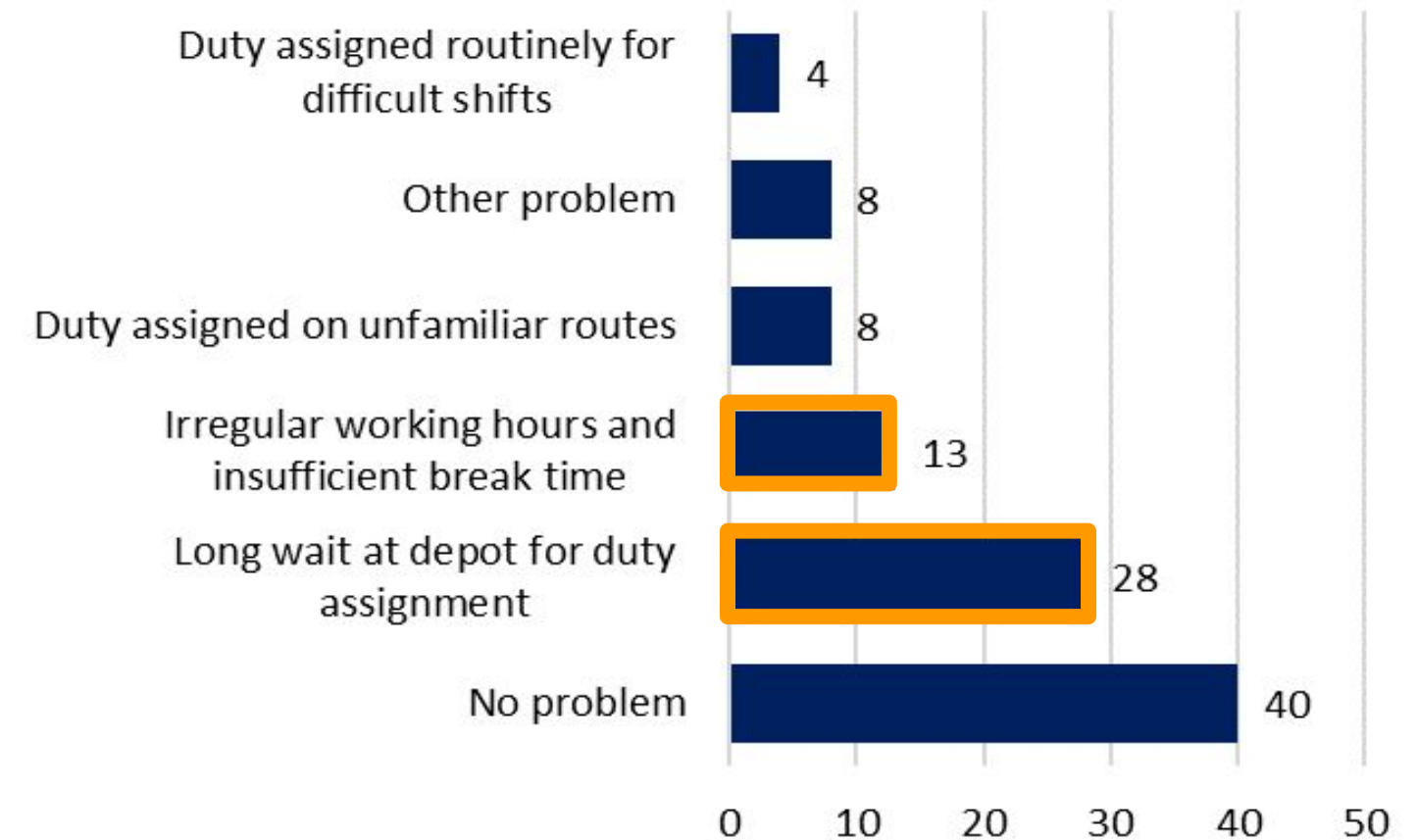
# Issues with Bus Scheduling & Maintenance

## Major Concerns with the Bus (%)



**40%** of the bus drivers & conductors report poor bus maintenance & lack of protection from heat, cold/rain as their major concerns.

