








CIVITAS indicators

Public transport supply index – Version 1 (TRA_PT_PTA1)

DOMAIN

 Transport	 Environment	 Energy	 Society	 Economy
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TOPIC

Public transport

IMPACT

Public transport availability

Improving the availability of public transport

TRA_PT

Category

Key indicator	Supplementary indicator	State indicator
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CONTEXT AND RELEVANCE

Public transport is generally more environmental-friendly than motorised private transport because it facilitates the efficient use of resources by transporting a larger number of passengers in a single vehicle, thereby reducing overall energy consumption and emissions per person compared to individual private vehicles. It is therefore desirable that public transport is widely used. A requirement for the use of public transport is its availability: if supply is limited (stops/stations are difficult to reach, there are few services, etc.) public transport cannot be an attractive or even feasible option for personal urban trips.

This indicator provides a measure of the availability of public transport. **It is a relevant indicator when the policy action is aimed at improving the availability of public transport. A successful action is reflected in a HIGHER value of the indicator.**

DESCRIPTION


This indicator is a **dimensionless index** where four elements are combined:

- **The length of public transport routes** in the experiment area
- **The number of public transport stops/stations** in the experiment area.
- **The average number of daily departures** of public transport routes in the experiment area
- **The number of inhabitants** in the experiment area

The length of routes, the number of stops/stations and the average frequency of departures are simple proxy measures of public transport supply. The number of inhabitants is used to consider that length of routes and the number of stops is correlated with the size of an area.

METHOD OF CALCULATION AND INPUTS

The indicator is calculated by means of a mathematical equation, **within the supporting tool, building on a set of required inputs.**

Method	
Calculation of the index based on simple proxy measures of Public Transport supply	Significance: 0.50 
METHOD OF CALCULATION <p>The indicator is computed according to the following steps:</p> <ul style="list-style-type: none">• Quantification of total length of public transport routes involved in the experiment.• Quantification of total number of stops/stations of public transport routes involved in the experiment.• Quantification of the average number of departures of public transport routes involved in the experiment.• Estimation of the index (within the supporting tool).	
INPUTS	

The following information should be coded in the supporting tool to compute the indicator:

- a) *PTLngh*. **Total length of public transport routes in the experiment area.** (If the experiment area is the whole city, it is the length of all public transport routes). Length of each route should be obtained from the transport operator or measured on map and then summed over all relevant routes.
- b) *StopsNm*. **Total number of stops/stations of public transport routes in the experiment area.** (If the experiment area is the whole city, it is the total number of stops/stations in the city). It should be obtained from the transport operator or collected from services map.
- c) *AvDayDepr*. **Average number of departures between 6 and 22 for public transport routes in the experiment area.** It should be computed building on routes timetables considering the number of departures in both directions:

$$AvDayDepr = \frac{\sum_r r_{DayDepr}}{R}$$

Where:

$r_{DayDepr}$ = number of departures (in both directions) between 6 and 22 for route r .

R = number of routes involved in the experiment.

- d) *Inhab*. **Number of inhabitants in the experiment area.** (If the experiment area is the whole city, it is the total number of inhabitants in the city). It should be taken from the demographic statistics of the municipality

The experiment would be reflected in the indicator by changing any input that is affected by the measure(s) implemented. For instance, if the frequency of some services is increased, the average number of services *AvDayServ* would be increased.

EQUATIONS

The equation **used within the supporting tool** to manage the calculation, building on the provision of the inputs, is the following:

Estimation of the availability index (indicator value):

$$PTSuppIndex = \frac{PTLngh^{\beta_1} * StopsNm^{\beta_2}}{Inhab} * AvDayDepr^{\beta_3}$$

The elements $\beta_1, \beta_2, \beta_3$ are weights pre-defined in the tool

ALTERNATIVE INDICATORS

An alternative indicator for measuring the same impact is **TRA_PT_PTA2**. This alternative indicator uses a more elaborated measures of transport supply. Therefore, it is more complex to implement but more significant.

	TRA_PT_PTA1	TRA_PT_PTA2
Complexity	<div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>
Significance	<div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>