CIVITAS
Sustainable and smart mobility for all
2030

CIVITAS indicators

Share of urban area for parking (ENV_US_IP2)

DOMAIN

Transport	Environment	Energy	Society	Economy

TOPIC	**Noise**	
IMPACT	**Transport visual impact** *Reducing the aesthetic footprint of motorized vehicles in the urban environment*	**ENV_US**

Category

Key indicator	**Supplementary indicator**	State indicator

CONTEXT AND RELEVANCE

The share of urban area dedicated to parking influences the visual and spatial quality of cities. Excessive land use for motorized vehicle parking—whether on-street or off-street—contributes to visual clutter, reduces green and recreational spaces, and undermines the compactness and liveability of urban environments. A high proportion of urban space allocated to parking reflects car-centric planning priorities, often at the expense of pedestrians, cyclists, and public transport users.

This indicator measures the share of land occupied by parking infrastructure within the pilot area. **It is particularly relevant when policy measures aim to reduce the visual and physical footprint of vehicles in the city. A successful intervention is reflected in a LOWER value of this indicator.**

DESCRIPTION

The indicator is computed as the ratio between the urban area taken up by parking infrastructure, considering both on-street and off-street parking, and the total non-built urban area. The indicator consists of a share; therefore, it is **dimensionless**.

METHOD OF CALCULATION AND INPUTS

The indicator should be calculated **exogenously** based on the required inputs and then coded in the supporting tool**.**

There are two alternative methods available for calculating this indicator. The two methods differ in their data sources for the area occupied by motorized vehicle parking. Method 1 relies on GIS data, satellite imagery or site plans, making it more scalable for larger experiment areas. On the other hand, Method 2 is based on on-site measurements, which is more labour-intensive to perform over large areas but can be used in cases where accurate GIS and map data on parking is unavailable.

METHOD 1		METHOD 2	
Parking infrastructure area from GIS data, satellite imagery or site plans		**Parking infrastructure area from on-field measurements**	
Complexity		Complexity	
Significance		Significance	

Method 1

Parking infrastructure area from GIS data, satellite imagery or site plans

Significance: **0.75**

INPUTS

The following information is needed to compute the indicator:

a) **The size of the public urban space taken up by motorized vehicle parking.** This includes on-street and public off-street parking space for cars, vans, motorbikes and scooters, but it excludes underground and multi-storey parking garages.
b) **The size of the non-built and public urban space.** This value is equal to the size of the total urban area minus the area occupied by buildings and private property. The value includes therefore the area taken up by roads, squares, sidewalks, parks, and all other open spaces.

The experiment would result in a modification of the size of the urban space taken up by motorized vehicle parking.

METHOD OF CALCULATION

The indicator is **computed exogenously and then coded in the supporting tool** according to the following steps:

- **Retrieval of the area of public urban space occupied by motorized vehicle parking from GIS data.** A GIS layer on vehicle parking can be sourced from **municipal or road authorities**, including the local police. Alternatively, **open data** may be used; however, data provided by local authorities is generally more accurate and up to date compared to third-party open data sources. If no viable GIS parking layer is available for the study area, **satellite imagery**, for example obtained from Google Earth, or **site plans** can be used as an alternative by manually digitizing parking areas by drawing polygons over them. However, this approach is more labour-intensive.

- **Retrieval of the area of non-built public urban space.** This data can be obtained from GIS data of the experiment area, sourced from either municipal and road authorities, or third parties.

- **Calculation of the indicator** as ratio between the area of public urban space occupied by motorized vehicle parking and the area of non-built public urban space (see equation below).

EQUATIONS

The indicator is computed as:

$$\boldsymbol{ParkShr} = \frac{\boldsymbol{ParkArea}}{\boldsymbol{NonBuiltArea}}$$

Where:

$ParkArea$ = Size of the public urban space taken up by motorized vehicle parking in the experiment area

$NonBuiltArea$ = Size of the non-built and public urban area in the experiment area

Method 2

Parking infrastructure area from on-field measurements	Significance: **1.00** 

INPUTS

See Method 1.

METHOD OF CALCULATION

The indicator is **computed exogenously and then coded in the supporting tool** according to the following steps:

- **Measurement of the area of public urban space occupied by motorized vehicle parking.** The measurement may be conducted as on-site surveys using laser rangefinders or measuring wheels.
- **Retrieval of the area of non-built and public urban space.** This data can be obtained from GIS data of the experiment area, sourced from either municipal and road authorities, or third parties.
- **Calculation of the indicator** as ratio between the area of public urban space occupied by motorized vehicle parking and the area of non-built and public urban space.

EQUATIONS

See Method 1.

ALTERNATIVE INDICATORS

This indicator measures the share of urban area taken up by motorized vehicle parking, allowing to evaluate whether land area is excessively allocated to parking, hindering the attractiveness and visual appeal of the experiment area. Furthermore, allocating urban space to parking comes at a detriment for other urban mobility modes, such as walking, cycling, and public transport, and other land uses, such as greenery and recreation.

While this indicator assesses legal parking spaces, alternative indicator **ENV_US_IP1** provides a measure of illegally parked vehicles in the experiment area. The presence of irregularly parked vehicles—cars, bikes, scooters, etc.— negatively affects aesthetic appeal of urban spaces, in addition to their functionality, as it can disrupt vehicular traffic flow and obstruct pedestrian areas and bike paths, reducing accessibility and safety for road users.