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Pan-European City Rating and Ranking on Urban Mobility for Liveable Cities

Final report

Report for the Clean Cities Campaign, hosted by Transport & Environment

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Executive summary

This report presents the methodology, data sources and results of a Pan-European City Rating and Ranking on Urban Mobility that has been commissioned by the Clean Cities Campaign. The Clean Cities Campaign is a European coalition that is hosted by “Transport & Environment” and that unites more than 60 organisations campaigning for active, shared and electric mobility for a more liveable and sustainable urban future.

This study was commissioned to provide a robust and transparent benchmark of the performance of cities when it comes to the conditions necessary to achieve zero emission mobility by 2030. More details on the background of this can be found in the Clean Cities Campaign briefing which should be read alongside this report.

The study rates and ranks 36 cities in 16 European countries, based on 11 indicators grouped into the following 5 categories:

1. **Space for people**
   This category assesses the amount of public space allocated to people and sustainable mobility, as compared to the amount of public space allocated to motorised vehicles.
2. **Safe roads**
   This category assesses citizens’ safety as they utilise active modes of transport.
3. **Access to climate friendly mobility**
   This category assesses the adequacy of the city’s infrastructure and services in terms of enabling access to public transport and zero-emission mobility.
4. **Polluting cars out, shared mobility in (Policies)**
   This category assesses whether low or zero emission zones are already in place or planned, if there are formal commitments at the national level to only allow the sales of zero-emission vehicles in a certain country and to what extent Mobility-as-a-Service offers are available.
5. **Clean air for everyone**
   This category assesses the air quality within the cities, based on current pollution levels and the recent trend in pollution levels.

Each city has been ranked for each of the indicators, so it is possible to see where different cities are excelling and where cities have room for improvement. The individual scores have also been combined to provide an overall rating and ranking for the cities.

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1 Introduction

This report presents the methodology, data sources and results of a Pan-European City Rating and Ranking on Urban Mobility that has been commissioned by the Clean Cities Campaign. The Clean Cities Campaign is a European coalition that is hosted by “Transport & Environment” and that unites more than 60 organisations campaigning for active, shared and electric mobility for a more liveable and sustainable urban future.

This study was commissioned to provide a robust and transparent benchmark of the performance of cities when it comes to the conditions necessary to achieve zero emission mobility by 2030. More details on the background of this can be found in the Clean Cities Campaign briefing which should be read alongside this report.

It was identified that there was a lack of comparable data between cites relating to zero emission urban mobility.

The aim of this study is to fill the gap and provide a zero emissions urban mobility rating and ranking for 36 European cities. The “Clean Cities Campaign” commissioned Ricardo to undertake a project to rate and rank European cities based on 11 indicators grouped into the following 5 main categories:

1. **Space for people**
   This category assesses the amount of public space allocated to people and sustainable mobility, as compared to the amount of public space allocated to motorised vehicles.
2. **Safe roads**
   This category assesses citizens’ safety as they utilise active modes of transport.
3. **Access to climate friendly mobility**
   This category assesses the adequacy of the city’s infrastructure and services in terms of enabling access to public transport and zero-emission mobility.
4. **Polluting cars out, shared mobility in (Policies)**
   This category assesses whether low or zero emission zones are already in place or planned, if there are formal commitments at the national level to only allow the sales of zero-emission vehicles in a country and to what extent Mobility-as-a-Service offers are available.
5. **Clean air for everyone**
   This category assesses the air quality within the cities, based on current pollution levels and the recent trend in pollution levels.

This project aims to allow the cities within the study to benchmark their performance against other cities when it comes to urban mobility solutions that help create liveable zero-emission cities. Publicly available datasets were used wherever possible so that the results are transparent and accessible. The accuracy, completeness and robustness of the underlying datasets have also been considered in compiling the results for this study, and a data quality rating has been developed for each indicator to reflect the reliability of the underlying data.

Each city has been ranked for each of the indicators[1], so it is possible to see where different cities are excelling and where cities have room for improvement. The individual scores have also been combined to provide an overall rating and ranking for the cities.

The selection of cities to be included in the study was led by the Clean Cities Campaign. Cities were selected based on the following criteria and considerations:

- Prioritising cities that have a prominent role in the debate on urban mobility in their countries and at a European level
- A sufficiently broad geographical spread across Europe
- Prioritising countries and cities that the “Clean Cities Campaign” is currently active in

[1] The only exception is the indicator on cyclist safety for the city of Naples, where a specific approach had to be chosen as the city was an outlier to which the design of this indicator could not be applied in a meaningful way. See Section 2.2.5.

- Selecting cities with sufficient data available

This report describes the general approach taken to develop the indicators and calculate the results (Section 2) and presents the results for each indicator (Section 3). The detailed information used to calculate indicator results is provided in the Appendices.

2 How the indicators were calculated

2.1 Overall approach

This project was designed to support the work of the Clean Cities Campaign. The aim of the campaign is to reinforce the leading role of cities in the transition to zero-emission mobility. The project was organised into the following stages:

- Background research was carried out on previous environmental rating and ranking projects.
- Development of an initial set of potential indicators.
- Presentation of the initial set of potential indicators at a workshop with the core team and partner organisations of the Clean Cities Campaign, to obtain feedback on the suitability of the indicators in capturing the key themes of the Clean Cities Campaign and to discuss potential challenges in calculating the indicators.
- Data collection, including identification of standard and centralised data sources that could be used to calculate the indicators for the 36 cities included in the study. For some indicators, standard and centralised datasets were not available; in this instance, data were obtained through internet searches, city plans and direct contact with city officials.
- Development of the scoring system for each indicator.
- Presentation of the collected data and scoring system at a second stakeholder workshop, to obtain feedback on the proposed methodology, the scoring system for each indicator, and potential methods of addressing any remaining gaps in the underlying datasets.
- Finalisation of the indicator calculations and scoring. As part of the process, the cities included in the study were contacted and asked to confirm if the data included in the indicator calculations were correct for their city, and/or if additional or more accurate datasets were available.
- Finalisation of the scaling factors within the scoring matrix once all results were finalised for all cities.

2.1.1 Background research

To enable the development of a ranking and rating scheme Ricardo firstly looked at other studies that had carried out similar work, these included:

- “Sustainable Urban Mobility Indicators (SUMI)”[2] that were developed by the European Commission
- “Living. Moving. Breathing.”[3] study by Greenpeace
- “Soot-free cities ranking”[4] study

The “Sustainable Urban Mobility Indicators” study had some indicators on topics that were considered relevant for this study, but the SUMI set of indicators tended to require detailed datasets that could not be obtained for this study in the timeframe available. The lack of consistent data across Europe is also stressed by the European Commission. It recently found that “a common approach to monitoring and providing information is lacking” and announced that it would “launch a programme support action for the collection of data for harmonised mobility indicators in order to monitor the progress achieved by TEN-T urban nodes towards sustainable urban mobility”.[5] As such, some of the SUMI set of indicators

[2] European Commission. Sustainable Urban Mobility Indicators (SUMI). https://transport.ec.europa.eu/transport-themes/clean-transport-urban-transport/sumi_en

[3] Kodukula, Santhosh; Rudolph, Frederic; Jansen, Ulrich; Amon, Eva (2018): *Living. Moving. Breathing*. Wuppertal: Wuppertal Institute from https://www.greenpeace.de/sites/www.greenpeace.de/files/publications/living.moving.breathing.20180604.pdf

[4] O’Sullivan, F. (2015, April 1st). Which European Cities Are Doing the Most to Improve Air Quality? Bloomberg. https://www.bloomberg.com/news/articles/2015-04-01/the-soot-free-for-the-climate-campaign-ranks-e-u-cities-according-to-their-clean-air-policies

[5] European Commission (2021). The New EU Urban Mobility Framework. from https://transport.ec.europa.eu/news/efficient-and-green-mobility-2021-12-14_de

have been used as inspiration for this study, but adjusted to use simpler datasets and/or simpler formulas.

We also looked at the way in which the studies had scored their indicators. The Greenpeace and European Commission studies used numerical scoring while the Soot-free cities study used a scoring system based on pluses and minuses. For transparency, it was decided to use numerical scoring for this study so that the results would be easier to understand.

2.1.2 Development of indicators

We developed a shortlist of indicators based on discussions with the Clean Cities Campaign and the likely availability of data sets that could be found across all of the chosen cities. As the indicators were being developed, data was being collected to ensure the indicators could be calculated. Some adjustments to the proposed indicator calculations were needed as it became apparent that certain data sets were not available for a number of cities or would be difficult to obtain in the timescale of the project.

In order to guide the development of the indicators, it was agreed that the results of this study should:

- Allow cities to **benchmark** their performance when it comes to urban mobility solutions that help create liveable cities
- Be **transparent** and based on publicly available datasets, wherever possible. Limitations and uncertainty in the available datasets should be noted for transparency.
- Be **robust**, in terms of the accuracy of the datasets and in terms of how the final scores reflect each city's actual situation.
- Be **understandable**, for citizens and policy makers alike.

2.1.3 First stakeholder workshop

The initial shortlist of indicators and their proposed calculation methodology were presented at a stakeholder workshop organised by the Clean Cities Campaign on the 6th May 2021. At this workshop, the campaign core team and partner organisations provided feedback on the proposed indicators, including suggestions for methodology, possible data sources and potential challenges in collecting data or calculating results.

2.1.4 Refinement of indicators and data collection

Feedback from the workshop resulted in additional indicators being developed with the Clean Cities Campaign to ensure that the study would reflect priority topics identified by the stakeholders. This resulted in an increase from 10 to 12 indicators to be included in the study. Additionally, some further cities were identified to be included.

An important aspect of this study was, wherever possible for each indicator, to use freely available and publicly accessible data that was largely available from a single, consolidated data source for all of the cities in the study. This was to ensure that the data used was transparent, that the methodology to collect the data was consistent between the different cities, and that the study would be repeatable in future years so that it may be possible for cities to improve their ranking over time. Some of the datasets used for this study are open source (e.g., OpenStreetMap), and for those datasets, data completeness and accuracy relies on user participation, which can vary across cities.

As the data collection was being carried out and the indicators were being finalised, the following considerations were taken into account to ensure a robust data set was collected:

- City boundaries were typically defined by the municipal boundary, consideration was given to factors such as the geographical extent that would be considered part of the city by residents, the area over which policies by the city could be applied, and the geographical area corresponding to available datasets. The city populations and areas are provided in Table 3-1. For Brussels, the area considered corresponds to the Brussels Capital Region. For London, the Inner London boroughs were included. For Manchester, the area considered corresponds to the Greater Manchester Area. For the Tri-city, the cities of Gdansk, Sopot and Gdynia were included together.

- To account for the differing effect that Covid-19 restrictions may have had on indicators such as congestion, air pollution levels, and pedestrian and cyclist fatalities, it was decided that "current" calculations for these indicators would be based on the average for the last three years of available data. This approach would smooth out the effects of Covid-19 restrictions from 2019 onwards.
- When the opportunity for walking indicator was being developed, we initially investigated the feasibility of an indicator based on the percentage of the city area that had been pedestrianised using data from OpenStreetMap. Following feedback from some cities, it became apparent that the data collected by cities themselves and the area determined using OpenStreetMap differed significantly. There was also significant variability in how cities calculated this data, and some cities indicated that they did not have an accurate measurement for their pedestrianised areas. Due to the lack of reliable data for pedestrianised areas within cities, this was not included as part of the indicators in this study.
- In an earlier phase of this study, an indicator based on the amount of green space within a city, as a percentage of the total city area, was considered. This indicator was removed from the final set of indicators because it was too difficult to take into account whether certain areas of urban green space were actually accessible to the public. The underlying data and approach for this indicator can be found in the appendix for completeness (Appendix A1.10).

2.1.5 Second stakeholder workshop - Stakeholder workshop to present final indicators, the scoring structure and data collected

A second stakeholder workshop was arranged by the Clean Cities Campaign on the 21st July 2021. At this second workshop, Ricardo presented the finalised set of indicators and methods for calculating them, along with a proposed scoring system that would be used to rate the cities. In addition Ricardo shared the data collected for some of the indicators, and requested assistance where data was unavailable for some cities. At this stage the stakeholders started to feed into the quality assurance of the data and helped to fill gaps in the data.

A total of 11 indicators grouped into 5 categories were selected for the study, as listed below. Additional details on the aim of each indicator, the approach to indicator calculations and the underlying datasets are described in Section 2.2.

Table 2-1 Indicators and categories

Category	Indicator
Space for people	Opportunity for walking
	Opportunity for cycling
	Congestion
Safe Roads	Pedestrian safety
	Cyclist safety
Access to climate-friendly mobility	Public transport affordability
	Access to public transport
	Access to electric vehicle charging
Polluting cars out, shared mobility in (Policies)	Polluting cars out, shared mobility in
Clean air	Current air quality
	Air quality trends

2.1.6 Finalisation of results and scoring metrics

Once the data was collected and compiled for all of the cities, Ricardo along with the Clean Cities Campaign and their local partner organisations attempted to contact the city administrations to check that the collected data was correct and complete. The cities were also asked to assist with filling any

identified gaps in the data. For cities that responded, the data included in the study was double-checked and, in some cases, updated based on more recent or more complete data.

After the data for all of the indicators was finalised and the indicator results were calculated, the results for each indicator were converted to a scoring system. Most indicators were assigned a maximum score of 10 points, whereas the indicator for “polluting cars out, shared mobility in” was assigned a maximum of 20 points to reflect the importance of city plans and policies in supporting the transition to zero-emission mobility.

Category scores were calculated for each of the cities, based on the number of possible points within each indicator category and the number of points scored by the cities (expressed as a category score out of 100% and a letter grade between A and F). An overall score was also calculated for each city, based on the total number of possible points across all categories, and again expressed as a score out of 100% and a letter grade between A and F. For most cities, the overall score was calculated based on a maximum total of 120 points. For Naples, the “Safe roads” category was scored out of 10 rather than 20 (see Section 2.2.5) and the overall score was based on a maximum of 110 points.

Scores out of 100% were assigned letter grades between A and F based on the scale below.

Table 2-2 Scores out of 100% and corresponding grades

Score out of 100%	Grade
80% up to 100%	A
60% up to 80%	B
50% up to 60%	C
40% up to 50%	D
30% up to 40%	E
< 30%	F

2.2 Approach for each indicator

2.2.1 Opportunity for walking

This indicator compares the length of walking infrastructure for pedestrians to the length of the city road network, as an approach to determining how much of the road network is designated for pedestrians. It is similar to the SUMI "Opportunity for active mobility" indicator[1], however the SUMI indicator includes infrastructure for both walking and cycling in the same indicator. In this study, separate indicators were developed for walking and cycling opportunities, as a city may be doing well with one type of active transport but not another.

Datasets for all cities were downloaded from OpenStreetMap[6] and processed using Geographic Information System (GIS) software and Python. Datasets included total length of the road network and total length of pedestrian footways. Total road length included all roads except motorways, motorway links, trunk roads and trunk links. Pedestrian footways included map categories: path, footway, steps, pedestrian and living streets.

The opportunity for walking indicator was calculated by using the formula below:

$$\%\ of\ road\ network\ designated\ for\ pedestrians = \frac{sum\ of\ lengths\ of\ pedestrian\ footways\ (in\ km)}{total\ length\ of\ city\ road\ network\ (in\ km)}$$

Results for the opportunity for walking indicator are presented in Table 3-2.

The data quality for this indicator has been rated as "poor" for all cities, due to uncertainty in the accuracy of the data for pedestrian footways. The OpenStreetMap dataset offers good geographic coverage, and it is a single, consolidated data source that includes information about walking infrastructure in all of the cities in this study. However, the data in OpenStreetMap is crowdsourced, and there is likely to be some variation between cities in terms of how much of the physical infrastructure has been added to the OpenStreetMap database and how different types of walking infrastructure are classified. When the length of pedestrian footways calculated from OpenStreetMap was compared to data provided directly by cities, there were some significant differences. It appears that cities collect this data differently across Europe and include different types of footways. Despite the uncertainty in the accuracy of the data included in the OpenStreetMap database, this was considered the most consistent source of information for walking infrastructure across all of the cities included in this study. For this reason, the indicator results were calculated solely based on information from OpenStreetMaps. Information provided by the cities is included in the Appendix for comparison, but has not been included in the indicator results.

The scale of this indicator was set so that a lower threshold of 0% would score 0 points, and an upper threshold of 70% would score 10 points. The upper threshold was set based on considering the "best in class" and allowing room for future improvement in all cities. A recent survey commissioned by the Clean Cities Campaign showed that even in the cities with the most extensive pedestrian infrastructure, more than two thirds of citizens still demand more space for walking[7].

2.2.2 Opportunity for cycling

This indicator compares the length of cycling infrastructure to the length of the city road network, as an approach to determining how much of the road network is designated for cyclists. It is similar to the SUMI "Opportunity for active mobility" indicator[1], however the SUMI indicator includes infrastructure for

[6] OpenStreetMap, 2019, https://www.openstreetmap.org
[7] Clean Cities Campaign. (2021). What European city-dwellers want from their mayors post-Covid – Survey. Retrieved 2 November 2021, from https://cleancitiescampaign.org/2021/05/04/what-city-dwellers-want-from-their-mayors-post-covid/

both walking and cycling in the same indicator. In this study, separate indicators were developed for walking and cycling opportunities, as a city may be doing well with one type of active transport but not another.

As for the walking indicator (2.2.1), datasets for all cities were downloaded from OpenStreetMap[4] and processed using GIS and Python. Total road length included all road categories except motorways, motorway links, trunk roads and trunk links. Cycle paths included the map category: cycleway.

The opportunity for cycling indicator was calculated by using the formula below.

$$\%\ of\ road\ network\ designated\ for\ cyclists = \frac{sum\ of\ lengths\ of\ cycling\ paths\ (in\ km)}{total\ length\ of\ city\ road\ network\ (in\ km)}$$

Results for the opportunity for cycling indicator are presented in Table 3-3.

Whilst sourcing data for this indicator, we contacted cycling organisations, who suggested that OpenStreetMap was not perfectly accurate but was nevertheless considered to be the most robust source of consolidated data for this measurement. The cities were also contacted and asked to provide data for this indicator. There was a wide range of detail obtained from the cities that responded. Some cities were able to provide detailed datasets for their cycling infrastructure, including categories for different types of cycling lanes (e.g. painted cycle lanes on the side of roads, cycle lanes that are physically separated from traffic, etc.). At the other end of the range, some cities were only able to provide an approximate number for the total length of their cycling lanes. To further complicate the calculations, different cities across Europe have very different systems for designating cycle lanes. It is therefore not possible to be certain that all cycle paths have been captured in the lengths we have calculated. When calculating the results for this indicator, data from OpenStreetMap was taken as a starting point and compared to data provided directly by cities (where available). Due to there being some uncertainty in both the OpenStreetMap data and the data provided by cities, the indicator results for each city were calculated using whichever dataset provided the highest number for that city.

Although there is uncertainty in the OpenStreetMap data, it was generally found that the cycling infrastructure data in OpenStreetMap was more consistent and robust than the walking infrastructure data. For this reason, the data quality for this indicator started as “medium” by default for each city. The data quality rating was upgraded to “good” if the city was able to provide detailed information about their cycling infrastructure, or if the city was able to provide the total length of cycling infrastructure and that length was fairly close (within 25%) of the length calculated using OpenStreetMap data.

The scale of this indicator was set so that a lower threshold of 0% would score 0 points, and an upper threshold of 35% would score 10 points. The upper threshold was set based on considering the “best in class” and allowing room for future improvement in all cities. The rationale behind this choice is that even the European cities with the most developed cycling infrastructure have not fully used the potential of cycling for creating zero-emission mobility, Amsterdam, for example, that obtains the highest score in the analysis, is implementing further targeted improvements as part of its “Multiannual Cycling Plan 2017-2022”.[8] A survey carried out by Ghent, with one of the highest ratings for this indicator, found that cyclists’ satisfaction with the provision of cycling infrastructure was only medium; this indicates that cities still need to go further in creating more cycling infrastructure.

2.2.3 Congestion

Within cities, cars and other vehicles compete for space with pedestrians and cyclists. In order to understand the space that is available for people and active transport within a city, it helps to understand the significance and prevalence of vehicles within the city and to assess the impact of motorised traffic on the quality of life.

[8] Gemeente Amsterdam (2017). Meerjarenplan Fiets 2017-2022. From https://www.amsterdam.nl/bestuur-en-organisatie/volg-beleid/verkeer-vervoer/meerjarenplan-fiets/

The modal share of cars was considered as a way of quantifying car pressure within the cities. However, as different cities use different methods to calculate modal share and the underlying datasets are often based on survey information, it would be difficult to get objective and comparable information for all of the cities using modal share.

The TomTom Traffic Index[9] was selected as a way of quantifying and comparing the car pressure experienced within cities. The TomTom Traffic Index contains information about congestion levels gathered from 416 cities in 57 countries, resulting in a dataset that is objective and comparable across all of the cities included in this study. The TomTom website provides this explanation of congestion levels: "A 53% congestion level in Bangkok, for example, means that a 30-minute trip will take 53% more time than it would during Bangkok's baseline uncongested conditions." For this indicator, annual congestion levels (i.e. based on congestion levels considered over a full year) were used to calculate the results.

The congestion indicator was calculated by averaging each city's annual congestion level for the three most recent years:

$$Congestion\ indicator = \frac{Congestion\ level\ 2020 + Congestion\ level\ 2019 + Congestion\ level\ 2018}{3}$$

Results for the congestion indicator are presented in Table 3-4. The data quality was rated as "good" for all cities for this indicator, since the same objective dataset (the TomTom traffic index) was used for all cities.

In order to convert the congestion indicator values to scores out of 10, the congestion indicator was calculated based on the average level of three years. 15% and 50% correspond to scores of 10/10 and 0/10 respectively. Congestion levels between 15% and 50% were converted to scores out of 10 using linear interpolation. For comparison, TomTom Traffic Index[8] lists the lowest and highest congestion levels for 2020 as 7% (for Greensboro-High Point, USA) and 54% (for Moscow region (oblast), Russia). The range selected for the lower and upper thresholds of this indicator matches the scale of the TomTom Traffic Index.

2.2.4 Pedestrian safety

Pedestrian safety within a city was calculated based on the average number of pedestrian fatalities within a year. In order to smooth out year-to-year variability and possible outliers within the datasets, fatality data was collected for the last 3 years for which data was available. City populations and fatality datasets were downloaded from various data sources for each city, with details provided in the Appendix. Where the data was available, fatality statistics were gathered based on the number of deaths occurring within 30 days after the traffic accident.

This indicator is similar to the SUMI "Traffic safety active modes" indicator[1], however the SUMI indicator includes pedestrian and cyclist deaths in the same indicator. In this study, separate indicators were developed for pedestrian and cyclist safety, as a city may be doing well with one type of active transport but not another.

This indicator is based on the number of pedestrian fatalities calculated as an average over the last 3 years, using the formula below:

$$Pedestrian\ safety = \frac{(pedestrian\ fatalities\ year1 + pedestrian\ fatalities\ year2 + pedestrian\ fatalities\ year3)/3}{city\ population\ (per\ 100{,}000\ people)}$$

Results for the pedestrian safety indicator are presented in Table 3-5. The data quality was rated as "good" for most cities, since the indicator results were calculated using 3 years of recent data (either

[9] TomTom International BV, 2021, "TomTom Traffic Index", viewed 23 June 2021, https://www.tomtom.com/en_gb/traffic-index/

2018 to 2020 or 2017 to 2019) and information was available regarding the number of pedestrian fatalities for each year. One city, Lisbon, was given a data quality rating of “medium” because the most recent data available was from 2016 to 2018, and the number of pedestrian fatalities was not found directly. The number of pedestrian fatalities was therefore approximated by multiplying the total number of pedestrian fatalities for the district of Lisbon (for each year) by the proportion of the district’s total traffic accident fatalities that occurred within the city of Lisbon (for each year).

In order to convert the pedestrian safety indicator values to scores out of 10, a 3-year average fatality rate of 0 and 1.7 deaths per 100,000 population corresponded to scores of 10/10 and 0/10 respectively. Fatality rates between 0 and 1.7 were converted to scores out of 10 using linear interpolation.

2.2.5 Cyclist safety

Cyclist safety within a city was calculated based on the average number of cyclist fatalities in a year. In order to smooth out year-to-year variability and possible outliers within the datasets, fatality data was collected for the last 3 years for which data was available. City populations and fatality datasets were downloaded from various data sources for each city, with details provided in the Appendix. Where the data was available, fatality statistics were gathered based on the number of deaths occurring within 30 days after the traffic accident.

This indicator is similar to the SUMI “Traffic safety active modes” indicator[1], however the SUMI indicator includes pedestrian and cyclist deaths in the same indicator. In this study, separate indicators were developed for pedestrian and cyclist safety, as a city may be doing well with one type of active transport but not another.

