



Modeling and Analysis of Walkability in Suburban Neighborhoods in Las Vegas



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Walking has sound health benefits and can be a pleasurable experience requiring neither fuel, fare, license, nor registration.

Society also benefits by the

associated reduction of motorized vehicle travel. The objective of this study was to quantify the walking environment by developing a comprehensive walkability index that (1) reflects resident perceptions of their neighborhoods' walking environment; (2) reflects the suitability and adequacy of the pedestrian facilities in the neighborhood infrastructure and built environment, and (3) incorporates a pedestrian crash index, which measures the pedestrian crash experience.

To improve neighborhood walkability – planners need to consider infrastructure, aesthetics and amenities, pedestrian safety and land use.

Study Methods

Eleven neighborhoods in the Las Vegas, NV, metropolitan area were selected as a case study for this research. The study methodology involved surveying a sample of neighborhood residents to document perceptions of their walking environment, conducting field audits of the neighborhood infrastructure and land use related to walking, and collection of pedestrian crash data to develop crash indices to be incorporated into the walkability index.

Using survey results, cross-classification tables were developed to identify infrastructure, land use and other neighborhood features that influence walking. Statistical models were also calibrated to determine relationships between residents' walking frequency and some key infrastructure and neighborhood features. Furthermore, the data was used to develop comprehensive walkability indices and identify features that may need improvement in order to encourage more walking.

Findings

Survey results revealed that:

1. The existence of large neighborhood parking lots discourages walking.
2. Neighborhood cul-de-sacs are negatively correlated with walking frequency. More specifically, cul-de-sacs are typically associated with gated enclosed communities which have limited access/egress points.
3. Attractive neighborhood landscaping and recreational facilities are positively associated with increased walking as a form of exercise.
4. Busy pedestrian corridors tend to attract more walkers.

Furthermore, three walkability indices were developed for each neighborhood, one based on resident perceptions of the walking environment, one based on audit parameters, and the third was an integrated index that combined resident perceptions and audit parameters. Overall, the resident perception walkability indices were found to be reasonably similar to audit-based indices, implying that either approach to evaluating walkability provided a reasonable measure of neighborhood walkability. However, it must be noted that, like other similar studies, the procedure of calculating the walkability indices was largely subjective, hence, the results can change widely depending on the various assumptions made during the calculation of the indices.



Policy Recommendations

Results indicated the need for a transactional evaluation approach, which recognizes that pedestrian behavior is influenced by many environmental features and by subjective perceptions of the walking environment. Thus, to improve neighborhood walkability – planners need to consider infrastructure, aesthetics and amenities, pedestrian safety and land uses that generate pedestrian traffic.

About the Authors

Dr. Mohamed Kaseko is an Associate Professor of Civil Engineering at the University of Nevada Las Vegas (UNLV) and Dr. Peris Nyagah is a recent PhD graduate in Civil Engineering at UNLV.

To Learn More

For more details about the study, download the full report at transweb.sjsu.edu/project/1249.html