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INTRODUCTION

Special issue on walking

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Walking is the most ancient mode of transportation. It is also the most common and cheapest physical activity. Indeed, the medical and public health literatures have long established the importance of walking and physical activity as determinants of good health. But walking is not only beneficial for an individual’s health, but also for the health of the environment. Unlike vehicular trips, walking trips do not produce greenhouse gas emissions, thus contributing to cleaner and greener environments. Despite these positive effects of walking, however, many cities of the Global North and the Global South have witnessed drastic reductions in walking as a transportation mode over the last decades. For example, the market share of commuters walking to work has dropped significantly in the United States, where in 2018 only an estimated 2.6% of commuters walked to work, compared to 9.9% of commuters who did so in 1960 (U.S. Census 2018). Walking trips to school have also decreased dramatically in this country (Transportation Research Board 2002). However, walking is still the most prevalent mode of transportation in some cities, as the article by Herman et al. in this issue demonstrates for Santiago, Chile.

Reductions in walking trips have coincided with unprecedented levels of car ownership and increased automobility during the same period. But while access to a private car has arguably a deleterious effect on walking for transportation, there are a number of other variables that also affect an individual’s propensity to walk. In general, we can say that three types of factors influence such propensity: individual characteristics, socio-cultural norms and attitudes towards walking, and built environment characteristics.

The combined or independent effect of an individual’s sociodemographic characteristics can influence the choice for walking more than the choice of using other travel modes. For example, a person’s age and health may affect her stamina and ability to undertake a walking trip. Income may affect the availability of alternative transportation options, while gender can also influence positively or negatively the propensity to walk, in ways that may vary by context. At the same time, studies have found that cultural characteristics, values, and norms may be more or less supportive of walking (Conn et al. 2014), and these differences can be demonstrated in the differential levels of walking observed between social groups within the same city, as well as differences in the walking patterns of populations in different cities and countries.

Walking exposes individuals to the public environment of cities in a higher degree than other transportation modes. For this reason, the urban form characteristics that relate to safety, comfort, convenience, and even to the pleasure of walking (such as the aesthetics
of the route) may be quite pertinent to an individual’s choice to undertake a walking trip (Craig et al. 2002). Safety is influenced by neighbourhood crime rates, traffic characteristics, as well as the condition of the sidewalk infrastructure. On the other hand, comfort and convenience may relate to the connectivity of the pedestrian network and its easy access on foot to various destinations, as well as the availability of crosswalks, urban furniture, and shade. Lastly, a pleasurable walking trip may depend on the aesthetics of the streetscape and its architecture, its environmental upkeep, as well as the presence of an urban forest with trees and tree canopies framing the street.

To complicate matters more, the significance of different factors affecting walking may vary for different types of walking, such as walking during the commute to work or school, utilitarian walking to run different errands, or recreational walking. The fact that built environment characteristics affect walking means that walking-affecting factors may play out differently in urban, suburban, exurban, or rural environments. At the same time, when walking is part of a larger trip that involves other transportation modes, the type of interface of these different modes may also be critical as demonstrated in the article by Van Soest et al. in this issue.

From the three aforementioned types of factors affecting walking, spatial planners and urban designers seeking to enhance walking can only manipulate certain characteristics of the built environment. Indeed, in the last decades, the desire to encourage more walking and more active and greener transportation modes has motivated municipal planners to employ different design interventions for the creation of pedestrian-friendly environments. Such efforts have ranged from complete pedestrianisation and closure of streets to traffic permanently or temporarily (such as ciclovias), to taming vehicular traffic through traffic calming, to encouraging a symbiotic relationship of multiple transportation modes through the creation of “complete streets”. Transportation planners have also created a number of indices and metrics to assess the walkability levels of various urban and suburban environments, as well as the pedestrian levels of service (PLOS) of specific street segments. Walkability denotes the extent to which a particular built environment is friendly to pedestrian activity, while PLOS is a measure used to categorize different intersections or sidewalk segments based on how they perform in accommodating pedestrians and enhancing their comfort and safety. In this special issue, the article by Arellana et al. critically examines the literature on walkability indices and suggests improvements, while the article by Nag et al. surveys and updates the literature on PLOS.

In the past walkability has not been given a major role in transportation research, and walking has often been included as part of a journey that involves several different forms of travel. Thus, walking has in the past been overlooked in many studies, and its importance has been underestimated. The purpose of the four papers is to redress that imbalance and to critically review the literature on different aspects of walking and walkability. The papers also generate new knowledge and help fill some of the many gaps in the literature on walking and walkability.