This indicator is based on the number of cyclist fatalities calculated as an average over the last 3 years, using the formula below:

$$Cyclist\ safety = \frac{(cyclist\ fatalities\ year1 + cyclist\ fatalities\ year2 + cyclist\ fatalities\ year3)/3}{city\ population\ (per\ 100{,}000\ people)}$$

Results for the cyclist safety indicator are presented in Table 3-6. The data quality was rated as “good” for most cities, since the indicator results were calculated using 3 years of recent data (either 2018 to 2020 or 2017 to 2019) and information was available regarding the number of cyclist fatalities for each year. One city, Lisbon, was given a data quality rating of “medium” because the number of cyclist fatalities was only found directly for 2020 and 2019. The number of cyclist fatalities in 2018 was therefore approximated by multiplying the total number of cyclist fatalities for the district of Lisbon by the proportion of the district’s total traffic accident fatalities that occurred within the city of Lisbon.

In order to convert the cyclist safety indicator values to scores out of 10, a 3-year average fatality rate of 0 and 0.9 deaths per 100,000 population corresponded to scores of 10/10 and 0/10 respectively. Fatality rates between 0 and 0.9 were converted to scores out of 10 using linear interpolation.

With regard to the cyclist safety data for Naples, a specific approach had to be chosen as the city was an outlier to which the design of this indicator - comparing the fatalities over three years to the city population - could not be applied in a meaningful way. Naples is the only city that did not record any fatalities during the three years taken into account but also has the lowest share of cycling infrastructure among all 36 cities (more than a standard deviation below the average for all cities). The absence of fatal accidents involving cyclists can therefore not be interpreted as a reflection of particularly safe roads. For these reasons and to avoid a misinterpretation of the safety data for Naples, the city has not been evaluated on cyclist safety and only the other indicators have been taken into account. This means that the city is not penalised for this lack of meaningful data.

2.2.6 Public transport affordability

The affordability of public transport was calculated by comparing the cost of a monthly unlimited public transport pass for the city compared to the average monthly income (before tax) per household for each city. The following information was collected for each city: the cost of a monthly unlimited public transport pass, the average household size, and the average household income.

This indicator is similar to the SUMI "Affordability of public transport for the poorest group" indicator[1], except that it is calculated based on average household incomes for all households in a city rather than based on the poorest 25% of residents. During the research carried out for this study, it was found that many cities have different approaches for improving the affordability of public transport for the poorest residents, such as free or discounted passes for certain age groups or income bands, tax credits, etc. These different approaches would have been difficult to account for in a fair and consistent manner for all of the cities in this study. It was determined that calculating this indicator based on average household incomes for all households in a city, and comparing that to the normal costs for public transport (i.e. not using discounted passes that are only available for certain subsets of the city's population) would provide a more comparable set of results for the different cities.

The affordability of public transport indicator was calculated as the share of the average household budget required to hold public transport (PT) passes for unlimited monthly travel, using the formula below.

$$Share\ of\ household\ budget = \frac{(price\ of\ monthly\ PT\ pass) * (average\ household\ size)}{(monthly\ average\ household\ income\ (before\ tax))}$$

Average household income information was not always consistent between different cities. For example, sometimes this information was found as income before or after taxes, income per household or income per capita, income provided for a year before 2021, etc. Subsequent calculations were used to convert all of the gathered income information to average household income before tax for the year 2021.

For some cities (Bilbao, Birmingham, Helsinki, London, Manchester, Stockholm), information was provided based on average household income before tax for a particular year. The values for average household income before tax were adjusted to the year 2021 by using the following method.

- Data for average income growth from the OECD[10] was used to adjust income to the year 2020 as data was not provided for the year 2021.
- GDP deflator[11] for inflation was used to adjust income from the year 2020 to 2021, as a proxy for income growth, given that average income growth data was not available for that period.

For some cities, additional calculations were required to determine the average household income (before tax):

- Amsterdam: Income information was provided as the average income per inhabitant; this was multiplied by the average household size.
- Antwerp, Ghent, Liege: Only net taxable income (corresponding to income after tax minus deductible expenses) was provided. Since deductible expenses would be difficult to determine directly, the Belgium ratio of average income after tax to average income before tax was calculated. The ratio was then multiplied with the net taxable income data found and the average household size.
- Barcelona, Brussels, Edinburgh, Granada, Lisbon, Ljubljana, Madrid, Poland (Krakow, Tri-city and Warsaw), Prague: Income information was provided as the average gross annual income for each worker or per employee, rather than average gross annual income per household. The average gross annual income for each worker/employee was multiplied by the percentage of the city population in employment (where available) or the employment rate, and the number of people per household.
- Copenhagen, Germany (Berlin, Cologne, Hamburg, and Munich): The data available provided average disposable income or average income after tax per inhabitant; this information was

[10] https://stats.oecd.org/Index.aspx?DataSetCode=AV_AN_WAGE

[11] https://stats.oecd.org/Index.aspx?QueryId=61354#Economic Outlook No 109 - May 2021 : GDP deflators, forecast growth (oecd.org)

used with an income tax calculator website to determine the corresponding average income per inhabitant (before tax). The household income was calculated by multiplying the average income (before tax) per inhabitant by the average household size.

- France (Lyon, Marseille, Paris and Strasbourg): The data available provided average household income after tax. However, the same website also provided the average income tax, so these two numbers could be added together to estimate average household income before tax. This method was chosen using the best data available that we could find and will only give an estimation.
- Italy (Milan, Naples, Rome and Turin): The data available provided average taxable income; this was multiplied by the percentage of the city that are taxpayers and the average household size.
- Oslo: The data available provided the average gross income for residents aged 17 and over; this was multiplied by the percentage of the city population over 17 years old and the average household size.
- Vienna: The data available provided the annual average income subject to wage tax per employee; this was multiplied by the percentage of people in employment and the average household size.

Results for the public transport affordability indicator are presented in Table 3-7. The data quality was rated as “medium” for all of the cities for this indicator, due to the varied nature of the available data sources for the different cities. Income information is generally gathered through the use of surveys, and the survey approach and reliability may vary between different countries and different cities. In the majority of cases it was also necessary to apply some additional calculations to the income data to convert it to average monthly household income (before tax). These additional calculations required different sources of information, such as employment rates or amount of tax paid, which also adds some uncertainty to the final income information used in the calculations.

To convert the indicator values to scores out of 10, the scale of this indicator was set so that a lower threshold of 17% would score 0 points, and an upper threshold of 1.3% would score 10 points. The upper threshold, 1.3% of the household budget, was set based on the “best in class” for this study, which was Copenhagen. The lower threshold, 17% of the household budget, was set based on official EU data that shows households spend between 6.6% and 16.9% of their household expenditure on transport overall.[12]

2.2.7 Access to public transport

This indicator represents how easy it is to access public transport services, by comparing the number of public transport stations and stops within the city to the city area.

Data was downloaded from OpenStreetMap[4] for all cities and processed using GIS and Python. Stations and stops included railway stations and halts (including underground stations), ferry terminals, bus stations, tram stops and bus stops. The total number of tram and bus stops were divided by 2 as they are usually located across from each other on either side of the street, so dividing by 2 indicates the number of tram and bus access points within the city.

This indicator looked at the number of public transport stations and stops by area using the formula below:

$$Access\ to\ public\ transport\ services\ per\ km^2 = \frac{number\ of\ public\ transport\ stations\ and\ stops}{city\ area\ (in\ km^2)}$$

Results for the access to public transport indicator are presented in Table 3-8. The data quality was rated as “good” for all of the cities for this indicator. When calculating the results for this indicator, the

[12] Eurostat. (2020). Transport costs EU households over €1.1 trillion. Retrieved on November 2nd, 2021, from https://ec.europa.eu/eurostat/fr/web/products-eurostat-news/-/ddn-20200108-1

data from OpenStreetMap was used as a starting point, since it contained data for all of the cities. The OpenStreetMap data was updated with information provided by the cities (where available); these were mostly only minor amendments, as there was generally fairly good agreement between the OpenStreetMap data and the city-provided data.

To convert the indicator values to scores out of 10, the scale of this indicator was set so that a lower threshold of 0 stations per km^2 would score 0 points, and an upper threshold of 16.7 stations per km^2 would score 10 points. The upper threshold was set based on the "best in class" for this study, which was Paris. The number of stations per km^2 between 0 and 16.7 were converted to scores out of 10 using linear interpolation.

2.2.8 Access to electric vehicle charging

This indicator represents how easy it is to access electric vehicle charging stations, by considering the number of charging stations that are accessible to the general public and the speed (power output) of the charging stations to determine charging availability within the city.

The power output available for charging per 1,000 people in the city was calculated using the following formula:

$$Power\ (kW)\ per\ 1{,}000\ population = \frac{public\ power\ output\ (kW) + (restricted\ power\ output\ (kW) x 0.5)}{city\ population\ (per\ 1000\ people)}$$

For this indicator, all of the information on charging station location and power output was sourced from Eco-movement.[13] Eco-movement gather and frequently update a comprehensive dataset containing detailed information about charging infrastructure across Europe. This data is not freely available and was purchased by T&E and the Clean Cities Campaign for this study. The Eco-movement dataset categorises charging stations as public if they are fully accessible to the public, 24 hours a day and 7 days a week. Stations that are sometimes accessible to the public but have some sort of restriction on their usage, such as being located in a car park that is closed overnight, are classified as restricted stations. For this indicator, the power output from fully publicly accessible stations was given full weighting in the calculation and the power output from restricted stations was multiplied by 0.5 to account for the restricted access.

The approach to calculating this indicator was designed to be similar to the EU's recent proposal[14] on setting objectives for charging infrastructure based on the size and composition of the vehicle fleet. The EU's proposed methodology suggests charging infrastructure objectives, in terms of total power output available across the charging stations within a city, based on the number of battery electric light-duty vehicles and the number of plug-in-hybrid light-duty vehicles. For this indicator, we were able to calculate the total power output across the charging stations within each city using the Eco-movement data. However, we were unable to find reliable information about the number of battery electric and plug-in hybrid light duty vehicles for each city. For this reason, the charging power output was compared to the city population rather than the number of electric vehicles in the fleet.

Results for the access to electric vehicle charging indicator are presented in Table 3-9. The data quality was rated as "good" for all of the cities for this indicator, because the charging station information was obtained from Eco-movement. Eco-movement spend considerable time and effort in cleaning, checking and updating their dataset to ensure that it is current and accurate.

The scale of this indicator was set so that a lower threshold of 0 kW available would score 0 points, and an upper threshold of 50 kW available would score 10 points. The upper threshold was set based on

[13] https://www.eco-movement.com/

[14] European Commission. (2021). Proposal for a Regulation of the European Parliament and of the Council on the deployment of alternative fuels infrastructure. Retrieved November 15th, 2021 from https://ec.europa.eu/info/sites/default/files/revision_of_the_directive_on_deployment_of_the_alternative_fuels_infrastructure_with_annex_0.pdf

considering the range of output power available in most of the cities included in this study. The results for this indicator showed that Amsterdam and Oslo have far more output power available for electric vehicles than the other cities, with 95.7 and 81.0 kW per 1,000 people respectively. These cities were considered to be outliers and were both given a score of 10/10.

2.2.9 Polluting cars out, shared mobility in (Policies)

The Clean Cities Campaign encourages cities to fully transition to sustainable and zero-emission transport by 2030. One component of this transition will be the switch from Internal Combustion Engine (ICE) vehicles to zero-emission vehicles in cities, which will also offer other benefits, such as improving air quality. This indicator was designed to measure each city's plans and efforts to reduce polluting cars in favour of shared mobility.

A scoring matrix was developed based on awarding points in two overarching themes: emission zones and promoting zero emission vehicles; and mobility as a service. The scoring matrix was developed to give greater weighting to areas that were considered to be the most important by the Clean Cities Campaign in promoting zero emission cities. Under each of the two themes sub-categories were developed and these were scaled to allow cities to be rewarded for varying levels of progress under each theme. The scoring matrix is provided in the Appendix A1.9. An overall maximum score of 20 was assigned to this indicator, to reflect the importance of these plans and efforts in creating sustainable, liveable cities.

Data for the ICE indicator was initially gathered from Eltis,[15] a database that provides web links to urban mobility plans for European cities. The site administrator attempts to control the accuracy of the information provided, however cannot guarantee the information is error free. Information was also obtained from the Urban Access Regulations in Europe website[16], which consolidate information for all European low emission zones, congestion charging schemes and urban traffic restrictions. Where data was missing, additional searches on a case by case basis were performed yielding information from a range of websites. Care was always taken to obtain data from reputable sources such as government and council webpages. The sub-categories under each theme were adapted as data was collected from the cities to ensure that the plans and actions of cities taking different but equally good approaches to improving sustainable mobility were recognised. For these reasons, the data quality has been rated "good" for this indicator across all of the cities.

Results for this indicator are presented in Table 3-10. Detailed results for this indicator can be found in appendix A1.9.

2.2.10 Current air quality

Measuring and monitoring the concentration of air pollutants can provide useful information about air pollution levels within a city. This study focused on the following pollutants:

- NO_2 – nitrogen dioxide
- PM_{10} – particulate matter measuring 10 micrometers or less in diameter
- $PM_{2.5}$ – particulate matter measuring 2.5 micrometers or less in diameter

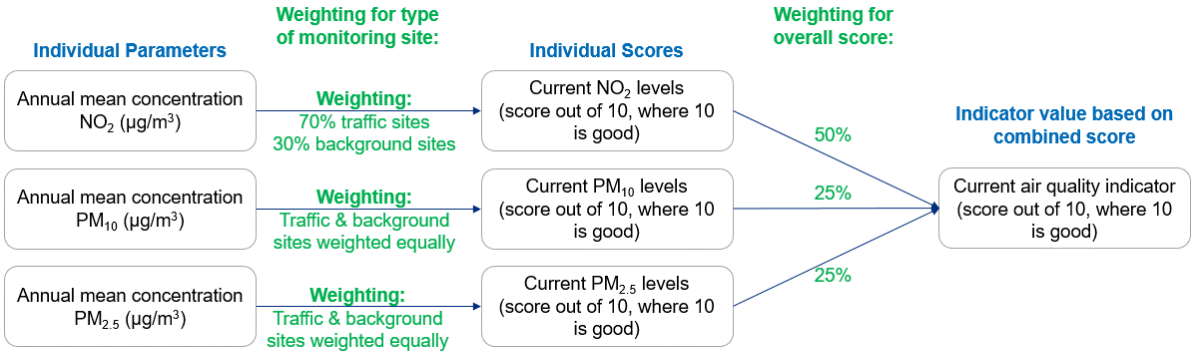
NO_2 pollution is primarily produced by burning fuel. This includes burning petrol and diesel fuel in vehicles as well as burning fuel in generators, power plants and off-road equipment. Particulate matter (PM_{10} and $PM_{2.5}$) pollution is partially produced by vehicles, both from the vehicle exhaust pipe (as fuel is burned) and from the wear of tyres, brakes and roads (as small particles are created and distributed in the air). Particulate matter is also produced by burning wood, such as for domestic heating, and from dusty sources such as construction sites and unpaved roads. Some particulate matter is created from the chemical reaction of other pollutants in the air.

Air quality monitoring data for NO_2, PM_{10} and $PM_{2.5}$ are available from the European Environment Agency (EEA) annual air quality statistics portal[17] for most of the cities, with the exception of a few

[15] https://www.eltis.org
[16] https://urbanaccessregulations.eu/
[17] European Environment Agency, 2021, "Annual AQ statistics", latest data downloaded on 25/11/2021, https://discomap.eea.europa.eu/App/AirQualityStatistics/index.html#

which were filled in using other data sources. Pollution monitoring data was downloaded for the most recent 5 years of ratified data (2015 to 2019). Monitoring stations were grouped by city and data was extracted for each city using GIS software, in order to extract data only for monitoring sites located within the city boundary. Since this study focused on cities and spaces accessible to the residents of a city, only monitoring sites that were classified as traffic/roadside sites or background sites were included in the calculations; monitoring sites that were classified as rural or industrial were not included. Monitoring sites with poor data capture (less than 75% for a given year) were also removed from the calculations. The measurements from monitoring stations that had multiple sampling points (i.e., for PM_{10} or $PM_{2.5}$) were averaged to represent a single annual mean for the monitoring station.

The current air quality indicator was calculated based on the 3-year annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ using the most recent 3 years available (2017, 2018 and 2019). This indicator is intended to reflect the current air pollution levels in the city, however, 3 years' worth of data were used in order to smooth out year-to-year variations based on factors such as weather conditions. NO_2 annual mean concentrations for each city were averaged by station type (traffic or background), with a higher weighting given to traffic sites. Weightings were used for calculating the parameters and scores individually and then combined, as described in the figure below.



Some cities had data gaps in the EEA datasets, for example, no particulate matter monitoring data from within the city boundary with a good data capture rate. For these cities, other data sources were used to fill in the gaps, e.g., Granada[18] and Ljubljana[19]. Two cities (Liège and Tri-city (Gdansk, Sopot and Gdynia)) had NO_2 background monitoring data available from EAQP but no NO_2 traffic monitoring data. Since NO_2 traffic monitoring data is often significantly higher than background data, and both are required to calculate this indicator, average NO_2 traffic concentrations for Liège and Tri-city (Gdansk, Sopot and Gdynia) were approximated using available data. This was done by: calculating the average ratio of NO_2 traffic to NO_2 background concentrations for each of the cities in Belgium and Poland; calculating an average NO_2 traffic to NO_2 background concentration for each country (Belgium and Poland); and applying this ratio as a scaling factor to the NO_2 background concentration for Liège and Tri-city (Gdansk, Sopot and Gdynia) to calculate an approximate NO_2 traffic concentration. This method provides only an indicative value for NO_2 traffic concentrations in Liège and Tri-city (Gdansk, Sopot and Gdynia); it allows this indicator to be calculated for these cities, but should not be considered as the actual NO_2 traffic concentrations for these cities.

The data quality of each data set NO_2, PM_{10} and $PM_{2.5}$ was assessed individually, based on the following criteria:

- Good: For this pollutant, there were at least 5 monitoring sites with 3 years' worth of data
- Medium: For this pollutant, there were 2-4 monitoring sites with 2-3 years' worth of data
- Poor: For this pollutant, there were less than 2 monitoring sites and/or limited years' worth of data (less than 2 years).

[18] Ecologistas en Acción (2020), "La calidad del aire en el Estado español", Reports from 2015-2019, https://www.ecologistasenaccion.org/documentos-y-recursos/
[19] Elektroinštitut Milan Vidmar (2019), "REZULTATI MERITEV OKOLJSKEGA MERILNEGA SISTEMA MESTNE OBČINE LJUBLJANA", Reports from 2015-2019, http://www.okolje.info/index.php/porocila-oms

- Indicative: Measuring information was not available for this pollutant, and it was estimated using an alternative approach.

The overall data quality for the city was determined based on the lowest data quality rating associated with any of the pollutants. For example, an overall data quality rating of "poor" indicates that at least one pollutant was given a data quality rating of "poor" for that city.

A score out of 10 was calculated for each pollutant based comparing the average NO_2, PM_{10} and $PM_{2.5}$ concentrations with the WHO guidelines:

- For NO_2: Average concentrations between 10 µg/m^3 and 40 µg/m^3 correspond to scores of 10/10 and 0/10 respectively.
- For PM_{10}: Average concentrations between 15 µg/m^3 and 40 µg/m^3 correspond to scores of 10/10 and 0/10 respectively.
- For $PM_{2.5}$: Average concentrations between 5 µg/m^3 and 25 µg/m^3 correspond to scores of 10/10 and 0/10 respectively.

For each pollutant, concentrations below the lower thresholds were given a score of 10, concentrations above the thresholds were given a score of 0, and linear interpolation was used between the lower and upper thresholds. A final, single score out of 10 was obtained by calculating a weighted average for the 3 pollutants: 50% based on the NO_2 score, 25% based on the PM_{10} score and 25% based on the $PM_{2.5}$ score.

Results for this indicator are presented in Table 3-11.

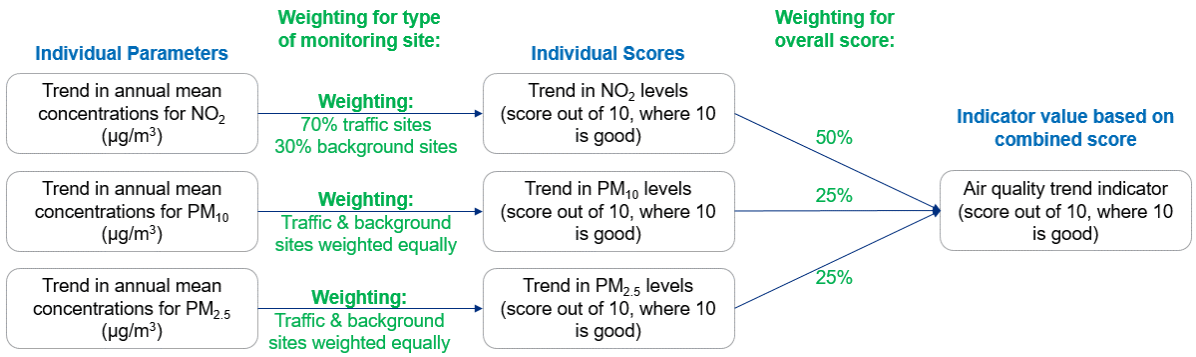
2.2.11 Air quality trends

The air quality trends indicator uses the same underlying datasets as the current air quality indicator (see 2.2.10). This indicator is intended to measure a city's improvement in air pollution levels and uses 5 years' worth of data to calculate this trend (2015 to 2019 inclusive).

As for the current air quality indicator, monitoring stations were grouped by city and data was extracted for each city using GIS software, in order to extract data only for monitoring sites located within the city boundary. Only monitoring sites that were classified as traffic/roadside sites or background sites were included in the calculations; monitoring sites that were classified as rural or industrial were not included. Monitoring sites with poor data capture (less than 75% for a given year) were also removed from the calculations.

Monitoring data for each pollutant from 2015 to 2019 were used to calculate the slope for a line of best fit describing the 5-year trend in concentrations for each air pollutant. The slope corresponded to the average annual change in pollutant concentration over the 5 years, for example, a decrease of 1 µg/m^3 per year for PM_{10}. The slope was divided by the 5-year annual mean concentration for each city, in order to express the change as a percentage rather than a concentration. Weightings were used for calculating the parameters and scores individually and then combined, as described in the figure below.

Two cities (Liège and Tri-city (Gdansk, Sopot and Gdynia)) had NO_2 background monitoring data available from EAQP but no NO_2 traffic monitoring data. For these cities, the improvement in air quality was calculated based only on trends for background NO_2 (no traffic NO_2), PM_{10} and $PM_{2.5}$.



The data quality of each data set NO_2, PM_{10} and $PM_{2.5}$ was assessed individually, based on the following criteria:

- Good: For this pollutant, there were at least 5 monitoring sites with 5 years' worth of data
- Medium: For this pollutant, there were 2-4 monitoring sites with 4-5 years' worth of data
- Poor: For this pollutant, there were less than 2 monitoring sites and/or limited years' worth of data (less than 4 years).

The overall data quality for the city was determined based on the lowest data quality rating associated with any of the pollutants. For example, an overall data quality rating of "poor" indicates that at least one pollutant was given a data quality rating of "poor" for that city.

A score out of 10 was calculated for each pollutant based on the improvement (expressed as a percentage per year) detailed below. Upper thresholds for these ranges were determined by looking at the "best in class" values for the cities in this study.

- For NO_2: An improvement of 10% (average per year) corresponds to a score of 10/10. No improvement or a worsening trend for air pollution concentrations corresponds to a score of 0/10.
- For PM_{10}: An improvement of 7% (average per year) corresponds to a score of 10/10. No improvement or a worsening trend for air pollution concentrations corresponds to a score of 0/10.
- For $PM_{2.5}$: An improvement of 7% (average per year) corresponds to a score of 10/10. No improvement or a worsening trend for air pollution concentrations corresponds to a score of 0/10.

Linear interpolation was used between the lower and upper thresholds. A final, single score out of 10 was obtained by calculating a weighted average for the 3 pollutants: 50% based on the NO_2 score, 25% based on the PM_{10} score and 25% based on the $PM_{2.5}$ score.

Results for this indicator are presented in Table 3-12.