## Major Concerns with Bus Scheduling (%)



**~40%** of the bus drivers & conductors report lack of efficient bus scheduling as their biggest concern.

## Problem Areas

Lack of periodic maintenance of buses | Lack of breakdown monitoring | Old bus fleet |  
Poor staff scheduling | Manpower crunch

6

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## Additional Concerns for IPT Drivers

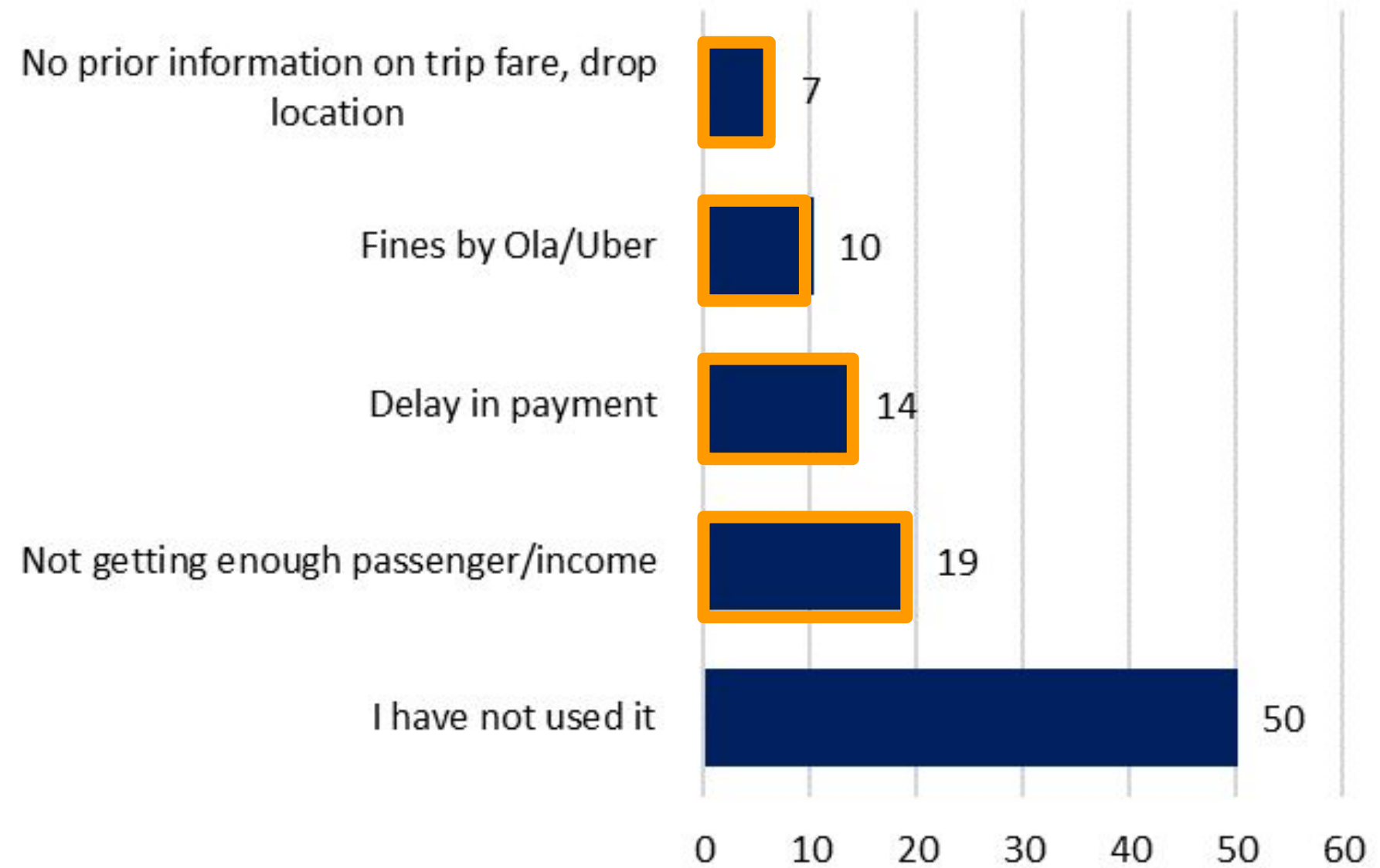
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# Concerns with Private App based Operators

