TECHSUMMARY

August 2023

State Project No. DOTLT1000297 | LTRC Project No. 19-3SA

Pedestrians and Bicyclists Count, Phase 2: Implementing and Applying Multimodal Demand Data

INTRODUCTION

Measuring progress toward Complete Streets policy implementation, as well as measuring the performance of individual projects in terms of safety outcomes, requires understanding patterns of and changes in active transportation demand. Continuous, long-term count data is increasingly recognized as a key foundation multi-modal demand analysis, context-sensitive complete streets infrastructure project development and evaluation, and long-range planning and performance measurement.

This study implemented a pilot network of permanent count locations in four communities at a variety of locations representing different contexts and facility types and provided guidance for sustainable long-term multimodal data collection and use.

Figure 1. Installation of EcoMulti pedestrian and bicycle counter on Norman C Francis Parkway Trail, New Orleans, March 2020

OBJECTIVE

The purpose of this study was to provide DOTD with a practical foundation for an efficient, cost-effective bicycle and pedestrian count program, develop roadway factor groups and preliminary expansion factors for Louisiana communities, and continue to inform collection and use of multimodal count data statewide.

SCOPE

This study included the following research tasks aimed at building the foundation for implementing a statewide pedestrian and bicycle count program:

- Developing an updated literature review, count technology, and vendor inventory
- Identifying preliminary Louisiana factor groups and conducting test counts
- Planning, installing, validating, and maintaining a network of pilot count locations using infrared and inductive loop sensors
- Supporting DOTD in advancing coordinated statewide multimodal data collection through research, outreach, and resource development
- Exploring applications for count data including expansion factors for short duration counts and use in safety analysis
- Providing recommendations for ongoing count program development and maintenance

METHODOLOGY

This applied research builds on previously identified recommendations and best practices, adapted to meet the needs and context of Louisiana communities and stakeholders. The research team conducted an annual scan of new literature pertaining to non-motorized counts with a focus on new research. Next, the team identified preliminary, rough factor groups representative of Louisiana roadways and identified a list of potential count locations assessed to be reasonably representative of a variety of those factor groups in each of the two urban case study areas as well as in a variety of small town or city contexts and tested factor group classifications against observed patterns. Based on these findings, long-duration count sites were selected based on feasibility, activity levels, and output end-user utility. A minimum of eight hours of manual validations counts were collected, and the data was routinely monitored to ensure accuracy. Finally, full results were compiled in a standardized format, analyzed, visualized, and applied to develop site-specific adjustment factors for short-duration count extrapolation and/or missing data imputation. Meanwhile, the team worked with local and regional stakeholders to expand capacity for and interest in multimodal data collection throughout the state through webinars, workshops, and meetings with key personnel.

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CONCLUSIONS

Continuous, long-term count data is a key foundation for safety analysis, planning, and policy or program evaluation, which aligns with a Safe Systems approach to Louisiana's transportation networks. This study has initiated ongoing, continuous data collection at 17 locations in Louisiana to pilot a bicycle and pedestrian count program that can serve as a model for sustainable and coordinated local and regional data collection across the state. In so doing, the research team has achieved the three primary objectives of (1) installing the counters, (2) developing preliminary expansion factors and groups, and (3) supporting coordinated local and regional data collection.

The project has also substantially helped identify and resolve potential barriers to continued expansion of multimodal data collection. While issues impacting infrared sensor performance (including vulnerability to vandalism and sensitivity to extreme weather conditions) may limit the use of this sensor type to areas where operation conditions are optimal or alternative methods are infeasible, performance of inductive loop sensors has been robust and reliable.

This study has produced robust preliminary database from which summary findings and trends have been synthesized and future data collection efforts may build upon and draw from to contextualize and adjust shorter duration counts. Increasingly, the development of improved data for understanding bicycle and pedestrian demand is expected to be an integral component of both area and project planning and a criterion for both funding and evaluating transportation investments. Multimodal demand data can be derived from a variety of direct and secondary sources; however, the establishment of continuous, permanent counters on strategically identified network links continues to be a critical keystone of data analysis, facilitating calibration of indirect or sample-based data sources and robust longitudinal trend analysis.

