



MCube
Munich Cluster for the Future of
Mobility in Metropolitan Regions

MCube Innovation Recommendation 01

A Mobility (In)Justice Atlas: Visualising where transport disadvantages meet social disadvantages in Munich

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.

Background

How accessible are everyday facilities? When we talk about mobility justice, we focus on how well people can access their basic needs without barriers. When people's everyday lives are restricted because their job, school, supermarket, or doctors are inaccessible, we call this mobility injustice. Access to such facilities is closely linked to social inclusion, mental health, quality of life, and general well-being. People who are denied access to everyday facilities risk falling into a 'poverty trap' as jobs, education and social activities are no longer available.

The first step in the fight against the mobility injustice is to identify and visualise affected areas.

To aid decision-makers in prioritizing interventions for disadvantaged groups and mitigating social exclusion, the 'Mobility Justice in Metropolitan Regions' (MGeM) project developed a Mobility Injustice Atlas for Munich. The Mobility (In)Justice Atlas has been designed as a sensibility tool which creates awareness for the relationship between socioeconomic disadvantages and a variety of mobility disadvantages in specific neighbourhoods of the city.

The atlas is a tool that helps to identify critical neighbourhoods, in which socio-economically disadvantaged groups are particularly affected by mobility injustice.

Maps play an important role in politics and decision making, as they present transparent indicators, visualize disparities and show complex spatial connections. The findings for the city of Munich that are presented here show the current tremendous potential of the Mobility (In)Justice Atlas.

We encourage policymakers in Munich to use the tool and learn about social and mobility injustice in their neighbourhoods. We hope that the (In)Justice Atlas inspires policy makers from other cities and will bring attention to the relevance of mobility injustice.

About the Mobility (In)Justice Atlas

This atlas was created in collaboration with stakeholders from academia, civil society, business, and the City of Munich. The study analyses two different types of transport disadvantages. The first type, distributive justice, looks at citizens' access to basic services like food, health & education, and the availability of different mobility resources, such as cycle paths, public transport stops, and car sharing. The availability of resources is often not enough to ensure that mobility options are used by the public. Therefore, mobility behaviour was also included to measure how often different modes of transport are used. The second type, environmental justice, refers to mobility burdens resulting from the impact of transport. It measures the extent to which residents are exposed to external risks such as traffic accidents, noise, and air pollution.