3 Indicator results

3.1 General city statistics

Table 3-1 City area and population statistics

City	City area (km^2)	Population	Population density (people per km^2)
Amsterdam	219.0	872,922	3,985.9
Antwerp	203.7	530,032	2,601.6
Barcelona	100.8	1,664,182	16,515.6
Berlin	891.8	3,664,088	4,108.6
Bilbao	41.3	347,000	8,393.3
Birmingham	268.0	1,140,525	4,255.9
Brussels (Brussels Capital Region)	162.4	1,219,970	7,510.4
Cologne	406.7	1,088,040	2,675.5
Copenhagen	93.6	638,147	6,819.1
Edinburgh	273.0	527,620	1,932.4
Ghent	157.9	263,406	1,667.8
Granada	88.1	233,648	2,651.8
Hamburg	742.5	1,904,000	2,564.3
Helsinki	214.0	656,920	3,069.7
Krakow	326.8	779,966	2,386.3
Liège	68.4	196,296	2,868.9
Lisbon	84.7	544,851	6,429.3
Ljubljana	275.1	294,113	1,069.3
London (Inner London)	348.8	3,750,439	10,752.3
Lyon	48.0	518,635	10,809.4
Madrid	604.9	3,334,730	5,512.8
Manchester (Greater Manchester)	1,276.9	2,848,286	2,230.6
Marseille	242.1	868,277	3,585.8
Milan	181.8	1,406,242	7,734.1
Munich	311.4	1,515,860	4,867.8
Naples	118.5	948,850	8,009.3
Oslo	480.8	697,028	1,449.9
Paris	105.4	2,175,601	20,643.1
Prague	496.3	1,335,084	2,690.2
Rome	1,285.8	2,823,000	2,195.5
Stockholm	215.8	975,551	4,520.5
Strasbourg	78.3	284,677	3,636.1
Tri-city (Gdansk, Sopot and Gdynia)	418.4	751,060	1,795.0
Turin	130.1	857,910	6,592.5
Vienna	414.9	1,914,743	4,615.4
Warsaw	517.2	1,794,166	3,469.0

3.2 Space for people

Table 3-2 Scores and city ranking for: opportunity for walking

Rank	City	% of road network designated for pedestrians	Data quality rating	Score out of 10
1	Granada	57.6%	Poor	8.2
2	Barcelona	57.4%	Poor	8.2
3	Oslo	50.8%	Poor	7.3
4	Warsaw	46.6%	Poor	6.7
5	Prague	46.4%	Poor	6.6
6	Helsinki	44.0%	Poor	6.3
7	Krakow	39.4%	Poor	5.6
8	Tri-city (Gdansk, Sopot and Gdynia)	39.3%	Poor	5.6
9	Bilbao	38.7%	Poor	5.5
10	Vienna	38.5%	Poor	5.5
11	Munich	38.1%	Poor	5.4
12	Hamburg	37.9%	Poor	5.4
13	Berlin	37.8%	Poor	5.4
14	Madrid	37.5%	Poor	5.4
15	Paris	36.1%	Poor	5.2
16	Milan	35.6%	Poor	5.1
17	Brussels (Brussels Capital Region)	33.8%	Poor	4.8
18	Stockholm	33.6%	Poor	4.8
19	Lyon	29.7%	Poor	4.2
20	London (Inner London)	29.3%	Poor	4.2
21	Edinburgh	29.0%	Poor	4.1
22	Copenhagen	28.9%	Poor	4.1
23	Amsterdam	27.2%	Poor	3.9
24	Cologne	26.4%	Poor	3.8
25	Lisbon	26.2%	Poor	3.7
26	Liège	26.0%	Poor	3.7
27	Ljubljana	24.7%	Poor	3.5
28	Strasbourg	24.0%	Poor	3.4
29	Manchester (Greater Manchester)	21.8%	Poor	3.1
30	Marseille	21.6%	Poor	3.1
31	Birmingham	21.0%	Poor	3.0
32	Ghent	17.6%	Poor	2.5
32	Turin	17.6%	Poor	2.5
34	Antwerp	16.4%	Poor	2.3
35	Rome	12.4%	Poor	1.8
36	Naples	10.9%	Poor	1.6

Table 3-3 Scores and city ranking for: opportunity for cycling

Rank	City	% of road network designated for cyclists	Data quality rating	Score out of 10
1	Amsterdam	26.0%	Good	7.4
1	Antwerp	26.0%	Good	7.4
3	Ghent	23.8%	Good	6.8
4	Copenhagen	21.8%	Good	6.2
5	Lyon	19.5%	Good	5.6
6	Helsinki	18.5%	Good	5.3
7	Stockholm	17.9%	Medium	5.1
8	Tri-city (Gdansk, Sopot and Gdynia)	13.1%	Medium	3.8
9	Strasbourg	13.0%	Good	3.7
10	Munich	12.2%	Good	3.5
11	Paris	11.5%	Medium	3.3
12	Vienna	10.1%	Good	2.9
13	Ljubljana	9.5%	Medium	2.7
14	Brussels (Brussels Capital Region)	9.3%	Good	2.7
15	Cologne	8.9%	Medium	2.5
16	Liège	8.0%	Good	2.3
17	Turin	7.7%	Medium	2.2
18	Hamburg	7.1%	Good	2.0
19	Milan	6.8%	Medium	1.9
20	Edinburgh	5.6%	Medium	1.6
21	Lisbon	5.4%	Good	1.5
22	Warsaw	5.1%	Good	1.5
23	Barcelona	5.0%	Medium	1.4
24	Birmingham	4.8%	Medium	1.4
25	Berlin	4.7%	Good	1.4
26	London (Inner London)	4.5%	Medium	1.3
27	Oslo	4.3%	Good	1.2
28	Krakow	4.2%	Good	1.2
29	Bilbao	3.3%	Medium	1.0
29	Manchester (Greater Manchester)	3.3%	Good	1.0
31	Madrid	2.8%	Medium	0.8
32	Rome	2.6%	Medium	0.7
33	Prague	2.5%	Good	0.7
34	Granada	1.9%	Medium	0.6
35	Marseille	1.9%	Medium	0.5
36	Naples	1.5%	Medium	0.4

Table 3-4 Scores and city ranking for: congestion

Rank	City	3-year average congestion (2018-2020)	Data quality rating	Score out of 10
1	Bilbao	12.7%	Good	10.0
2	Helsinki	18.0%	Good	9.1
3	Ghent	19.3%	Good	8.8
4	Liège	20.0%	Good	8.6
4	Madrid	20.0%	Good	8.6
6	Copenhagen	20.3%	Good	8.5
7	Oslo	21.0%	Good	8.3
8	Ljubljana	22.0%	Good	8.0
9	Amsterdam	22.7%	Good	7.8
10	Granada	23.0%	Good	7.7
11	Turin	23.7%	Good	7.5
12	Cologne	24.0%	Good	7.4
13	Birmingham	25.0%	Good	7.1
14	Stockholm	25.3%	Good	7.1
14	Strasbourg	25.3%	Good	7.1
16	Prague	26.3%	Good	6.8
17	Barcelona	26.7%	Good	6.7
18	Vienna	27.0%	Good	6.6
19	Lyon	28.0%	Good	6.3
19	Milan	28.0%	Good	6.3
19	Munich	28.0%	Good	6.3
22	Antwerp	29.0%	Good	6.0
22	Manchester	29.0%	Good	6.0
22	Naples	29.0%	Good	6.0
25	Lisbon	29.3%	Good	5.9
26	Tri-city (Gdansk, Sopot and Gdynia)	30.7%	Good	5.5
27	Berlin	31.0%	Good	5.4
28	Hamburg	32.0%	Good	5.1
29	Marseille	33.0%	Good	4.9
30	Brussels	34.7%	Good	4.4
30	Rome	34.7%	Good	4.4
32	London	35.3%	Good	4.2
33	Paris	35.7%	Good	4.1
34	Warsaw	36.7%	Good	3.8
35	Edinburgh	37.7%	Good	3.5
36	Krakow	40.3%	Good	2.8

3.3 Safe Roads

Table 3-5 Scores and city ranking for: pedestrian safety

Rank	City	Ratio (deaths per 100,000 people)	Data quality rating	Score out of 10
1	Oslo	0.14	Good	9.2
2	Helsinki	0.20	Good	8.8
3	Copenhagen	0.26	Good	8.5
4	Amsterdam	0.31	Good	8.2
5	Munich	0.33	Good	8.1
6	Vienna	0.35	Good	7.9
7	Strasbourg	0.47	Good	7.2
8	Bilbao	0.48	Good	7.2
9	Antwerp	0.50	Good	7.1
10	Berlin	0.51	Good	7.0
10	Ghent	0.51	Good	7.0
12	Brussels (Brussels Capital Region)	0.52	Good	6.9
13	Granada	0.57	Good	6.6
14	Barcelona	0.58	Good	6.6
14	Hamburg	0.58	Good	6.6
16	Edinburgh	0.63	Good	6.3
17	Birmingham	0.67	Good	6.1
18	Liège	0.68	Good	6.0
18	Ljubljana	0.68	Good	6.0
20	Stockholm	0.72	Good	5.8
21	London (Inner London)	0.73	Good	5.7
22	Cologne	0.74	Good	5.6
23	Paris	0.77	Good	5.5
24	Manchester (Greater Manchester)	0.81	Good	5.2
25	Naples	0.84	Good	5.1
26	Madrid	0.87	Good	4.9
27	Lyon	0.96	Good	4.4
28	Prague	1.07	Good	3.7
29	Turin	1.13	Good	3.4
30	Marseille	1.19	Good	3.0
30	Milan	1.19	Good	3.0
32	Krakow	1.24	Good	2.7
32	Tri-city (Gdansk, Sopot and Gdynia)	1.24	Good	2.7
32	Warsaw	1.24	Good	2.7
35	Lisbon	1.28	Medium	2.5
36	Rome	1.66	Good	0.2

Table 3-6 Scores and city ranking for: cyclist safety

Rank	City	Ratio (deaths per 100,000 people)	Data quality rating	Score out of 10
1	Madrid	0.03	Good	9.7
2	Krakow	0.04	Good	9.6
2	Marseille	0.04	Good	9.6
4	Prague	0.05	Good	9.4
4	Vienna	0.05	Good	9.4
6	Barcelona	0.08	Good	9.1
7	Bilbao	0.10	Good	8.9
8	Brussels (Brussels Capital Region)	0.11	Good	8.8
8	Manchester (Greater Manchester)	0.11	Good	8.8
10	Birmingham	0.12	Good	8.7
10	Lisbon	0.12	Medium	8.7
10	Strasbourg	0.12	Good	8.7
13	Rome	0.13	Good	8.6
14	Granada	0.14	Good	8.4
14	Oslo	0.14	Good	8.4
16	Hamburg	0.16	Good	8.2
17	London (Inner London)	0.18	Good	8.0
18	Edinburgh	0.19	Good	7.9
18	Turin	0.19	Good	7.9
18	Warsaw	0.19	Good	7.9
21	Milan	0.21	Good	7.7
22	Paris	0.23	Good	7.4
23	Berlin	0.24	Good	7.3
23	Stockholm	0.24	Good	7.3
25	Helsinki	0.25	Good	7.2
26	Lyon	0.26	Good	7.1
27	Tri-city (Gdansk, Sopot and Gdynia)	0.27	Good	7.0
28	Liège	0.34	Good	6.2
28	Ljubljana	0.34	Good	6.2
30	Munich	0.42	Good	5.3
31	Cologne	0.49	Good	4.6
32	Amsterdam	0.53	Good	4.1
33	Copenhagen	0.63	Good	3.0
34	Ghent	0.76	Good	1.6
35	Antwerp	0.82	Good	0.9
n/a	Naples	0.00	Not representative	n/a

3.4 Access to climate-friendly mobility

Table 3-7 Scores and city ranking for: public transport affordability

Rank	City	Share of household budget required	Data quality rating	Score out of 10
1	Copenhagen	1.3%	Medium	10.0
2	Munich	1.5%	Medium	9.9
3	Ghent	1.9%	Medium	9.6
3	Prague	1.9%	Medium	9.6
5	Oslo	2.0%	Medium	9.6
6	Liège	2.2%	Medium	9.4
7	Barcelona	2.3%	Medium	9.4
7	Paris	2.3%	Medium	9.4
9	Brussels (Brussels Capital Region)	2.4%	Medium	9.3
9	Warsaw	2.4%	Medium	9.3
11	Rome	2.5%	Medium	9.2
12	Antwerp	2.7%	Medium	9.1
12	Milan	2.7%	Medium	9.1
12	Turin	2.7%	Medium	9.1
15	Bilbao	2.9%	Medium	9.0
15	Madrid	2.9%	Medium	9.0
17	Vienna	3.2%	Medium	8.8
18	Helsinki	3.4%	Medium	8.7
19	Stockholm	3.5%	Medium	8.6
20	Amsterdam	3.6%	Medium	8.5
20	Edinburgh	3.6%	Medium	8.5
20	Lyon	3.6%	Medium	8.5
23	Marseille	3.8%	Medium	8.4
24	Berlin	3.9%	Medium	8.3
24	Granada	3.9%	Medium	8.3
26	Strasbourg	4.0%	Medium	8.3
27	Hamburg	4.1%	Medium	8.2
28	Ljubljana	4.2%	Medium	8.2
28	Tri-city (Gdansk, Sopot and Gdynia)	4.2%	Medium	8.2
30	Lisbon	4.3%	Medium	8.1
31	Cologne	4.5%	Medium	8.0
32	Naples	5.1%	Medium	7.6
33	Krakow	5.6%	Medium	7.3
34	Birmingham	7.9%	Medium	5.8
35	Manchester (Greater Manchester)	9.0%	Medium	5.1
36	London (Inner London)	9.6%	Medium	4.7

Table 3-8 Scores and city ranking for: access to public transport

Rank	City	Stations and stops per km²	Data quality rating	Score out of 10
1	Paris	16.7	Good	10.0
2	Lisbon	14.3	Good	8.6
3	London (Inner London)	10.7	Good	6.4
3	Turin	10.7	Good	6.4
5	Barcelona	10.5	Good	6.3
6	Lyon	10.2	Good	6.1
7	Milan	9.4	Good	5.6
8	Bilbao	8.3	Good	5.0
9	Brussels (Brussels Capital Region)	8.0	Good	4.8
10	Birmingham	7.9	Good	4.7
11	Liège	7.1	Good	4.2
12	Helsinki	6.9	Good	4.1
12	Vienna	6.9	Good	4.1
14	Copenhagen	6.4	Good	3.8
15	Stockholm	5.9	Good	3.5
16	Marseille	5.3	Good	3.2
17	Manchester (Greater Manchester)	5.0	Good	3.0
18	Munich	4.8	Good	2.9
19	Strasbourg	4.6	Good	2.8
20	Madrid	4.5	Good	2.7
21	Edinburgh	4.3	Good	2.6
21	Naples	4.3	Good	2.6
23	Warsaw	4.2	Good	2.5
24	Berlin	4.1	Good	2.5
25	Ghent	4.0	Good	2.4
26	Antwerp	3.9	Good	2.3
27	Amsterdam	3.8	Good	2.3
27	Granada	3.8	Good	2.3
29	Prague	3.3	Good	2.0
29	Rome	3.3	Good	2.0
31	Hamburg	3.0	Good	1.8
32	Krakow	2.9	Good	1.7
33	Cologne	2.5	Good	1.5
34	Oslo	2.1	Good	1.3
35	Tri-city (Gdansk, Sopot and Gdynia)	1.7	Good	1.0
36	Ljubljana	1.4	Good	0.8

Table 3-9 Scores and city ranking for: access to electric vehicle charging

Rank	City	Power (kW) per 1,000 population (based on weighing factors)	Data quality rating	Score out of 10
1	Amsterdam	95.7	Good	10.0
2	Oslo	81.0	Good	10.0
3	Ghent	45.7	Good	9.1
4	Copenhagen	33.9	Good	6.8
5	Helsinki	32.1	Good	6.4
6	Antwerp	30.4	Good	6.1
7	Ljubljana	30.1	Good	6.0
8	Munich	28.6	Good	5.7
9	Lisbon	25.6	Good	5.1
10	Stockholm	24.0	Good	4.8
11	London (Inner London)	23.6	Good	4.7
12	Hamburg	21.6	Good	4.3
12	Paris	21.6	Good	4.3
14	Vienna	19.9	Good	4.0
15	Turin	16.9	Good	3.4
16	Brussels (Brussels Capital Region)	12.5	Good	2.5
17	Berlin	11.9	Good	2.4
18	Cologne	9.8	Good	2.0
19	Barcelona	9.1	Good	1.8
20	Prague	8.8	Good	1.8
21	Liège	8.7	Good	1.7
21	Lyon	8.7	Good	1.7
23	Marseille	8.0	Good	1.6
24	Edinburgh	7.4	Good	1.5
25	Strasbourg	7.1	Good	1.4
26	Bilbao	6.9	Good	1.4
27	Milan	6.5	Good	1.3
28	Tri-city (Gdansk, Sopot and Gdynia)	5.8	Good	1.2
29	Manchester (Greater Manchester)	5.7	Good	1.1
30	Rome	5.3	Good	1.1
31	Birmingham	5.2	Good	1.0
32	Madrid	4.7	Good	0.9
33	Krakow	3.7	Good	0.7
34	Granada	2.9	Good	0.6
34	Warsaw	2.9	Good	0.6
36	Naples	2.0	Good	0.4

3.5 Polluting cars out, shared mobility in

Table 3-10 Scores and city ranking for: polluting cars out, shared mobility in

Rank	City	Emission Zones	Promoting zero emission vehicles	Mobility as a service	Data quality rating	Score out of 20
1	Amsterdam	10.50	3.00	5.00	Good	18.50
1	Oslo	10.50	3.00	5.00	Good	18.50
3	London (Inner London)	11.25	1.50	4.80	Good	17.55
4	Paris	10.50	1.50	5.00	Good	17.00
5	Stockholm	7.50	3.00	5.00	Good	15.50
6	Antwerp	9.00	0.00	5.00	Good	14.00
6	Brussels (Brussels Capital Region)	9.00	0.00	5.00	Good	14.00
6	Ghent	9.00	0.00	5.00	Good	14.00
9	Birmingham	7.50	1.50	4.80	Good	13.80
10	Barcelona	6.75	1.50	5.00	Good	13.25
10	Berlin	8.25	0.00	5.00	Good	13.25
12	Copenhagen	6.00	1.50	5.00	Good	12.50
12	Madrid	6.00	1.50	5.00	Good	12.50
12	Milan	7.50	0.00	5.00	Good	12.50
15	Cologne	6.75	0.00	5.00	Good	11.75
15	Lisbon	6.75	0.00	5.00	Good	11.75
15	Munich	6.75	0.00	5.00	Good	11.75
18	Lyon	5.00	1.50	5.00	Good	11.50
19	Rome	6.25	0.00	5.00	Good	11.25
20	Strasbourg	3.75	1.50	5.00	Good	10.25
20	Turin	5.25	0.00	5.00	Good	10.25
22	Marseille	3.00	1.50	5.00	Good	9.50
23	Bilbao	3.00	1.50	4.80	Good	9.30
24	Naples	3.75	0.00	5.00	Good	8.75
24	Vienna	3.75	0.00	5.00	Good	8.75
26	Prague	3.00	0.00	5.00	Good	8.00
27	Manchester (Greater Manchester)	2.00	1.50	4.35	Good	7.85
28	Edinburgh	3.00	1.50	3.30	Good	7.80
28	Granada	3.00	1.50	3.30	Good	7.80
28	Liège	3.00	0.00	4.80	Good	7.80
31	Hamburg	2.25	0.00	5.00	Good	7.25
32	Helsinki	2.00	0.00	4.80	Good	6.80
33	Krakow	1.50	0.00	5.00	Good	6.50
33	Ljubljana	1.50	0.00	5.00	Good	6.50
33	Tri-city (Gdansk, Sopot and Gdynia)	1.50	0.00	5.00	Good	6.50
33	Warsaw	1.50	0.00	5.00	Good	6.50

3.6 Clean air

Table 3-11 Scores and city ranking for: current air quality

Rank	City	3-year (2017-2019) weighted average concentrations (µg/m^3)			Data quality rating	Score out of 10
		NO_2	PM_{10}	$PM_{2.5}$		
1	Helsinki	24.1	17.0	6.3	Medium	7.3
2	Stockholm	24.0	18.8	5.6	Good	7.2
3	Manchester (Greater Manchester)	28.0	16.2	10.3	Medium	6.2
3	Oslo	30.0	16.6	7.7	Good	6.2
5	Birmingham	29.1	15.8	10.1	Poor	6.1
6	Liège	29.5	17.6	9.6	Indicative	5.9
6	Tri-city (Gdansk, Sopot and Gdynia)	24.6	20.9	13.5	Indicative	5.9
8	Copenhagen	26.5	22.1	12.0	Medium	5.7
9	Bilbao	31.7	17.5	9.7	Poor	5.6
10	Vienna	30.9	19.9	13.7	Good	5.0
11	Edinburgh	41.3	10.6	6.4	Poor	4.8
12	Amsterdam	34.1	20.9	12.5	Good	4.5
13	Lyon	34.8	20.3	12.8	Poor	4.4
14	Ghent	31.2	24.8	14.2	Medium	4.3
15	Brussels (Brussels Capital Region)	38.1	18.2	12.2	Medium	4.1
16	Madrid	40.9	18.6	10.1	Good	4.0
17	Cologne	37.2	19.8	13.7	Poor	3.9
18	London (Inner London)	45.6	19.5	11.5	Good	3.7
18	Prague	32.8	24.5	17.2	Medium	3.7
20	Berlin	36.2	23.1	15.2	Medium	3.6
20	Hamburg	39.4	19.9	12.8	Medium	3.6
20	Lisbon	38.9	22.9	11.2	Medium	3.6
23	Antwerp	37.0	24.3	13.9	Good	3.5
23	Munich	48.0	20.0	12.7	Medium	3.5
25	Strasbourg	37.7	22.9	14.8	Poor	3.4
26	Marseille	47.0	25.5	12.8	Medium	3.0
27	Naples	38.0	27.8	14.1	Medium	2.9
28	Rome	48.6	26.0	14.2	Good	2.8
29	Paris	47.9	25.5	15.3	Medium	2.7
30	Barcelona	44.9	25.7	16.5	Good	2.5
31	Ljubljana	40.1	24.0	18.5	Poor	2.4
32	Granada	42.9	32.7	16.3	Poor	1.8
33	Warsaw	40.4	31.2	21.6	Medium	1.3
34	Milan	47.2	34.6	23.8	Medium	0.7
35	Turin	52.7	34.4	24.6	Medium	0.6
36	Krakow	45.0	41.9	32.4	Medium	0.0

Table 3-12 Scores and city ranking for: air quality trends

Rank	City	Improvement as % per year			Data quality rating	Score out of 10
		NO_2	PM_{10}	$PM_{2.5}$		
1	Marseille	9.8%	4.6%	10.4%	Medium	9.1
2	Lyon	5.8%	8.2%	10.2%	Poor	8.1
2	Milan	6.8%	5.5%	9.0%	Medium	8.1
4	Krakow	4.3%	8.9%	6.8%	Medium	7.4
5	Helsinki	9.0%	4.5%	1.6%	Medium	7.0
6	Munich	8.0%	3.2%	3.3%	Medium	6.7
7	London (Inner London)	8.6%	3.5%	1.5%	Medium	6.5
8	Rome	4.4%	3.8%	7.4%	Good	6.4
9	Naples	2.4%	5.7%	9.1%	Poor	6.2
10	Brussels (Brussels Capital Region)	3.5%	5.1%	5.9%	Medium	6.1
11	Turin	2.7%	6.1%	5.4%	Medium	5.9
12	Oslo	7.5%	2.8%	1.4%	Good	5.8
13	Birmingham	9.5%	0.0%	1.3%	Poor	5.7
14	Copenhagen	8.2%	1.2%	1.7%	Medium	5.6
14	Hamburg	5.5%	1.2%	5.5%	Medium	5.6
16	Berlin	4.5%	3.2%	4.2%	Medium	5.4
16	Paris	5.1%	3.9%	2.8%	Medium	5.4
18	Cologne	4.3%	3.4%	4.0%	Poor	5.3
19	Madrid	3.6%	4.0%	2.8%	Good	4.9
20	Lisbon	0.3%	6.1%	4.9%	Medium	4.7
21	Ljubljana	-4.3%	5.5%	8.2%	Poor	4.5
21	Strasbourg	3.1%	2.3%	4.1%	Poor	4.5
23	Ghent	5.2%	1.4%	1.6%	Medium	4.3
23	Stockholm	7.1%	1.0%	-4.6%	Good	4.3
25	Liège	2.7%	0.6%	4.4%	Poor	3.8
26	Antwerp	5.6%	-1.7%	1.5%	Medium	3.7
26	Vienna	4.4%	1.0%	1.2%	Good	3.7
28	Warsaw	0.6%	3.6%	3.6%	Medium	3.6
29	Amsterdam	3.5%	-0.5%	3.5%	Good	3.4
30	Manchester (Greater Manchester)	4.0%	1.0%	0.2%	Medium	3.2
31	Bilbao	1.4%	-0.5%	5.5%	Poor	3.1
31	Granada	2.6%	3.7%	-5.3%	Poor	3.1
33	Barcelona	4.5%	0.8%	-1.9%	Good	3.0
34	Prague	1.2%	-0.4%	1.7%	Medium	1.8
35	Edinburgh	0.5%	-0.9%	0.2%	Poor	1.0
36	Tri-city (Gdansk, Sopot and Gdynia)	-0.4%	-1.9%	-1.4%	Poor	0.0

