MCube

SASIM

MCube Innovation Recommendation 07

The Mobi-Score

Uncovering the Hidden Costs of Mobility

For sustainable and socially inclusive mobility, we need responsible political decisions. The Munich Cluster for the Future of Mobility (MCube) uses applied and transdisciplinary research to provide a basis for decision-making on the mobility of the future. With the MCube Innovation Recommendations series, we communicate research results and recommendations for action to policy-makers and all interested.

Context

In everyday life, we often rely on labels to assist in decision-making. Those interested in food production pay attention to organic or Fairtrade labels. Those seeking a healthier diet might look at the Nutri-Score, which compares similar foods based on their nutritional content. People aiming to reduce their energy consumption or ongoing costs might consider the EU energy label when purchasing a refrigerator.

Labels help us understand complex information more easily.

When it comes to mobility, there is currently no label comparable to other labels that guides travel decisions. We often think of fuel or ticket prices when planning how to get from A to B. But transportation causes far more costs than those directly felt in one's wallet – the so-called hidden costs. Beyond familiar aspects like CO2 emissions and air pollution, numerous other factors contribute to societal harm: Traffic jams waste valuable time for drivers and bus passengers, poorly developed bike lanes increase accident risks, and noise and pollutants negatively impact our health.

Depending on where we travel and our mode of transport, we are exposed to varying risks. These risks can be translated into costs, which makes them comparable.

Hidden costs in transportation are often not transparent.

Therefore, hidden costs are insufficiently considered in important political, economic, and personal decisions. A mobility label for hidden costs could help to change this.

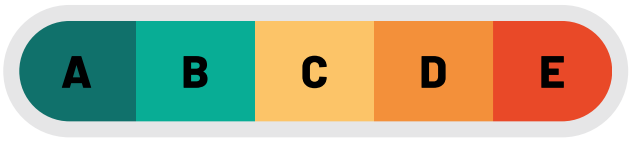
In this innovation recommendation, we present various cases how mobility labels can be used and how they can support decision-making. We, the team of the „Smart Advisor for Sustainable Integrated Mobility“ (SASIM) project, have developed an intuitive mobility label, based on our research into hidden costs in transportation: the Mobi-Score. With the Mobi-Score, we aim to reveal hidden transportation costs and make them comparable. It is already used as an online tool for individuals and in collaboration with municipalities. We demonstrate the diverse applications of the Mobi-Score and how it can assist different target groups in mobility-related decisions.

The first recommendation involves the use of the Mobi-Score as an online tool to calculate hidden costs arising from mobility. The second recommendation addresses how the Mobi-Score can reveal hidden costs when evaluating urban measures. Several municipalities are already testing this in collaboration with the SASIM team. Third, we recommend the use of mobility labels in assessing business or real estate locations, which would represent a further development of the current Mobi-Score.

The Mobi-Score

The Mobi-Score evaluates the hidden costs of individual mobility. It aims to raise awareness for the unequal distribution of mobility costs, as many are not borne by users themselves but by society. To achieve this, we first determined the hidden costs of various modes of transport (e.g., bicycles, cars, public transport) and compared them. These costs were then converted into an easy-to-understand label: the Mobi-Score. It visually communicates which modes of transport cause the lowest hidden costs for specific routes. The Mobi-Score depends on the chosen mode of transport and the travel distance. A route with high external costs for a particular mode of transport receives an Mobi-Score of E (red), while a route with low external costs receives a Mobi-Score of A (green).

mobiscore



To evaluate costs, we defined the categories Time, Health, and Environment. The Mobi-Score can display these costs either as a composite or individually. This allows for balanced consideration. For example, a trip causing high time costs might simultaneously have low noise costs.

Time
Costs arising from traffic jams and delays caused by spatial barriers like railroad crossings