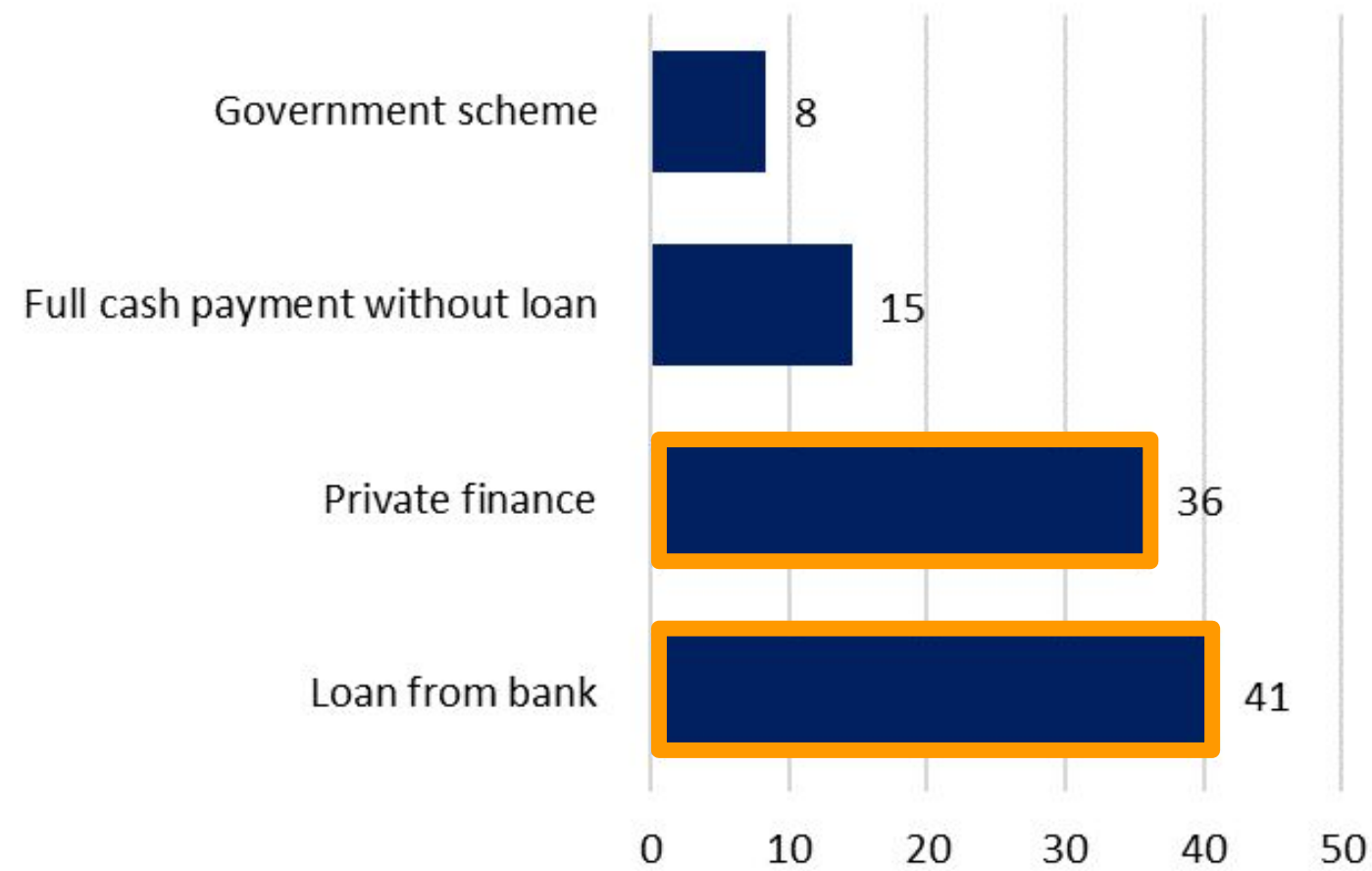
~50% of the IPT drivers are not happy using apps like Ola/Uber because of various reasons like insufficient income, delay in payments, fines and unavailability of information about the trip fare, drop location.

Issues with Companies like Ola/Uber (%)