A1 Indicator calculations and references

A1.1 Main data sources for each indicator

Category	Indicator	Main data sources
Space for people	Opportunity for walking	OpenStreetMap
	Opportunity for cycling	OpenStreetMap and data provided by cities
	Congestion	Traffic Index by Tomtom International BV
Safe Roads	Pedestrian safety	Local Councils and national databases, data provided by cities
	Cyclist safety	Local Councils and national databases, data provided by cities
Access to climate-friendly mobility	Public transport affordability	Local and national databases, data provided by cities
	Access to public transport	OpenStreetMap and data provided by cities
	Access to charging infrastructure	Eco-Movement B.V.
Polluting cars out, shared mobility in	Polluting cars out, shared mobility in	Local data, Portal on Urban Access Regulations provided by Sadler Consultants Ltd., The International Council on Clean Transportation's overview on government targets for phasing out new sales of internal combustion engine passenger cars
Clean Air	Current air quality	European Environment Agency Air Quality e-Reporting
	Air quality trends	European Environment Agency Air Quality e-Reporting

A2 General city statistics

Amsterdam

Population: https://allecijfers.nl/gemeente/amsterdam/

City area: https://opendata.cbs.nl/statline/#/CBS/en/dataset/70262ENG/table?ts=1636555333401

Antwerp

Population: Provided in email from city

City area: https://www.atlas-belgique.be/index.php/en/resources/map-data/

Barcelona

Population: https://www.ine.es/dynt3/inebase/en/index.html?padre=517&dh=1

City area: http://centrodedescargas.cnig.es/CentroDescargas/catalogo.do?Serie=CAANE

Berlin

Population: https://www-genesis.destatis.de/genesis/online

City area: https://opendata-esri-de.opendata.arcgis.com/datasets/esri-de-content::vg250-gemeindegrenzen/about

Bilbao

Population: https://www.bilbao.eus/cs/Satellite?c=Page&cid=1272993139883&language=es&pageid=1272993139883&pagename=Bilbaonet%2FPage%2FBIO_Observatorio

City area: http://centrodedescargas.cnig.es/CentroDescargas/catalogo.do?Serie=CAANE

Birmingham

Population: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland

City area: https://www.ordnancesurvey.co.uk/business-government/products/boundaryline

Brussels (Brussels Capital Region)

Population: https://statbel.fgov.be/en/open-data/population-place-residence-nationality-marital-status-age-and-sex-10

City area: https://data.metabolismofcities.org/dashboards/brussels/hub/harvesting/852

Cologne

Population: https://www.stadt-koeln.de/mediaasset/content/pdf15/statistik-jahrbuch/15_statistisches_jahrbuch_2020_bfrei.pdf

City area: https://opendata-esri-de.opendata.arcgis.com/datasets/esri-de-content::vg250-gemeindegrenzen/about

Copenhagen

Population: Provided in an email from the city

City area: https://www.opendata.dk/city-of-copenhagen/bydele

Edinburgh

Population: https://www.nrscotland.gov.uk/files/statistics/council-area-data-sheets/city-of-edinburgh-council-profile.html

City area: https://www.ordnancesurvey.co.uk/business-government/products/boundaryline

Ghent

Population: https://gent.buurtmonitor.be/jive?workspace_guid=b8d83be7-355d-4ae9-aa4d-236d81a31b36

City area: https://www.atlas-belgique.be/index.php/en/resources/map-data/

Granada

Population: https://www.ine.es/dynt3/inebase/en/index.html?padre=517&dh=1

City area: http://centrodedescargas.cnig.es/CentroDescargas/catalogo.do?Serie=CAANE

Hamburg

Population: Provided in an email from the city

City area: https://opendata-esri-de.opendata.arcgis.com/datasets/esri-de-content::vg250-gemeindegrenzen/about

Helsinki

Population:
https://www.stat.fi/tup/suoluk/suoluk_vaesto_en.html#Demographic%20dependency%20ratio%20by%20municipality

City area:
https://www.maanmittauslaitos.fi/sites/maanmittauslaitos.fi/files/attachments/2018/01/Suomen_pa_2018_kunta_maakunta.pdf

Krakow

Population: https://stat.gov.pl/en/topics/population/population/area-and-population-in-the-territorial-profile-in-2021,4,15.html

City area: https://gis-support.pl/baza-wiedzy-2/dane-do-pobrania/granice-administracyjne/

Liege

Population: https://statbel.fgov.be/en/open-data/population-place-residence-nationality-marital-status-age-and-sex-10

City area: https://www.atlas-belgique.be/index.php/en/resources/map-data/

Lisbon

Population:
https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&contecto=pi&indOcorrCod=0010745&selTab=tab0

City area: https://dados.gov.pt/pt/datasets/concelhos-de-portugal/

Ljubljana

Population: Provided in an email from the city

City area: https://www.openstreetmap.org/

London (Inner London)

Population: https://data.london.gov.uk/dataset/land-area-and-population-density-ward-and-borough

City area: https://www.ordnancesurvey.co.uk/business-government/products/boundaryline

Lyon

Population: https://www.insee.fr/fr/statistiques/1405599?geo=FRANCE-1

City area: https://www.data.gouv.fr/en/datasets/decoupage-administratif-communal-francais-issu-d-openstreetmap/

Madrid

Population: https://www.ine.es/dynt3/inebase/en/index.html?padre=517&dh=1

City area: http://centrodedescargas.cnig.es/CentroDescargas/catalogo.do?Serie=CAANE

Manchester (Greater Manchester)

Population:
https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland

City area: https://www.ordnancesurvey.co.uk/business-government/products/boundaryline

Marseille

Population: https://www.insee.fr/fr/statistiques/1405599?geo=FRANCE-1

City area: https://www.data.gouv.fr/en/datasets/decoupage-administratif-communal-francais-issu-d-openstreetmap/

Milan

Population: http://dati-censimentipermanenti.istat.it/?lang=en#

City area:
https://hub.arcgis.com/datasets/e68ceb0a193e4e378b29255b62ab75e0_0/data?geometry=-28.738%2C35.432%2C54.890%2C46.956

Munich

Population: Provided in an email from the city

City area: https://opendata-esri-de.opendata.arcgis.com/datasets/esri-de-content::vg250-gemeindegrenzen/about

Naples

Population: http://dati-censimentipermanenti.istat.it/?lang=en#

City area:
https://hub.arcgis.com/datasets/e68ceb0a193e4e378b29255b62ab75e0_0/data?geometry=-28.738%2C35.432%2C54.890%2C46.956

Oslo

Population: https://www.ssb.no/en/statbank/table/01222/tableViewLayout1/

City area: https://kartkatalog.geonorge.no/metadata/administrative-units-municipalities/041f1e6e-bdbc-4091-b48f-8a5990f3cc5b

Paris

Population: https://www.insee.fr/fr/statistiques/1405599?geo=FRANCE-1

City area: https://www.data.gouv.fr/en/datasets/decoupage-administratif-communal-francais-issu-d-openstreetmap/

Prague

Population: https://vdb.czso.cz/vdbvo2/faces/en/index.jsf?page=home

City area: https://geoportal.cuzk.cz/(S(xru2wyncg4cspnziajbgxmbg))/Default.aspx?lng=EN&mode=TextMeta&side=dsady_RUIAN&metadataID=CZ-CUZK-SH-V&mapid=5&menu=252

Rome

Population: Provided in an email from the city

City area: https://hub.arcgis.com/datasets/e68ceb0a193e4e378b29255b62ab75e0_0/data?geometry=-28.738%2C35.432%2C54.890%2C46.956

Stockholm

Population: https://www.scb.se/en/finding-statistics/statistics-by-subject-area/population/population-composition/population-statistics/pong/tables-and-graphs/rank-lists-municipalities/swedens-50-largest-municipalities-2020/

City area: https://www.arcgis.com/home/item.html?id=4b1a4eb235e5483fa4619bcb2ad2fae9

Strasbourg

Population: https://www.insee.fr/fr/statistiques/1405599?geo=FRANCE-1

City area: https://www.data.gouv.fr/en/datasets/decoupage-administratif-communal-francais-issu-d-openstreetmap/

Tri-city (Gdansk, Sopot and Gdynia)

Population: https://stat.gov.pl/en/topics/population/population/area-and-population-in-the-territorial-profile-in-2021,4,15.html

City area: https://gis-support.pl/baza-wiedzy-2/dane-do-pobrania/granice-administracyjne/

Turin

Population: http://dati-censimentipermanenti.istat.it/?lang=en#

City area: https://hub.arcgis.com/datasets/e68ceb0a193e4e378b29255b62ab75e0_0/data?geometry=-28.738%2C35.432%2C54.890%2C46.956

Vienna

Population: https://www.statistik.at/web_en/statistics/PeopleSociety/population/population_censuses_register_based_census_register_based_labour_market_statistics/totaL_population/078395.html

City area: https://www.data.gv.at/katalog/dataset/1a22d558-544a-46c1-95b9-baa77d2bb485

Warsaw

Population: https://stat.gov.pl/en/topics/population/population/area-and-population-in-the-territorial-profile-in-2021,4,15.html

City area: https://gis-support.pl/baza-wiedzy-2/dane-do-pobrania/granice-administracyjne/

A3 Opportunity for walking and cycling

Amsterdam

General:

- Total length of road network (km) calculated from Open Street Maps: 4,649.5

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1,264.7
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 1,264.7

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 824.4
- Total cycle path length (km) provided by the city: 1209.05
  This number includes: 262.5 km of shared moped/cycle path along the road (Brom-fietspad langs weg); 519.7 km of bike path along the road (Fietspad langs weg); 223.2* km of solitary shared moped / cycle path (Solitair brom-fietspad); 386.9* km of solitary bike path (Solitair fietspad); 8.6 km of bicycle street (Fietsstraat) and 113.2 km of bicycle suggestion strip (Fiets-suggestie-strook) *These numbers were divided by 2 to correct for double-counting the two directions, and for consistency with the other datasets.
  https://www.cbs.nl/nl-nl/maatwerk/2021/16/lengte-van-fietspaden-per-gemeente-wijk-en-buurt-2020
- Total cycle path length (km) used to calculate this indicator: 1209.05

Antwerp

General:

- Total length of road network (km) calculated from Open Street Maps: 3,004.5

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 492.6
- Total length of pedestrian paths (km) provided by the city: 735.96
  Information provided in an email from the city in October 2021.
- Total length of pedestrian paths (km) used to calculate this indicator: 492.6

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 417.2
- Total cycle path length (km) provided by the city: 779.94
  Information was provided in an email from the city in October 2021. The city confirmed that they do not double-count bidirectional cycle lanes.
- Total cycle path length (km) used to calculate this indicator: 779.94

Barcelona

General:

- Total length of road network (km) calculated from Open Street Maps: 4,171.8

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 2,394.3
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 2,394.3

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 210.1

- Total cycle path length (km) provided by the city: n/a
- Total cycle path length (km) used to calculate this indicator: 210.1

Berlin

General:

- Total length of road network (km) calculated from Open Street Maps: 1,8767.6

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 7,102.3
- Total length of pedestrian paths (km) provided by the city: 1,432
  In an email from the city in October 2021, the city contact noted that the way footpaths are counted in Berlin is based on a classification of footpaths that is not readily comparable with the data from OSM. According to the classification system used in Berlin, the total length of footpaths (pedestrian tunnels or subways, pedestrian zones, green spaces, allotments, traffic-calmed areas, brides) is 1,432 km; pavements along roads and forest paths are explicitly not included in this number.
- Total length of pedestrian paths (km) used to calculate this indicator: 7,102.3

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 511.9
- Total cycle path length (km) provided by the city: 888.5
  In an email from the city in October 2021, the city contact noted that the way cycle paths are counted in Berlin is based on a classification of cycle paths that is not readily comparable with the data from OSM. A total cycle path length of 888.5 km was provided as an approximate equivalent to the type of cycle path classification used in the OSM data.
- Total cycle path length (km) used to calculate this indicator: 888.5

Bilbao

General:

- Total length of road network (km) calculated from Open Street Maps: 832.8

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 322.4
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 322.4

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 27.8
- Total cycle path length (km) provided by the city: n/a
- Total cycle path length (km) used to calculate this indicator: 27.8

Birmingham

General:

- Total length of road network (km) calculated from Open Street Maps: 4,878.8

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1026.3
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 1026.3

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 234.5
- Total cycle path length (km) provided by the city: n/a
- Total cycle path length (km) used to calculate this indicator: 234.5

Brussels (Brussels Capital Region)

General:

- Total length of road network (km) calculated from Open Street Maps: 4,057.8

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1,372.2
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 1,372.2

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 190.4
- Total cycle path length (km) provided by the city: 376.59
  This number includes: 89.42 km of one way cycle path, 149.98* km of two way cycle paths, 28.73 km of shared cycle/foot paths, and 183.45 km of marked cycle paths.
  *These numbers were divided by 2 to correct for double-counting the two directions, and for consistency with the other datasets.
  This information was provided in an email from the city in October 2021.
- Total cycle path length (km) used to calculate this indicator: 376.59

Cologne

General:

- Total length of road network (km) calculated from Open Street Maps: 7,437.2

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1,966.5
- Total length of pedestrian paths (km) provided by the city: n/a
  In an email from the city in October 2021, it was stated that this data is not currently available but is envisioned to be determined in the future.
- Total length of pedestrian paths (km) used to calculate this indicator: 1,966.5

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 662.7
- Total cycle path length (km) provided by the city: n/a
  In an email from the city in October 2021, it was stated that this data is not currently available but is envisioned to be determined in the future.
- Total cycle path length (km) used to calculate this indicator: 662.7

Copenhagen

General:

- Total length of road network (km) calculated from Open Street Maps: 2379.1

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 687.1
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 687.1

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 175.2
- Total cycle path length (km) provided by the city: 518
  This number includes 386 km of curb-separated bicycle tracks, 64 km Green Cycle Routes, 35 km Super Cycle Highways, and 33 km of painted cycle lanes.
  This information was provided in an email from the city in October 2021.
- Total cycle path length (km) used to calculate this indicator: 518

Edinburgh

General:

- Total length of road network (km) calculated from Open Street Maps: 3,776.1

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1,095.1
- Total length of pedestrian paths (km) provided by the city: n/a
  In an email in October 2021, the city contact commented that our number seemed reasonable.
- Total length of pedestrian paths (km) used to calculate this indicator: 1,095.1

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 158.1
- Total cycle path length (km) provided by the city: 211
  This number was provided in an email from the city in October 2021. The total length of cycle lanes was presented as 131 miles (211 km) in Bike Life.
- Total cycle path length (km) used to calculate this indicator: 211

Ghent

General:

- Total length of road network (km) calculated from Open Street Maps: 2,228.8

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 392.1
- Total length of pedestrian paths (km) provided by the city:
  The city commented, in an email in October 2021, that our numbers appeared correct.
- Total length of pedestrian paths (km) used to calculate this indicator: 392.1

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 170.5
- Total cycle path length (km) provided by the city: 531.3
  This number includes: 14.38 km of fietsstraat (bicycle streets), 94.92 km of losliggend fietspad (loose cycle tracks), 175.47 km of vrijliggend fietspad (separate cycle track), 183.31 km of aanliggend fietspad (adjacent cycle paths), 5.95 km of fietstunnel/ -brug (bicycle tunnels/bridges), 0.32 km of opgeblazen fietsopstelstrook (blown-up bicycle lanes), and 56.90 km of fietssuggestiestrook (bicycle suggestion lanes).
  There is also some cycling infrastructure that was not included in the total, in order to make the data compatible with the other data gathered for this indicator:, 23.54 km of oversteekplaats fietsers (crossing point for cyclists), and 2.64 km of gemengde bus – fietsstrook (mixed bus-bicycle lane).
  This information was provided in an email from the city in October 2021.
- Total cycle path length (km) used to calculate this indicator: 531.3

Granada

General:

- Total length of road network (km) calculated from Open Street Maps: 1,869.2

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1,076.4
- Total length of pedestrian paths (km) provided by the city: 37.2
- Total length of pedestrian paths (km) used to calculate this indicator: 1,076.4

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 36.2
- Total cycle path length (km) provided by the city: 36.2

In an email in October 2021, the city indicated that the cycle path length extracted from OSM seemed reasonable.

- Total cycle path length (km) used to calculate this indicator: 36.2

Hamburg

General:

- Total length of road network (km) calculated from Open Street Maps: 12,788.3

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 4,844.5
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 4,844.5

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 278.6
- Total cycle path length (km) provided by the city: 913
  This number includes: 44 km of separate cycle lanes (Selbstständig geführte Radwege), i.e. structurally separated cycle lanes from both the carriageway and footpaths (e.g. kerb to carriageway, green strip to cycle lane); 710 km of separate cycle paths and foot paths (Getrennte Geh- und Radwege) (with and without compulsory use); and 159 km of compulsory use of shared footpaths and cycle paths (Benutzungspflichtige gemeinsame Geh- und Radwege).
  This information was provided in an email from the city in October 2021.
- Total cycle path length (km) used to calculate this indicator: 913

Helsinki

General:

- Total length of road network (km) calculated from Open Street Maps: 7,030.7

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 3,092.3
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 3,092.3

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 1,298.1
- Total cycle path length (km) provided by the city: 1,298.1
  The city commented, in an email in October 2021, that the number appeared correct.
- Total cycle path length (km) used to calculate this indicator: 1,298.1

Krakow

General:

- Total length of road network (km) calculated from Open Street Maps: 5,992.3

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 2,361.0
- Total length of pedestrian paths (km) provided by the city: 744.3
  Information provided in an email from the city in October 2021.
- Total length of pedestrian paths (km) used to calculate this indicator: 2,361.0

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 213.3
- Total cycle path length (km) provided by the city: 253
  Information provided in an email from the city in October 2021.

- Total cycle path length (km) used to calculate this indicator: 253

Liege

General:

- Total length of road network (km) calculated from Open Street Maps: 1,187.4

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 309.3
- Total length of pedestrian paths (km) provided by the city: > 52 km
  The city responded that they do not have a complete dataset that accounts for all of the pedestrian paths in the city.
- Total length of pedestrian paths (km) used to calculate this indicator: 309.3

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 27.4
- Total cycle path length (km) provided by the city: 95.46
  This number includes: 51.66 km of dedicated paths (RAVeL and other dedicated sites); 10.88 km of segregated cycle paths; 25.01 km of marked cycle tracks; and 7.91 km of suggested cycle tracks (chevrons on the ground).
  There is also some cycling infrastructure that was not included in the total, in order to make the data compatible with the other data gathered for this indicator: 8.15 km of bus lanes accessible to bicycles.
  This information was provided in an email from the city in October 2021.
- Total cycle path length (km) used to calculate this indicator: 95.46

Lisbon

General:

- Total length of road network (km) calculated from Open Street Maps: 2,343.7

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 612.9
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 612.9

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 114.7
- Total cycle path length (km) provided by the city: 126.8
- Total cycle path length (km) used to calculate this indicator: 126.8
  Information from an email received from Lisbon city contact in October 2021.

Ljubljana

General:

- Total length of road network (km) calculated from Open Street Maps: 3,172.7

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 785.2
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 785.2

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 195.2
- Total cycle path length (km) provided by the city: 300

Based on information provided in an email from the city in October 2021, there are about 300 km of cycle lanes in the city, though the exact number of km is unknown. This is comprised of one way cycling roads (on each side of a road).

- Total cycle path length (km) used to calculate this indicator: 300

London (Inner London)

General:

- Total length of road network (km) calculated from Open Street Maps: 9,191.4

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 2,690.0
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 2,690.0

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 414.6
- Total cycle path length (km) provided by the city: 291.73
  This number includes: 155.28 km of cycle paths for London Cycling Comfort Guide High Comfort / Cycling is prioritised and 136.45 of cycle paths for London Cycling Comfort Guide Improved Comfort – 2020 TfL + LTN's changes. As the city estimate is less than the OSM data, the calculations use the number from the OSM data.
  https://www.google.com/maps/d/u/0/viewer?mid=1rKcdx8FZF1-R_FRPerZs8u1rhaCpD5Nk&ll=51.490613014892155%2C-0.026770965184493845&z=11
- Total cycle path length (km) used to calculate this indicator: 414.6

Lyon

General:

- Total length of road network (km) calculated from Open Street Maps: 1,345.2

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 399.2
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 399.2

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 54.7
- Total cycle path length (km) provided by the city: 262.56
  This number includes: 114.09 km of cycling bands (bande Cyclable); 93.92 km of two-way cycling (double sens cyclable); and 54.56 km of cycle paths (piste cyclable).
  There is also some cycling infrastructure that was not included in the total, in order to make the data compatible with the other data gathered for this indicator: 0.54 km of coated shoulder (accotement revêtu) (including CVCB); 12.84 km of widened bicycle bus corridor (couloir bus vélo élargi); 44.74 km of non-widened bicycle bus corridor (couloir bus vélo non élargi); 0.62 km chute or ramp (goulotte ou rampe); and 31.19 km of greenway (voie verte).
  https://geo.data.gouv.fr/fr/datasets/51de26ab60d24f0b479ac6d660e1941c55c42912
- Total cycle path length (km) used to calculate this indicator: 262.56

Madrid

General:

- Total length of road network (km) calculated from Open Street Maps: 10,044.0

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 3,763.1

- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 3,763.1

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 283.8
- Total cycle path length (km) provided by the city: n/a
- Total cycle path length (km) used to calculate this indicator: 283.8

Manchester (Greater Manchester)

General:

- Total length of road network (km) calculated from Open Street Maps: 17,603.8

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 3,836.9
- Total length of pedestrian paths (km) provided by the city: 5,113.4
  The city provided this estimate based on Ordnance Survey (OS) data: MasterMap Highways, PathLink table.
- Total length of pedestrian paths (km) used to calculate this indicator: 3,836.9

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 588.5
- Total cycle path length (km) provided by the city: 509.1
  The city provided an estimate of 509.1 based on Ordnance Survey (OS) data: Cycle Routes dataset with route types 3, 4 and 11. As the city estimate is less than the OSM data, the calculations use the number from the OSM data.
- Total cycle path length (km) used to calculate this indicator: 588.5

Marseille

General:

- Total length of road network (km) calculated from Open Street Maps: 3,908.8

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 844.8
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 844.8

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 73.3
- Total cycle path length (km) provided by the city: n/a
- Total cycle path length (km) used to calculate this indicator: 73.3

Milan

General:

- Total length of road network (km) calculated from Open Street Maps: 4,330.0

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1,543.7
- Total length of pedestrian paths (km) provided by the city:
- Total length of pedestrian paths (km) used to calculate this indicator: 1,543.7

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 177.3
- Total cycle path length (km) provided by the city: 293

Information provided by the city in an email in October 2021.
- Total cycle path length (km) used to calculate this indicator: 293

Munich

General:

- Total length of road network (km) calculated from Open Street Maps: 8,486.6

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 3,236.0
- Total length of pedestrian paths (km) provided by the city: 4,334
  The city responded that its walking path lengths (4,334 km) include 4,294 km of Reine Gehbahnen (pure foot traffic lanes), 7 km of Fußgängerbereiche (pedestrian zones), and 33 km of Verkehrsberuhigte Bereiche (traffic calmed areas).
- Total length of pedestrian paths (km) used to calculate this indicator: 3,236.0

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 1032.7
- Total cycle path length (km) provided by the city: 862
  The city indicated that its cycling infrastructure includes 862 km of Radwege ausgebaut (inkl. Geh- und Radwege (cycle paths including foot paths). Since the OSM data provides a higher number, we have used the OSM number in the calculation.
- Total cycle path length (km) used to calculate this indicator: 1032.7

Naples

General:

- Total length of road network (km) calculated from Open Street Maps: 1,919.9

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 209.9
- Total length of pedestrian paths (km) provided by the city:
- Total length of pedestrian paths (km) used to calculate this indicator: 209.9

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 6.8
- Total cycle path length (km) provided by the city: 28.9
  This number includes 21.3 km of existing cycle paths (before 2020) and 7.6 km of new pop-up cycle paths created in 2020.
  https://www.legambiente.it/wp-content/uploads/2020/12/Dossier-CovidLanes.pdf
- Total cycle path length (km) used to calculate this indicator:

Oslo

General:

- Total length of road network (km) calculated from Open Street Maps: 6,880.9

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 3,494.0
- Total length of pedestrian paths (km) provided by the city: 3,494.0
  The city responded that this number appeared to be correct.
- Total length of pedestrian paths (km) used to calculate this indicator: 3,494.0

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 295.0
- Total cycle path length (km) provided by the city: 295.0

The city responded that this number appeared to be correct.
- Total cycle path length (km) used to calculate this indicator: 295.0

Paris

General:

- Total length of road network (km) calculated from Open Street Maps: 3,405.9

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1,228.1
- Total length of pedestrian paths (km) provided by the city: n/a
  In an email from the city in October 2021, it was stated that there are 72.4 km of streets with a pedestrian area decree, however the total length of pedestrian paths is not known.
- Total length of pedestrian paths (km) used to calculate this indicator: 1,228.1

