LOUISIANA TRANSPORTATION RESEARCH CENTER

Technical Summary

LTRC Report 730

SIO No. DOTLT1000463
LTRC Project No. 23-4SS

Statewide Non-Motorized Traffic Monitoring Study

Introduction

The growing emphasis on creating a multimodal transportation system in the U.S. requires high-quality multimodal traffic data for planning success. This research investigated strategies for integrating non-motorized (e.g., bicyclist and pedestrian) traffic monitoring into routine motorized traffic monitoring practices in Louisiana.

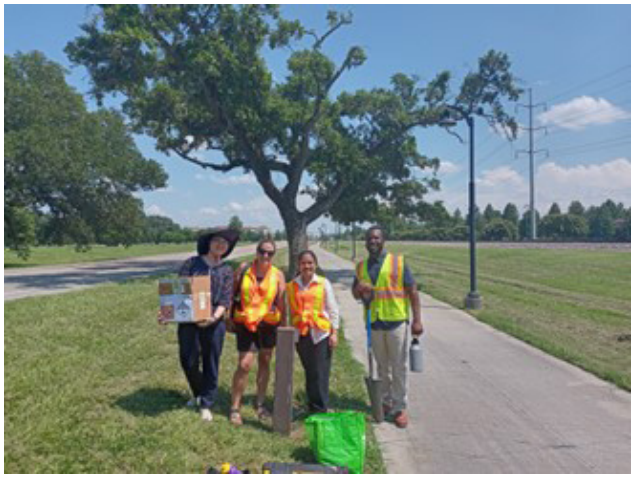

Figure 1. LTRC Project Team reinstalls Nicholson Drive counter, June 2024

Objective

The project aimed to identify opportunities to integrate non-motorized traffic data (e.g., bicyclist and pedestrian) into routine motorized traffic counting practices in Louisiana. Specifically, the objectives of the research were to:

1. Consolidate non-motorized traffic data collected by LTRC and DOTD to date onto a GIS platform.
2. Explore the possibilities of consolidating non-motorized traffic data collected by other public agencies onto the same GIS platform.
3. Refine adjustment factors for short-term counters with additional data.
4. Evaluate emerging data products by comparing them with counting data collected to date in Louisiana.
5. Evaluate opportunities for and needs pertaining to expanding counting locations to support DOTD's needs.

Scope

This research primarily focused on managing non-motorized traffic data collected by LTRC and DOTD to date, but also considered data collected by other public agencies with an anticipation of developing multi-agency collaborations in the future.

1. **Data type:** Non-motorized traffic data refers to pedestrians (including wheelchairs, scooters, and other mobility devices) and bicyclists (including e-bikes).
2. **Geographic scope:** The geographic scope of the data collection and analysis is intended to be statewide. However, permanent counters have been installed in four parishes in Louisiana to date, so the corresponding analysis was primarily completed for those four parishes using a methodology applicable to a broader geographic scope.
3. **Temporal scope:** Permanent count data from existing devices was compiled from 2020 through 2025 to support this project. Additionally, short-term count data representing a minimum of seven complete days of continuous hourly

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data collected by UNOTI through previous studies from 2017 to 2025 was integrated into the count database. Permanent counter data from 2021 to 2023 were used to develop adjustment factor calculations (i.e., the third research objective) and for comparison with data from Strava Metro (i.e., the fourth research objective). When data from Replica is introduced in studying the fourth research objective, the temporal analysis scope was reduced to one year (i.e., 2023) due to data quality (e.g., missing network links in earlier years) and data availability at the study time. Finally, data from the most recent years (i.e., 2023, 2024, and 2025) were collected from Strava Metro and Replica to support counter location expansion analysis (i.e., the fifth research objective).

Methodology

The literature/practice review results suggested that program institutionalization, QA/QC procedure implementation, local agency collaboration, open data access, and network expansion with data support are potential strategies for statewide implementation success. Within the project time, the research team: (1) developed a draft data transmission, management, and maintenance protocol; (2) refined adjustment factor calculations by comparing different methods and data sources; (3) evaluated third-party mobility data from different sources with a method proposed to mitigate data bias for practical use (i.e., "Virtual Network Sensors"); and (4) investigated how to leverage third-party mobility data to systematically identify road segments with similar temporal activity patterns for strategic placement of counters (i.e., two-stage spatial-temporal clustering framework).

Conclusions

The findings of this research indicate that while the state of practice for bicyclist and pedestrian data collection is evolving rapidly, it remains grounded in a set of consistent, proven approaches. While emerging technologies, particularly video-based detection and automated data processing, offer increased flexibility and analytical potential, most agencies with mature multimodal monitoring programs continue to rely on networks of permanent or semi-permanent mechanical counters to generate reliable, continuous baseline data. These systems provide the temporal depth and consistency needed to understand trends, calibrate short-term counts, and support long-term planning decisions. For Louisiana to keep pace with national best practices, it will be important to adopt a similarly hybrid approach, leveraging new technologies where appropriate, while prioritizing the establishment of a core network of permanent counters on key facilities to anchor the statewide data system.

Recommendations

The following recommendations are based on the work completed over the project time:

1. Establish a shared equipment loan program
2. Develop a regular statewide convening on active transportation data
3. Designate a centralized point of contact for multimodal counting
4. Finalize and disseminate technical guidance and specifications
5. Leverage funding mechanisms to expand counting programs
6. Promote standardized short-term count practices
7. Integrate multimodal data collection into consultant scopes of work
8. Implement a coordinated outreach and training program
9. Use the third-party data for hybrid data collection