



TECHSUMMARY *September 2019*

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Pedestrians and Bicyclists Count: Developing a Statewide Multimodal Count Program

INTRODUCTION

Over the last decade, Louisiana has moved toward a “complete streets” approach to infrastructure development by implementing or upgrading facilities for walking, bicycling, and transit use. Evaluation of the efficacy of these investments—and planning and prioritizing future investments—requires new and innovative approaches to multimodal data collection and analysis in order to measure infrastructure demand and performance (including safety) for road users. This study sought to develop a framework for coordinated statewide data collection to address gaps in our understanding of demand for and safety of walking and bicycling in Louisiana.

OBJECTIVE

The objectives of this study were to (1) research established and emerging methodologies for counting bicycles and pedestrians and identify best practices for statewide count programs, (2) inventory and evaluate available count technology equipment options and identify preferred alternatives suitable for statewide deployment, and (3) identify potential funding sources for the implementation of a multimodal count program and opportunities to integrate active transportation counts into existing vehicular count programs.

SCOPE

This project consisted of an initial comprehensive literature review and investigation into the current state of the practice for non-motorized data collection across the US, followed by data collection at three case study locations in New Orleans and Baton Rouge to pilot and refine preliminary recommendations for data collection methods, processing, and analysis. Concurrently, a support study for this project investigated the feasibility of collecting count data through automated video image processing.

METHODOLOGY

The methods employed for this study included a review of academic and applied literature pertaining to collecting pedestrian and bicycle data collection and benchmarking, as well as interviews with practitioners and participation in seminars and professional meetings addressing pedestrian and bicyclist data. In addition to general best practices for program development, avenues of inquiry focused on techniques for using count data to evaluate exposure rates and safety outcomes or trends, emerging technologies for automated count collection, and potential funding sources and partners for program implementation.

For the case study data collection, infrared and pneumatic tube sensor devices specifically calibrated for pedestrians and bicyclists were installed at each location for approximately 30 days, concurrent with one video camera unit, calibrated and validated these units using manual in-person and/or recorded video methods, and utilized the resulting data to calculate adjustment factors to account for inherent systemic error. This data was evaluated to determine general traffic patterns by hour of day

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and day of week to identify the general typology of active transportation activity (i.e., factor group). Where appropriate, preliminary temporal adjustment factors were applied to derive estimated average annual daily pedestrian and bicycle traffic. Finally, potential applications and overall data needs for measuring change/outcomes at the corridor level were explored to advance fundamental elements of comprehensive evaluation of the safety impacts of complete streets-oriented infrastructure.

CONCLUSIONS

The results of this research indicate there is no “one size fits all” approach to pedestrian and bicycle monitoring—local or agency needs, intended data uses, and resource constraints must all be considered in the design of a count program. However, the incremental development of systematic active transportation monitoring, in coordination with existing traffic monitoring activities and in cooperation with local and regional agencies interested in or already engaged in data collection and analysis, is feasible and scalable (geographically and fiscally) using a combination of traditional and emerging technologies.

States with developed count programs tend to use multiple methods, various vendors, and technologies that evolve over time, and secondary supplemental datasets to aid interpretation and application of count data. Case study data collection illustrated the utility as well as limitations of three specific technologies, highlighting the need for a menu of options in service to promoting routine multimodal data collection as part of complete streets project planning and delivery, particularly (but not exclusively) for major corridor projects where improved pedestrian/bicycle safety and access is an explicit goal. Evaluation of project outcomes, and forecasting of potential future project impacts, is severely constrained if adequate, compatible, and timely pre- and post-intervention data for a variety of sites is not available.

Importantly, non-motorized traffic is inherently more variable than motorized traffic and thus more data is required in order to make inferences or conduct statistical analyses of count and/or crash data, which can preclude frictionless integration of pedestrian and bicycle counts into existing motor-vehicle count programs. However, inter-jurisdictional and inter-departmental outreach and partnerships are needed to sustain successful non-motorized traffic monitoring, and state engagement in existing data collection efforts and development of

guidance for future local/regional data collection can ensure compatible data sets and collaboration and efficient use of resources. Moreover, significant expansion of long-duration count data availability was found to be critical to all efforts to holistically evaluate safety impacts at the project level, and an area where state leadership and investment will have the greatest impact.

RECOMMENDATIONS

Recommendations for actions to be taken by DOTD include initiating the implementation of a preliminary set of permanent count locations, reviewing agency policies and funding criteria to encourage and/or require local and regional data collection, disseminating resources to promote a coordinated data collection and use approach, and training staff and contractors in pedestrian and bicycle count collection methods. In addition, additional research is needed to develop statewide factor groups and adjustment factors for extrapolating short-duration counts, continue to advance the use of automated video-image count methods, and to further evaluate the impacts of complete streets projects with pre- and post-intervention data.