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 241.5
- Total cycle path length (km) provided by the city: 391.58
  This number includes 331.58 km of bicycle paths and around 60 km of pop up cycle lanes. This information was provided in an email from the city in October 2021.
- Total cycle path length (km) used to calculate this indicator: 391.58

Prague

General:

- Total length of road network (km) used to calculate this indicator: 20,934.2

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 9,704.8
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 9,704.8

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 505.3
- Total cycle path length (km) provided by the city: 515
  https://www.tsk-praha.cz/static/udi-rocenka-2019-en.pdf
- Total cycle path length (km) used to calculate this indicator: 515

Rome

General:

- Total length of road network (km) calculated from Open Street Maps: 11535.9

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1,427.1
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 1,427.1

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 197.1
- Total cycle path length (km) provided by the city: 295
  This information was provided in an email from the city in October 2021.
- Total cycle path length (km) used to calculate this indicator: 295

Stockholm

General:

- Total length of road network (km) calculated from Open Street Maps: 5,211.0

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 1,748.9
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 1,748.9

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 934.7
- Total cycle path length (km) provided by the city: n/a
- Total cycle path length (km) used to calculate this indicator: 934.7

Strasbourg

General:

- Total length of road network (km) calculated from Open Street Maps: 1,521.3

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 364.7
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 364.7

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 198.4
- Total cycle path length (km) provided by the city: 108.8
  Information provided by the city in an email in December 2021.
- Total cycle path length (km) used to calculate this indicator: 198.4

Tri-city (Gdansk, Sopot and Gdynia)

General:

- Total length of road network (km) calculated from Open Street Maps: 7,108.8

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 2,791.5
- Total length of pedestrian paths (km) provided by the city:
  In an email from the city in October 2021, for Tri-city (Gdansk, Sopot and Gdynia) only, the total length of pedestrian footways was specified as 2694.92 km.
- Total length of pedestrian paths (km) used to calculate this indicator: 2,791.5

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 250.1
- Total cycle path length (km) provided by the city: 934.53
  In an email from Gdansk city in October 2021, for Gdansk only, the length of cycle lanes was listed as 206.8 km and the total length of cycle paths was listed as 842.1 km. No information was received from the cities of Gdynia and Sopot. The total number was calculated by combining the cycle path length provided by Gdansk (842.1 km) with the OSM cycle path length for Gdynia and Sopot (92.43).
- Total cycle path length (km) used to calculate this indicator: 934.53

Turin

General:

- Total length of road network (km) calculated from Open Street Maps: 2,778.0

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 488.7
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 488.7

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 160.4
- Total cycle path length (km) provided by the city: 213
  This number includes 197.5 km of existing cycle paths (before 2020) and 15.5 km of new pop-up cycle paths created in 2020.
  https://www.legambiente.it/wp-content/uploads/2020/12/Dossier-CovidLanes.pdf
- Total cycle path length (km) used to calculate this indicator: 213

Vienna

General:

- Total length of road network (km) calculated from Open Street Maps: 8,551.5

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 3,290.6
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 3,290.6

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 552.7
- Total cycle path length (km) provided by the city: 861.6
  This number includes: 168.6 km of cycle lanes (Radwege); 169.3 km of combined infrastructure for walking and cycling (Geh- und Radwege); 7 km of bicycle streets (Fahrradstraßen); 41.3 km of cycle lanes on the road (Radfahrstreifen); 8.8 km of cycling in pedestiranised areas (Radfahren in FußgängerInnen-Zonen); 145.2 km of multi-purpose lanes (Mehrzweckstreifen); and 321.4 km of cycling against the one-way (Radfahren gegen die Einbahn).
  There is also some cycling infrastructure that was not included in the total, in order to make the data compatible with the other data gathered for this indicator: 27 km of crossings for cyclists (Radfahrerüberfahrten); 18.5 km of cycling in bus lanes (Radfahren auf der Busspur); 276.4 km of bike routes without specific cycling infrastructure (Radroute); 38.1 km of living streets (Wohnstraße); 361.4 km of streets with lower speed limits (Verkehrsberuhigter Bereich); and 72.4 km of mountain bike routes (Mountainbikestrecke).
  https://www.wien.gv.at/verkehr/radfahren/radnetz/fakten.html
- Total cycle path length (km) used to calculate this indicator: 861.6

Warsaw

General:

- Total length of road network (km) calculated from Open Street Maps: 13,243.9

Pedestrian paths:

- Total length of pedestrian paths (km) calculated from Open Street Maps: 6,167.3
- Total length of pedestrian paths (km) provided by the city: n/a
- Total length of pedestrian paths (km) used to calculate this indicator: 6,167.3

Cycle paths:

- Total cycle path length (km) calculated from Open Street Maps: 639.7
- Total cycle path length (km) provided by the city: 680.4
  Information provided in an email from the city in October 2021.
- Total cycle path length (km) used to calculate this indicator: 680.4

A4 Congestion

City	Congestion level 2020	Congestion level 2019	Congestion level 2018
Amsterdam	18%	26%	24%
Antwerp	24%	32%	31%
Barcelona	22%	29%	29%
Berlin	30%	32%	31%
Bilbao	12%	13%	13%
Birmingham	19%	28%	28%
Brussels (Brussels Capital Region)	29%	38%	37%
Cologne	21%	26%	25%
Copenhagen	18%	22%	21%
Edinburgh	32%	41%	40%
Ghent	18%	20%	20%
Granada	20%	25%	24%
Hamburg	29%	34%	33%
Helsinki	15%	19%	20%
Krakow	36%	45%	40%
Liège	16%	24%	20%
Lisbon	23%	33%	32%
Ljubljana	17%	26%	23%
London (Inner London)	31%	38%	37%
Lyon	25%	30%	29%
Madrid	15%	23%	22%
Manchester (Greater Manchester)	22%	33%	32%
Marseille	30%	34%	35%
Milan	23%	31%	30%
Munich	24%	30%	30%
Naples	25%	32%	30%
Oslo	20%	22%	21%
Paris	32%	39%	36%
Prague	23%	29%	27%
Rome	27%	38%	39%
Stockholm	23%	27%	26%
Strasbourg	22%	28%	26%
Tri-city (Gdansk, Sopot and Gdynia)	29%	33%	30%
Turin	20%	27%	24%
Vienna	26%	28%	27%
Warsaw	31%	40%	39%

A5 Pedestrian and cyclist safety

Amsterdam

- Pedestrian fatalities: 2 (2020) 2 (2019) 4 (2018)
- Cyclist fatalities: 5 (2020) 6 (2019) 3 (2018)
  Information from an email received from Amsterdam city contact in November 2021. Reported cyclist fatalities include bicycles and e-bikes.

Antwerp

- Pedestrian fatalities: 4 (2020) 1 (2019) 3 (2018)
- Cyclist fatalities: 7 (2020) 3 (2019) 3 (2018)
  Information from an email received from Antwerp city contact in October 2021.

Barcelona

- Pedestrian fatalities: 10 (2019) 12 (2018) 7 (2017)
- Cyclist fatalities: 2 (2019) 0 (2018) 2 (2017)
  https://www.dgt.es/inicio/

Berlin

- Pedestrian fatalities: 24 (2019) 19 (2018) 13 (2017)
- Cyclist fatalities: 6 (2019) 11 (2018) 9 (2017)
  Information from an email received from Berlin city contact in October 2021.

Bilbao

- Pedestrian fatalities: 2 (2019) 0 (2018) 3 (2017)
- Cyclist fatalities: 1 (2019) 0 (2018) 0 (2017)
  https://www.dgt.es/inicio/

Birmingham

- Pedestrian fatalities: 7 (2019) 6 (2018) 10(2017)
- Cyclist fatalities: 1 (2019) 0 (2018) 3 (2017)
  https://www.gov.uk/government/collections/road-accidents-and-safety-statistics

Brussels (Brussels Capital Region)

- Pedestrian fatalities: 5 (2020) 7 (2019) 7 (2018)
- Cyclist fatalities: 0 (2020) 2 (2019) 2 (2018)
  https://www.vias.be/storage/main/barometer-2020-q4-fr.html#R%C3%A9gion_de_Bruxelles-Capitale

Cologne

- Pedestrian fatalities: 5 (2020) 10 (2019) 9 (2018)
- Cyclist fatalities: 5 (2020) 3 (2019) 8 (2018)
  Information from an email received from Cologne city contact in October 2021.

Copenhagen

- Pedestrian fatalities: 3 (2020) 2 (2019) 0 (2018)
- Cyclist fatalities: 4(2020) 2(2019) 6 (2018)
  https://www.statbank.dk/statbank5a/selectvarval/define.asp?PLanguage=1&subword=tabsel&MainTable=UHELDK1&PXSId=113915&tablestyle=&ST=SD&buttons=0

Edinburgh

- Pedestrian fatalities: 4 (2019) 4 (2018) 2 (2017)
- Cyclist fatalities: 1 (2019) 0 (2018) 2 (2017)
  https://www.gov.uk/government/collections/road-accidents-and-safety-statistics

Ghent

- Pedestrian fatalities: 2 (2020) 1 (2019) 1 (2018)
- Cyclist fatalities: 3 (2020) 2 (2019) 1 (2018)
  https://statbel.fgov.be/en/open-data?category=162

Granada

- Pedestrian fatalities: 2 (2019) 1 (2018) 1 (2017)
- Cyclist fatalities: 1 (year) 0 (year) 0 (year)
  Information from an email received from Granada city contact in October 2021.

Hamburg

- Pedestrian fatalities: 9 (2020) 10 (2019) 14 (2018)
- Cyclist fatalities: 3 (2020) 4 (2019) 2 (2018)
  Information from an email received from Helsinki city contact in October 2021.

Helsinki

- Pedestrian fatalities: 3 (2020) 0 (2019) 1 (2018)
- Cyclist fatalities: 3 (2020) 0 (2019) 2 (2018)
  Information from an email received from Helsinki city contact in October 2021.

Krakow

- Pedestrian fatalities: 4 (2020) 7 (2019) 18 (2018)
- Cyclist fatalities: 0 (2020) 1 (2019) 0 (2018)
  Information from an email received from Krakow city contact in October 2021.

Liege

- Pedestrian fatalities: 2 (2019) 0 (2018) 2 (2017)
- Cyclist fatalities: 2 (2019) 0 (2018) 0 (2017)
  Information from an email received from Liege city contact in October 2021.

Lisbon

- Pedestrian fatalities: 13* (2018) 6* (2017) 2* (2016)
- Cyclist fatalities: 1 (2020) 0 (2019) 1* (2018)
  https://observador.pt/especiais/acidentes-com-bicicletas-portugal-registou-18-mortes-e-35-atropelamentos-em-ano-de-pandemia/

  https://visao.sapo.pt/atualidade/verificado/2021-09-09-fact-check-morreram-26-pessoas-nas-ciclovias-em-lisboa-em-2019-como-diz-carlos-moedas/

  http://www.ansr.pt/Estatisticas/RelatoriosDeSinistralidade/Pages/default.aspx

  * These statistics could not be found directly. These numbers are approximations calculated by multiplying the number of pedestrian/cyclist fatalities reported for the District of Lisbon for that year, by the proportion of traffic accident fatalities that occurred in the city of Lisbon.

Ljubljana

- Pedestrian fatalities: 2 (2020) 3 (2019) 1 (2018)
- Cyclist fatalities: 1 (2020) 1 (2019) 1 (2018)

Information from an email received from Ljubljana city contact in October 2021.

London (Inner London)

- Pedestrian fatalities: 25 (2019) 24 (2018) 33 (2017)
- Cyclist fatalities: 4(2019) 10 (2018) 6 (2017)
  https://www.gov.uk/government/collections/road-accidents-and-safety-statistics

Lyon

- Pedestrian fatalities: 6 (2019) 4 (2018) 5 (2017)
- Cyclist fatalities: 2 (2019) 2 (2018) 0 (2017)
  Information from an email received from Lyon city contact in October 2021.

Madrid

- Pedestrian fatalities: 32 (2019) 31 (2018) 24 (2017)
- Cyclist fatalities: 1 (2019) 0 (2018) 2 (2017)
  https://www.dgt.es/inicio/

Manchester (Greater Manchester)

- Pedestrian fatalities: 25 (2019) 22 (2018) 22 (2017)
- Cyclist fatalities: 3 (2019) 3 (2018) 3 (2017)
  https://www.gov.uk/government/collections/road-accidents-and-safety-statistics
  Confirmed by Manchester city contact in October 2021.

Marseille

- Pedestrian fatalities: 11 (2019) 6 (2018) 14 (2017)
- Cyclist fatalities: 0 (2019) 0 (2018) 1 (2017)
  https://www.onisr.securite-routiere.gouv.fr/en/crash-map

Milan

- Pedestrian fatalities: 14 (2020) 12 (2019) 24 (2018)
- Cyclist fatalities: 1 (2019) 3 (2018) 5 (2017)
  https://www.istat.it/it/archivio/incidenti+stradali
  Data supplemented by email correspondence with ISTAT.

Munich

- Pedestrian fatalities: 6 (2020) 5 (2019) 4 (2018)
- Cyclist fatalities: 6 (2020) 6 (2019) 7 (2018)
  Information from an email received from Munich city contact in October 2021.

Naples

- Pedestrian fatalities: 10 (2020) 4 (2019) 10 (2018)
- Cyclist fatalities: 0 (2019) 0 (2018) 0 (2017)
  https://www.istat.it/it/archivio/incidenti+stradali
  Data supplemented by email correspondence with ISTAT.

Oslo

- Pedestrian fatalities: 2 (2020) 0 (2019) 1 (2018)
- Cyclist fatalities: 1 (2020) 0 (2019) 2 (2018)
  Information from an email received from Oslo city contact in October 2021.

Paris

- Pedestrian fatalities: 15 (2020) 16 (2019) 19 (2018)
- Cyclist fatalities: 8 (2020) 4 (2019) 3 (2018)

Information from an email received from Paris city contact in October 2021.

Prague

- Pedestrian fatalities: 7 (2019) 25 (2018) 11 (2017)
- Cyclist fatalities: 1 (2019) 0 (2018) 1 (2017)

https://www.tsk-praha.cz/static/udi-rocenka-2019-en.pdf
https://www.tsk-praha.cz/static/udi-rocenka-2018-en.pdf
https://www.tsk-praha.cz/static/udi-rocenka-2017-en.pdf

Rome

- Pedestrian fatalities: 40 (2020) 42 (2019) 59 (2018)
- Cyclist fatalities: 7 (2019) 3 (2018) 1 (2017)

https://www.istat.it/it/archivio/incidenti+stradali
Data supplemented by email correspondence with ISTAT.

Stockholm

- Pedestrian fatalities: 5 (2020) 8 (2019) 8 (2018)
- Cyclist fatalities: 4 (2020) 2 (2019) 1 (2018)

https://sdb.socialstyrelsen.se/if_dor/val_eng.aspx

Strasbourg

- Pedestrian fatalities: 2 (2019) 1 (2018) 1 (2017)
- Cyclist fatalities: 1 (2019) 0 (2018) 0 (2017)

https://www.onisr.securite-routiere.gouv.fr/en/crash-map

Tri-city (Gdansk, Sopot and Gdynia)

- Pedestrian fatalities: 8 (2020) 8 (2019) 12 (2018)
- Cyclist fatalities: 3 (2020) 2 (2019) 1 (2018)

Information for Gdansk received from Gdansk city contact by email in October 2021.
Information for Gdynia and Sopot from http://sewik.pl/search

Turin

- Pedestrian fatalities: 4 (2020) 13 (2019) 12 (2018)
- Cyclist fatalities: 1 (2019) 2 (2018) 2 (2017)

https://www.istat.it/it/archivio/incidenti+stradali
Data supplemented by email correspondence with ISTAT.

Vienna

- Pedestrian fatalities: 6 (2020) 8 (2019) 6 (2018)
- Cyclist fatalities: 0 (2020) 0 (2019) 3 (2018)

Information from an email received from Vienna city contact in October 2021.
https://www.statistik.at/web_de/statistiken/energie_umwelt_innovation_mobilitaet/verkehr/strasse/unfaelle_mit_personenschaden/index.html

Warsaw

- Pedestrian fatalities: 22 (2020) 21 (2019) 24 (2018)
- Cyclist fatalities: 5 (2020) 1 (2019) 4 (2018)

Information from an email received from Warsaw city contact in October 2021.

A6 Public transport affordability

Figures provided here are raw data used in the calculations.

Amsterdam

- Income information: Average income per inhabitant (2019): €31,200
  https://allecijfers.nl/gemeente/amsterdam/#inkomen
- Average household size: 1.81 (2021)
  https://www.cbs.nl/nl-nl/cijfers/detail/70072ned?q=huishoudensgrootte
- Cost of public transport: €100 per month for GVB Only
  https://reisproducten.gvb.nl/nl/abonnementen/gvb-only

Antwerp

- Income information: Average net taxable income per inhabitant (2018): €16,415.20
  Information from an email received from Antwerp city contact in October 2021.
- Ratio of gross to net income for Belgium: 1.590
  Based on average monthly income per person (€3401.00) divided by midpoint net average income per person (€2139.00)
  https://www.vrt.be/vrtnws/en/2017/05/17/are_you_below_orabovetheaveragebelgianwage-1-2981427/
- Average household size: 2.19
  Information from an email received from Antwerp city contact in October 2021.
- Cost of public transport: €60
  https://www.belgiantrain.be/en/tickets-and-railcards/train-and-other-transport/train-bus-tram-metro/citypass-antwerpen

Barcelona

- Income information: Average gross taxable income (2018): €38,696
  https://www.agenciatributaria.es/AEAT/Contenidos_Comunes/La_Agencia_Tributaria/Estadisticas/Publicaciones/sites/irpfCodPostal/2018/jrubik264e0849e0e0121b939f7fc833c9a410deabf47a.html
- Employment rate: 54.96% (average for 2019)
  https://www.ine.es/jaxiT3/Tabla.htm?t=3996&L=1
- Average household size: 2.58 (2019)
  https://ugeo.urbistat.com/AdminStat/en/es/classifiche/componenti-della-famiglia/comuni/cataluna/9/2
- Cost of public transport: €40 for T-usual zone 1
  https://www.tmb.cat/es/tarifas-metro-bus-barcelona/sencillos-e-integrados/t-usual

Berlin

- Income information: Average disposable income per inhabitant (2018): €20,972
  This website was used because it provided a consistent dataset for all German cities included in this study.
  https://de.statista.com/statistik/daten/studie/998971/umfrage/verfuegbares-einkommen-in-den-groessten-staedten-in-deutschland/#professional
- Average taxable income per inhabitant (2018): €25,051
  Calculated assuming a single person in 2018
  https://www.bmf-steuerrechner.de/ekst/eingabeformekst.xhtml
- Average household size: 1.78 (2018) based on 2,028,000 and a population of 3,613,000 in 2018
  https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Haushalte-Familien/Publikationen/Downloads-Haushalte/entwicklung-privathaushalte-5124001209004.pdf?__blob=publicationFile
- Cost of public transport: €84 monthly for Berlin ABC

https://sbahn.berlin/tickets/alle-tickets/wochen-monats-abo-jahrestickets/vbb-umweltkarte-im-abo/?tabs=tbc-t2

Bilbao

- Income information: Average family income, before tax (2019): €46,502
  https://www.eustat.eus/elementos/tbl0006266_c.html
- Average household size: 2.42 (2019)
  https://ugeo.urbistat.com/AdminStat/en/es/classifiche/componenti-della-famiglia/comuni/vizcaya/48/3
- Cost of public transport: €46 for Bidai Oro in Barik, Zone 1
  https://www.ctb.eus/es/tarifas-barik

Birmingham

- Income information: Total gross annual household income (2018) calculated as £37,158
  https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/smallareaincomeestimatesformiddlelayersuperoutputareasenglandandwales
- Average household size: 2.41 (2019) average for West Midlands region
  https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/datasets/householdsbyhouseholdsizeregionsofenglandandukconstituentcountries
- Cost of public transport: £105 for zones 1-3
  https://legacy.wmnetwork.co.uk/tickets/#/?allowBus&allowTrain&allowMetro&passengerType=Adult&timeBand=About%20a%20month&limit=6&limitExact=12#sbmBtn

Brussels (Brussels Capital Region)

- Income information: Average gross salary per month (2018): €3642
  https://www.jobat.be/fr/art/le-belge-gagne-en-moyenne-3329-euros-bruts-par-mois
- Employment rate: 62.7% (2021)
  https://statbel.fgov.be/en/themes/datalab/monthly-figures-labour-market
- Average household size: 2.17 (2020)
  https://ibsa.brussels/themes/population/menages
- Cost of public transport: €55.50 per month for BRUPASS (valid on the STIB, SNCB, De Lijn, TEC networks)
  https://www.stib-mivb.be/article.html?_guid=f06631b4-33f1-3910-2a8c-988f71b287a7&l=fr

Cologne

- Income information: Average disposable income per inhabitant (2018): €22,402
  This website was used because it provided a consistent dataset for all German cities included in this study.
  https://www.stadt-koeln.de/mediaasset/content/pdf15/statistik-jahrbuch/15_statistisches_jahrbuch_2020_bfrei.pdf
- Average taxable income per inhabitant (2018): €27,122
  Calculated assuming a single person in 2018
  https://www.bmf-steuerrechner.de/ekst/eingabeformekst.xhtml
- Average household size: 1.88 (2018)
  https://www.stadt-koeln.de/mediaasset/content/pdf15/statistik-jahrbuch/15_statistisches_jahrbuch_2020_bfrei.pdf
- Cost of public transport: €105.50 per month for MonatsTicket pro Monat, zone 1b (Cologne or Bonn)
  https://www.vrs.de/fileadmin/Dateien/Downloadcenter/Infobroschueren/VRS_Flyer_MonatsTicket_2021.pdf

Copenhagen

- Income information: Average income per capita, after tax: 237,000 DKK (2019)

Information from an email received from Copenhagen city contact in October 2021.
- Gross income per capita, before tax: 548,900 DKK (2019) based on tax calculator https://dk.talent.com/en/tax-calculator?salary=548900&from=year&region=K%C3%B8benhavns
- Average household size: 2.0 (2020)
  Information from an email received from Copenhagen city contact in October 2021.
- Cost of public transport: 540 DKK for a commuter pass for 3 zones plus 80 DKK for metro supplement
  https://dinoffentligetransport.dk/en/prices-and-zones/prices/

Edinburgh

- Income information: Average gross annual income for all workers (2020): £35,333
  Information from an email received from Edinburgh city contact in October 2021.
- Percentage of city population in employment: 51.7% (2020) based on 272,600 people employed and city population 527,600
  http://www.nomisweb.co.uk/reports/lmp/la/1946157416/printable.aspx
- Average household size: 2.14 (2011)
  https://statistics.gov.scot/slice?dataset=http%3A%2F%2Fstatistics.gov.scot%2Fdata%2Faverage-household-size&http%3A%2F%2Fpurl.org%2Flinked-data%2Fsdmx%2F2009%2Fdimension%23refPeriod=http%3A%2F%2Freference.data.gov.uk%2Fid%2Fyear%2F2019
- Cost of public transport: £56 for a monthly Ridacard
  https://www.lothianbuses.com/ridacard/

Ghent

- Income information: Average net taxable income per inhabitant (2018): €19,326.40
  https://gent.buurtmonitor.be/jive?workspace_guid=b8d83be7-355d-4ae9-aa4d-236d81a31b36
- Ratio of gross to net income for Belgium: 1.590
  Based on average monthly income per person (€3401.00) divided by midpoint net average income per person (€2139.00)
  https://www.vrt.be/vrtnws/en/2017/05/17/are_you_below_orabovetheaveragebelgianwage-1-2981427/
- Average household size: 2.16 (2021)
  https://gent.buurtmonitor.be/jive?workspace_guid=b8d83be7-355d-4ae9-aa4d-236d81a31b36
- Cost of public transport: €49 for an Omnipas
  https://www.delijn.be/en/vervoerbewijzen/abonnementen/omnipas.html

Granada

- Income information: Average gross taxable income (2018): €29,300
  https://www.agenciatributaria.es/AEAT/Contenidos_Comunes/La_Agencia_Tributaria/Estadisticas/Publicaciones/sites/irpfCodPostal/2018/jrubikac69143ffd58856b9f0ba2f3dc1e7df617b2545.html
- Employment rate: 43.67% (average for 2019)
  https://www.ine.es/jaxiT3/Tabla.htm?t=3996&L=1
- Average household size: 2.48 (2019)
  https://ugeo.urbistat.com/AdminStat/en/es/classifiche/componenti-della-famiglia/comuni/andalucia/1/2
- Cost of public transport: €41 for a monthly pass
  http://www.granadadirect.com/transporte/tarifas-autobuses-granada/

