



# **Support study on data collection and analysis of active modes use and infrastructure in Europe**

Executive Summary

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# EXECUTIVE SUMMARY

## OVERVIEW OF THE STUDY

This study aims at addressing the lack of comparable information and statistics on walking and cycling use and related infrastructure. Its main objectives are to provide comparable information and statistics on these active modes at urban and national level, and to suggest ways forward to further improve this information.

This final report covers all study tasks:

- › Task 1 consisted of the mapping of data sources, providing an overview on walking and cycling use and infrastructure at urban, regional and national level.
- › Task 2 describes the active modes data collection in the EU28, Switzerland and Norway, and their capitals. For each country, a country report presents the available statistics in a summary table, and the response to the questionnaire, along with background information to help interpret these data. These country reports are published as Appendix C in this final report. The information was obtained through countries consultation by mapping the data sources on walking and cycling use and infrastructure.
- › Task 3 presents the identified strengths and weaknesses of different data collection methods for providing comparable information on walking and cycling use. Data collection methods from the country reports include travel surveys, national census, and traffic counts. In addition, other European active modes statistics are examined; i.e. Eurobarometers and the European Health Interview Survey (EHIS). New data collection methods are introduced: the potential of big data and of crowdsourcing.
- › Task 4 is a comparative overview showing how much is feasible in terms of EU wide statistics on walking and cycling use and related infrastructure.
- › Task 5 presents the difficulties encountered when developing the comparative overview and compares the active modes statistics produced based on the countries consultation, with those from Eurobarometers and the European Health Interview Survey.
- › The recommendations are presented in Task 6.

## DATA MAPPING AND COUNTRIES CONSULTATION

The study started with an overview of data sources, based on a literature review and semi-structured expert interviews. This provided key issues to address in the consultation of active modes data providers in 30 countries and their capitals. The first part of the consultation addressed the available data collection methods, focusing on the methods leading to the indicators 'average daily distance travelled per person' and 'average number of trips per day', for both walking and cycling. The study also addressed the issues related to the comparability of the statistics: the target population, how trips are recorded, and factors affecting distance. Questions were also asked about other potential sources of active modes data, such as big data, traffic counts and national census.

Finally, the study covered walking and cycling infrastructure data. Aside from the countries consultation, two case studies (Google Better Cities and COWI City Sense - Signal Re-identification) were selected to assess the potential of big data for providing walking and cycling statistics.

The consultation covered different types of organisations and institutions. The majority of the respondents were either from City Authorities (27%), Ministries or related agencies (38%). More than half of the countries (18 out of 30) mentioned difficulties when collecting active modes data. In countries with a systematic data collection structure, difficulties due to under reporting and bias or partial data were mentioned. In seven countries the lack of systematic and consistent data collection is mentioned, whilst three countries mention a complete lack of data.

## DATA COLLECTION METHODS IN COUNTRIES AND CAPITALS ACROSS EUROPE

The countries could be divided in seven groups according to the data collection method and reporting used concerning walking and cycling: Group 1 - National surveys are carried out regularly and the data collected and reported include all key indicators, Group 2 - National surveys are carried out regularly and the data collected and reported include SOME of the key indicators, Group 3 - National surveys are carried out regularly but the data collected and the ensuing reports do NOT include key indicators, Group 4 - Ad-hoc surveys are carried out at national level only, Group 5 - Surveys are conducted regularly only at capital level, Group 6 - Ad-hoc surveys are carried out at capital level, Group 7 - No surveys including active modes. Geographically, the groups divide Europe in two parts: Western and Scandinavian countries are mostly in Groups 1, 2 and 3, whilst Eastern and South-eastern countries feature more in Groups 4-7.

All countries producing statistics on average daily walking distance per person and on average daily number of walking trips at country and capital level obtain these figures from travel surveys. In countries where walking and cycling data are collected as part of the National Census, mobility data refers to commuting trips and mostly about the main mode; therefore these are not sufficient to produce comparable data for a comprehensive overview. Traffic counts are currently not an option to produce comparable data on pedestrians, although good practice examples of automated counts were identified in Oslo and Zürich. For cycling, dedicated cycling apps allow comparisons between cities, but further research is needed to find out more about the bias in such statistics.

The most recent and representative statistics referred to the mobile population (the part of the surveyed population that makes any trip on the surveyed days). The 'average daily distance travelled per person' and 'average number of trips



per day' per country/capital, for both walking and cycling, are presented in the country report summary tables (Appendix C). These data were introduced in a geodatabase to produce a first comparative overview on walking and cycling in 30 European countries and their capitals.

#### COMPARISON OF THE AVERAGE DAILY DISTANCE WALKED AND NUMBER OF WALKING TRIPS PER PERSON

The average daily distance walked per person could be produced for 17 countries, in most cases for both the country and its capital but in some cases only for one of the two. When data for the capital was not available, data from another city in the same country was used instead. General impressions based on these non-harmonised data collected are that: 1) The numbers are quite similar throughout Europe; 2) Averages for the mobile population are higher than for the total population; 3) People tend to walk more (in terms of pkm/day) in cities. The average number of walking trips per day could be produced for 15 countries, but in nine cases data are available only at country or capital level, making it harder to make comparisons across Europe.

