Findings

Leadbetter, Isla, Angel Emmanuel Hernandez Cruz, Léa Ravensbergen, and Anastasia Soukhov. 2024. "The Negative Impact of Parking Lots on Walkability." *Findings*, December. https://doi.org/10.32866/001c.127106.

TRANSPORT FINDINGS

The Negative Impact of Parking Lots on Walkability

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Keywords: Parking Lots, Walkability, Built Environment, Audit, Mobility of Care

https://doi.org/10.32866/001c.127106

Findings

Parking lots are surprisingly understudied in walkability research. Using an audit, this article examines how parking lots impact walkability at care destinations in Hamilton, Ontario. Parking lots are found to negatively - and substantially - impact walkability; their objective walkability score is half that of other road segments and 3.5 times lower than pedestrian and bicycle streets. Correlation analysis suggests low scores are related to parking lot's frequent absence of walkable features, such as pedestrian facilities and traffic control elements. Removing parking lots would increase urban walkability. When this is not feasible, incorporating design elements can improve parking lot walkability.

1. QUESTIONS

Within the vast literature on walkability, work that emphasises the population-level impacts of built and social environments on walking, parking lots have received little attention. This is surprising since parking lots represent 5-7% of the urban land use in North America (Davis, Pijanowski, Robinson, and Kidwell 2010; Davis, Pijanowski, Robinson, and Engel 2010). Some of the most highly cited walkability papers do not mention parking (e.g., Ewing and Handy 2009; Ewing et al. 2006). Literature reviews focused on walkability reference parking lots as an indicator in walkability studies, but do not highlight parking as a major influence (Shields et al. 2023; Maghelal and Capp 2011). Other studies note that parking lots can negatively impact walkability, for instance by creating barriers for pedestrians walking through them, or through a lack of safety due to traffic, but do not focus on parking lots directly (Herrmann et al. 2017; Alhajaj 2023; Rodrigue et al. 2022; Golan et al. 2019; Knapskog et al. 2019; Alhajaj and Daghistani 2021). In one of the few studies that considers the impact of parking on walkability directly, Herrmann et al. (2017) argue that walkability scores and walking behaviour are not always correlated, and find that when this is the case, it is due to parking lots, setbacks, and tree canopy. Other work identifies ways to improve parking lot walkability, including proper access to paths, having designated crossing areas, and implementing traffic calming strategies (Alhajaj 2023).

While conducting a built environment audit measuring walkability (Hernandez et al., under review), the great extent to which parking lots negatively impact walkability emerged. Given how little the academic literature focuses on their impact, this short article focuses directly on the potentially underestimated role of parking lots on urban walkability.

2. METHODS

This article is part of a larger study (Hernandez et al., under review) that measured walkability surrounding mobility of care destinations in Hamilton, Ontario (Hernandez et al., under review). Mobility of care refers to all travel associated with unpaid care work, such as to grocery stores or daycares (Sánchez de Madariaga 2013). Mobility of care is an important aspect of daily mobility, for instance comprising 29% of 30-45-year-olds' daily trips in Madrid, Spain (Sanchez de Madariaga and Zucchini 2019). Past work has found that few people use transit to access care destinations (Ravensbergen, Fournier, and El-Geneidy 2022). Given that transit trips involve walking (e.g., to/from the bus stop), the larger study explored whether poor walkability at care destinations contributes to low transit use for mobility of care trips. All care destinations in Hamilton (including grocery-, dependent-, health-, and errand-centric locations) identified using a range of secondary data sources (Soukhov, Ravensbergen, and Mooney 2025) were initially considered. Connecting this work to walkability and transit use, all care destinations in four representative areas of the city were assessed: 31 destinations in areas with *high transit access* and 23 in areas with *low transit access*.

The walkability of the built and social environment surrounding the 54 identified care destinations was measured using an audit containing 39 objective and 4 subjective questions by a team of two researchers between June 26 and July 09, 2024. At each destination, each street segment (i.e., street section between two intersections, a parking lot is considered a street segment) was scored between 0 to 1 for objective questions (i.e., built environment, presence of pedestrian facilities, type of road attributes, aspects of walking/cycling environment) and 0 to 5 for subjective questions reflecting attractiveness and safety for walking/cycling. For all questions, higher scores indicate higher walkability. Questions were adapted from the Pedestrian Environment Data Scan (PEDS) (Clifton, Smith, and Rodriguez 2007) with a scoring system from Rigolon, Toker and Gasparian (2018). For detail on the methodology of the larger study, please see Hernandez et al. (under review). This paper's primary focus is on the parking lot segments, representing 23% of all segments audited.

3. FINDINGS

Both objective and subjective walkability scores were much lower for parking lot segments. Figure 1 shows that parking lot segments' objective score was 23% on average. This is approximately half the average score for low-volume (49%) and high-volume (51%) road segments, and 3.5 times lower than pedestrian/bike path segments' average score of 81%. Subjective assessments present a similar pattern (Figure 1), where parking lots are the least attractive and feel the least safe for walking by a considerable percentage. These results suggest that parking lots strongly reduce walkability around care destinations in Hamilton.