Hamburg

- Income information: Average disposable income per inhabitant (2018): €25,029
  This website was used because it provided a consistent dataset for all German cities included in this study.

https://de.statista.com/statistik/daten/studie/998971/umfrage/verfuegbares-einkommen-in-den-groessten-staedten-in-deutschland/#professional
- Average taxable income per inhabitant (2018): €31,000
  Calculated assuming a single person in 2018
  https://www.bmf-steuerrechner.de/ekst/eingabeformekst.xhtml
- Average household size: 1.8 (2020)
  Information from an email received from Hamburg city contact in October 2021
- Cost of public transport: €112.80 for a monthly pass for Hamburg AB
  https://www.hvv.de/de/fahrkarten/wochen-monatskarten/vollzeit-karten

Helsinki

- Income information: Gross income per household (2017): €61,600
  https://www.hel.fi/hel2/tietokeskus/julkaisut/pdf/19_06_17_Helsingin%20_tila_ja_kehitys_2019.pdf
- Average household size: 1.85 (2020)
  https://asuminenhelsingissa.fi/fi/content/asuntokuntien-m%C3%A4%C3%A4r%C3%A4-ja-tyyppi#:~:text=Helsingiss%C3%A4%20keskikoko%20k%C3%A4vi%20alimmillaan%20vuonna,1%2C97%20henkil%C3%B6%20per%20asunto.
- Cost of public transport: €99.70 for zones ABC
  https://www.hsl.fi/en/tickets-and-fares/season-tickets

Krakow

- Income information: Average monthly gross salary (2020): 6,482.24 zł. This website was used because it included information for all of the Polish cities included in this study.
  https://bdl.stat.gov.pl/BDL/dane/teryt/kategoria/313
- Employment rate: 48.3% based on the number of employed (376,552) and the total population (779,115) in 2019
  https://bdl.stat.gov.pl/BDL/dane/teryt/kategoria/313
- Average household size: 2.76 in 2019
  https://krakow.stat.gov.pl/dane-o-wojewodztwie/wojewodztwo-918/gospodarstwa-domowe-mieszkania/
- Cost of public transport: 179 zł for zones 1-3
  https://www.mpk.krakow.pl/pl/bilety2/cenniki-biletow-okresowych/

Liege

- Income information: Average net taxable income per inhabitant (2019): €15,382.00
  https://statbel.fgov.be/fr/themes/menages/revenus-fiscaux#figures
- Ratio of gross to net income for Belgium: 1.590
  Based on average monthly income per person (€3401.00) divided by midpoint net average income per person (€2139.00)
  https://www.vrt.be/vrtnws/en/2017/05/17/are_you_below_orabovetheaveragebelgianwage-1-2981427/
- Average household size: 1.94 (2021)
  https://walstat.iweps.be/walstat-catalogue.php?niveau_agre=C&theme_id=2&indicateur_id=223200&sel_niveau_catalogue=T&ordre=0
- Cost of public transport: €50 per month for Liège City Pass
  https://www.belgiantrain.be/en/tickets-and-railcards/train-and-other-transport/train-bus-tram-metro/citypass-liege

Lisbon

- Income information: €1,171.90 average salary per worker per month in Lisbon in 2019
  https://www.lisbob.net/en/blog/average-wage-salary-lisbon-portugal

- Employment rate: 76% in 2020 for Área Metropolitana de Lisboa
  https://ec.europa.eu/eurostat/databrowser/view/TGS00102/default/table
- Average household size: 2.48 across Portugal
  Information from an email received from Lisbon city contact in October 2021, based on Censos 2021 information.
- Cost of public transport: €40 for Lisbon's Metropolitan Area
  https://www.metrolisboa.pt/en/buy/

Ljubljana

- Income information: Average gross income per worker (2019): €23,625.60
  Information from an email received from Ljubljana city contact in October 2021.
- Percentage of population employed: 43.7% (2019) based on 128,374 employed and total population 293,440
  https://pxweb.stat.si/SiStat/sl
- Average household size: 2.32 (2018) based on 124,998 households and total population 289,675
  https://pxweb.stat.si/SiStat/sl
- Cost of public transport: €37 for monthly Urbana card, zone 1
  https://www.lpp.si/sites/www.jhl.si/files/dokumenti/price_list_tickets_ljubljana_city_public_transport_and_integrated_lines_september_2019__0.pdf

London (Inner London)

- Income information: Total gross annual household income (2018) calculated as £53,771
  https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/smallareaincomeestimatesformiddlelayersuperoutputareasenglandandwales
- Average household size: 2.68 (2019)
  https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/datasets/householdsbyhouseholdsizeregionsofenglandandukconstituentcountries
- Cost of public transport: £167.10 monthly price cap for travel within zones 1-3
  https://tfl.gov.uk/fares/find-fares/tube-and-rail-fares/caps-and-travelcard-prices?intcmp=54720

Lyon

- Income information: Average household income after tax (2019): €2,712 per month
  https://www.journaldunet.com/business/salaire/lyon/ville-69123
- Average household income tax (2019): €5336
  https://www.journaldunet.com/economie/impots/lyon/ville-69123
- Average household size: 1.7 (2019)
  https://www.journaldunet.com/business/salaire/lyon/ville-69123
- Cost of public transport: €65
  https://www.tcl.fr/tickets-abonnements/titres-et-tarifs

Madrid

- Income information: Average gross taxable income (2018): €40,083
  https://www.agenciatributaria.es/AEAT/Contenidos_Comunes/La_Agencia_Tributaria/Estadisticas/Publicaciones/sites/irpfCodPostal/2018/jrubik6fa10afb68532afa930018f0e692b32e58bf4623.html
- Employment rate: 56.16% (average for 2019)
  https://www.ine.es/jaxiT3/Tabla.htm?t=3996&L=1
- Average household size: 2.59 (2019)
  https://ugeo.urbistat.com/AdminStat/en/es/classifiche/componenti-della-famiglia/comuni/comunidad-de-madrid/13/2
- Cost of public transport: €54.60 for Zone A
  https://www.crtm.es/billetes-y-tarifas/billetes-y-abonos/abono-transportes/abono-treinta-dias.aspx

Manchester (Greater Manchester)

- Income information: Total gross annual household income (2018) calculated as £38,086
  https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/smallareaincomeestimatesformiddlelayersuperoutputareasenglandandwales
- Average household size: 2.35 (2019) average for North West region
  https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/datasets/householdsbyhouseholdsizeregionsofenglandandukconstituentcountries
- Cost of public transport: £126 for a 28-day System One Adult County Card
  https://www.systemonetravel.co.uk/travelcard-finder/

Marseille

- Income information: Average household income after tax (2019): €1,976 per month
  https://www.journaldunet.com/business/salaire/marseille/ville-13055
- Average household income tax (2019): €4059
  https://www.journaldunet.com/economie/impots/marseille/ville-13055
- Average household size: 1.7 (2019)
  https://www.journaldunet.com/business/salaire/marseille/ville-13055
- Cost of public transport: €49.50 for Pass 30 jours Pour tous
  https://www.rtm.fr/tarifs/pass-30-jours-pour-tous

Milan

- Income information: Average taxable income (2019): €32,330.04
  https://www1.finanze.gov.it/finanze3/analisi_stat/index.php?tree=2020
- Percentage of population that are taxpayers (2019): 72.6% based on 1,020,463 taxpayers and a population of 1,406,242
  https://www1.finanze.gov.it/finanze3/analisi_stat/index.php?tree=2020
- Average household size: 2.07 (2019)
  https://ugeo.urbistat.com/AdminStat/it/it/demografia/famiglie/milano/15/3
- Cost of public transport: €39 for unlimited monthly travel in the area (Mi1-Mi3)
  https://www.atm.it/it/ViaggiaConNoi/Documents/TARIFFE%20ATM_settembre%202021.pdf

Munich

- Income information: Average disposable income per inhabitant (2018): €32,766
  This website was used because it provided a consistent dataset for all German cities included in this study.
  https://de.statista.com/statistik/daten/studie/998971/umfrage/verfuegbares-einkommen-in-den-groessten-staedten-in-deutschland/#professional
- Average taxable income per inhabitant (2018): €43,090
  Calculated assuming a single person in 2018
  https://www.bmf-steuerrechner.de/ekst/eingabeformekst.xhtml
- Average household size: 1.78 (2014)
  https://www.muenchen.de/rathaus/Stadtverwaltung/Referat-fuer-Stadtplanung-und-Bauordnung/Stadtentwicklung/Grundlagen/Haushaltsprognose.html
- Cost of public transport: €57 per month for Zone M (covers the entire Munich city area)
  https://www.mvv-muenchen.de/tickets/zeitkarten-abos/isarcard/index.html

Naples

- Income information: Average taxable income (2019): €19,756.66
  https://www1.finanze.gov.it/finanze3/analisi_stat/index.php?tree=2020
- Percentage of population that are taxpayers (2019): 52.6% based on 498,928 taxpayers and a population of 948,850
  https://www1.finanze.gov.it/finanze3/analisi_stat/index.php?tree=2020
- Average household size: 2.68 (2019)

https://ugeo.urbistat.com/AdminStat/it/it/demografia/famiglie/napoli/63/3
- Cost of public transport: €42 for a monthly pass in the urban area
https://www.metropolitanenapoli.com/biglietti/

Oslo

- Income information: Average gross income for residents aged 17 and over (2019): 540,000 NOK
https://www.oslo.kommune.no/statistikk/inntekt-levekar-og-sosiale-forhold/inntekt/
- Percentage of population over 17 years old: 80.8% (2019)
https://ugeo.urbistat.com/AdminStat/en/no/demografia/eta/oslo/20421988/4
- Average household size: 1.95 (2021)
https://www.ssb.no/
- Cost of public transport: 795 NOK for 30-day ticket, 1 zone
https://ruter.no/en/buying-tickets/tickets-and-fares/30-day-tickets/

Paris

- Income information: Average household income after tax (2019): €4,025 per month
https://www.journaldunet.com/business/salaire/paris/ville-75056
- Average household income tax (2019): €11,750
https://www.journaldunet.com/economie/impots/paris/ville-75056
- Average household size: 1.5 (2019)
https://www.journaldunet.com/business/salaire/paris/ville-75056
- Cost of public transport: €75.20 for Navigo monthly pass (zones 1-5)
https://www.iledefrance-mobilites.fr/titres-et-tarifs/detail/forfait-navigo-mois

Prague

- Income information: Average gross monthly wages per full-time equivalent employee (2020): 43,675 CZK
https://www.czso.cz/csu/czso/ari/average-wages-4-quarter-of-2020
- Percentage of employees: 64.5% (2020) based on 1,064,749 employed and total population 1,897,000
https://www.czso.cz/csu/czso/ari/average-wages-4-quarter-of-2020
- Average household size: 2.09 people in 2018
https://www.kurzy.cz/zpravy/493161-zivotni-podminky-prazskych-domacnosti-v-roce-2018/
- Cost of public transport: 550 CZK for a monthly ticket
https://pid.cz/en/travelling-around-prague/?tab=2

Rome

- Income information: Average taxable income (2019): €25,262.07
https://www1.finanze.gov.it/finanze3/analisi_stat/index.php?tree=2020
- Percentage of population that are taxpayers (2019): 69.0% based on 1,947,406 taxpayers and a population of 2,823,000
https://www1.finanze.gov.it/finanze3/analisi_stat/index.php?tree=2020
- Average household size: 2.07 (2019)
https://ugeo.urbistat.com/AdminStat/it/it/demografia/famiglie/roma/58091/4
- Cost of public transport: €35 monthly for unlimited travel in the Roma Capitale
https://www.atac.roma.it/biglietti-e-abbonamenti/abbonamento-mensile-personale-roma

Stockholm

- Income information: Mean household income before tax (2019): 650,485 SEK
Information from an email received from Stockholm city contact in October 2021.
- Average household size: 2.08 (2020)
Information from an email received from Stockholm city contact in October 2021.
- Cost of public transport: 950 SEK for a 30-day ticket

https://mitt.sl.se/sv/kop-biljett/#/periodbiljett

Strasbourg

- Income information: Average household income after tax (2019): €2,070 per month
  https://www.journaldunet.com/business/salaire/strasbourg/ville-67482
- Average household income tax (2019): €4,426
  https://www.journaldunet.com/economie/impots/strasbourg/ville-67482
- Average household size: 1.8 (2019)
  https://www.journaldunet.com/business/salaire/strasbourg/ville-67482
- Cost of public transport: €51.80 for a monthly pass for ages 26 to 64 years
  https://www.cts-strasbourg.eu/fr/Titres-de-transport/tarifs/Abonnements/

Tri-city (Tri-city (Gdansk, Sopot and Gdynia), Sopot and Gdynia)

- Income information: Average monthly gross salary (2020): 6,316.15 zł. This website was used because it included information for all of the Polish cities included in this study.
  https://bdl.stat.gov.pl/BDL/dane/teryt/kategoria/313
- Employment rate: 36.7% based on the number of employed (276,319) and the total population (752,974) in 2019
  https://bdl.stat.gov.pl/BDL/dane/teryt/kategoria/313
- Average household size: 2.64 for the Pomorskie region in 2019
  https://Tri-city (Gdansk, Sopot and Gdynia).stat.gov.pl/publikacje-i-foldery/roczniki-statystyczne/rocznik-statystyczny-wojewodztwa-pomorskiego-2020,4,21.html
- Cost of public transport: 132 zł for a monthly metropolitan ticket
  https://mzkzg.org/bilety-okresowe

Turin

- Income information: Average taxable income (2019): €23,792.87
  https://www1.finanze.gov.it/finanze3/analisi_stat/index.php?tree=2020
- Percentage of population that are taxpayers (2019): 73.3% based on 629,179 taxpayers and a population of 857,910
  https://www1.finanze.gov.it/finanze3/analisi_stat/index.php?tree=2020
- Average household size: 2.12 (2019)
  https://ugeo.urbistat.com/AdminStat/it/it/demografia/famiglie/torino/1/3
- Cost of public transport: €36.50 monthly for Formula 1
  https://www.gtt.to.it/cms/biglietti-abbonamenti/abbonamenti/abbonamenti-per-l-area-integrata-formula#mensili

Vienna

- Income information: Annual average income subject to wage tax per employee in Vienna (2018): €33,211
  https://www.wien.gv.at/statistik/publikationen/jahrbuch.html
- Percentage of people in employment: 56.1% (2019) based on 1,064,749 employed and total population 1,897,000 in 2019
  https://www.wien.gv.at/statistik/publikationen/jahrbuch.html
- Average household size: 2.04 people in 2020
  https://www.statistik.at/web_de/statistiken/menschen_und_gesellschaft/bevoelkerung/haushalte_familien_lebensformen/haushalte/023298.html
- Cost of public transport: €51.00 for a monthly pass
  https://shop.wienerlinien.at/index.php/product/8/show#distribution_method

Warsaw

- Income information: Average monthly gross salary (2020): 7147.46 zł. This website was used because it included information for all of the Polish cities included in this study.

https://bdl.stat.gov.pl/BDL/dane/teryt/kategoria/313

- Employment rate: 55.9% based on the number of employed (1,002,743) and the total population (1,794,166) in 2019
  https://bdl.stat.gov.pl/BDL/dane/teryt/kategoria/313
- Average household size: 2.51 in 2019
  https://warszawa.stat.gov.pl/dane-o-wojewodztwie/wojewodztwo/gospodarstwa-domowe-mieszkania/
- Cost of public transport: 98 zł for Varsovian 30-day Zones 1&2
  https://www.wtp.waw.pl/ceny-i-rodzaje-biletow/bilety-dlugookresowe/

A7 Access to public transport

Amsterdam

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	5	n/a	5
Bus stops (÷2)	540	n/a	540
Ferry terminals	32	n/a	32
Railway, subway and metro stations / stops / halts	41	n/a	41
Tram stops (÷2)	208	n/a	208
Total	826	n/a	826

City information: n/a

Antwerp

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	n/a	n/a	n/a
Bus stops (÷2)	558	557	558
Ferry terminals	10	10	10
Railway, subway and metro stations / stops / halts	8	18	8
Tram stops (÷2)	216	216	216
Total	792	791	792

City information: City provided data in email

Barcelona

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	7	n/a	7
Bus stops (÷2)	874	n/a	874
Ferry terminals	10	n/a	10
Railway, subway and metro stations / stops / halts	132	n/a	132
Tram stops (÷2)	30	n/a	30
Total	1053	n/a	1053

City information: n/a

Berlin

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	n/a	n/a	n/a
Bus stops (÷2)	3070	3039	3039
Ferry terminals	56	13	13
Railway, subway and metro stations / stops / halts	385	175	175

Tram stops (÷2)	411	402	402
Total	3922	3629	3629

City information: City provided data in email

Bilbao

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	2	n/a	2
Bus stops (÷2)	298	n/a	298
Ferry terminals	n/a	n/a	0
Railway, subway and metro stations / stops / halts	32	n/a	32
Tram stops (÷2)	12	n/a	12
Total	344	n/a	344

City information: n/a

Birmingham

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	2	n/a	2
Bus stops (÷2)	2058	n/a	2058
Ferry terminals	1	n/a	1
Railway, subway and metro stations / stops / halts	35	n/a	35
Tram stops (÷2)	12	n/a	12
Total	2108	n/a	2108

City information: n/a

Brussels (Brussels Capital Region)

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	n/a	n/a	n/a
Bus stops (÷2)	855	n/a	855
Ferry terminals	9	n/a	9
Railway, subway and metro stations / stops / halts	110	n/a	110
Tram stops (÷2)	331	n/a	331
Total	1305	n/a	1305

City information: n/a

Cologne

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	2	2	2
Bus stops (÷2)	744	761	761
Ferry terminals	5	5	5
Railway, subway and metro stations / stops / halts	39	29	29
Tram stops (÷2)	198	236	236
Total	988	1033	1033

City information: City provided data in email

Copenhagen

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	11	5	5
Bus stops (÷2)	526	505	505
Ferry terminals	9	9	9
Railway, subway and metro stations / stops / halts	68	78	78
Tram stops (÷2)	n/a	n/a	n/a
Total	614	597	597

City information: City provided data in email

Edinburgh

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	1	n/a	1
Bus stops (÷2)	1162	n/a	1162
Ferry terminals	n/a	n/a	n/a
Railway, subway and metro stations / stops / halts	12	n/a	12
Tram stops (÷2)	12	n/a	12
Total	1187	n/a	1187

City information: City provided comment in email that the OSM numbers seem reasonable

Ghent

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	n/a	n/a	n/a
Bus stops (÷2)	505	n/a	505
Ferry terminals	10	n/a	10
Railway, subway and metro stations / stops / halts	7	n/a	7
Tram stops (÷2)	111	n/a	111
Total	633	n/a	633

City information: n/a

Granada

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	n/a	1	1
Bus stops (÷2)	341	318	318
Ferry terminals	n/a	n/a	n/a
Railway, subway and metro stations / stops / halts	1	n/a	1
Tram stops (÷2)	18	n/a	18
Total	360	319	338

City information: City provided data in email

Hamburg

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	1	1	1
Bus stops (÷2)	2109	2090	2090
Ferry terminals	27	20	20
Railway, subway and metro stations / stops / halts	147	142	142
Tram stops (÷2)	n/a	n/a	n/a
Total	2284	2253	2253

City information: City provided data in email

Helsinki

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	12	14	14
Bus stops (÷2)	1343	1280	1280
Ferry terminals	21	2	2
Railway, subway and metro stations / stops / halts	35	34	34
Tram stops (÷2)	155	150	150
Total	1566	1480	1480

City information: City provided data in email

Krakow

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	3	5	5
Bus stops (÷2)	578	778	778
Ferry terminals	3	3	3
Railway, subway and metro stations / stops / halts	23	25	25
Tram stops (÷2)	183	138	138
Total	790	949	949

City information: City provided data in email

Liege

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	0	0	0
Bus stops (÷2)	470	n/a	470
Ferry terminals	6	6	6
Railway, subway and metro stations / stops / halts	7	7	7
Tram stops (÷2)	0	0	0
Total	483	13	483

City information: City provided data in email

Lisbon

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	2	4	4
Bus stops (÷2)	944	1071	1071
Ferry terminals	0	1	1
Railway, subway and metro stations / stops / halts	45	46	46
Tram stops (÷2)	100	88	88
Total	1091	1210	1210

City information: City provided data in email

Ljubljana

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	1	n/a	1
Bus stops (÷2)	364	n/a	364
Ferry terminals	2	n/a	2
Railway, subway and metro stations / stops / halts	14	n/a	14
Tram stops (÷2)	0	n/a	0
Total	381	n/a	381

City information: n/a

London (Inner London)

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	7	n/a	7
Bus stops (÷2)	3418	n/a	3418
Ferry terminals	31	n/a	31
Railway, subway and metro stations / stops / halts	292	n/a	292
Tram stops (÷2)	0	n/a	0
Total	3748	n/a	3748

City information: n/a

Lyon

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	0	n/a	0
Bus stops (÷2)	396	n/a	396
Ferry terminals	4	n/a	4
Railway, subway and metro stations / stops / halts	32	38	38
Tram stops (÷2)	52	n/a	52
Total	484	n/a	490

City information: City provided data in email

Madrid

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	5	n/a	5
Bus stops (÷2)	2508	n/a	2508
Ferry terminals	0	n/a	0
Railway, subway and metro stations / stops / halts	230	n/a	230
Tram stops (÷2)	0	n/a	0
Total	2743	n/a	2743

City information: n/a

Manchester (Greater Manchester)

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	14	27	27
Bus stops (÷2)	6440	6219	6219
Ferry terminals	1	1	1
Railway, subway and metro stations / stops / halts	99	92	92
Tram stops (÷2)	104	99	99
Total	6658	6438	6438

City information: City provided data in email

Marseille

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	2	n/a	2
Bus stops (÷2)	1220	n/a	1220
Ferry terminals	34	n/a	34
Railway, subway and metro stations / stops / halts	9	n/a	9
Tram stops (÷2)	28	n/a	28
Total	1293	n/a	1293

City information: n/a

Milan

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	8	1	1
Bus stops (÷2)	1252	1578*	1578
Ferry terminals	0	0	0
Railway, subway and metro stations / stops / halts	117	135	135
Tram stops (÷2)	352	*	0
Total	1729	1714	1714

City information: City provided data in email. A single value of 1578 was provided for all surface stops (bus, tram, trolleybus).

Munich

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	1	1	1
Bus stops (÷2)	1118	1065	1065
Ferry terminals	0	0	0
Railway, subway and metro stations / stops / halts	143	250	250
Tram stops (÷2)	97	174	174
Total	1359	1490	1490

City information: City provided data in email.

Naples

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	12	n/a	12
Bus stops (÷2)	382	n/a	382
Ferry terminals	6	n/a	6
Railway, subway and metro stations / stops / halts	82	n/a	82
Tram stops (÷2)	22	n/a	22
Total	504	n/a	504

City information: n/a

Oslo

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	4	n/a	4
Bus stops (÷2)	789	n/a	789
Ferry terminals	28	n/a	28
Railway, subway and metro stations / stops / halts	110	n/a	110
Tram stops (÷2)	84	n/a	84
Total	1015	n/a	1015

City information: n/a

Paris

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	1	n/a	1
Bus stops (÷2)	1406	n/a	1406
Ferry terminals	12	n/a	12
Railway, subway and metro stations / stops / halts	288	n/a	288
Tram stops (÷2)	54	n/a	54
Total	1761	n/a	1761

City information: n/a

Prague

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	3	n/a	3
Bus stops (÷2)	1409	1225	1225
Ferry terminals	17	n/a	17
Railway, subway and metro stations / stops / halts (inc. funicular)	111	109	109
Tram stops (÷2)	313	277	277
Total	1853	1611	1631

City information: https://www.tsk-praha.cz/static/udi-rocenka-2019-en.pdf

Rome

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	17	6	6
Bus stops (÷2)	4186	4010	4010
Ferry terminals	4	4	4
Railway, subway and metro stations / stops / halts	152	158	158
Tram stops (÷2)	86	88	88
Total	4445	4266	4266

City information: City provided data in email

Stockholm

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	6	n/a	6
Bus stops (÷2)	1084	n/a	1084
Ferry terminals	59	n/a	59
Railway, subway and metro stations / stops / halts	115	n/a	115
Tram stops (÷2)	20	n/a	20
Total	1284	n/a	1284

City information: n/a

Strasbourg

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	2	n/a	2
Bus stops (÷2)	288	n/a	288
Ferry terminals	0	n/a	0
Railway, subway and metro stations / stops / halts	2	n/a	2
Tram stops (÷2)	69	n/a	69
Total	361	n/a	361

City information: n/a

Tri-city (Gdansk, Sopot and Gdynia)

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	1	12 (Gdansk only)	12
Bus stops (÷2)	524	506 (Gdansk only)	524
Ferry terminals	21	1 (Gdansk only)	21
Railway, subway and metro stations / stops / halts	39	24 (Gdansk only)	39
Tram stops (÷2)	128	124 (Gdansk only)	128
Total	713	630 (Gdansk only)	724

City information: City provided data in email (Gdansk only). The number of bus stations was updated as if there are 12 in Gdansk, there must be at least 12 in the Tri-City as well. For other modes of transport, the OSM data was used to ensure it included Gdynia and Sopot as well.