Health
Costs from noise, accidents, and air pollution

Environment
Costs from climate damage and land consumption

Innovation Recommendations

1. Making hidden mobility costs transparent for citizens

2. Evaluating and comparing measures of mobility planning

3. Certifying residential and business locations with the Mobi-Score

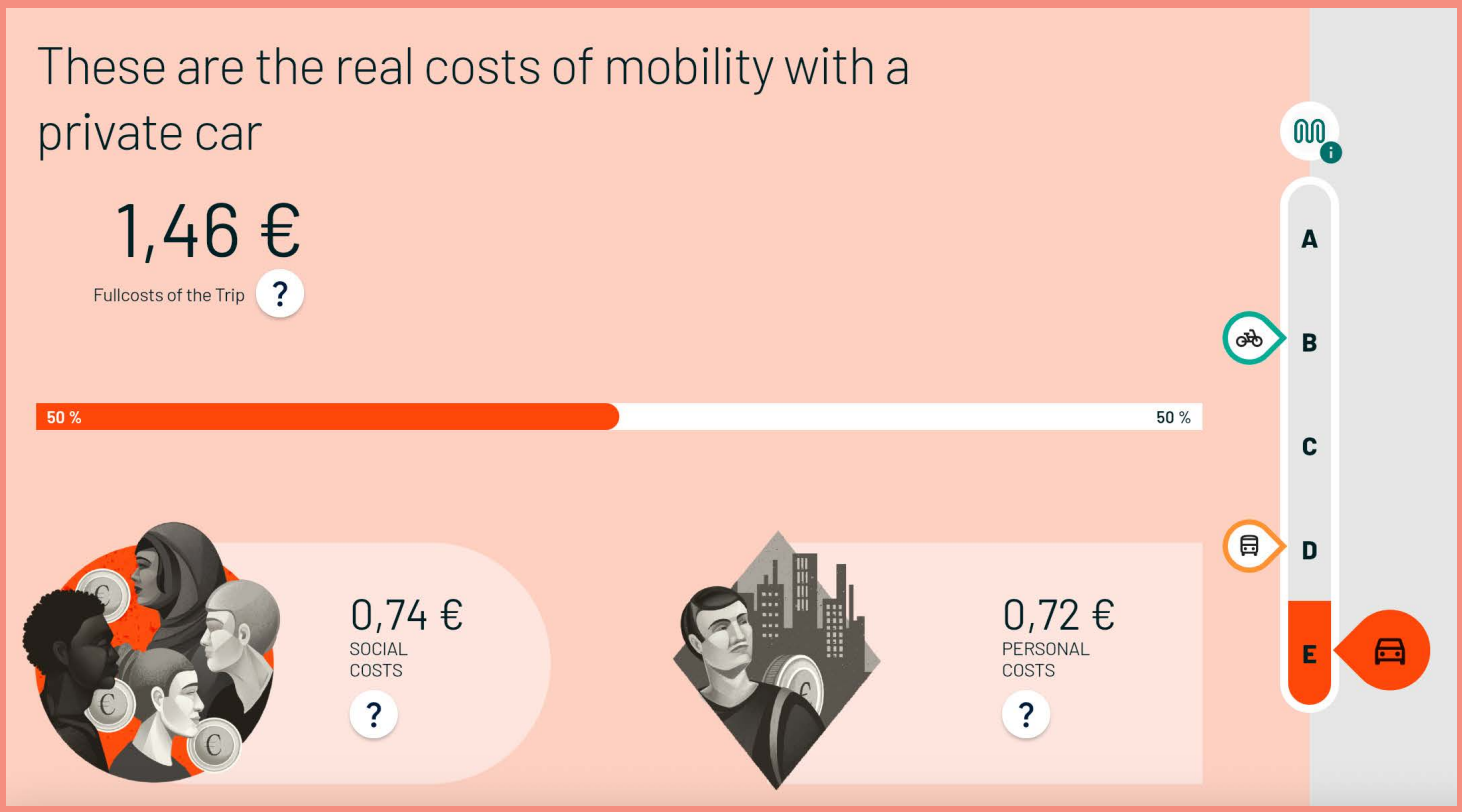
1. Making hidden mobility costs transparent for citizens

Currently, most people are unaware of how their mobility choices impact the environment and society.

To foster awareness for hidden transportation costs, citizens need a transparent and easily understandable source of information.

A mobility label is the most suitable tool, summarizing key information at a glance and building on citizens' familiarity with labels. Municipalities can use mobility labels to inform citizens, encourage behavioural changes, and advance local mobility goals.

For the Mobi-Score, our primary goal was to provide citizens with insights into their mobility behaviour. To this end, we developed a free **Online-Tool** that calculates and translates the hidden costs of any route for users. Users can enter their route and discover interactively the related costs. The tool displays costs for different modes of transport and calculates the corresponding Mobi-Score.



This is the results page of the online tool. For a journey by private car in Munich city centre, the true costs are around twice as high as the personal costs. The private car receives a Mobi-Score of E for this route.

