

Impact of the Built Environment on Active Mobility and Physical Activity

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INTRODUCTION

Aim of this Study

Literature shows, that the form of the built environment (“5 Ds”: Density, Destination Accessibility, Design, Diversity, Distance to Public transport) increases the odds of using non-motorised transport modes such as walking and cycling for different purposes (see e.g. Ewing and Cervero 2010, Parkin and Koorey 2012, Gerike and Parkin 2015).

This study aims to show the impact of the built environment on the duration of physical activity for transport and whether or not the WHO standards of minimum 150 minutes of physical activity per week are met by physical activity from transport only.

In 2017 an online survey on active mobility was conducted in twelve German cities with different size and topography. The questionnaire contained detailed information about the built environment (“5 Ds”), socio-demographics, socio-economics, socio-psychological variables and travel behaviour. In addition, the standardised Global Physical Activity Questionnaire (GPAQ) was included, in order to collect data on physical activity [minutes/week].

Characteristics of the Survey

- Online Survey
- Survey Period: September until December 2017
- Sample: Twelve German cities with different size (min. 100,000 residents) and topography
- Number of respondents: 4,637
- Time needed for completing the online questionnaire: 25 minutes (Median)



Abb. 1: Participant Cities
[© GeoBasis-DE/BKG 2018 (modified)]

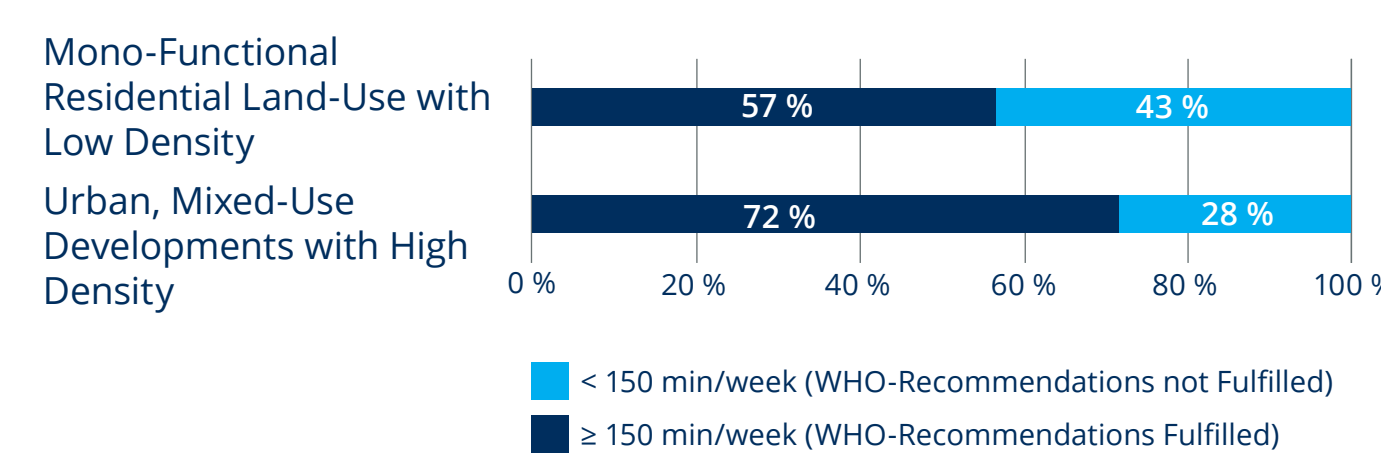
RESULTS

Density and Diversity

The results show a highly significant impact ($p \leq 0.05$) of the area type on the duration of walking and cycling per week.

Three out of four persons living in an urban area with mixed land-use and high density fulfill the recommendations of the WHO by physical activity from transport only.

Abb. 2: Area Type (Density and Diversity)