Turin

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	0	n/a	0
Bus stops (÷2)	1172	n/a	1172
Ferry terminals	n/a	n/a	n/a
Railway, subway and metro stations / stops / halts	27	n/a	27
Tram stops (÷2)	196	n/a	196
Total	1395	n/a	1395

City information: n/a

Vienna

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	4	n/a	4
Bus stops (÷2)	1762	2146	2146
Ferry terminals	8	n/a	8
Railway, subway and metro stations / stops / halts	170	109	170
Tram stops (÷2)	454	538	538
Total	2398	2793	2866

City information: https://www.wien.gv.at/statistik/publikationen/jahrbuch.html

Warsaw

Public transport services	Open Street Map data	Number based on city information	Number used in this study
Bus stations	19	0	0
Bus stops (÷2)	1964	1828	1828
Ferry terminals	9	0	0
Railway, subway and metro stations / stops / halts	84	53	53
Tram stops (÷2)	296	267	267
Total	2372	2148	2148

City information: City provided data in email

A8 Access to electric vehicle charging

City	EV charging stations accessible to the public		EV charging stations with some access restrictions	
	Station count	Total connector power (kW)	Station count	Total connector power (kW)
Amsterdam	5,227	65,285.0	2,407	36,502.4
Antwerp	306	12,152.6	387	7,935.2
Barcelona	1,455	14,513.5	99	1,333.9
Berlin	1,698	39,497.6	420	8,170.0
Bilbao	103	2,282.3	15	202.4
Birmingham	157	5,097.2	88	1,758.5
Brussels (Brussels Capital Region)	536	10,614.4	428	9,382.6
Cologne	347	8,318.6	260	4,781.5
Copenhagen	819	14,180.3	678	14,967.6
Edinburgh	59	3,531.8	51	732.0
Tri-city (Gdansk, Sopot and Gdynia)	98	3,149.5	96	2,486.1
Ghent	489	9,665.4	219	4,755.8
Granada	45	606.8	9	163.9
Hamburg	1,187	33,940.7	590	14,280.1
Helsinki	727	17,136.5	402	7,865.1
Krakow	60	2,482.7	23	765.9
Liège	38	1,208.9	52	1,012.9
Lisbon	625	12,549.0	111	2,754.8
Ljubljana	258	7,884.1	111	1,958.9
London (Inner London)	2,817	72,158.2	4,012	32,574.4
Lyon	275	3,175.9	198	2,709.7
Madrid	550	14,609.9	141	1,833.2
Manchester (Greater Manchester)	514	12,056.8	372	8,150.2
Marseille	437	6,076.2	133	1,702.7
Milan	606	8,278.4	95	1,711.6
Munich	1,841	41,535.3	184	3,610.6
Naples	67	1,458.0	28	899.0
Oslo	2,256	48,908.4	1,680	15,092.2
Paris	1,143	12,490.2	5,925	69,052.6
Prague	201	7,095.5	335	9,357.3
Rome	713	13,607.8	111	2,481.3
Stockholm	1,136	17,977.3	1,429	10,901.5
Strasbourg	163	1,743.9	61	544.2
Turin	627	14,267.5	19	388.5
Vienna	2,163	36,756.5	107	2,788.8
Warsaw	118	4,100.4	102	2,336.3

A9 Polluting cars out, shared mobility in

Scoring matrix

Emission zones				Promoting zero emission vehicle		Mobility as a service					
Emissions zone 'type' - official political decision?				Phasing out the sales of diesel/petrol vehicles (regional and/or national) - official political decision?		Bike rental services		Car sharing services		Integrated ticket services	
ZEZ in place currently	6	Foreign vehicles also affected in emissions zone	0.75	No planned ban	0	None in place	0	None in place	0	None in place	0
ULEZ in place currently (a Euro6/VI standard, at least for diesel)	5.25	Planned restrictions of more polluting vehicles over time (Can be a progressive increase in the number of vehicles being excluded)	0.75	Ban of both diesel and petrol vehicles planned later than 2030	1.5	Plans in place, not developed yet. (E.g. outlined in a 2030 mobility plan, but nothing further)	0.5	Plans in place, not developed yet. (E.g. outlined in a 2030 mobility plan, but nothing further)	0.5	Plans in place, not developed yet. (E.g. outlined in a 2030 mobility plan, but nothing further)	0.25

LEZ (less than Euro 6/VI standard) currently in place	4.5	ULEZ planned for future or trials in place OR ZEZ planned for future or trials in place	1.5 OR 3	Ban with split enforcement dates i.e. diesel OR petrol ban planned for 2030 and before	2.25	Investment made, dedicated company or team doing work on this	1.0	Investment made, dedicated company or team doing work on this	1.0	Investment made, dedicated company or team doing work on this	0.50
If no LEZ, is LEZ planned prior to 2030	3	Emission zone has restrictions on all vehicle types including cars	1.5	Ban of BOTH diesel and petrol vehicles planned for 2030 and before	3	Pilot bike scheme in place/ not accessible for everyday use	1.5	Pilot scheme in place	1.5	Multi-trip/ travel cards only available for the transport mode they correspond to	0.75
If no LEZ is there a zone which reduces car emissions (pedestrian zones/emergency LEZ on periods of high pollution)	1.5					Limited accessibility and availability. Supposed to be available to public but hindered in specific ways	1.8	Limited accessibility and availability. Supposed to be available to public but hindered in specific ways	1.8	Only limited services in place (only certain transport systems, lack of long term tickets)	0.9

						Bike rental scheme in place, fully accessible to public	2.0	Car sharing scheme in place, fully accessible to public	2.0	Integrated ticket services in place (e.g. smart card)	1
Maximum	**6**		**6**		**3**		**2**		**2**		**1**

Amsterdam

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place	4.5
Emission zone details	Foreign vehicles affected	0.75
	From 2025 only zero emission vehicles will be allowed to enter the city centre for delivery - applies to all vehicles from 2030	3
	Restrictions impact all vehicle types	1.5
	LEZ progressively excludes more vehicles from entering over the years	0.75
Banned sale of diesel/petrol (ICE) vehicles	Political agreement foresees only sales of zero-emission vehicles as of 2030	3
Mobility as a service		
Bike rental services	Bike self service widely available across the city through a number of different companies and directed to a number of different demographics	2
Car sharing services	Car share available, register online and pay online. Other cheap rental and hiring services available (Europcar, Enterprise) across the city	2
Integrated ticket services	OV trip card is available for use on metro, tram and bus. Allows combined travel tickets and users to use one card/ ticket for multiple forms of transport. Available online and in-travel hubs	1
Total score		**18.5**

https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

https://www.klimaatakkoord.nl/mobiliteit

Antwerp

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place	4.5
Emission zone details	Foreign vehicles also affected	0.75
	Planned restrictions of more polluting vehicles over time	0.75
	Restrictions impact all vehicles	1.5
	ULEZ planned (diesel vehicles) from 2025	1.5
Banned sale of diesel/petrol (ICE) vehicles	Sales phase-out currently only discussed, e.g. in Flanders, Belgium expressed support for a European phase-out date	0
Mobility as a service		
Bike rental services	Blue Bike/ Velo bikes available across the city - used with passes or season cards	2
Car sharing services	Car share companies and rental schemes in place, personal sharing also promoted	2
Integrated ticket services	MoBIB card and City of Antwerp Travel Pass available	1
Total score		**14**

https://urbanaccessregulations.eu/countries-mainmenu-147/belgium/antwerp

https://www.slimnaarantwerpen.be/en/LEZ/check-your-vehicle/conditions-for-admission-as-of-1/1/2020#current-rules

https://www.slimnaarantwerpen.be/en/bike/discount

https://klimaat.be/2050-en

https://assets.antwerpen.be/srv/assets/api/download/59251c86-b7d3-4680-a7a7-140405af3a5f/mobiliteitsplan_DEF_web.pdf

https://reader.elsevier.com/reader/sd/pii/S2352146519301097?token=8B7CAF7EC178D3C14BD4AE8070E640B02E5BBDA082F3FA1FBB771AB05BB3D34E1FAA5429F0B249799EE0DAB14A87BFFA&originRegion=eu-west-1&originCreation=20210722134120

https://www.lalibre.be/economie/conjoncture/2021/11/02/la-flandre-pourrait-interdire-limmatriculation-de-tous-les-vehicules-thermiques-dici-2030-C47FODQAXBBRRLF6QXY7OJXFSI/?fbclid=IwAR3BKJhXblCTyJk3RZouPL7JsJrwqxumASISIYLJ8xLFzcpl8t6xW_zxvIw

Barcelona

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place	4.5
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
Banned sale of diesel/petrol (ICE) vehicles	Only vehicles with 0g of CO_2/km to be sold after 2040	1.5
Mobility as a service		
Bike rental services	Public bicycle scheme made available through Bicing. 6,000 mechanical bikes and 300 electric bikes available to the public. Pay stations on the street and paid via apps too. Very accessible but limited info	2
Car sharing services	Avancar, SocialCar, Hertz and other car-share club companies/ car rental companies in operation across Barcelona - information available online regarding payment and booking	2
Integrated ticket services	Integrated tickets are available to everyone via ticket machines in stations and online	1
Total score		**13.25**

https://www.barcelona.cat/mobilitat/es/actualidad-y-recursos/aprobacion-inicial-del-plan-de-movilidad-urbana-2024

Berlin

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place, ZEZ only being discussed	4.5
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
	ULEZ trial on 4 streets (previously 8)	1.5
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted, discussions ongoing as part of the coalition negotiations for the future government	0
Mobility as a service		

Category	Notes	Score
Bike rental services	Widely available self-service stations for renting bikes, extra support in place for students or young people	2
Car sharing services	Many carsharing companies in place in Berlin (SIXT, Share2go, WeShare). Must register online or be paid via online	2
Integrated ticket services	Multiple public transport passes and apps available	1
Total score		**13.25**

https://www.berlin.de/special/auto-und-motor/nachrichten/4947848-2301467-drohende-fahrverbote-was-dieselfahrer-wi.html

https://www.berlin.de/sen/uvk/_assets/verkehr/mobilitaetswende/broschure_mobilitatswende-en.pdf

https://www.berlin.de/special/auto-und-motor/605948-44826-umweltzoneinberlin.html

Bilbao

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ planned for 2023	3
Banned sale of diesel/petrol (ICE) vehicles	Only vehicles with 0g of CO_2/km to be sold after 2040	1.5
Mobility as a service		
Bike rental services	Bike self-service in place. Requires free online registration, then in person confirmation of membership onto the program. Each trip costs a fare, found online and in-branch	2
Car sharing services	Small car sharing scheme (ibilkri) is in place	1.8
Integrated ticket services	Travel cards available both for tourists and day to day users, can be loaded with credit and used on any public transport around Bilbao within city limits	1
Total score		**9.3**

https://pmus.bilbao.eus/wp-content/uploads/2016/10/PMUS-Plan-de-Movilidad-Urbana-Sostenible-de-Bilbao.pdf

https://www.autofacil.es/movilidad/restricciones-de-trafico/bilbao-zona-bajas-emisiones-2023/278254.html

https://www.ibilkari.com/ubicaciones.php

Birmingham

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	ULEZ currently in place, called Clean Air Zone (diesel minimum standard Euro 6)	5.25
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
Banned sale of diesel/petrol (ICE) vehicles	ICE sale phase-out by 2030 (2035 for PHEVs)	1.5
Mobility as a service		
Bike rental services	Bike self-service with Beryl which is part of broader West Midlands cycle hire scheme. National scheme to rent "Brompton" bikes in place across the country with docking bays in Birmingham, and short term bike hire is available from Leisure centres with cycling branches	2

Category	Notes	Score
Car sharing services	Limited car share available (not many cars in circulation and not many schemes in place) - available via registration and online payment. Free float cars, so collection from the street	1.8
Integrated ticket services	Swift travel card available for the West Midlands, covers buses, trains and trams (Birmingham included)	1
Total score		**13.8**

https://www.bbc.co.uk/news/uk-england-birmingham-44551122

https://cdn.fleetnews.co.uk/web/1/digital-issue-categories/june-2021-digital-issue/index.html#page=6

https://www.birmingham.gov.uk/downloads/file/4210/bmap_green_paper_full_document

https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

Brussels (Brussels Capital Region)

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place	4.5
Emission zone details	Foreign vehicles also affected	0.75
	ZEZ planned 2035 (diesel by 2030)	3
	Planned restrictions of more polluting vehicles over time	0.75
Banned sale of diesel/petrol (ICE) vehicles	Sales phase-out currently only discussed, e.g. in Flanders, Belgium expressed support for a European phase-out date	0
Mobility as a service		
Bike rental services	Several shared bike schemes in place, e.g. Villo!, Blue-bike, Billy Bike, Swap fiets - trusted companies and widely available to the public for self-service pick up or on street rental. Some are free float, whereas others are at stations	2
Car sharing services	Alternative mobility including car sharing encouraged by Brussels and schemes are available	2
Integrated ticket services	Payment via contactless card available, payment via STIB card also available. Multiple transport tickets with integrated travel available through ticket offices or online	1
Total score		**14**

https://environnement.brussels/sites/default/files/user_files/pnec_rbc_fr.pdf

https://ec.europa.eu/energy/sites/default/files/documents/be_final_necp_parta_en.pdf

https://qz.com/2030106/brussels-will-ban-diesel-cars-by-2030-petrol-cars-by-2035/

https://www.lalibre.be/economie/conjoncture/2021/11/02/la-flandre-pourrait-interdire-limmatriculation-de-tous-les-vehicules-thermiques-dici-2030-C47FODQAXBBRRLF6QXY7OJXFSI/?fbclid=IwAR3BKJhXblCTyJk3RZouPL7JsJrwqxumASISIYLJ8xLFzcpl8t6xW_zxvIw

Cologne

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place	4.5
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5

Category	Notes	Score
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted, discussions ongoing as part of the coalition negotiations for the future government	0
Mobility as a service		
Bike rental services	KVB-Rad bikes free floating and parked at stations across Cologne, accessible via app or card	2
Car sharing services	Several car sharing services, including Cambio	2
Integrated ticket services	KVB app integrates different mobility options	1
Total score		**11.75**

https://ratsinformation.stadt-koeln.de/getfile.asp?id=674618&type=do

https://www.stadt-koeln.de/leben-in-koeln/klima-umwelt-tiere/luft-umweltzone/die-koelner-umweltzone

https://ratsinformation.stadt-koeln.de/getfile.asp?id=690075&type=do

https://www.stadt-koeln.de/leben-in-koeln/verkehr/e-fahrzeuge-unternehmen-der-freien-wirtschaft

https://www.stadt-koeln.de/mediaasset/content/pdf66/foerderrichtlinie-oepnv-pauschale.pdf

https://www.kvb.koeln/app/#funktion

Copenhagen

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone ‘type’	LEZ currently in place but only for vans, buses and trucks (hence only 3 out of 4.5 points)	3
Emission zone details	Foreign vehicles affected	0.75
	ZEZ pilots planned as of 2023, no details known yet	1.5
	LEZ progressively excludes more vehicles from entering over the years	0.75
Banned sale of diesel/petrol (ICE) vehicles	Climate and Air Plan (2018) sets the goal of setting a 2030 end date for the sales of new petrol and diesel cars and a 2035 end date for PHEVs	1.5
Mobility as a service		
Bike rental services	Bycyklen bike sharing scheme in place	2
Car sharing services	Share Now biggest car share group in Copenhagen, on street collection and drop-off - accessible through app and online registration	2
Integrated ticket services	Rejsekort card unites different transport modes, zones and prices for convenience for residences of Copenhagen. Available online, on app and in-branch	1
Total score		**12.5**

https://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=983

https://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=1123

https://theicct.org/sites/default/files/publications/global-cities-zez-dev-EN-aug21.pdf

https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

https://bycyklen.dk/

https://www.share-now.com/dk/en/

Edinburgh

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	Planned ULEZ for May 2022, postponed due to COVID (cars and vans). Ongoing voting process at the local level, the implementation might be delayed	3
Banned sale of diesel/petrol (ICE) vehicles	ICE sale phase-out by 2030 (2035 for PHEVs)	1.5
Mobility as a service		
Bike rental services	The Just Eat Cycles bike sharing scheme has been halted in September 2021: New plans are being discussed	0.5
Car sharing services	Car rental and cheap car hire available, no exclusive car clubs in place as of yet. Car rental and hire is however accessible online and in-store	1.8
Integrated ticket services	Ridacard allows combined travel between trams, buses night services and bus routes of surrounding areas. It can be bought for short-term, long term, annual with different plans for students, adults, seniors and young people	1
Total score		**7.8**

https://www.edinburgh.gov.uk/downloads/file/29320/city-mobility-plan-2021-2030-pdf

https://www.edinburghnews.scotsman.com/news/transport/edinburghs-low-emission-zone-thrown-into-chaos-after-committee-refuses-to-back-scheme-3433716

https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

https://theedinburghreporter.co.uk/2021/09/bike-hire-scheme-skids-to-a-halt/

Ghent

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place	4.5
Emission zone details	Foreign vehicles also affected	0.75
	Restrictions impact all vehicles	1.5
	ULEZ planned (diesel vehicles) from 2025	1.5
	Planned restrictions of more polluting vehicles over time	0.75
Banned sale of diesel/petrol (ICE) vehicles	Sales phase-out currently only discussed, e.g. in Flanders, Belgium expressed support for a European phase-out date	0
Mobility as a service		
Bike rental services	Several bike sharing services including Blue Bike and Donkey Republic	2
Car sharing services	Cambio car sharing available, sharing among citizens also promoted	2
Integrated ticket services	City Pass available flexible for 1-12 months	1
Total score		**14**

https://urbanaccessregulations.eu/countries-mainmenu-147/belgium/gent-ghent

https://stad.gent/en/mobility-ghent/circulation-plan

https://www.eltis.org/in-brief/news/ghent-and-milan-win-international-car-sharing-awards

https://www.eltis.org/sites/default/files/c1_scheirs_mobility_policy_ghent.pdf

https://como.org.uk/wp-content/uploads/2021/01/CoMoUK_Mobility-Hubs_Ghent-Case-Study-A4.pdf

https://stad.gent/sites/default/files/page/documents/20150929_DO_%20Mobiliteitsplan%20Gent%20-%20strategische%20mobiliteitsvisie.pdf

https://www.lalibre.be/economie/conjoncture/2021/11/02/la-flandre-pourrait-interdire-limmatriculation-de-tous-les-vehicules-thermiques-dici-2030-C47FODQAXBBRRLF6QXY7OJXFSI/?fbclid=IwAR3BKJhXblCTyJk3RZouPL7JsJrwqxumASISIYLJ8xLFzcpl8t6xW_zxvIw

Granada

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ planned	3
Banned sale of diesel/petrol (ICE) vehicles	Only vehicles with 0g of CO_2/km to be sold after 2040	1.5
Mobility as a service		
Bike rental services	Bike rental mainly through shops, previous bike sharing schemes currently not in operation	0.5
Car sharing services	No car sharing scheme in place, but many cheap car rental companies available for hire - delivery cars to front door or at pick-up/drop-off points. Accessible via telephone, in-store request, online	1.8
Integrated ticket services	Integrated app through Imbric (buses, taxis, parking)	1
Total score		**7.8**

http://www.movilidadgranada.com/cieu/DIAGNOSIS.pdf

https://urbanaccessregulations.eu/countries-mainmenu-147/spain/granada-ar

https://www.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1528790291.pdf

http://movilidadgranada.org/noticias.php?idioma=es&id=395

https://www.granadahoy.com/granada/bicicleta-capital-Abalos-ciudad-gafada_0_1582942792.html

Hamburg

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	ULEZ only on 2 streets (similar to a trial, only for diesels)	1.5
Emission zone details	Foreign vehicles affected	0.75
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted, discussions ongoing as part of the coalition negotiations for the future government	0
Mobility as a service		
Bike rental services	Self-service bikes available across city with lots of information regarding use online	2
Car sharing services	Many car sharing schemes in place	2
Integrated ticket services	Public transport passes and apps available	1
Total score		**7.25**

https://www.hamburg.de/durchfahrtsbeschraenkungen/11087142/diesel-durchfahrtsbeschraenkungen/

https://reallab-hamburg.de/en/projekte/warenmobilitaet-mikrodepot/

https://hamburg-news.hamburg/en/location/hamburg-gearing-city-cycling-2020

https://www.hamburg.de/lbv-fahrzeug/5886634/umweltplakette/

https://www.hamburg.de/carsharing/

Helsinki

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ requiring only garbage trucks and buses to have a minimum euro standard (hence only 2 out of 4.5 points)	2
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted	0
Mobility as a service		
Bike rental services	City bike scheme in place, however only during Spring, Summer and Autumn months. Available via purchasing city bike pass	1.8
Car sharing services	2 car sharing companies in operation in Helsinki with car rental operations available too. Available via online, app and telephone	2
Integrated ticket services	HSL Card & HSL App available to be loaded with different tickets, travel credit, discounts and regions - allows for flexible travel and built-in route planning	1
Total score		**6.8**

https://www.hel.fi/uutiset/en/kaupunkiymparisto/helsinki-envisions-future-development-pathways-of-urban-transport

https://www.eltis.org/in-brief/news/helsinki-announces-expansion-public-bike-sharing-scheme

Krakow

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	A ZEZ from 2019 is no longer in place	0
	Pedestrian zones in the centre	1.5
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted	0
Mobility as a service		
Bike rental services	Wavelo service shutdown in 2019, new "Park-E-Bike" scheme in place	2
Car sharing services	Car share available online and on app paid via card	2
Integrated ticket services	Travel cards responding to respective zones allows flexible travel	1
Total score		**6.5**

https://www.krakow.pl/aktualnosci/226585,29,komunikat,abc_strefy_czystego_transportu_na_kazimierzu.html

https://www.krakow.pl/aktualnosci/227935,26,komunikat,co_zostalo_ze_strefy_czystego_transportu_na_kazimierzu.html

https://www.eltis.org/discover/case-studies/evaluation-transport-policy-implementation-krakow-poland

https://urbanaccessregulations.eu/countries-mainmenu-147/poland/krakow

http://www.krakow-info.com/driving.htm

Liège

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	The Walloon region will become a low emission zone from 2023	3
Banned sale of diesel/petrol (ICE) vehicles	Sales phase-out currently only discussed, e.g. in Flanders, Belgium expressed support for a European phase-out date	0
Mobility as a service		
Bike rental services	Limited bike rental availability compared to other cities, mostly around railway stations (BlueBike) and at Pro Vélo association, and more for long-term rental (hence only 1.8 out of 2)	1.8
Car sharing services	Cambio car sharing available	2
Integrated ticket services	Liege City Pass and other travel passes available online and in transport hubs	1
Total score		**7.8**

http://mobilite.wallonie.be/files/PUM-LIEGE/PUM-LIEGE-rapport-final-mai-2019.pdf

https://www.walloniebassesemissions.be/fr/mon-vehicule/#suis-je-concerne

https://orbi.uliege.be/bitstream/2268/257873/1/Lebas%20%26%20Crutzen%20%282021%29%20MaaS%20exploratory%20study%20on%20the%20governance%20and%20managemnt%20in%20Belgium.pdf

https://www.walloniebassesemissions.be/fr/

https://www.lalibre.be/economie/conjoncture/2021/11/02/la-flandre-pourrait-interdire-limmatriculation-de-tous-les-vehicules-thermiques-dici-2030-C47FODQAXBBRRLF6QXY7OJXFSI/?fbclid=IwAR3BKJhXblCTyJk3RZouPL7JsJrwqxumASISIYLJ8xLFzcpl8t6xW_zxvIw

