

Benchmarking Cities of 15 Minutes using Open Data and Tools within the MyFairShare Project

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The “MyFairShare” project develops fair CO₂ mobility budgets for individuals. Here, “fairness” mainly depends on the people’s location as everyone should be capable to access all the destinations needed to perform everyday tasks. As such, a basic understanding about the accessibility within an area is needed, regarding all activities that must be performed. To achieve this, a software system for benchmarking areas has been developed. It is based on open source applications and uses data that – besides public transport data in GTFS format – is freely available throughout Europe.

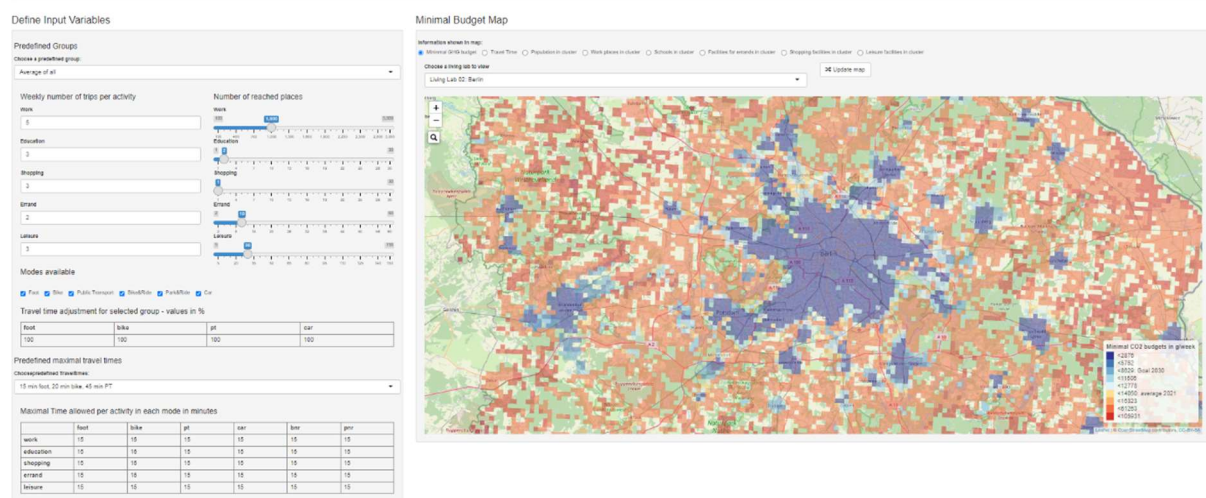
At first, the system computes the accessibility of activity locations for the modes walking, bicycling, public transport and motorized individual transport. The used input data consists of the transport infrastructure and activity locations from OpenStreetMap (OSM), GTFS data for computing public transport accessibilities, and the census population grid. The centroids of the 1 km × 1km population grid are used as origins, the activity locations as destinations. Here, activity locations are distinguished by the respective activity type, namely work, education, shopping, leisure, and errands. The accessibility measures were computed using the open source tool “UrMoAC”¹.

These activity measures are then weighted by the frequency of the respective activity within a week obtained from the Austrian national mobility survey. The weights for the different activity types can be set manually or chosen from a set of pre-defined person groups, such as kids, single parents or elderly.

Besides developing and computing the benchmark, a web-based visualisation tool has been developed in the scope of the project that allows to investigate the results in an interactive manner². Figure 1 shows a screenshot of the tool. The benchmark has been applied to the project’s living lab areas, namely Berlin (DE), Jelgava (LV), London (UK), Sarpsborg (NO), and Vienna (AT).

MyFairShare Minimal Budget Viewer

This Shiny App is part of the MyFairShare Project



¹ <https://github.com/DLR-VF/UrMoAC>

² <https://mytrips.ait.ac.at/myfairshare/>

Figure 1 - The MyFairShare visualization tool.

Besides presenting the plain accessibility measures, the tool allows for computing the least necessary CO₂ budget needed to access all locations that need to be visited within a week. This is done by going through the modes, ordering them by their sustainability – walking, bicycling, public transport, MIT – for all activities and choosing the first, most sustainable mode if a location the respective activity can be performed at is found in a range of 15 minutes. Again, activities are weighted by the frequency of being visited within a week.

The first evaluations show that while large parts of major cities minimum carbon budgets are already within 2030 goals, achieving 15-minute cities is tougher, especially if all activity locations should be accessible by foot. As common to other investigations, the most developed areas can usually be found around the cities' center.

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