

ALL ABOARD!

Accessibility, availability and affordability
of public transport in Bangalore



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In this publication, we present visualizations based on research undertaken by Fields of View as part of the project 'Joint Road Forward'. The project is a collaboration between Fields of View, International Institute of Information Technology, Bangalore, TU Delft, and KTH Royal Institute of Technology, Stockholm, Sweden. Our efforts in this project have been supported by The Netherlands Organisation for Scientific Research (NWO).

A note

The following publication is part of Fields of View's efforts to make policy research accessible using visualizations and comic books. All details presented in this publication are faithful to the research undertaken at Fields of View, and sources of all the data presented are indicated wherever applicable.

Do you know how many people use the public bus service daily in Bengaluru? It is almost equal to the population of Singapore.



In Bengaluru, buses were the only form of public transport till 2011, when Phase 1 of the Metro was inaugurated. Bangalore Metropolitan Transport Corporation (BMTC) manages public bus services, and it transports close to 4.9 million passengers every day with a fleet size of 6,631 buses [1].



People who live in slums in cities prefer public transport, apart from walking and cycling, as it is the only alternative for those who don't own a motorised vehicle.



As public transport has a direct impact on social mobility, the question that needs to be considered is: Is public transport 'adequate' for people who live in slums? Let us look at three dimensions of adequacy:



And, let us see how the public transport experience for a person who resides in a slum compares with that of an average person who resides in non-slum areas.

ACCESSIBILITY

How much do you have to walk to access a bus stop? The answer decides how accessible a bus stop is for you.

In other words, 'accessibility' is defined by the distance you have to walk to reach a bus stop.



If people have to walk...

...400 meters

and above to access a bus stop

they are less likely to use bus service [2].

0-400 mtrs
(high accessibility)



400-800 mtrs
(medium accessibility)



800 mtrs and above
(poor accessibility)



We measure accessibility for each slum by the number of bus stops that fall within an area of 1 square kilometer from the centre of the slum [1].

5 out
of
36
slums

Have no
accessible
bus stops.

The slums that do
have accessible bus
stops seem to have
the access because
of their location [1].

In Bengaluru, slums are often situated near main streets or roads, which are wide enough for buses to ply on. Such a location allows for more bus stops.

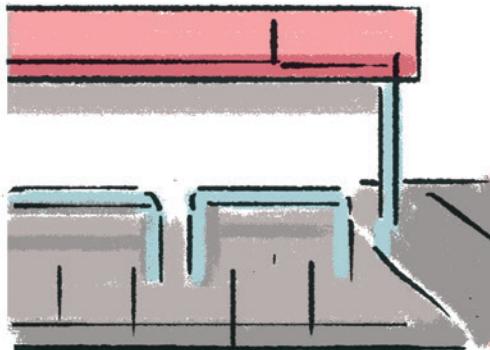


AVAILABILITY

Even if a bus stop is accessible, are buses available at those stops? What does 'availability' mean here?

Imagine this situation:

You recently moved to Channasandra and go to the nearest bus stop at 9 am.



You wait for a long time for your bus, that never shows up. You realise that the bus service is not very frequent.

You change your mind and decide to go elsewhere, only to find that there are no buses that go in that direction.

The above situation shows what 'availability' of public transport implies.

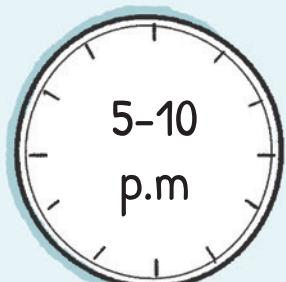
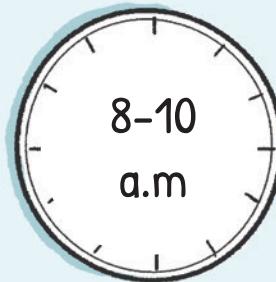


We measure availability in two ways:



1. Schedule availability:

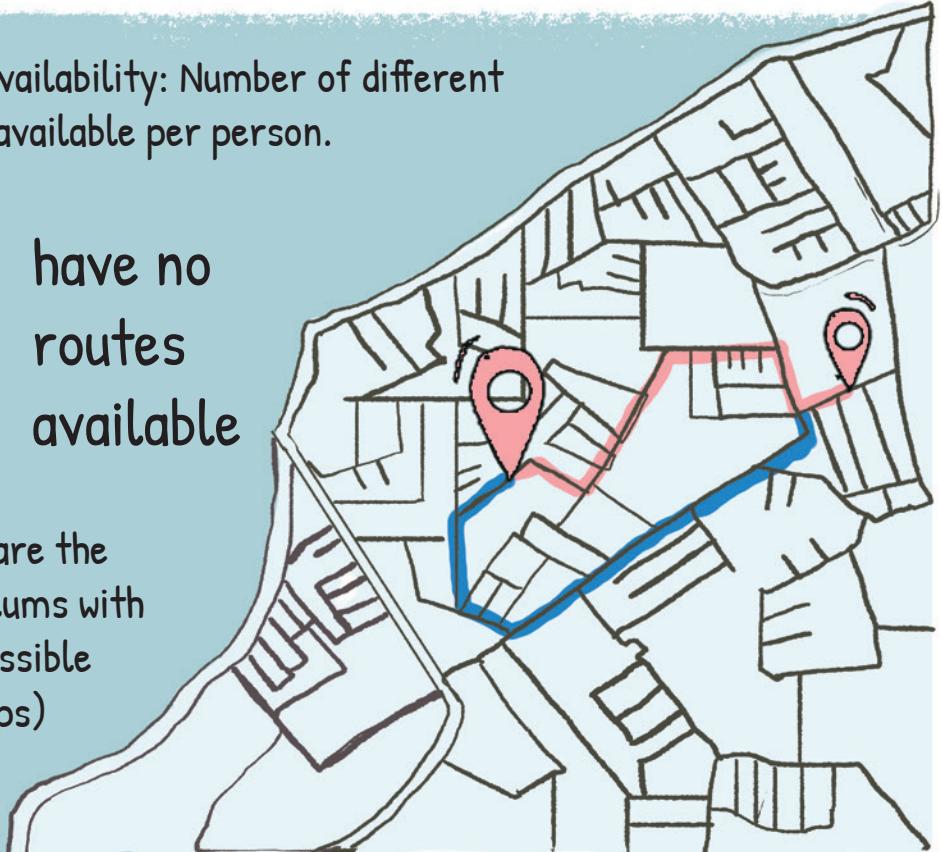
Number of different schedules available per person during a period of time.



2. Route availability: Number of different routes available per person.

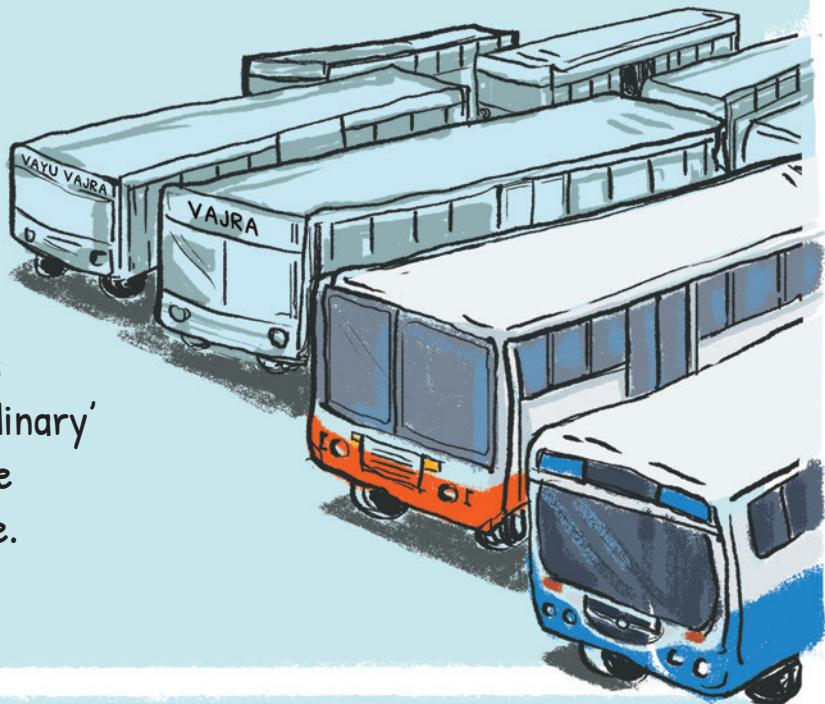
5 out of
36 slums have no routes available

(these are the same slums with no accessible bus stops)