Mobility Injustice in Munich

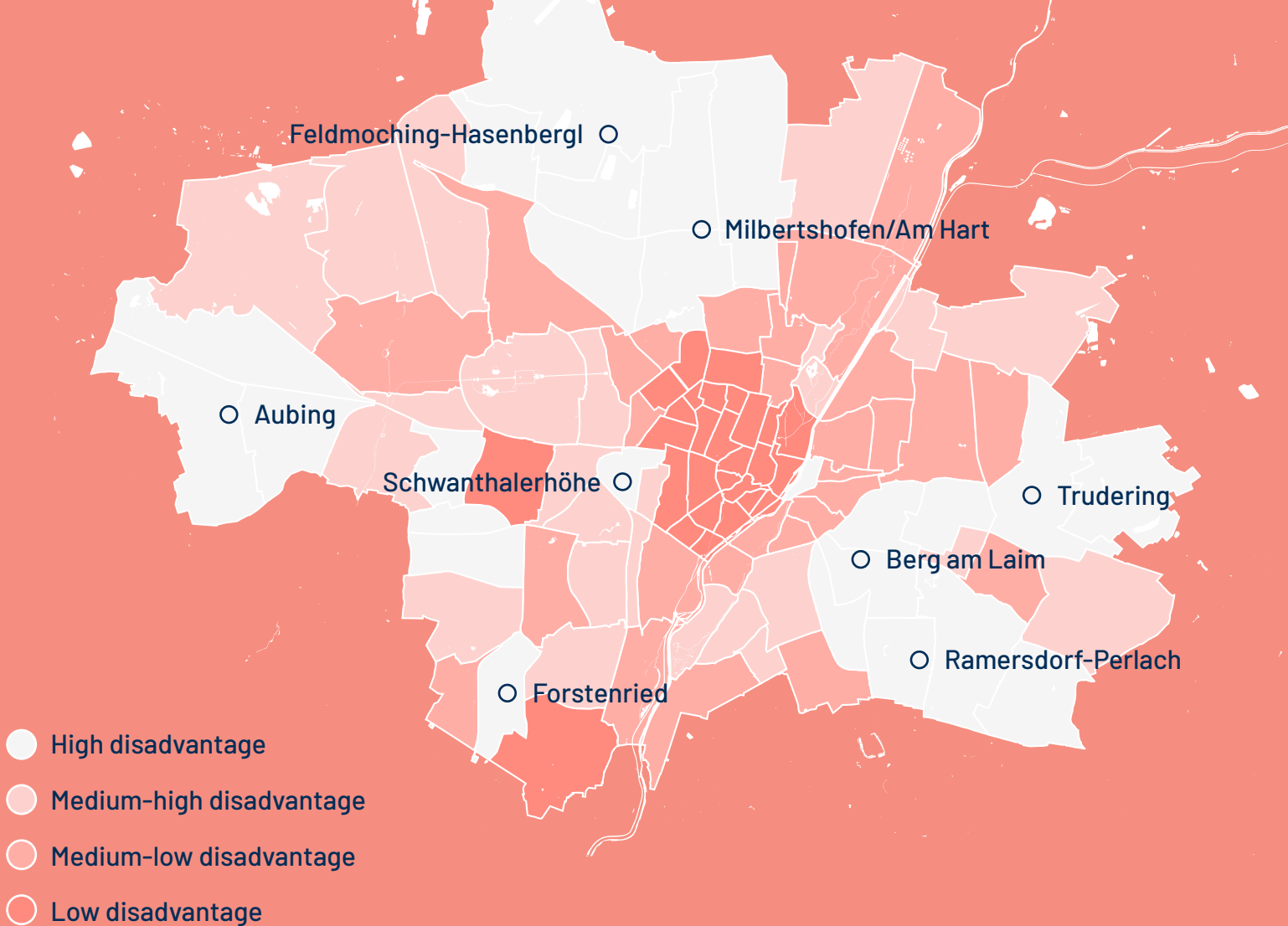
Where do socio-economically disadvantaged people live?

Six different socio-economic groups are analysed in the study. These are young people (under 18), older people (over 65), residents without German citizenship, low-income households, unemployed citizens, and single parents. The following figure shows that socio-economically disadvantaged groups live primarily on the outskirts of the city in the north, west, and east of Munich. This map serves as a starting point for understanding the other results presented here.

Naturally, the needs and requirements for transport and public services differ between the various socio-economic groups. The Mobility (In)Justice Atlas therefore provides a detailed analysis that makes it possible to look at the results for each of the six socio-economically disadvantaged groups.

Disadvantaged population per neighbourhood

Disadvantage score by neighborhood



Considering older population, people under 18 years old, non-german population, unemployment, low percapita income and single parent homes.

How accessible are everyday facilities?

Most important services are concentrated in the city centre and are only available to a lesser extent in the districts on the outskirts of the city. There is a clear link between the share of socio-economically disadvantaged groups in a neighbourhood and poorer accessibility to everyday facilities.

Critical areas where everyday facilities are difficult to reach are located on the northern, western, and south-eastern outskirts of Munich.

It is worth noting that older people have particularly poor access to supermarkets and community centres, while residents without German citizenship and young people lack access to sports centres. In general, poor access to health services is particularly prevalent. This affects Munich residents without German citizenship, young people, unemployed citizens, and low-income households.

What mobility resources are available and how are they used?