We are planning to integrate the Mobi-Score into existing platforms of mobility providers or route planners. This would allow citizens to access information about the impact of their mobility choices directly where they already plan their journeys. Similar to the DB app currently displaying CO2 savings for train journeys compared to cars, mobility providers could use the Mobi-Score to provide a comprehensive assessment of chosen routes. This would be an important step to incentivize citizens to become more familiar with hidden transportation costs.

When querying public transportation connections via the timetable information system, routes can be assigned a Mobi-Score.
This makes the hidden costs of different public transport modes more transparent.
For instance, diesel-powered buses cause different emissions costs compared to an electrically powered subway or tram.
The use of the Mobi-Score and its associated online tool is already recommended on the website of the Munich Transport Association (MVV). However, integration into the timetable information system is not yet available.

The Mobi-Score is also suitable for shared mobility or Mobility-as-a-Service (MaaS) platforms. MaaS refers to the integration of public transport, shared mobility, and other mobility services into a single platform.
For example, the Mobi-Score could illustrate how bike-sharing, scooter-sharing, or car-sharing compares to a privately owned vehicle. The better environmental and cost performance of shared mobility options could motivate users to continue using these services or even use them more frequently.
Another potential application is the introduction of an intelligent pricing system that offers discounts for alternatives with a better Mobi-Score. This would make the Mobi-Score a foundation for sustainable mobility decisions – either through providing information or targeted price incentives.

The Mobi-Score can be used independently of mobility providers by integrating it into route planners, such as Google Maps. In addition to the usual details like time and distance, routes could be assigned a Mobi-Score. This would give travellers the opportunity to base their decision not only on time savings but also on making a choice that benefits society, guided by the Mobi-Score.

2. Evaluating and comparing measures of mobility planning

Mobility labels can also be applied in transport planning to evaluate and compare different measures. Many municipalities develop sustainable mobility plans involving various measures, such as expanding bike lanes, introducing on-demand services, or calming traffic. Given that political decisions are needed for implementing measures – and decision-makers often do not have a mobility background – a clear basis for comparison is essential.

The Mobi-Score covers the categories Time, Health, and Environment. This aligns with many urban goals and helps to evaluate various measures in terms of their hidden costs.
A Mobi-Score „A“ indicates particularly high savings potential.

The Mobi-Score offers an intuitive foundation by comparing measures visually and highlighting those that save the most societal costs. This way, the Mobi Score could facilitate communication with decision-makers and support their decision-making.

A mobility label like the Mobi-Score can provide targeted support to cities, municipalities, and districts in mobility planning.

We are already collaborating with municipalities in the Munich region to identify savings potentials through mobility planning measures. Using a calculation tool, planners can estimate how much hidden costs can be saved through measures such as expanding bike lanes or implementing 30 km/h speed ones. The municipality compares the implementation costs with the savings from previously hidden costs. The Mobi-Score then categorizes the measures based on their impact on savings, making them easy to compare and visually clear.

3. Certifying residential and business locations with the Mobi-Score

Whether choosing a home or a workplace, many people value a location that is connected to different mobility options.

With its dimensions of time, health, and environment, the Mobi-Score would also be applicable for certifying residential and business locations. It could evaluate the hidden costs associated with commuting to a certain location.

The Mobi-Score assesses locations based on their accessibility via various modes of transportation and the related mobility costs: a poorly connected location receives a low score because it can only be reached with high hidden mobility costs. In contrast, well-connected locations result in lower hidden costs.

Locations with a high Mobi-Score are therefore more attractive to businesses, investors, and citizens.

Sustainability is becoming increasingly important for companies – both to attract employees and to win customers. EU-wide sustainability reporting obligations also encompass the mobility sector. The Mobi-Score can provide a comprehensive mobility assessment of all individuals traveling to a company location. A location with low hidden costs could receive a Mobi-Score of „A," which would contribute positively to the company's image.

A similar approach to companies can also be applied to houses or apartments for private use: if residents have many options to be mobile with low hidden costs, the house or apartment would receive a Mobi-Score „A."
The Mobi-Score can thus serve as a guide on real estate platforms: those who wish to travel sustainably can specifically search for properties with a good Mobi-Score.

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MCube - the Munich Cluster for the Future of Mobility in Metropolitan Regions - utilises the unique agglomeration of players in the field of mobility innovation to make Munich a pioneer for sustainable and transformative mobility innovations. The aim of the cluster is to test and research leap innovations in the mobility sector and to develop scalable solutions with a model character for Germany and worldwide.