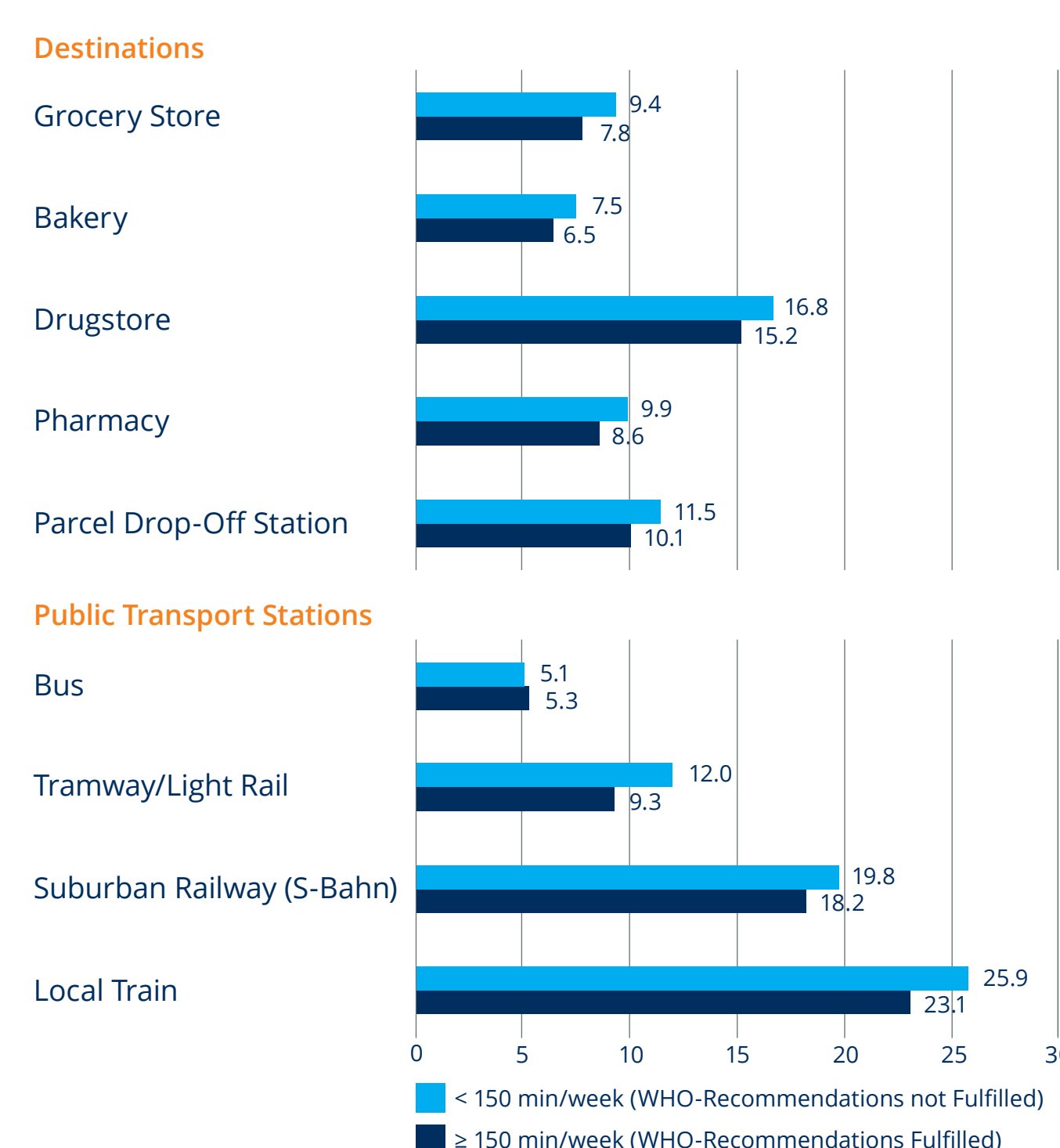


Destination Accessibility and Distance to Public Transport

The respondents gave information about their perceived walking time from their home location to various facilities as well as to the nearest public transport stations.

Persons with better accessibility to relevant destinations consistently show higher durations of walking and cycling per week.

