Parameters of Assessing Public Transport Accessibility for Indian Cities

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1 Introduction

Literature Review

Public transport can be enhanced by improving its accessibility with regards to population distribution. Therefore, it is important to measure the level of accessibility offered by the current system.

PTAL (Public Transport Accessibility Levels)

measures accessibility of a point of interest in terms of availability of public transport service at nearest service access point (e.g., public transport stop) within given maximum access time, irrespective of destination. (Transport for London, 2010)



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Parameters of PTAL

Point of Interests (POIs)- origin of trip

Service Access Points (SAPs)- stops like bus stops, metro stations, etc.

Walk network- shortest path b/w POI and SAPs.

🛱 🛱 Service frequency data

There are other tools as well for assessing existing public transport system such as:

- Time-Based Transit Service Area Tool (TTSAT)
- Land Use & Public Transport Accessibility Index (LUPTAI)

Studies show that public transport accessibility is impacted by a number of factors and may result in inequalities for various social groups. Therefore, assessment of existing PT system is important to overcome such invisibly affecting challenges.

	Name of document	Year	Learning Outcomes
1	Public Transport Accessibility Levels (Steve Abley & Reuben William)	2008	PTAL and it's parameters
2	Public Transport Accessibility: A Literature Review (Muhammad Atiullah Saif , Mohammad Maghrour Zefreh, Adam Torok)	2019	PT accessibility from various aspects like sustainability, social exclusion, public health, etc.
3	Uneven mobilities, uneven opportunities: Social distribution of public transport accessibility to jobs and education in Montevideo (Diego Hernandez)	2017	 Application of PTAL Fare and time has significant impact on accessibility
4	Public transport accessibility in metropolitan areas: A new approach incorporating population density (Tayebeh Saghapour & Sara Moridpour, Russell G. Thompson)	2016	Accessibility cannot be completely understood by only focusing on residential spaces.
5	Public Transport Accessibility Levels for Ahmedabad, India (Jay Shah, Bhargav Adhvaryu)	2019	Square grids can be considered in case of lack of POI (Point of Interests)
6	Mapping public transport accessibility levels (PTAL) in India and its applications: A case study of Surat (Bhargav Adhvaryu, Abhay Chopde, Lalit Dashora)	2019	Relation b/w PTAL and population density
7	Study on Public Transport Accessibility Levels (PTAL) in Delhi	2021	Hexagonal grids instead of square grids as POI s

2 Need of the Study

Aim, Objectives and Methodology

Aim:

To identify the parameters influencing accessibility of public transport.

Limitation:

- 1. Study is focused on only small Tier II cities.
- 2. Only intra connectivity using both PT and IPT would be assessed.
- 3. Socio- economic parameters are not considered for this study.







2. PT usage by only Captive users

Public transport users in India are mostly captive users and not users of the system by choice. (Ministry of Urban Development, GOI)

3. Accessibility assessment of only metropolitan cities

PTAL assessment has only been carried out for cities of- Ahmedabad, Surat, Pune, Bangalore, Raipur- New Raipur, Hubli- Dharwad, Lucknow and Delhi.

NO smaller cities are studied till date on this head.

3 How is PTAL developed?

Factors Influencing Accessibility of Public Transport

Step 1: Define points of interest (POI) and service access points (SAP)

Step 2: Calculate walk access time from POI to SAP

Step 3: Identify valid routes at each SAP and calculate average waiting time (AWT)

AWT= (0.5 * 60/frequency) + k

Step 4: Calculate total access time (TAT) for each valid route at each SAP

TAT= WT + AWT

Step 5: Convert TAT into equivalent doorstep frequency (EDF)

EDF= 30/ TAT

Step 6: Calculate accessibility index (AI) for each POI





However, **significance** of these parameters is not being utilized for assessing the accessibility of existing public transport system.

4 Site Selection

Data Collection





For assessment of identified parameters

Observational Survey 5

Data Analysis- Perception Survey





Encroached bus stops





Even IPT stand has stop infrastructure available in the city

Singrauli



Incomplete infrastructure



Broken stops due to road widening



Encroachment of available PT stops







Cleanliness at

Inferences:

- People of all the locations prefer PT majorly due to low fare prices.
- In Satna, PT users find boarding/ alighting and cleanliness as major reason for opting IPT.
- In Rewa, dirty station and vehicle is the negative factors for non-PT usage.

Inferences:

- Ease of boarding/ alighting is the main reason after frequency that people of Satna and Rewa prefer IPT.
- Comfortability and cleanliness accounts for shift of preference from IPT to private vehicles.

6 **PTAL Analysis**



- a) Overlapping routes within and among modes results in improved accessibility of the area.
- b) The greater the coverage of routes in the city, the better the overall accessibility.

- c) Lesser is the distance between PT stops along the routes, the better the accessibility of surrounding areas.
- Reliability has a greater impact on the accessibility index than the frequency of service provided.

7 **Recommendations**











Inferences:

a) When the areas with no built cover is eliminated, overall accessibility of the city improves but the AI values does not change.

8 **Recommendations**



9 **Recommendations**



Conclusion- Revised PTAL tool



THANK YOU