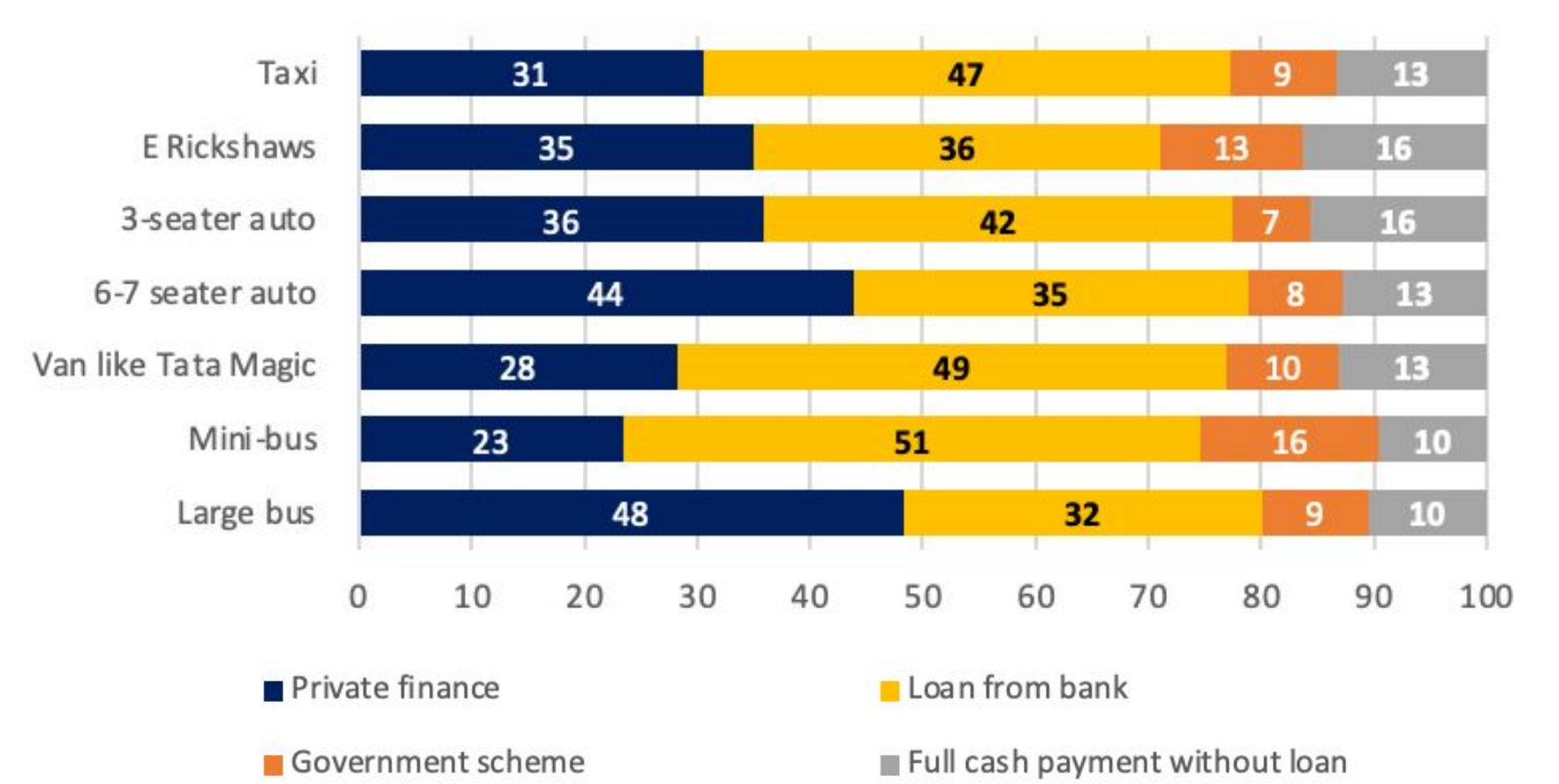


# Funding options for IPT vehicles

## Financing of the Vehicle (%)



## Financing of the Vehicle by