








CIVITAS indicators

Bike-reserved paths connectivity index – Version 2 (TRA_BK_CN2)

DOMAIN

| | | | | |
|---|---|--|---|--|
|  Transport |  Environment |  Energy |  Society |  Economy |
|---|---|--|---|--|

TOPIC

Bicycle

IMPACT

Connectivity of bike network

Improving the connectivity of bike-reserved paths network

TRA_BK

Category

| | | |
|----------------------|-------------------------|-----------------|
| Key indicator | Supplementary indicator | State indicator |
|----------------------|-------------------------|-----------------|

CONTEXT AND RELEVANCE

To be developed.


This indicator provides a measure of the connectivity of the network of bike reserved paths. It is a relevant indicator when the policy action is aimed at increasing the number of origin-destination pairs within a specific area of the city for which a bike route entirely on reserved paths exists. A successful action is reflected in a HIGHER value of the indicator.

DESCRIPTION

This indicator is an index obtained as ratio between the **total length of bike-reserved paths in the experiment area** and the total length of roads within the experiment area. The indicator is dimensionless.

METHOD OF CALCULATION AND INPUTS

The indicator should be computed exogenously, by applying the method described and then coded in the supporting tool.

| Method | |
|--|--|
| Calculation of the index based on the map of bike reserved paths and the map of roads | Significance: 0.50  |
| <h3>INPUTS</h3> <p>The following information is needed to compute the indicator:</p> <ul style="list-style-type: none">a) A map of the roads on in the experiment areab) A map of the bike reserved paths in the experiment area where different bike path types are identified. Ultimately, types should allow to classify bike paths into three different categories:<ul style="list-style-type: none">i. Bike lanes (bike path identified by lanes painted onto a street, not physically protected from lanes used by motorised vehicles)ii. Side path (side street bikeways with some kind of physical separation from motorised vehicles except at intersections)iii. Protected bikeway (infrastructure completely separated from roads used by motorised vehicles). <p>The experiment would result in a modification of the map of bike reserved lanes in the experiment area either in terms of additional sections or in term of modification of lane type for some sections (e.g. from bike lane to side path).</p> | |
| <h3>METHOD OF CALCULATION</h3> | |

Commentato [DF1]: Definitions and descriptions of bike paths categories to be checked/revised by an expert

The indicator should be computed exogenously according to the following steps:

- **Calculation of the total length of the road network within the experiment area.** This calculation can be obtained from the map of roads using a GIS application.
- **Calculation of the total length of the bike paths for each type within the experiment area.** This calculation can be obtained from the map bike paths using a GIS application.
- **Estimation of the index** by computing the ratio between a weighted sum of the lengths calculated in the second step (see equation below) and the length calculated in the first step.

EQUATIONS

The weighted sum of the lengths of the bike paths in the experiment area should be computed using the following equation:

$$WBkPLnght = 0.5 * BklnLnght + 0.75 * SdpthLnght + PrBkwLnght$$

Where:

BklnLnght = Length of bike lanes (see definition above)

SdpthLnght = Length of side paths (see definition above)

PrBkwLnght = Length of protected bikeways (see definition above)

Commentato [DF2]: Text and/or equation could be modified after the check of bike paths categories above

The equation computing the index (last step of the method of calculation) is the following:

$$BkConnIndex = \frac{WBkPLnght}{TotRoadLnght}$$

Where:

WBkPLnght = weighted length of bike paths in the experiment area

TotRoadLnght = Total length of roads in the experiment area

ALTERNATIVE INDICATORS

To be drafted