The availability of different mobility resources in Munich's neighbourhoods is the focus of the availability analysis. The analysis takes into account five resources: car sharing membership, (e-)bike sharing services, pedestrian friendliness, availability of cycle paths, and proximity to public transport. The results show:

Findings show that residents of central neighbourhoods benefit from better access to public transport, higher availability of car and (e-)bike sharing services, and a denser network of cycle lanes.

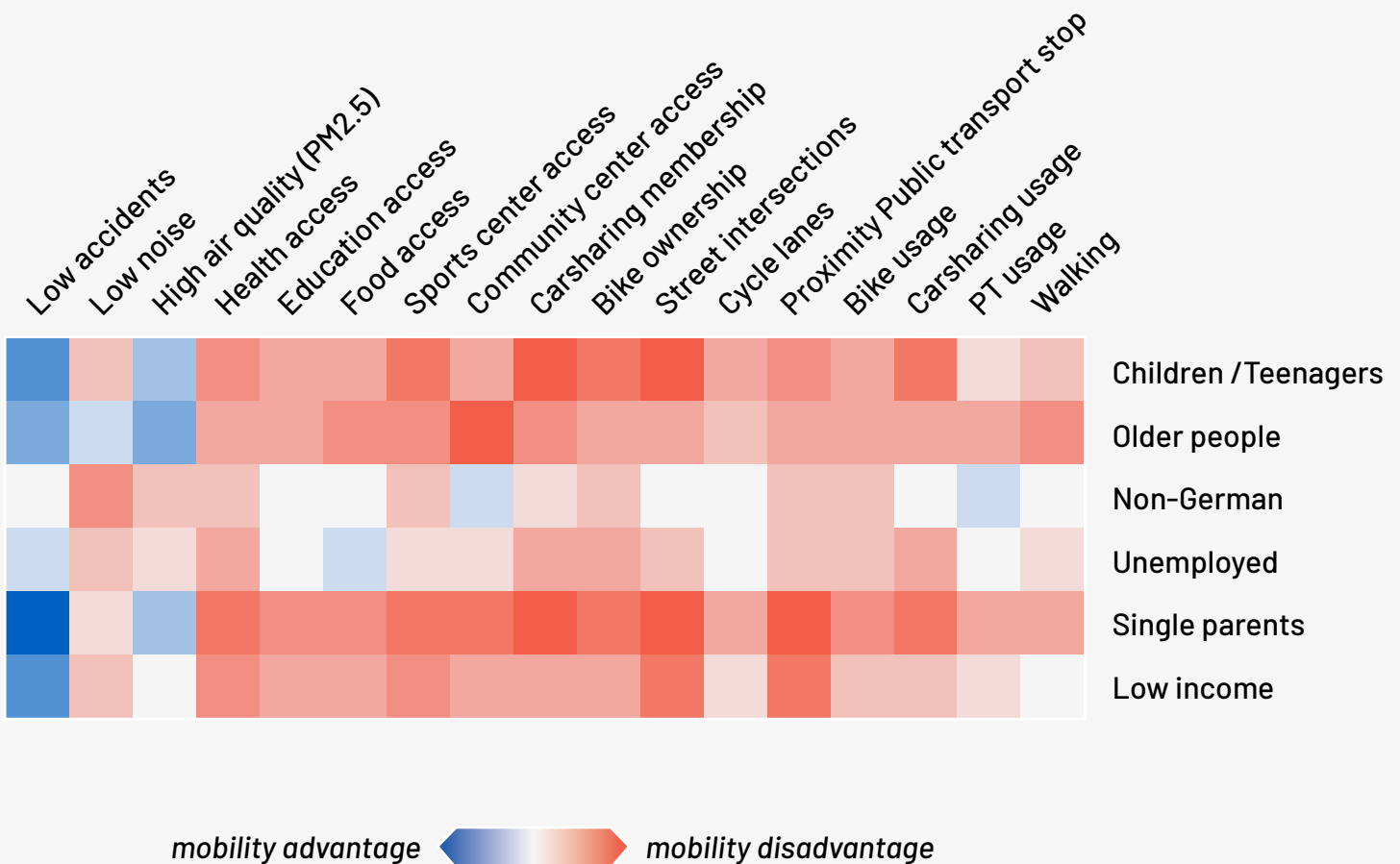
Poor accessibility to public transport stops primarily affects neighbourhoods with a higher proportion of residents without German citizenship and single parents. The lack of mobility options in peripheral neighbourhoods has an impact on the mobility behaviour of citizens. For car-sharing and walkability in particular, the analysis has shown that a lack of available services leads to lower usage. Overall, both older citizens over 65 and young people under 18 tend to live in neighbourhoods with fewer sustainable transport options. Low-income households and young people are particularly affected by low walkability in their neighbourhoods. Residents without German citizenship often live in neighbourhoods with low bicycle use.