Vehicle Type (%)



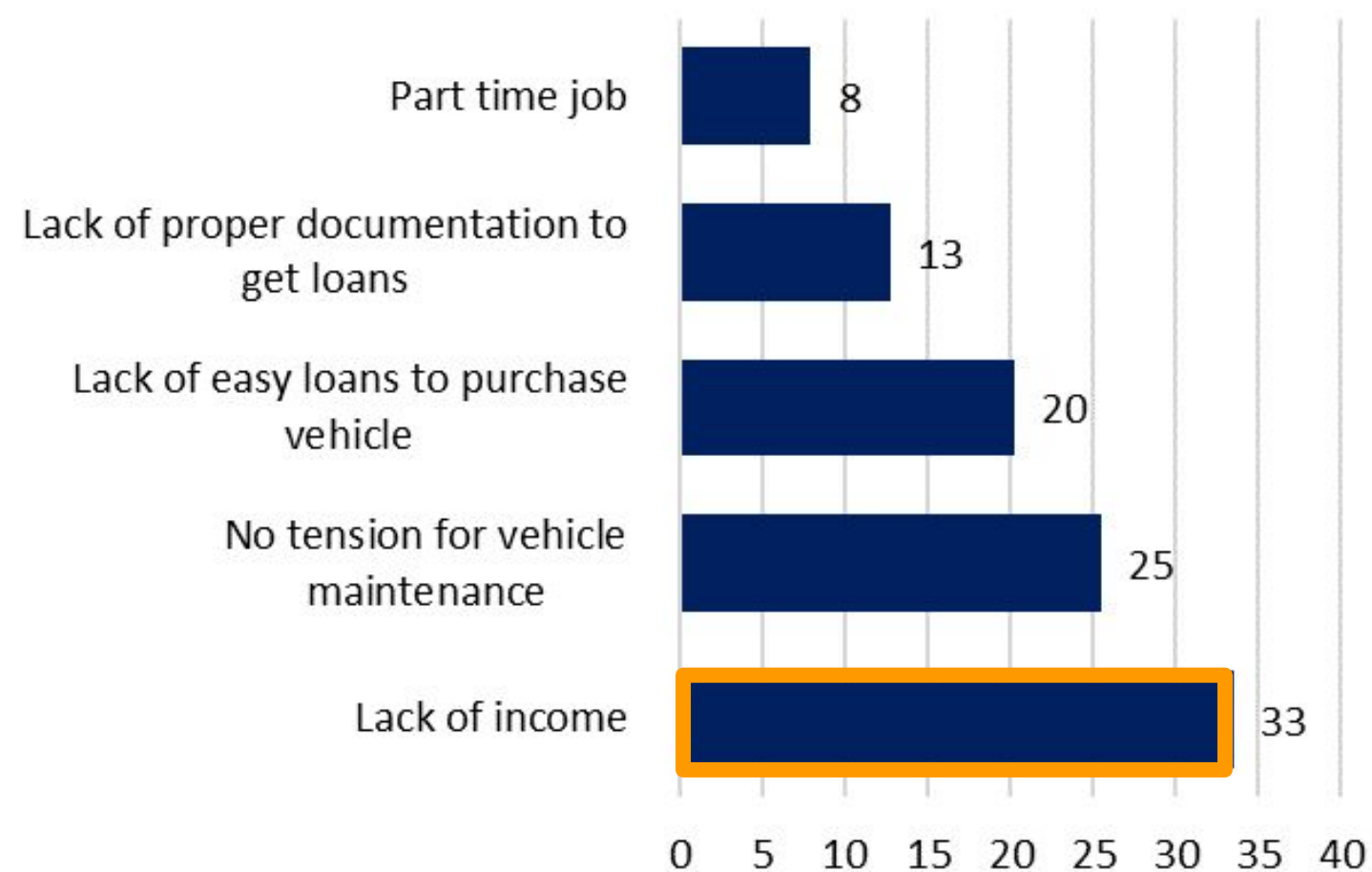
**77%** of the IPT vehicles are financed through loan from the bank or private finance.