Abb. 3: Walking Time [min] to Destinations and Public Transport



Design of the Streets in the Respondents' Neighbourhoods

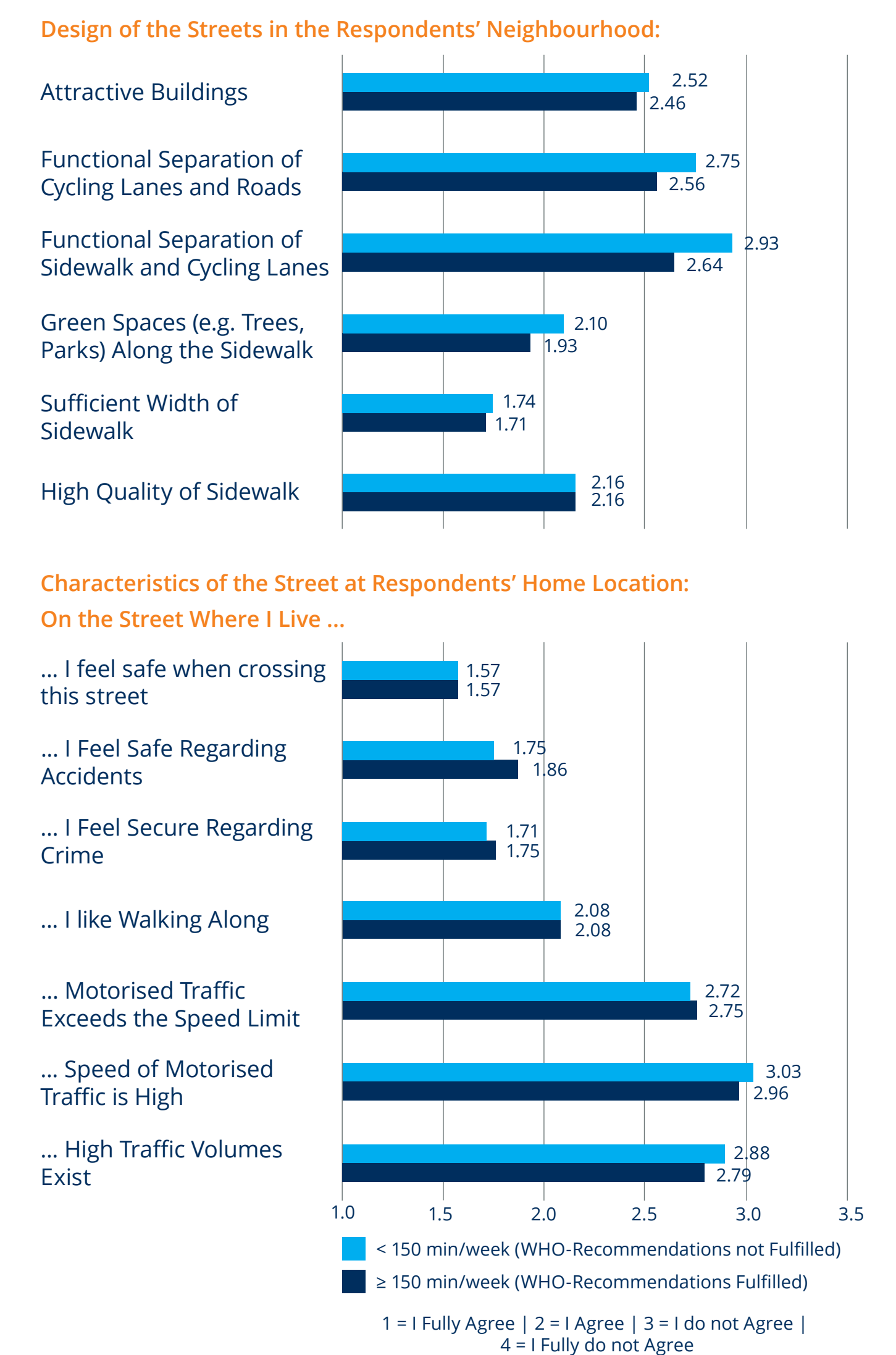
In particular the following design criteria are identified as motivating factors for walking and cycling:

- attractive buildings,
- green spaces (e.g. trees, parks) along the sidewalk,
- functional separation of cycling lanes and roads, and
- functional separation of sidewalks and cycling lanes

The width and the quality of sidewalks show high levels of agreement from both groups. These factors have neither a motivating nor a hindering character on active mobility in this study.

Persons with less physical activity for transport describe the character of the street at their home location with high traffic volumes, high speed of motorised transport, and a lack of safety regarding traffic accidents. Perceived safety is a necessary prerequisite for fostering active mobility, especially in a sensitive environment such as the residential streets directly at the home location.

Abb. 4: Design and Characteristics of the Streets



CONCLUSIONS

The results of this study confirm the significant impact of the built environment (“5 Ds”) on the duration of physical activity for transport in German cities. Dense spatial structures with mixed land-use provide multiple facilities and good access to public transport. These are core determinants of active mobility in general and of walking in particular.

This study also adds new insights on the relevance of street design. Perceived safety and attractive spaces and buildings support the subjective comfort and enhance walking and cycling.

Other determinants such as socio-economics and socio-demographics as well as attitudes towards walking and cycling should also be considered to identify motivating factors of active mobility. These factors are analysed in other parts of the project “Active Travel: Increased Quality of Life in Urban Agglomerations”.

References:
Ewing R., Cervero R. (2010). *Travel and the Built Environment. A Meta-Analysis. Journal of the American Planning Association*, pp. 265–294.
Parkin J., Koorey G. (2012). *Network planning and infrastructure design. Cycling and Sustainability*, pp. 131–160.
Gerike R., Parkin J. (2015). *Cycling futures. From research into practice. Ashgate*.