Where are Munich residents most exposed to the negative effects of traffic?

To analyse the extent to which socio-economically disadvantaged groups are exposed to traffic-related environmental risks, we consider noise, air pollution and traffic accidents as possible risk factors. Noise caused by road traffic is associated with mental and physical health symptoms such as stress, lack of sleep, cognitive problems and learning delays in children. In Munich, the neighbourhoods near the motorways are most affected by traffic noise. Noise pollution from rail traffic mainly affects neighbourhoods closer to the city centre. The analysis shows that Munich residents without German citizenship are more affected by noise pollution. Air pollution can contribute to the development of asthma and increase susceptibility to cardiovascular and respiratory diseases such as pneumonia, strokes, and lung cancer. The analysis of exposure to air pollution shows an increased risk for neighbourhoods near the city centre and along the Isar river. Socio-economically disadvantaged groups were not significantly affected by traffic accidents.

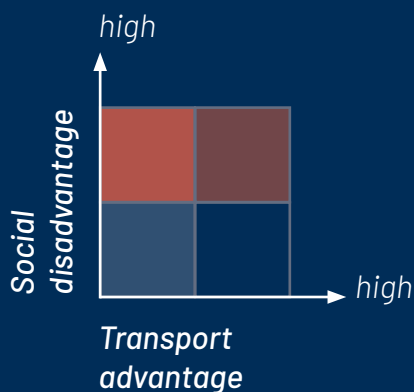
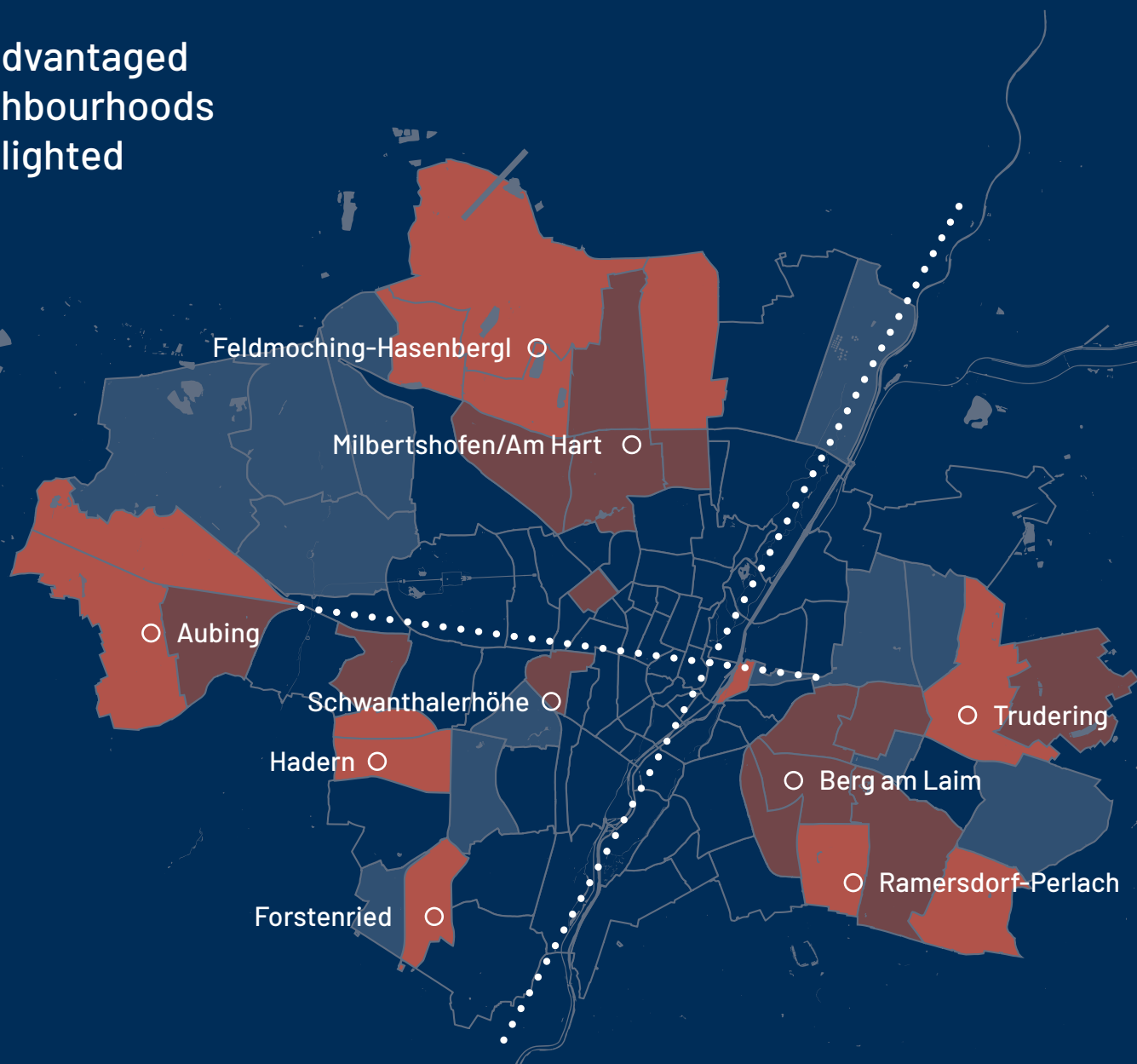
Summary