## Problem Areas

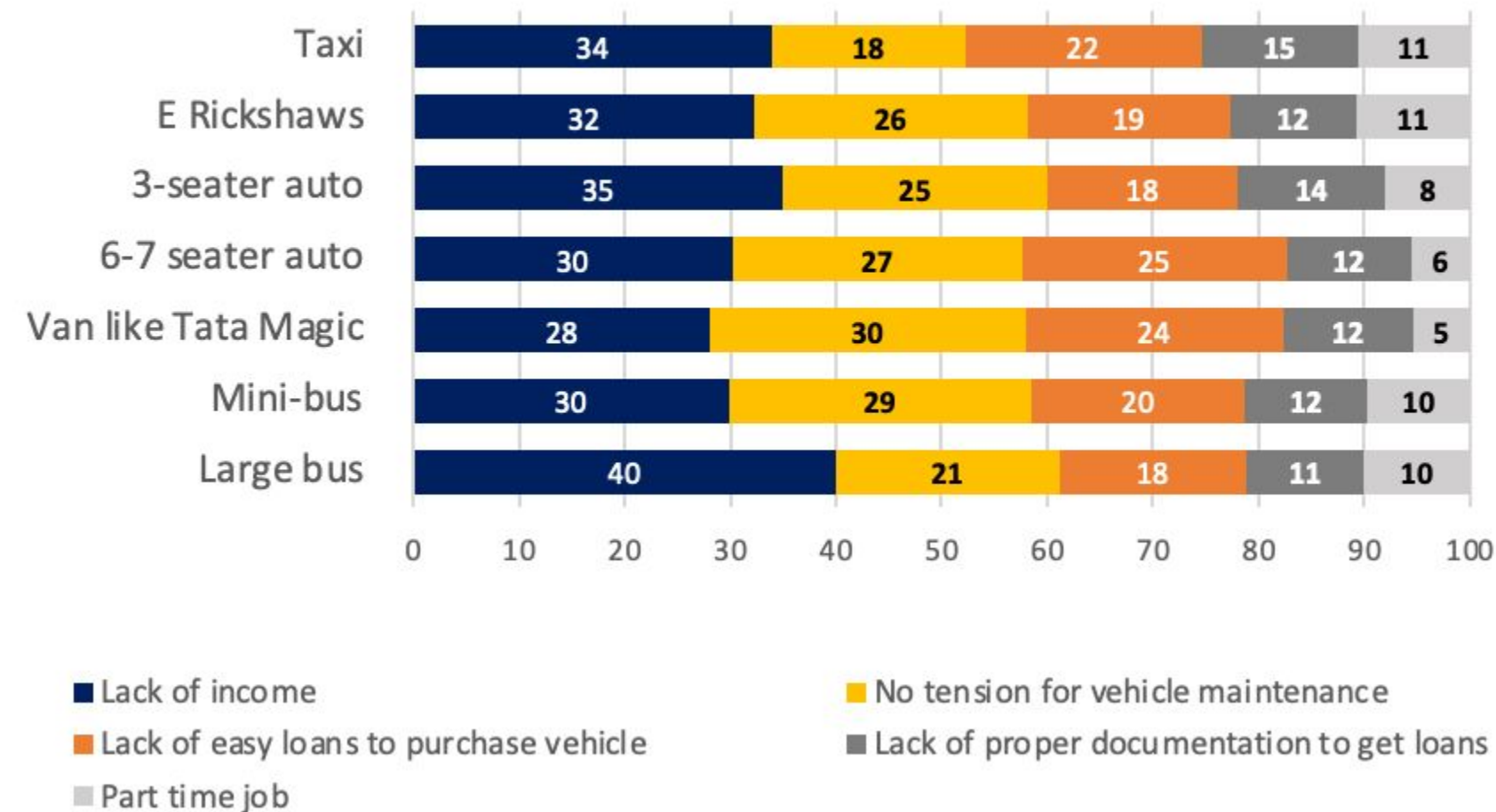
Poor access to government schemes | Higher interest rates | Lack of awareness

# Reasons for Renting

## Reasons for Renting the Vehicle (%)



## Reasons for Renting the Vehicle by Vehicle Type(%)



More than **~30%** of IPT drivers across all the modes are renting their vehicles as they cannot afford to purchase their own vehicle.