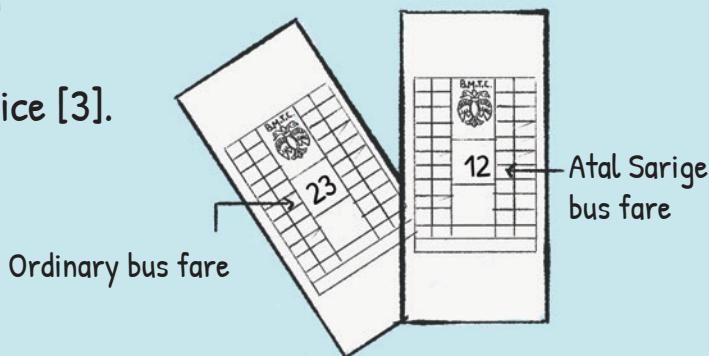
AFFORDABILITY

How much of your income do you spend on travel? The answer decides how affordable public transport is for you. The more you need to spend, the greater is the burden of affordability.

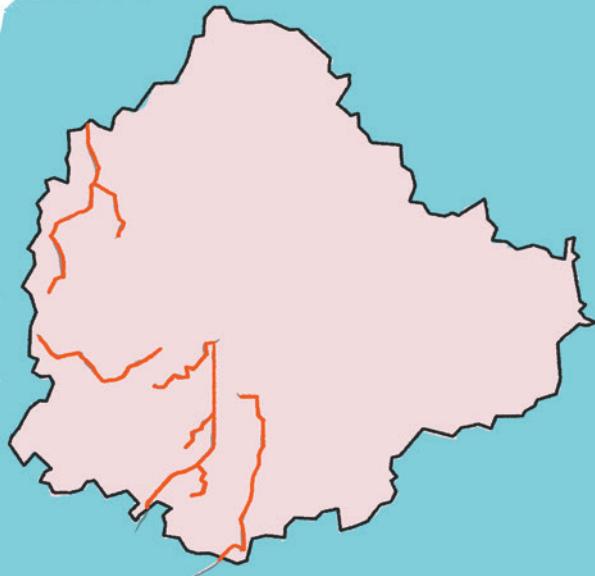


BMTC provides different kinds of services. Among its many services, 'Ordinary' and 'Atal Sarige' are the most affordable.

Atal Sarige's fares are almost half the cost of the 'Ordinary' service [3].



Fare comparison for a distance of 25 kms (ten stages)



Although Atal Sarige* eases the burden of travel by half for people who live in the slums, it is important to note that it is available only in 9 out of 36** slums surveyed.

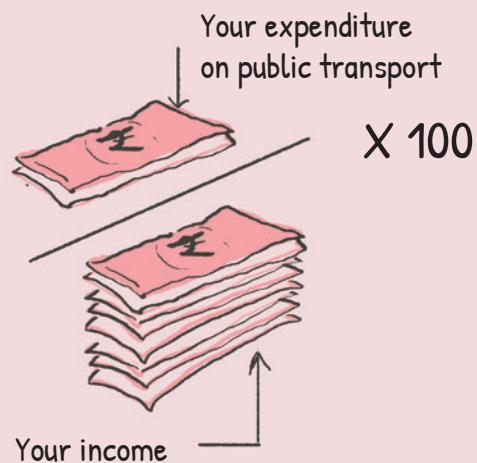
*The routes are from 2018.

**The figure is from 2010.

In order to understand how costly the commute is for a resident of slums in the city, we use the Affordability Burden Index.

We have estimated the cost burden of public transport on slums through the Affordability index.

It is the portion of one's income that is spent on public transport.