RECOMMENDATIONS

- Future research may use the data produced through this study as a model input, calibration factor for surrogate data sources, and foundation for advanced analysis of non-motorized travel demand. The data should be considered in future areawide or project-level exposure-normalized safety assessments and integrated into survey and GPS-based mobility analyses to validate user volume and mode share estimates.
- Prioritize expansion of continuous count station network on underrepresented facility types and in underrepresented communities with an emphasis on equity criteria to guide investment.
- Include evidence of demand as a criterion in competitive funding applications, prioritize projects that include an evaluation/data collection component, and integrate new counter installation into complete streets-oriented road projects as well as recreational trails projects by including count equipment and installation (particularly inductive loop bicycle counters) in project budget and including installation and use of counters as part of MOUs with local agencies.
- Encourage or require collection of multimodal counts as part of Stage 0/feasibility studies where appropriate, and use expansion factors for comparable facilities provided in this report to estimate AADT for pedestrians and/or bicyclists.
- Develop a data dashboard, portal, or page to disseminate data both internally and externally, and identify roles and responsibilities for agency support and coordination of data collection and management.
- Develop and use count data in economic impact analyses to show the business case for active transportation infrastructure.

Figure 2. Bicyclist passes over EcoMulti infrared + inductive loop counter on Tammany Trace, Mandeville

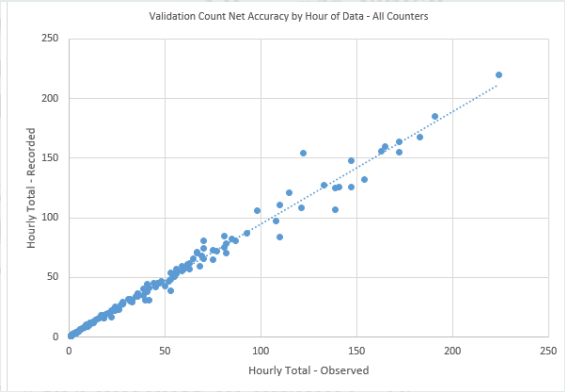

Figure 3. Validation count reliability assessment results

	1 –Multi-Use Regional Connector	2 –Primarily Recreational "Destination" Trail	3 – Utilitarian/ Mixed Use On-Street Bikeway	4 – Mixed/Other: irregular, land-use driven activity
Key Characteristics:	*7-day activity, moderate PM peaks, observed mix of user types*	*pronounced weekend activity, sharp weekday PM/weekend AM peaks, exercise-focused uses prevalent*	*Mix of user types; hourly activity may vary by day of week*	*High volume variability linked to activity in surrounding neighborhood/land use and/or irregular patterns observed*
A – High Volume (>300/day mixed, >200 per mode)	1A • Norman Francis Parkway Trail • Lafitte Greenway	2A • Algiers MRT • Wisner Trail (peds) • Tammany Trace (bikes) • Dalrymple Drive (Peds) • Baton Rouge MRT (Casino)	3A • Esplanade Avenue Bike Lanes	4A • Mandeville Lakefront Path
B – Medium Volume (100-300/day mixed, >50 per mode)	1B • Dalrymple Drive (bikes)	2B • Wisner Trail (bikes) • Behrman Park Trail (peds) • Tammany Trace (peds) • Rock Island Greenway Phase 1 (peds) • Baton Rouge MRT (Water Campus)	3B • Baronne St Bike Lane • Capital Heights Bike Lane	4B
C – Low Volume (<100/day, <50 per mode)	1C • Rock Island Greenway Phase 2	2C • Behrman Park Trail (bikes) • Rock Island Greenway Phase 2 (bikes)	3C • Government St Bike Lane	4C • Nicholson Drive Trail

Figure 4. Louisiana proposed factor group description matrix