Lisbon

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place	4.5
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
Banned sale of diesel/petrol (ICE) vehicles	Ongoing discussions on a phase-out of sales of ICE vehicles (as of 1st of November 2021)	0
Mobility as a service		
Bike rental services	Free float and docked bikes available across city – e-scooters and e-bikes also available. 3 different companies present in Lisbon. Must register through app online to gain access to the bikes	2
Car sharing services	Carshare available through street-parked cars. Online registration first with payment, no on street payment facilities	2
Integrated ticket services	Multiple travel cards available. Lisboa viva is the most suitable, can be used in accordance with trams, trains and buses - other cards are more limited. Apply for online or in-station	1
Total score		**11.75**

https://cities-today.com/how-lisbon-is-reshaping-its-mobility-landscape/

https://www.uia-initiative.eu/en/news/digitalization-mobility-lisbon

https://urbanaccessregulations.eu/countries-mainmenu-147/portugal/lisbon

https://smartopenlisboa.com/mobility/

Ljubljana

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	A pedestrian zone with access for delivery at certain times	1.5
Banned sale of diesel/petrol (ICE) vehicles	The Market Development Strategy for the Establishment of Adequate Alternative Fuel Infrastructure in the Transport Sector foresees a limit of 50 g of CO2/km as of 2030, which would still allow for the sales of PHEVs (hence 0 points)	0
Mobility as a service		
Bike rental services	Simple/ easy to understand bike hire instructions online; bikes parked at docks, cheap online registration (1 euro for a week, 3 euro for a year), unlock and ride. Widely available, requires card payment	2
Car sharing services	Avant2go in operation in Ljubljana with reasonable prices online, must register online or via application	2
Integrated ticket services	Urbana card available to use with city bus travel (LPP), parking service (JP LPT), cable car ride (Ljubljana Castle), use of the BicikeLJ service (Europlakat) and use of SMS parking service. Apply for online or in stations.	1
Total score		**6.5**

https://civitas.eu/sites/default/files/civitas_cities_-_success_stories_booklet.pdf

https://rralur.si/wp-content/uploads/2020/03/SUMP-LUR.pdf

https://www.ljubljana.si/en/ljubljana-for-you/transport-in-ljubljana/environmentally-friendly-vehicles/

https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

https://urbana.jhl.si/

London (Inner London)

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	ULEZ in place: no diesel vehicles that do not meet Euro 6 standards (ULEZ expanded on 25th October 2021)	5.25
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
	ZEZ trial on selected roads and ZEZ planned	3
	LEZ progressively excludes more vehicles from entering over the years	0.75
Banned sale of diesel/petrol (ICE) vehicles	ICE sale phase-out by 2030 (2035 for PHEVs)	1.5
Mobility as a service		
Bike rental services	Bike self-service in place with app or contactless card. Must be paid for, increments of 30 mins and returned to a docking station (no free float) Numerous free floating bike rental services (e.g. Lime, Urban Forest) Trialling e-scooter hire with 3 companies (Dott, Lime, Tier)	2

Category	Notes	Score
Car sharing services	Disjointed policy for car sharing and small number of car sharing schemes in place across London. Relatively affordable, however requires app registration and online payment	1.8
Integrated ticket services	World leading with contactless car payments on all public transport services. Also, Oyster cards allows travel on most public transport routes in London (e.g. Tram, Underground, Buses, DLR etc) - exceptions for private lines or ones in outer zones. Accessible in most tube stations, can be topped up with cash or card	1
Total score		**17.55**

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/846593/future-of-mobility-strategy.pdf

https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf

https://www.gov.uk/government/news/government-takes-historic-step-towards-net-zero-with-end-of-sale-of-new-petrol-and-diesel-cars-by-2030

https://tfl.gov.uk/modes/driving/ultra-low-emissionzone/cars?intcmp=52215

https://theicct.org/sites/default/files/publications/global-cities-zez-dev-EN-aug21.pdf

https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

Lyon

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place but only for freight vehicles (hence only 3,5 points out of 4.5)	3.5
Emission zone details	Foreign vehicles affected	0.75
	Planned restrictions of more polluting vehicles over time	0.75
Banned sale of diesel/petrol (ICE) vehicles	End of sales of diesel and petrol vehicles by 2040 in France	1.5
Mobility as a service		
Bike rental services	Velo self services bikes in operation across Lyon, ~5,000 bikes available across ~428 stations	2
Car sharing services	Car sharing stations, 12 local sharing companies available for private and business use	2
Integrated ticket services	Tickets that cross transport modes available (long duration tickets, 1 hour tickets)	1
Total score		**11.5**

http://www.sytral.fr/306-presentation_pdu.htm

Madrid

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place (Madrid Central replaced by new ZBEDEP Distrito Centro scheme, in connection with access and parking rules)	4.5
Emission zone details	Foreign vehicles affected	0.75
	LEZ progressively excludes more vehicles from entering over the years	0.75

Category	Notes	Score
Banned sale of diesel/petrol (ICE) vehicles	Only vehicles with 0g of CO_2/km to be sold after 2040	1.5
Mobility as a service		
Bike rental services	Multiple forms of bike and small mobility / accessibility vehicles available alongside bike service, must register with city first or using an app in accordance with the company - paid online	2
Car sharing services	Car sharing schemes in place, private clubs that must be registered and companies which require an app to download and pay with	2
Integrated ticket services	Multi Card covers all forms of transport and can be loaded with any type of ticket or card. Allows flexible travel and can be bought online or in person	1
Total score		**12.5**

https://www.madrid.es/portales/munimadrid/es/Inicio/Medio-ambiente/Publicaciones/MADRID-360-la-estrategia-para-cumplir-con-los-objetivos-de-calidad-del-aire-de-la-Union-Europea/?vgnextfmt=default&vgnextoid=3d6c1609d818d610VgnVCM2000001f4a900aRCRD&vgnextchannel=f6ff79ed268fe410VgnVCM1000000b205a0aRCRD

https://www.eldiario.es/madrid/bicicletas-madrid-desinflan-almeida-bicimad-pierde-6-700-usuarios-abril_1_8407696.html

Manchester (Greater Manchester)

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	Planned ULEZ (Euro 6 standard for the vehicles concerned) for May 2022, postponed due to COVID. Cars not affected and vans have temporary exemption until 1 June 2023 (hence only 2 points out of 3)	2
Banned sale of diesel/petrol (ICE) vehicles	ICE sale phase-out by 2030 (2035 for PHEVs)	1.5
Mobility as a service		
Bike rental services	Bike self-service scheme set to release during November 2021. Publicly operated, self-service, 24/7 National bike rental scheme "Brompton" has one docking station available, very limited availability	1.8
Car sharing services	Community car share schemes in place and cheaper car hire / rentals available across the city & Greater Manchester. Either requires app registration, telephone, online or in-store arrangements and booking	1.8
Integrated ticket services	Limited combined travel passes. There are short term tickets that can be used as part of a journey but there is not much accessibility towards widely combined passes. There is discussion over an oyster-card like system coming to Manchester but no further details	0.75
Total score		**7.85**

https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

https://static1.squarespace.com/static/5e440b36f686ae560a571ed4/t/5fb537e256a25e1aea57b0f1/1605712018219/03._GM_2040_TS_Full.pdf

https://www.salford.gov.uk/pests-nuisances-pollution-and-food-hygiene/protecting-the-environment/air-quality-and-monitoring/greater-manchester-clean-air-plan/

https://www.manchestereveningnews.co.uk/news/greater-manchester-news/plans-build-uks-first-mobility-20728072

Marseille

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	Planned LEZ for 2022, postponed due to COVID	3
Banned sale of diesel/petrol (ICE) vehicles	End of sales of diesel and petrol vehicles by 2040 in France	1.5
Mobility as a service		
Bike rental services	Bike rental is in place (1,000 bikes available cycling rather convenient)	2
Car sharing services	Car sharing available through apps and through rental companies	2
Integrated ticket services	Travel passes available (covers different routes and different timeframes)	1
Total score		**9.5**

https://www.ampmetropole.fr/sites/default/files/2020-01/PDU-MEP.pdf

https://www.environmentalbadge.com/ecological-zone-marseille/

Milan

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place	4.5
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
	LEZ progressively excludes more vehicles from entering over the years	0.75
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted	0
Mobility as a service		
Bike rental services	3 bike sharing services available, all must be used via app and paid for using credit / debit card	2
Car sharing services	Car sharing services available online, must be registered through an app and paid for using card	2
Integrated ticket services	Transport passes available online and in travel hubs - wide variety of what the passes can do, app does not include all mobility services	1
Total score		**12.5**

https://www.comune.milano.it/aree-tematiche/mobilita/area-c/area-c-calendario-prossimi-divieti

https://www.comune.milano.it/aree-tematiche/mobilita/area-b/area-b-veicoli-che-non-possono-entrare

https://www.comune.milano.it/-/mobilit%C3%A1.-viaggi-condivisi-parcheggi-gratuiti-e-costi-dimezzati-comune-e-bepooler-insieme-per-lo-sviluppo-del-car-pooling

https://www.comune.milano.it/-/mobilita.-il-car-sharing-e-sempre-piu-elettrico-e-integrato-con-l-area-metropolitana

https://www.comune.milano.it/documents/20126/126287041/Low+Emission+Zone.pdf/3a1fb9d7-badd-cb86-5096-efdb0e7ab5b7?t=1554213072204

https://www.eltis.org/discover/news/electric-car-sharing-milan-italy-0

Munich

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place	4.5
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted, discussions ongoing as part of the coalition negotiations for the future government	0
Mobility as a service		
Bike rental services	Bike rental available, many floating bikes and stations across the city	2
Car sharing services	Car sharing in place (Share Now, Stattauto)	2
Integrated ticket services	One app for all services (MVGO)	1
Total score		**11.75**

https://www.mvg.de/services/mobile-services/carsharing.html

https://www.mvg.de/services/mobile-services/mvgo.html

https://www.muenchen.de/rathaus/home_en/Environment-and-Health/Low_emission_zone.html

https://www.muenchen.de/rathaus/Serviceangebote/verkehr/verkehrsplanung/radverkehr.html

https://www.muenchen.de/rathaus/Serviceangebote/verkehr/verkehrsplanung/mobilitaetsplan.html#-ausbau-des-ffentlichen-nahverkehrs_1

https://www.muenchen.de/rathaus/Serviceangebote/verkehr/verkehrsplanung/verkehrsprojekte/sharing-mobility.html

https://www.muenchen.de/rathaus/Serviceangebote/verkehr/verkehrsplanung/verkehrsprojekte/autofreie-altstadt.html

https://www.muenchen.de/rathaus/Serviceangebote/verkehr/verkehrsplanung/verkehrsprojekte/radschnellverbindungen.html

https://www.muenchen.de/rathaus/Stadtverwaltung/Referat-fuer-Gesundheit-und-Umwelt/Klimaschutz_und_Energie/Elektromobilitaet/IHFEM.html#ziele_0

https://www.clientearth.org/latest/latest-updates/news/what-will-it-take-to-clean-up-munich-s-air/

Naples

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	No LEZ per se but ban on Euro 0 and 1 for cars and commercial vehicles (lorries, vans), plus a ban on Diesel only cars and commercial vehicles equal or lower than Euro 4 standard. Score reduced because of the highly atypical LEZ scheme currently in place in the city, which does limit cars in some areas but only very old classes.	1.5
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5

Category	Notes	Score
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted	0
Mobility as a service		
Bike rental services	Napoli'n Bike Sharing and Lime present in the city	2
Car sharing services	Amicar car sharing in place, only electric vehicles	2
Integrated ticket services	Transport passes available online and in travel hubs - wide variety of what the passes can do, app does not include all mobility services	1
Total score		**8.75**

https://www.ansa.it/campania/notizie/2021/09/29/napoli-ordinanza-antismog-stop-a-euro-0-e-euro-1_2511b1c4-4123-4d11-b91a-637f021b328c.html

https://www.napolitoday.it/green/napoli-n-bike-sharing-piazza-bovio-nuova-stazione.html

https://www.amicarnapoli.it/

https://www.comune.napoli.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/15945?web=1&wdLOR=cC9961A6E-FEF7-43DB-9276-E109BE2406A4

https://www.comune.napoli.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/28268

https://www.comune.napoli.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/33761

https://www.napolike.com/linea-filoviaria-204-a-napoli-inaugurato-il-nuovo-bus-a-emissioni-zero

https://www.comune.napoli.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/19883?web=1&wdLOR=cB83C7D98-D12B-418A-B063-A3AC56DA7E74

https://what-europe-does-for-me.eu/data/pdf/region/ITF33_en.pdf

Oslo

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone ‘type’	Combined congestion charge and low emission zone	4.5
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
	Zero-Emission Zone planned	3
	LEZ progressively excludes more vehicles from entering over the years	0.75
Banned sale of diesel/petrol (ICE) vehicles	The National Transport Plan 2018-2029 foresees that all new passenger cars and light vans sold in 2025 shall be zero-emission vehicles	3
Mobility as a service		
Bike rental services	Oslo has a city bike service. Requires an app, 253 stations and payment is made online. Very similar to other cities and reviews suggest it is reliable	2
Car sharing services	Vybil is a car sharing service centred in Oslo. Requires online / app registration. Paid for via card online	2
Integrated ticket services	Commuter cards available to purchase online and in-station. Can be loaded with tickets or credits	1
Total score		**18.5**

https://urbanaccessregulations.eu/countries-mainmenu-147/norway-mainmenu-197/oslo-charging-scheme

https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

https://www.klimaoslo.no/wp-content/uploads/sites/88/2018/06/Climate-and-Energy-Strategy-2016-English.pdf

https://www.c40knowledgehub.org/s/article/Oslo-s-Climate-Budget-2019?language=en_US

Paris

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place, tightening as of 2022, no diesel cars after 2024	4.5
Emission zone details	Foreign vehicles affected	0.75
	ZEZ planned for 2030	3
	Restrictions impact all vehicles	1.5
	Planned restrictions of more polluting vehicles over time	0.75
Banned sale of diesel/petrol (ICE) vehicles	End of sales of diesel and petrol vehicles by 2040 in France	1.5
Mobility as a service		
Bike rental services	Bike rental hubs available around Paris, regularly repaired and used frequently	2
Car sharing services	Car sharing scheme in place (cars left parked on the street, use through app and return to same place)	2
Integrated ticket services	Multiple travel passes in place (annual, monthly) - covers all modes of transport	1
Total score		**17**

https://energy-cities.eu/wp-content/uploads/2019/06/PUBLI_Paris_plan-climat_2018_horizon-2030_2018_en.pdf

Prague

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	A LEZ is planned but currently not in operation. Discussions are ongoing	3
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted	0
Mobility as a service		
Bike rental services	Prague is served by Rekola bikes. Registration online, via website or app. Paid for online	2
Car sharing services	AnytimeCar in use across city, cars parked on streets and free float similar to bikes. Registration is held online and paid for online	2
Integrated ticket services	Litacka (formerly Opencard) can be loaded with vouchers, credits, or tickets to permit travel between parts of the city over different travel routes. There are other options available for young children, students and seniors to make the pass more accessible for the wider public	1
Total score		**8**

https://www.autosalon.tv/novinky/ridicuv-chleba/ods-se-pred-volbami-pustila-do-magistratu-kvuli-mytnemu-pro-stara-auta-zatim-asi-zbytecne

https://poladprahu.cz/wp-content/uploads/2019/11/Mobility_Plan-Brochure_EN.pdf

https://www.green-zones.eu/en/low-emission-zones/czechia/prague

Rome

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place (comment: signed the C40 Fossil Fuel Free Streets protocol, pledging to have one urban area 'with zero emissions' from transport by 2030, but no clear plan regarding a ZEZ) The score has been slightly reduced to reflect the fact that the LEZ is very limited compared to the extension of the city.	4
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted	0
Mobility as a service		
Bike rental services	Bike self-service available	2
Car sharing services	Car sharing available	2
Integrated ticket services	Transport tickets available both online and in hubs with various options for zones, routes and services, not all mobility services integrated	1
Total score		**11.25**

https://romamobilita.it/it/progetti/pumsroma

https://press.siemens.com/global/en/pressrelease/siemens-and-pave-way-future-urban-mobility-rome-historic-center

https://www.eltis.org/resources/case-studies/giving-people-what-they-want-romes-sump-and-its-participatory-co-creation

Stockholm

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	Two LEZ currently in place, one on Hornsgatan street, the other city-wide but only for trucks and buses (hence only 3 out of 4.5 points)	3
Emission zone details	Foreign vehicles affected	0.75
	ULEZ planned for future (July 2022)	1.5
	Emission zone has restrictions on all vehicle types including cars	1.5
	LEZ progressively excludes more vehicles from entering over the years	0.75
Banned sale of diesel/petrol (ICE) vehicles	Sweden to end the sale of petrol and diesel cars from 2030 according to the Climate Policy Action Plan from 2017	3
Mobility as a service		
Bike rental services	Stockholm has 140 bike stations across the city. You may either purchase a three day bike-card or seasonal bike-card online or in-person at retailers across Stockholm	2

Category	Notes	Score
Car sharing services	Aimo Solution is an electric car share company in Stockholm. Available for hire and share when registered through the app, paid for online	2
Integrated ticket services	Stockholm travelcard covers subway, buses, trams, commuter train, and ferry. Available to buy online and in retailers	1
Total score		**15.5**

https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

https://international.stockholm.se/globalassets/ovriga-bilder-och-filer/urban-mobility-strategy.pdf

https://carbonn.org/uploads/tx_carbonndata/StockholmActionPlanForClimateAndEnergy2010-2020%5b1%5d.pdf

Strasbourg

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	Planned LEZ for 2022	3
Emission zone details	Planned restrictions of more polluting vehicles over time	0.75
Banned sale of diesel/petrol (ICE) vehicles	End of sales of diesel and petrol vehicles by 2040 in France	1.5
Mobility as a service		
Bike rental services	Bike rental is available (6000 bikes and 20 stations), registration is necessary, also possible in shops	2
Car sharing services	Car sharing is same level as other cities, many rental companies and locations for pick-up / drop-off	2
Integrated ticket services	Travel passes available over different time periods and different modes of transport	1
Total score		**10.25**

https://participer.strasbourg.eu/detail-participation/-/entity/id/142107096

https://www.strasbourg.eu/comment-faire-evoluer-mes-deplacements

https://www.strasbourg.eu/zone-faibles-emissions

Tri-city (Gdansk, Sopot and Gdynia)

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	No LEZ in place	0
	Access restrictions for heavy trucks in Gdynia	1.5
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted	0
Mobility as a service		
Bike rental services	Bike share available	2
Car sharing services	Car share companies available, not as many in relation to other cities, requires app/ prior registration (free) then payment via card	2
Integrated ticket services	Travel cards available, no set zones but allows unlimited travel within a set timeframe	1
Total score		**6.5**

https://ec.europa.eu/info/sites/default/files/file_import/nrp_poland_en_0.pdf

https://urbanaccessregulations.eu/countries-mainmenu-147/poland

http://urbanplanet.info/urbanism/improving-sustainable-mobility-Tri-city (Gdansk, Sopot and Gdynia)-poland/

https://www.eltis.org/sites/default/files/sump_en_Tri-city (Gdansk, Sopot and Gdynia).pdf

https://urbanaccessregulations.eu/countries-mainmenu-147/poland/gdynia-ar

Turin

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place but suspended since the Covid-19 pandemic	3
Emission zone details	Foreign vehicles affected	0.75
	Restrictions impact all vehicles	1.5
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted	0
Mobility as a service		
Bike rental services	Bike sharing scheme in place (140 stations) as well as free floating bikes	2
Car sharing services	Car sharing services available online through app, paid via card	2
Integrated ticket services	Transport passes available online and in travel hubs - wide variety of what the passes can do, app does not include all mobility services	1
Total score		**10.25**

https://www.sicurauto.it/news/attualita-e-curiosita/ztl-torino-orari-mappa-sospensione/

https://www.muoversiatorino.it/en/bike_sharing/

http://geoportale.comune.torino.it/web/sites/default/files/mediafiles/pums_sintesi_non_tecnica.pdf

https://www.fcabankgroup.com/en/news/leasys-s-revolution-in-electric-mobility-continues-with-the-acquisition-of-the-car-sharing-business-and-ev-charging-stations-in-turin-from-french-groupe-bollore

https://urbanaccessregulations.eu/countries-mainmenu-147/italy-mainmenu-81/piemonte-region/torino

http://www.comune.torino.it/torinosostenibile/documenti/200612_EGCA_2022_singola_def.pdf

Vienna

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	LEZ currently in place (only for lorries) (hence only 3 out of 4.5 points)	3
Emission zone details	Foreign vehicles affected	0.75
Banned sale of diesel/petrol (ICE) vehicles	Possible phase-out discussed in Mobility Master Plan but no formal decision yet	0
Mobility as a service		
Bike rental services	CityBike WIEN service in place, allows people to register via app, online or at a bike rental station	2
Car sharing services	Car share available in Vienna, parked on street for pick up or at specific pick up and drop off zones. Must register online or via app before services are available	2

Category	Notes	Score
Integrated ticket services	Vienna App and tickets available online and in-station, valid for all branches within set timeframe / region	1
Total score		**8.75**

https://www.wien.info/de/lifestyle-szene/sport/radfahren/fahrrad-verleih-345670

https://www.wien.gv.at/stadtentwicklung/studien/pdf/b008444.pdf

Warsaw

Category	Notes	Score
Emission zones and Promoting zero emission vehicles		
Emission zone 'type'	No current or proposed LEZ (No LEZ programmed but pledge to make most of the city emission free by 2030 and only clean buses from 2025 (C40 pledge signed by Warsaw, other restrictions apply to trucks))	0
Emission zone details	Pedestrian zones in the centre; access rules for heavy-duty vehicles	1.5
Banned sale of diesel/petrol (ICE) vehicles	No such policy currently in place or adopted	0
Mobility as a service		
Bike rental services	Bike sharing in place. Available through app or online, paid via card. Many different types of bikes available	2
Car sharing services	Car sharing in place. Available via app or online, paid through card	2
Integrated ticket services	Ticket zones dictate where someone can travel. Covers all transport bounds	1
Total score		**6.5**

https://www.google.com/url?q=https://www.c40.org/other/green-and-healthy-streets&sa=D&source=editors&ust=1635847050112000&usg=AOvVaw0Y1KITGgIbUDE633942YG9

https://urbanaccessregulations.eu/countries-mainmenu-147/poland/warsawa

https://www2.deloitte.com/content/dam/insights/us/articles/4331_Deloitte-City-Mobility-Index/Warsaw_GlobalCityMobility_WEB.pdf

https://nws.eurocities.eu/MediaShell/media/Warsaw_transport%20vision.pdf

https://theicct.org/sites/default/files/publications/Poland-ev-market-sept2020.pdf

A10 Urban green space

This indicator was removed from the study as the results were being finalised. The information collected has been included for completeness but has not been utilised to rank the cities.

The amount of urban green space within cities was calculated using data from the Urban Atlas (UA2018)[20]. The Urban Atlas is a harmonised land cover and land use map covering several hundred European cities and their surroundings, and as such it provides a single, consistent source of data for all of the cities in this study. The dataset was last updated in 2018.

The urban green space indicator was calculated by using the formula below. In this study, areas considered to be urban green space included these categories from Urban Atlas: forests, green urban areas, herbaceous vegetation associations (e.g. natural grassland, moors, etc.), and sports and leisure facilities.

$$\%\ of\ urban\ green\ space\ within\ city = \frac{sum\ of\ areas\ considered\ to\ be\ urban\ green\ space\ (in\ km)}{total\ city\ area\ (in\ km^2)}$$

Results for the urban green space indicator are presented in the following table.

City	Total urban green space (km^2)	City area (km^2)	Urban green space as % of city area
Amsterdam	26.4	219.0	12.0%
Antwerp	18.9	203.7	9.3%
Barcelona	22.1	100.8	21.9%
Berlin	298.5	891.8	33.5%
Bilbao	13.5	41.3	32.7%
Birmingham	46.2	268.0	17.2%
Brussels (Brussels Capital Region)	39.6	162.4	24.4%
Cologne	110.7	406.7	27.2%
Copenhagen	17.3	93.6	18.5%
Edinburgh	71.0	273.0	26.0%
Tri-city (Gdansk, Sopot and Gdynia)	159.4	418.4	38.1%
Ghent	11.9	157.9	7.5%
Granada	31.4	88.1	35.7%
Hamburg	137.6	742.5	18.5%
Helsinki	88.4	214.0	41.3%
Krakow	46.7	326.8	14.3%
Liège	16.4	68.4	23.9%
Lisbon	17.6	84.7	20.8%
Ljubljana	123.2	275.1	44.8%
London (Greater London)*	320.3	1595.2	20.1%

[20] European Union, Copernicus Land Monitoring Service 2018, European Environment Agency (EEA), https://land.copernicus.eu/local/urban-atlas/urban-atlas-2018. The Urban Atlas data were produced by funding by the European Union and remain the sole property of the European Union.

City	Total urban green space (km^2)	City area (km^2)	Urban green space as % of city area
Lyon	5.8	48.0	12.1%
Madrid	273.0	604.9	45.1%
Manchester (Greater Manchester)	312.2	1276.9	24.4%
Marseille	112.9	242.1	46.6%
Milan	22.5	181.8	12.4%
Munich	60.0	311.4	19.3%
Naples	17.4	118.5	14.7%
Oslo	289.1	480.8	60.1%
Paris	24.0	105.4	22.7%
Prague	113.6	496.3	22.9%
Rome	201.1	1285.8	15.6%
Stockholm	66.6	215.8	30.8%
Strasbourg	22.6	78.3	28.8%
Turin	28.4	130.1	21.8%
Vienna	128.3	414.9	30.9%
Warsaw	144.1	517.2	27.9%

*Initially this study looked at Greater London prior to this indicator being removed, this figure was not updated to reflect the change to inner London as reported elsewhere in the study.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