

MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 24-563 (project 678) | September 2024

Pedestrian Infrastructure and ADA Compliance: Leveraging Advances in Spatial Technologies



the **ISSUE**

Despite the passage of the Americans with Disabilities Act (ADA) in 1990, non-compliant pedestrian infrastructure remains widespread, often because of a lack of comprehensive pedestrian infrastructure data. Traditional methods of measuring compliance are time consuming, prompting the need for more efficient approaches.

the **RESEARCH**

This research examines how mobile light detecting and ranging (LiDAR) technology, such as that in the iPhone Pro, can improve the efficiency and accuracy of assessing ADA compliance for sidewalks and curb ramps, address gaps in current methods, and help to make pedestrian infrastructure more accessible for individuals with disabilities. LiDAR is a remote sensing technology that uses pulsed laser light to measure distances and create 3-D maps.

Traditional methods of gathering pedestrian infrastructure data are often slow and inefficient. In the first part of the study, the iPhone's LiDAR performance was compared to a high-end Trimble TX8 LiDAR unit and field measurements. Results showed that while the iPhone's LiDAR is generally effective at detecting ADA compliance issues, there is some inconsistency in measuring curb ramp slopes.

In the second part of the study, the impact of obstructions, like vegetation and parked cars, on data quality was examined. These obstructions were tested to see how they might affect ADA compliance assessments when data are collected from the middle of the street rather than directly from the sidewalk.



A University Transportation Center sponsored by the U.S. Department of Transportation serving the Mountain-Plains Region. Consortium members:

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North Dakota State University
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Lead Investigator(s)

Wesley Marshall, PhD, PE
wesley.marshall@ucdenver.edu

Co-Investigator(s)

Bruce Janson, PhD
bruce.janson@ucdenver.edu

Research Assistant(s)

Christopher Cameron, GRA, MS
David Todorut, GRA, MENG

Project Title

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the FINDINGS

The research found that mobile LiDAR technology, like the iPhone 13 Pro's LiDAR, is generally effective in assessing ADA compliance for sidewalks and curb ramps. While it performs well at detecting small compliance issues, some variability was noted in measuring curb ramp slopes. However, when data were collected from the middle of the street, obstructions such as vegetation and parked cars caused significant data gaps. Despite these limitations, the study highlights that mobile LiDAR shows promise in improving ADA compliance assessments, especially in areas without obstructions, potentially making pedestrian infrastructure more accessible for individuals with disabilities.

the IMPACT

This research demonstrates that mobile LiDAR, such as that embedded within the iPhone 13 Pro and newer models, offers a cost-effective, efficient way to assess ADA compliance in pedestrian infrastructure. Its implementation can help municipalities streamline compliance checks, improving the accessibility of sidewalks and curb ramps for individuals with disabilities. By reducing the time and cost involved in data collection, cities can more rapidly address non-compliant infrastructure. Though obstructions can impact accuracy, using mobile LiDAR in unobstructed areas provides a practical solution, potentially leading to faster and more widespread improvements in accessibility for communities.

For more information on this project, download the Main report at <https://www.ugpti.org/resources/reports/details.php?id=1265>

For more information or additional copies, visit the Web site at www.mountain-plains.org, call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.



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