# CIVITAS indicators

## Road accidents by severity (SOC_SF_SF2)

## DOMAIN

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

| TOPIC | **Safety** | |
|-------|------------|--|
| **IMPACT** | **Safety during personal mobility** <br> *Reducing the risk of injuries during urban trips* | **SOC_SF** |

## Category

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

## CONTEXT AND RELEVANCE

Ensuring the safety of road users is crucial for creating sustainable and livable urban environments. This involves reducing road accidents through various measures, such as improving road design, enhancing public transportation systems, lowering speed limits on urban roads, and introducing physical separations between different modes of transport, like motorized vehicles and bicycles. These urban road safety measures help reduce the risk of injuries and fatalities associated with trips in cities. Promoting road safety is also crucial for encouraging active mobility, as pedestrians and cyclists are among the most vulnerable road users due to their lack of physical protection and greater exposure to traffic.

This indicator is a function of the number of road accidents (per inhabitant) occurring in the pilot area. **It is a relevant indicator when the policy action is aimed at increasing the safety of mobility. A successful action is reflected in a <u>LOWER</u> value of the indicator.**

## DESCRIPTION

This indicator is the ratio between the weighted sum of the reported number of accidents involving a road vehicle (including bicycles and scooters) in the pilot area and the number of inhabitants of the pilot area itself. The weighted sum refers to the application of a different weight according to the severity of the accidents. Being based on weights, the numerator of the ratio is an artificial number. Therefore, the unit of measurement of the indicator is **dimensionless**.

## METHOD OF CALCULATION AND INPUTS

**The indicator is calculated within the supporting tool** building on the inputs specified in the calculation method presented below, which should be coded in the supporting tool.

| Method | | |
|---|---|---|
| **Calculation of the indicator as weighted sum based on accident data by severity** | Significance: **0.85** | ▮▮▮▮ |

INPUTS

**The following information is needed** to compute the indicator:

- **Reported number of accidents involving a road vehicle in the pilot area by severity.** The number of accidents should make reference to a period of **at least 10 weeks before the date of data collection**. This condition is relevant especially for the calculation of the indicator after the implementation of the pilot measures. In any case, the monitored period must be of the same length before and after the implementation of the pilot measures.
  The condition that accidents involve a road vehicle does not mean that accident involving pedestrians are excluded. They are relevant provided that a road vehicle (including bicycle and scooters) is also involved (e.g. a collision between a scooter and a pedestrian should be considered).
  The source of the data should be local police, which is alerted when a road accident occurs. It is acknowledged that not all accidents are reported to the local police; however, missing accidents are generally very light. The required

data does not need details on the type of means involved or to the seriousness of the consequences or to the specific location where the accidents occurred.

The severity categories are those defined by the European Road Safety Observatory, i.e.:

- o **Only material damages**
- o **Slight injuries** (minor injuries not requiring significant time off work)
- o **Serious injuries** (injuries requiring at least four days off work)
- o **Fatalities**

- **Population of the pilot area**. The population is used to proportionate the number of accidents to the size of the pilot area. The source of this data should be the municipality.

## METHOD OF CALCULATION

The indicator is computed **within the supporting tool** according to the following method:

- **Calculation of the weighted sum of accidents** (see equation below)**.** The weights applied to each severity level are pre-defined in the tool; they are as follows:
  - o Only material damages: weight = 1
  - o Slight injuries: weight = 2
  - o Serious injuries: weight = 10
  - o Fatalities: weight = 100

- **Calculation of the indicator** as ratio between the weighted sum of accidents and the population (see equation below).

## EQUATIONS

The weighted sum of accidents is computed with the following equation:

$$WghtAcc = \sum Acc^v * SevWght^v$$

Where:

$Acc^v$ = Number of accidents of severity $v$ in the pilot area in the monitored period

$SevWght^v$ = Weight assigned to accidents of severity $v$

The indicator is then computed as:

$$WghtAccRatio = \frac{WghtAcc}{Pop}$$

Where:

$Pop$ = Population of the pilot area

## ALTERNATIVE INDICATORS

Alternative indicators to the one described in this factsheet are **SOC_SF_SF1** and **SOC_SF_SF3**. Both are based on accident data. **SOC_SF_SF1** does not distinguish accidents by severity. **SOC_SF_SF3** includes severity but is focused on vulnerable road users only (drivers of bicycles, drivers of scooters, pedestrians). Therefore, **SOC_SF_SF1** is less demanding than the indicator described in this factsheet but also less significant, while **SOC_SF_SF3** requires more detailed data but is more significant when the focus is on vulnerable road users.

A different alternative is the indicator **SOC_SF_PS1**, which measures the perceived safety of individuals. This is a different impact as perceived safety may diverge from objective safety level. Therefore, more than an alternative, this other indicator could be considered complementary. Its calculation requires to collect individual responses. This can be rather demanding if a sample survey should be organised on purpose to collect the required individual judgments on perceived safety. If a sample survey is already envisaged to collect other responses, the addition of one question does not add much complexity and makes the calculation of this indicator not complex.