To:	Transport Planning
From:	Adrian Davis
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Subject:	Essential Evidence on a page: No 178 Suburban rail stations, walking distance and other key determinants

Top line: Safety and security are the most influential factors regarding pedestrian access to suburban rail stations.

Making environments within walking distance of suburban rail stations walkable has been a particular concern in terms of increasing sustainable transport mode share. With the goal of making more walkable urban environments, studies on pedestrian behaviour heavily rely on surveys or are increasingly using global positioning system tracking as the main way of collecting data. Alternatively, one study adopted the procedure of following pedestrians, a direct observation method, to examine pedestrians' walking distance, route choice, and activities while walking from suburban rail stations.[1] Following 139 pedestrians from a surburban rail stations in the San Francisco Bay Area to their final destinations on weekday afternoons suggests that pedestrians walked 548m on average and up to 1100 m, exceeding ¼ mile (400 m), a rule-of-thumb distance frequently implemented in practice. This longer distance has been reported elsewhere e.g. in suburban Montreal it was 1,259 for home-based commuter rail trip.[2]

In this study which also included interviews with pedestrian suburban rail users, it was also found that the existence of mixed-use main streets that operate as the centre of neighbourhood is crucial in promoting walkability in cities. The vast majority of suburban rail users chose to walk along the main streets even though for some the actual walked distances were longer than the shorted possible routes. Buildings along main street that carry shops, cafes, restaurants, grocery stores, bookstores, banks etc attract pedestrians.

A recent study assessing the perceived walk accessibility of metro stations in India was found to be highly influenced by the safety and security construct.[3] This has been found in previous studies. It consisted of measured variables such as streetlights, police patrols, and traffic signs and signals, of which the availability of traffic signs and signals exhibited the highest factor loading, followed by the availability of streetlights. The researchers identified 3 other key constructs: Mobility and infrastructure influenced the perceived walk accessibility of stations. This construct consists of four observed variables: the width of the sidewalk, quality of sidewalk, raised sidewalks, and continuity of sidewalks. Of these variables, the continuity of sidewalks was dominant, followed by raised sidewalks, sidewalk quality, and width of the sidewalk. The presence of crossings had the highest influence on the comfort and convenience construct. This indicates that the availability of crossing facilities like zebra crossings, footbridges, and subways could improve pedestrian satisfaction with the comfort and convenience factor, which can consequently enhance the walk accessibility of the metro station. The presence of obstructions on sidewalks had a comparatively smaller effect regarding comfort and convenience compared to that of crossing facilities.

[1] Kim, H. 2015. Walking distance, route choice, and activities while walking: A record of following pedestrians from transit stations in the San Francisco Bay area, *Urban Design International*, 20(2): 144-157.
[2] El-Geneidy, A. et al, 2014. New evidence on walking distances to transit stops: identifying redundancies and gaps using variable service areas, *Transportation*, 41:193–210
[3] Bivina, G., Gupta, A., Parida, M., 2019 Influence of microscale environmental factors on perceived walk accessibility to metro stations, *Transportation Research Part D*, 67: pp.142-155.