For the average resident in the city, Affordability burden index calculated is

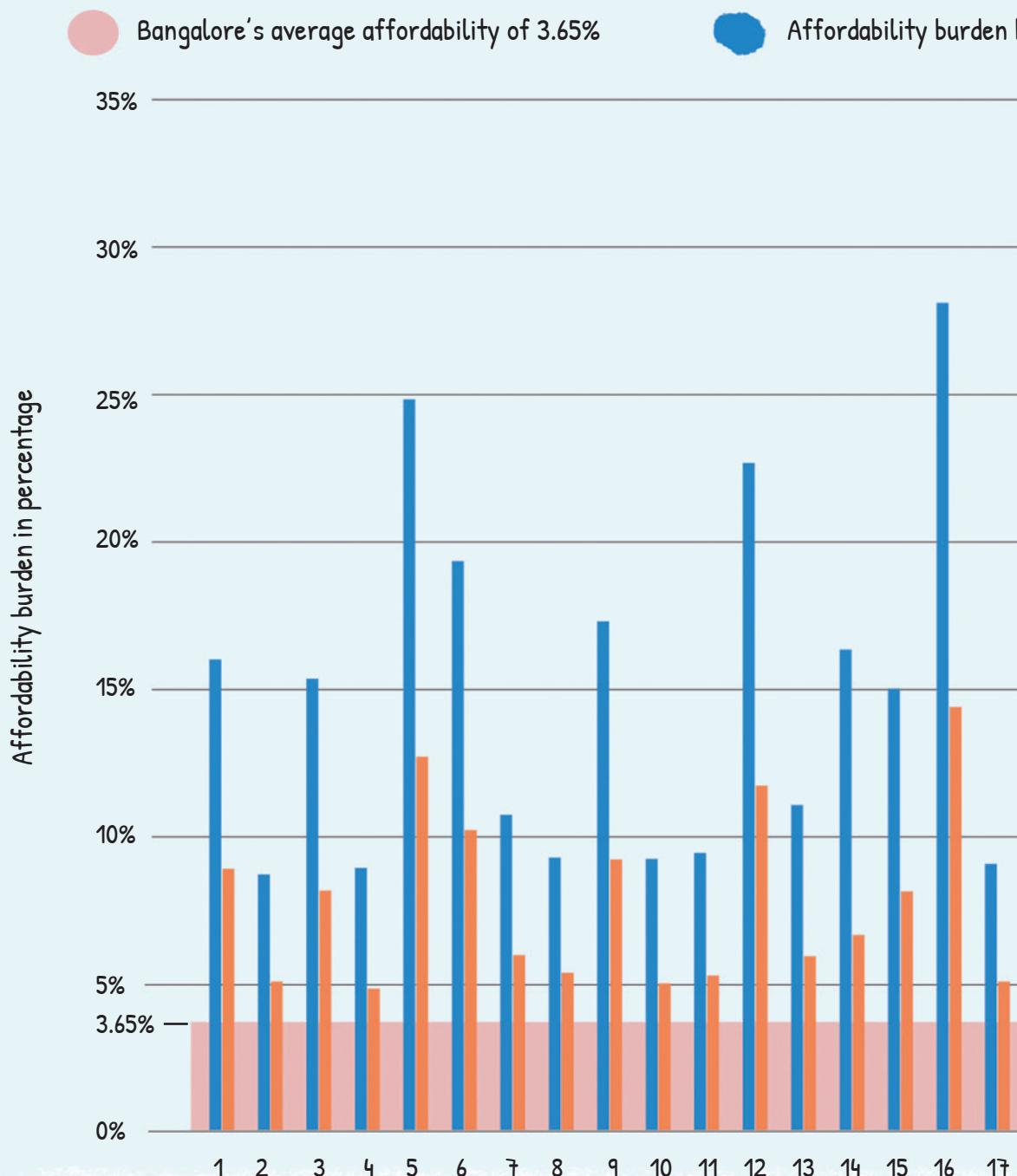
3.65%*



*calculated using presumptive cost of travel based on BMTC base fare of INR 20 for 12 kms and average daily income of 547.67 [4,5].

This graph displays the cost burden borne by people residing in the surveyed slums.

You can see how it compares with the affordability burden (3.65 %) of an average resident of non-slum areas.