#### COMPARISON OF THE AVERAGE DAILY DISTANCE CYCLED AND NUMBER OF CYCLING TRIPS PER PERSON

The average daily distance cycled per person could be produced for 18 countries. Unfortunately, there are statistics which are not in line with expected values and are harder to interpret. For example, the Netherlands is considered as the number one cycling country in Europe according to the Special Eurobarometer 406 "Attitudes of Europeans towards urban mobility", but reports an average of 2.55 pkm/day; while countries such as Poland or Norway report values almost twice as high. At urban level, this could be linked to the fact that some cities measure the kilometres cycled and trips of the urban population (sometimes limited to the urban perimeter) whilst others have statistics of the numbers of kilometres cycled per day in the city. There are also different methods for calculating the average distance per person: on the basis of the total population, mobile population or just the cycling population. The estimated percentage of the population cycling regularly was compared with the cycling statistics of the Special Eurobarometer 406. The main differences are due to unclear definitions of what is considered 'regularly' (i.e. in some cases this means once a week, in others once a month, and in most cases it is not clearly defined at all).

#### TOTAL DISTANCE WALKED AND CYCLED PER YEAR IN THE EU

Based on the non-harmonised statistics of the country reports, the calculated medians for the whole EU are summarized as follows: the daily walking distance is around 1.06 pkm/day; while the daily cycling distance is 0.80 pkm/day; as regards to the number of trips, the median values are 0.66 walking trips/day and 0.22 cycling trips/day in Europe, while the share of the population cycling is estimated to be around 26%. When generalising these numbers on a yearly base for the EU28, this amounts to 193 billion walked person-kilometres per year, and 146 billion cycled person-kilometres

which corresponds respectively to 2.78% and 2.11% of the total annual passenger-km in Europe, although these figures should be treated as rough estimates.

#### POTENTIAL OF CROWDSOURCING FOR COLLECTING CYCLING INFRASTRUCTURE DATA

No overview at European level could be produced on cycling infrastructure based on the information gathered during the consultation but the potential of crowdsourcing infrastructure data collection was tested. In Amsterdam, the cycling infrastructure statistics from three sources were compared: the city database, the Fietzersbond (Dutch cycling federation) and the cycling infrastructure data from the OpenCycleMap. Fietzersbond data are collected by volunteers according to clear standards based on the European Cycling Lexicon. The difference with the length of cycling infrastructure in the city database is less than 7% and is most likely due to a different way of treating one-way cycling paths. The statistics derived from the OpenCycleMap are very similar to those derived from the Fietzersbond database (less than 1% difference). A visual screening performed of the OpenCycleMap in 20 cities providing cycling infrastructure statistics in the consultation revealed an overall consistent image regarding the overall length of cycling infrastructure, but differences in quality e.g. concentration of infrastructure in specific neighbourhoods and parks. When cycling infrastructure statistics for Berlin, Brussels, Prague, Sofia and Vienna, were derived in a similar way as for Amsterdam, the difference with the reported data in the consultation was more than 50% in each city. The main reason is a systematic problem in the recording of one-way and two-way cycle tracks and lanes. This leads to the conclusion that there is potential for using crowdsourcing cycling infrastructure data to produce cycling infrastructure statistics, but that this requires standard definitions and guidelines for the contributors, for example like those provided by the European Cycling Lexicon.

#### POTENTIAL OF BIG DATA FOR COLLECTING WALKING AND CYCLING DATA

Both 'Google Better Cities' and 'COWI City Sense - Signal Re-identification' appear to be promising for data collection of active modes use in the future. In their current stage of development, neither big data collection methods could provide active modes statistics for Europe. For cycling, Google Better Cities speed data for cyclists was found to be sufficiently accurate on heavily travelled links in Copenhagen. No study of pedestrian speeds has been publicly released yet. COWI has undertaken projects on pedestrians over the past two years, based on increasingly accurate GPS based systems. These systems are used to analyse human mobility around sporting events or community gatherings. However, this application has only been applied in Denmark so far.

#### NEED FOR COMMON DEFINITIONS

Our recommendations emphasize the need for common definitions, starting with basic questions such as "what is cycling?" and "what is walking?". Some specific recommendations concern the European Cycling Lexicon,





and the extension of cycling infrastructure definitions, with zones with speed limits for all modes. On the same lines, a harmonized definition for cities and urban areas should be used when preparing walking and cycling statistics, such as the OECD-EC definition (Dijkstra et. Al., 2012).

#### DEVELOPMENT OF POST-PROCESSING METHODS

Rather than harmonizing data collections on active modes used in all the European countries and cities, the development of post-processing methods is likely to improve comparability and to harmonize statistics from different national data collections. For walking infrastructure, indicators of the pedestrian-friendliness of urban environments could be explored as an alternative to obtaining statistics on the existing infrastructure.

#### DEFINE KEY PERFORMANCE INDICATORS FOR WALKING AND CYCLING

New initiatives, such as the pan-European master plan for the promotion of cycling, are a good opportunity to define key performance indicators for walking and cycling. The study shows that existing indicators such as the walking and cycling frequency from the Eurobarometer and the walking and cycling times from EHIS, could be complemented by national statistics on active modes such as average distance and number of trips per day, after they are made comparable through post-processing. Other existing initiatives such as the “Quality of Life in cities” survey, undertaken by DG REGIO could be used to collect data on active modes in cities.







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