### Problem Areas

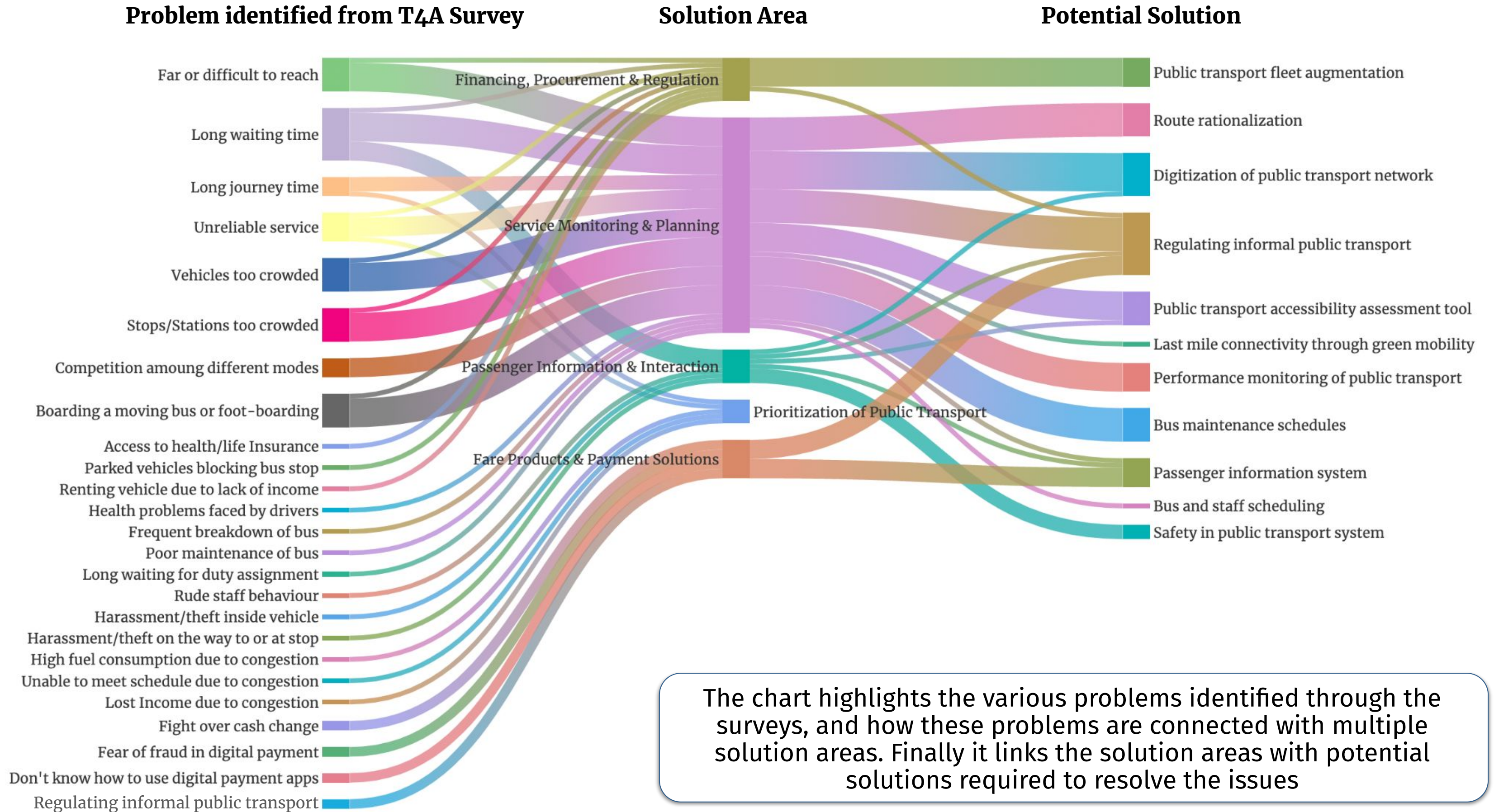
Poor access to government schemes | Higher interest rates | Lack of awareness





Image source - Dreamstime  
Location - Delhi

# Problem Identification



# SMART CITY - INTEGRATED COMMAND & CONTROL CENTER



# 165+ Problem Statements across 46 Cities

Problems that can be resolved by technological solutions through Transport4All Challenge

**01** Reliable passenger information system with integrated multimodal journey planning

- PIS
- Grievance redressal
- Fare integration

**02** Public transport route rationalization to enhance accessibility and increase service coverage

- Identifying, planning and regulating bus services

**03** Bus and staff scheduling to optimize resource utilization

- Scheduling optimized shifts
- Fair workloads and distribution of shifts

**04** Digitization of formal and informal public transport network and services

- Digitization of Public Transport and IPT data sets

**05** Bus maintenance schedules for optimal utilization of the fleets

- Preventive maintenance scheduling ensuring maximum fleet utilization

# 165+ Problem Statements across 46 Cities

Problems that can be resolved by technological solutions through Transport4All Challenge

06

Regulating informal public transport by developing a locally tailored aggregate solution

- Tracking IPTs
- Aggregating IPTs locally
- Regulating Fare

07

Public Transport Accessibility Assessment Tool

- Spatial tool that can visually indicate accessibility of PT

08

Performance monitoring of Public transport system

- Overseeing city bus operations

09

Safety in public transport system

- Ensure safe commute for transit friendly environment

10

Last mile connectivity through green mobility

- Better last mile connectivity planning with green modes

# 165+ Problem Statements across 46 Cities

Problems that can be resolved by non-technological solutions through Transport4All Challenge

## 11 Bus Fleet Augmentation

- Procurement of buses to match MoHUA guideline of 40-60 buses per lakh population

## 12 Public Transport Prioritization

- BRTS
- Bus Priority Lanes

## 13 Public Transport Supporting Infrastructure and Regulations

- Basic infrastructure for passengers at bus stops and IPT
- Space allotment to IPT
- Organized parking