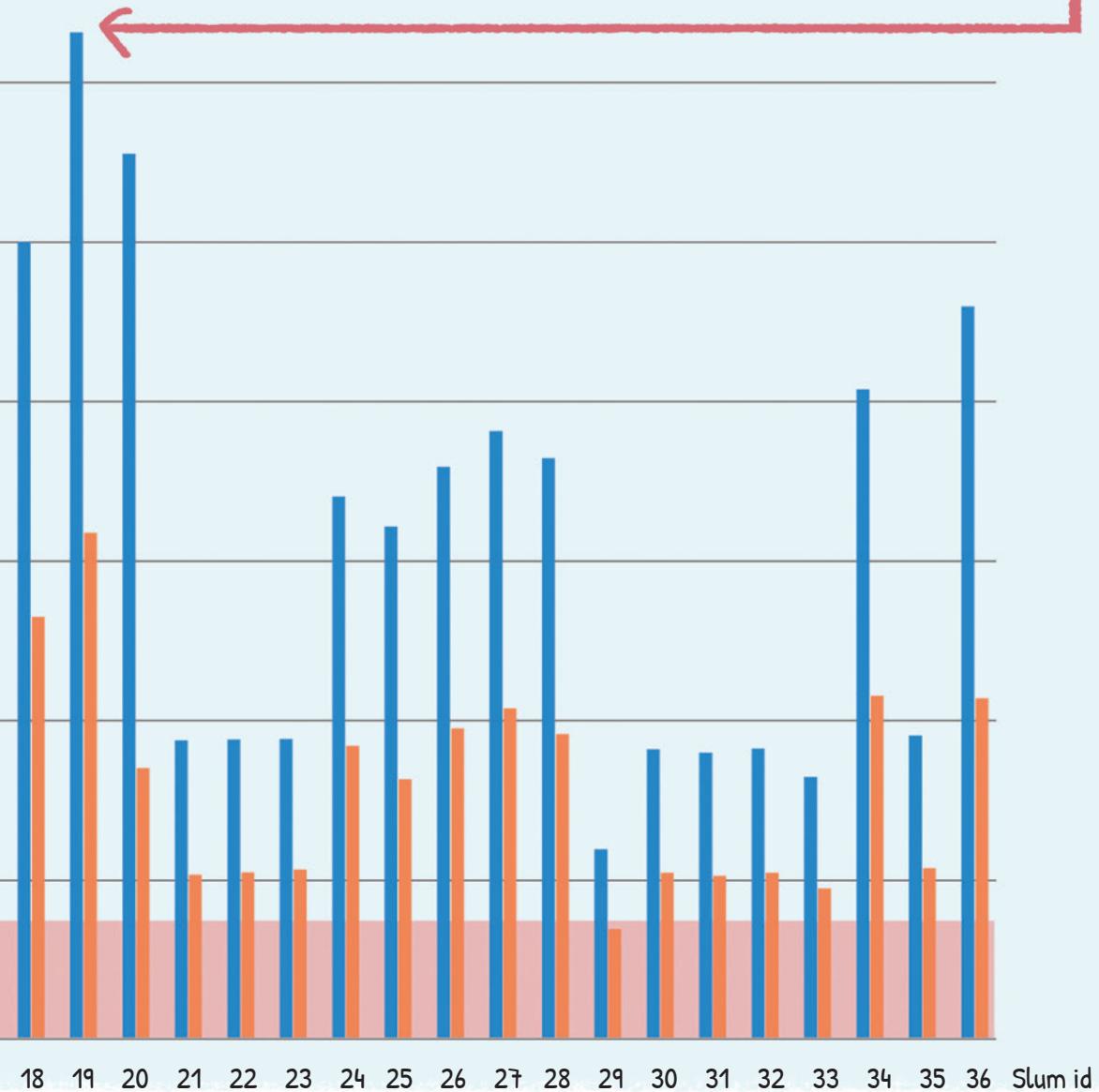




In some slums the burden of spending on public transport can go upto 10 times the spending of an average resident in the city.

by using Ordinary services

Affordability burden by using Atal sarige service



Here is a comparison of the 3 metrics (per person) to see how adequate the services are for people who live in slums:

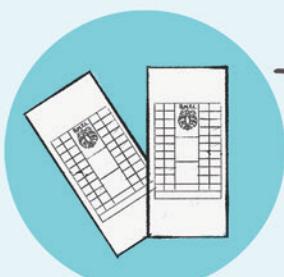
ACCESSIBILITY



Person
in a non-
slum area



AFFORDABILITY



For every 1 accessible bus stop



Given the average affordability burden of a resident in the city

AVAILABILITY



For every 1 route available

Schedule availability



8-10 am



For 1 Ordinary bus schedule



5-10 pm



For 1 Ordinary bus schedule



8-10 am



X 3.8 For 3.8 Ordinary bus schedules



5-10 pm



X 7 For 7 Ordinary bus schedules

*Please note that the data is only for 36 surveyed slums.

Person
in a slum



X 25

There are 25 accessible bus stops for the slums



X 4.5

Ordinary services are 4.5
times more expensive for
those in slums



X 2.3

Atal sarige is 2.3 times
more expensive for
those in slums



X 15.8

There are 15.8 bus routes available in the slums

Schedule availability



X 48.6

there are 48.6 Ordinary
bus schedules.



X 63.3

there are 63.3 Ordinary
bus schedules.



Only 1 Atal sarige schedule available



Only 1 Atal sarige schedule available

TO SUM IT UP:

Public transport is increasingly being seen as critical for social mobility. To reach the place of livelihood, education, healthcare, and other needs, access to affordable, available, and accessible public transport is imperative for people who reside in slums. Thus, for the Indian context, needs and preferences of diverse sets of people, especially vulnerable and marginalised groups, has to be included in the transport planning process. What can we then do to make public transport equitable?

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