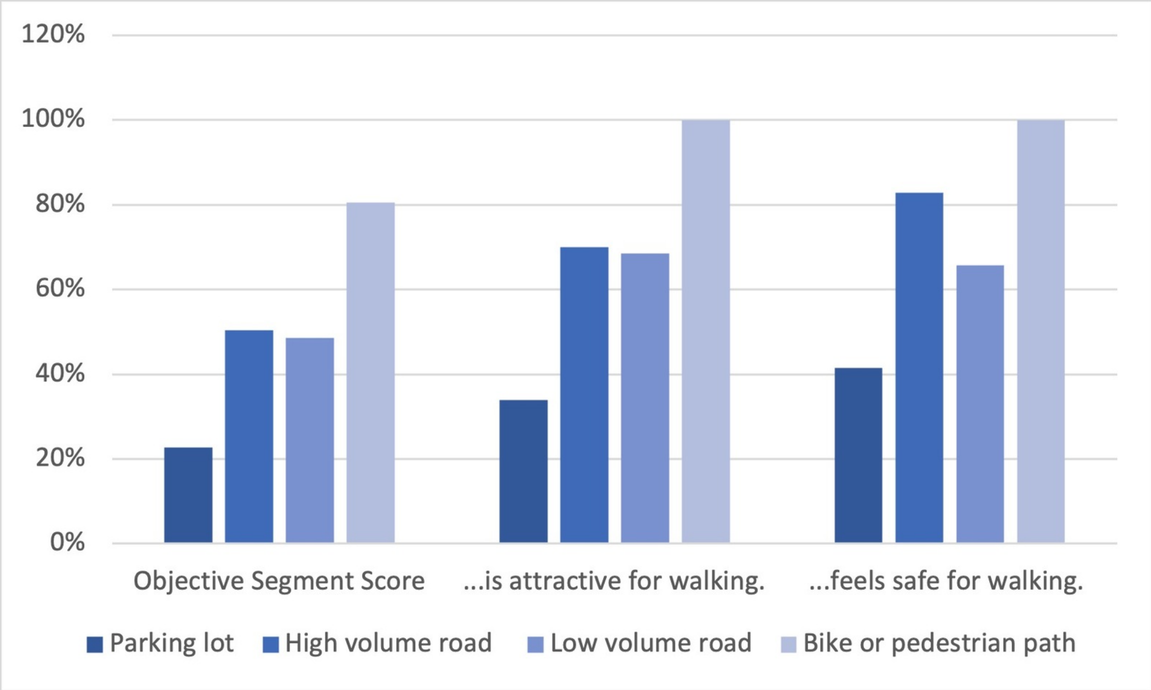

Figure 1. Objective and Subjective Walkability Scores Across Segment Types

Figure 2 shows a moderate negative correlation between answering 'Yes' to the question 'Must you walk through a parking lot to get to most buildings?' and several walkability variables. This suggests that having to walk through a parking lot most negatively impacts sidewalk completeness/continuity and degree of enclosure (negative correlation coefficients of -0.69). The case is similar regarding sidewalk connectivity to other sidewalks, path material, type of pedestrian facility, and crosswalks. Somewhat weaker but moderate negative correlations are shown between traffic control devices, tree cover, and crossing aids (e.g., zebra cross walks). Overall, these results suggest that parking lot presence often corresponds to the absence of walkable features. They also emphasise Alhajaj (2023)'s findings that parking lot walkability is influenced by factors such as pedestrian facilities and traffic control, and that tree cover and enclosure can impact parking lot walkability, as expressed by Herrmann et al. (2017).

While parking lots were found to reduce walkability, Figure 3 shows that some (left image) are more walkable than others (right image). Both parking lots have features missing that would improve walkability, including enclosure, tree cover, and traffic control devices. Nonetheless, the left image appears much more walkable due to sidewalk connectivity across the parking lot directly to the entrance of the building and around the building, making it walkable in multiple directions. In contrast, the parking lot in the right image has no pedestrian facilities, making it much less walkable. This comparison shows how a simple addition, such as a pathway, can make parking lots much

Figure 2. Correlation Between Walkability Variables and Needing to Walk Through a Parking Lot to Get to Care Destination

Figure 3. Example images of a more walkable (left) and less walkable (right) parking lot

more walkable, facilitating care trips by foot. Furthermore, missing elements in both images identify areas to improve walkability in parking lots more generally.

Taken together, parking lots have substantial negative impacts on walkability scores in the built urban environments around care destinations in Hamilton. These impacts may be under-considered in walkability research and practice, we therefore urge walkability researchers to directly consider parking lots. Further, we identify aspects of the built environment that influence parking lots' low walkability scores. Given the population-level health benefits of walkability, this analysis highlights that removing parking lots may be an urban public health strategy. When this is not feasible, we demonstrate existing examples of design elements that can make parking lots more walkable.

ACKNOWLEDGMENTS

Funding to support researchers was acquired through the Mitacs Globalink Research Internship (GRI).

Submitted: October 22, 2024 AEDT, Accepted: December 07, 2024 AEDT

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