## 14 Financial and Healthcare Support

- Insurance for all drivers & staff
- Financial support to drivers through government schemes



04

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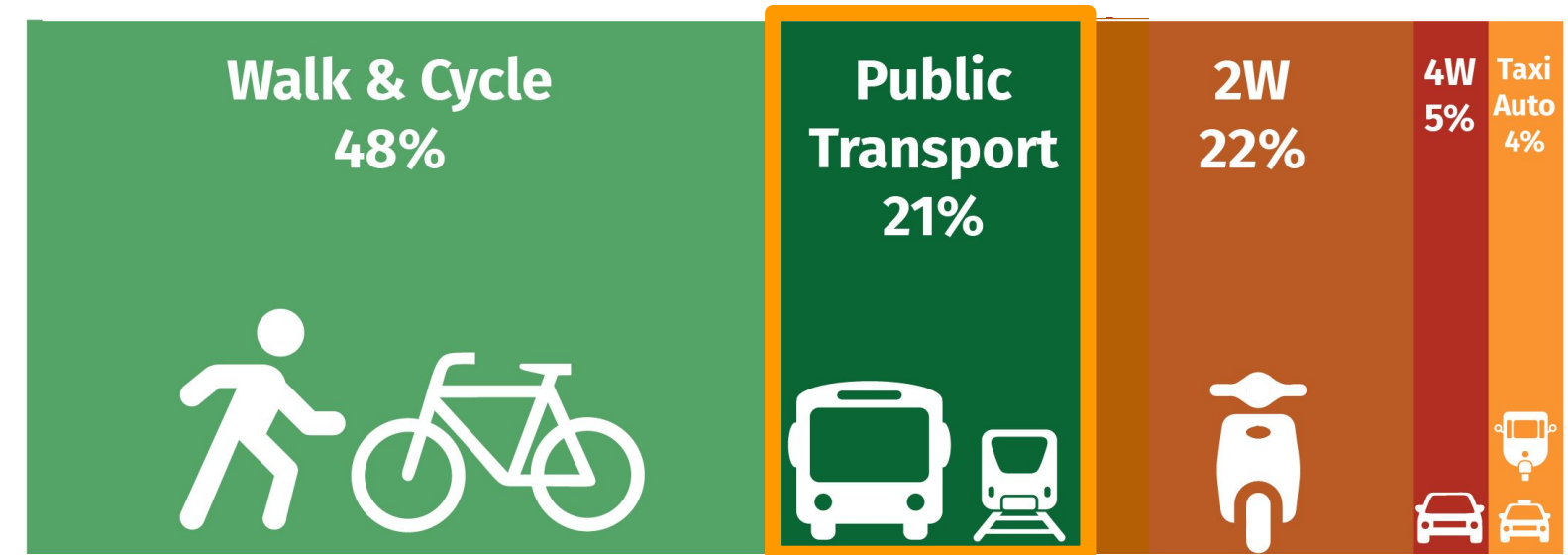
# Conclusion

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## Mode Share in Urban India - 2011 Census (%)



Transport4All challenge looks forward to solving various challenges faced by commuters, drivers and conductors using technology by bringing together the cities, citizens and start-ups.

By improving the public transport user experience, citizens would be encouraged to use the public transport.

**81%** of the non-public transport users are willing to shift to public transport, if improvements are made.

## Willingness to Shift to Public Transport if Improved (%)



# SOLUTION AREAS TO IMPROVE PUBLIC TRANSPORT



**Service Monitoring and Planning**



**Passenger Information and Interaction**



**Fare Products and Payment Solutions**



**Financing, Procurement and Regulation**



**Prioritization of Public Transport**

**These solutions will help make public transport safe, convenient, affordable and accessible to all.**



**SELTOS**  
BADASS BY DESIGN  
Starts at 79.99 Lacs

२२ शिवांतवाडी

05

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# Acknowledgements

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# MEET THE PEOPLE BEHIND THE SCENES

## CHALLENGE HOST



### **Kunal Kumar**

Joint Secretary and Mission Director,  
Smart Cities Mission,  
Ministry of Housing and Urban Affairs

### **Rahul Kapoor**

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### **Sampath Kumar S,**

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Ministry of Housing and Urban Affairs

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Vaishali Singh | Faraz Ahmad | Smrithi Prasad |  
Dhruv Soni | Chetan Doddamani

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Sreevidya K

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Kashmira Dubash

## KNOWLEDGE PARTNER



### **The Team**

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