The results for Munich indicate that residents without German citizenship often live in areas that are more affected by mobility-related problems such as noise and pollution, while older people, children, and young people tend to live in areas with poorer access to public transport, sharing services, and essential services.



Transport disadvantages and privileges in Munich

Disadvantaged neighbourhoods highlighted



We identified two main “axes with mobility privileges” in Munich where citizens are least affected by mobility injustice. The first axis follows the course of the Isar river, and the second axis follows the main public transportation route (“Stammstrecke”).

In general, socio-economically disadvantaged groups have less access to critical services, have fewer means of transport available and therefore use less sustainable means of transport than the average.

The results of the Atlas of Mobility (In)Justice for Munich show that socio-economically disadvantaged groups are more affected by mobility injustice than the average. With this tool, we hope to raise awareness of this critical correlation and improve the consideration of disadvantaged groups in future urban transport planning. Political decision-makers in Munich and other cities are encouraged to use the Mobility (In)Justice Atlas to learn more about social and mobility injustice.



*The Mobility (In)Justice Atlas for Munich is available as an interactive **tool** and as a **publikation**. All the results can be found there in detail. The tool is an online version of the atlas that allows users to conduct an interactive search according to their own interests. The tool is freely accessible and can be freely expanded and modified with the help of these **instruction**.*



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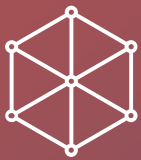
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The results and recommendations for action presented here are taken from the Mobility (In)Justice Atlas developed by the MCube innovation project „Mobility Justice in Metropolitan Regions (MGeM)“. These results are published for a wide audience in collaboration with the MCube integration project „Responsible Mobility Innovation & Governance (ReMGo)“.

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.