Herman and her coauthors focus on Santiago, Chile, a city located in a region that is quite underrepresented in the literature on walking. As the authors observe, Santiago and other Chilean cities have not experienced the dramatic decreases in walking that many cities around the world have experienced with the proliferation of automobility. The authors inform us that walking trips represent 34.5% of all trips in Santiago, while walking and cycling trips together represent 64% of all trips undertaken by city residents.
They discuss how cultural, environmental, economic, and built environment factors in Santiago contribute to this “persistence” of walking, despite federal policies and investments that have favoured the automobile. They find that a combination of factors – cultural norms that favour an active street life, street markets, and street fairs; the prevalence of low-income households in the city who lack automobiles; built environment characteristics such as short blocks, mixed uses, and high densities that result in accessible and connected pedestrian networks; and a series of pedestrian initiatives promoted by local municipalities – have all contributed to the prevalence of walking in the city. While the authors note that Santiago can present some lessons to other cities who also wish to promote walking, they caution that the challenge for Santiago is “not only to preserve or increase walking shares but to do so in a way that further dignifies and prioritises walking as a key mobility mode and urban activity”. This would include making walking safer for women, as well as directing investments for pedestrian improvements and walking infrastructure in some of the city’s most underprivileged neighbourhoods.

Van Soest and his coauthors focus on the interrelationship between using public transit and walking. Almost all transit trips involve a pedestrian component – what transportation planners have coined the first and last mile – that brings the transit rider from her point of origin to the transit stop and from the transit stop to her final destination. The authors review the literature to learn how people walk to the transit stop, and what factors influence their walk. They find that the literature describes four types of factors that influence walking related to a public transit trip: personal, public transit service-related, environmental, and journey-related (such as trip purpose, time of the day, trip length, etc.). The authors also find a large variation in walking distances and in the duration of walking trips among the reviewed studies. This may be because walking related to a transit trip is highly context-specific, but it also may relate to some inaccurate assessments of walking. The authors propose an analytical framework that distinguishes between supply-related and demand-related influences on walking to reach public transit, as well as modifiable and non-modifiable factors. They also recommend for more accurate measurements of walking that take advantage of new GPS technologies.

Arellana and his co-authors review the literature of the last decade (2009–2018) on walkability indices. They find a geographic imbalance, with 45% of the studies coming from North American cities, 22.5% from European cities, and 15% from Asian cities. Latin American cities are largely underrepresented in this literature, which also seems to favour the measurement of walkability in large cities over smaller cities. The authors observe that the majority of walkability indices employ objective meso-scale factors, and only a few studies also utilise subjective micro-scale factors (such as for example pedestrians’ perceptions of security or traffic safety), even though such factors are very important for walkability. Further, while some studies weigh all factors equally in the index, some other studies introduce differential weighting to better capture the differential contributions to walkability of different variables. But very few studies use discrete choice models to develop weighted indexes. To respond to these gaps in the literature, the authors develop a walkability index that utilises both meso-scale variables that use objective factors and micro-scale variables that are drawn from user perceptions. Their index is composed of attributes that describe four major components – sidewalk conditions; traffic safety and security from crime; comfort, and attractiveness – and they use a discrete choice model to obtain different weights for each component, based on a rank perception
survey with 340 residents from Barranquilla, Colombia. They find security and traffic safety to be the most important factors affecting walkability in this medium-size Latin American city, in contrast to many studies from cities in the Global North, which find sidewalk conditions and attractiveness to be the most important influencing factors.

As mentioned earlier, pedestrian level of service (PLOS) measures, while also evaluating the walking environment, are somewhat narrower than walkability indices that typically measure more aspects of the walking environment. The fourth and last article in the special issue, by Nag and his co-authors, reviews the literature on PLOS, since 1971, when the concept was first developed by John Fruin. The authors observe that these studies typically utilise one or more out of three classes of attributes to develop a PLOS: pedestrian flow characteristics, built environment characteristics, and user perceptions. But as the authors observe, none of the reviewed studies uses all three constructs in a combined fashion. They also note the absence of a common methodology used by researchers in selecting the attributes of a PLOS. Researchers tend to select attributes drawing from the literature, rather than employing first-hand information from users and experts. The authors argue that a more effective development of a PLOS classification would use all three aforementioned constructs simultaneously, utilise user and expert input, and would also include network connectivity measures, which are currently largely absent. It would also employ innovative modelling techniques that may involve machine learning models.

This set of papers has provided comprehensive reviews and original research on some of the key issues relating to walking and walkability. They have provided a platform on which further research and articles can be generated, as there are many important and interesting research questions that need further investigation. As noted at the beginning of this introduction, walking is the oldest form of travel and it forms an essential part of all trips, yet the attention given to it has not been commensurate with its importance. These papers make a start in redressing this imbalance.

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