RESEARCH PROJECT CAPSULE [14-3SA]

April 2014

TECHNOLOGY TRANSFER PROGRAM

Developing a Method for Estimating Traffic Volumes on Local Roads in Louisiana

JUST THE FACTS:

Start Date:
January 2, 2014

Duration:
12 months

End Date:
December 31, 2014

Funding:
Safety

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Sponsored jointly by the Louisiana Department of Transportation and Development and Louisiana State University

POINTS OF INTEREST:

Problem Addressed / Objective of Research / Methodology Used Implementation Potential

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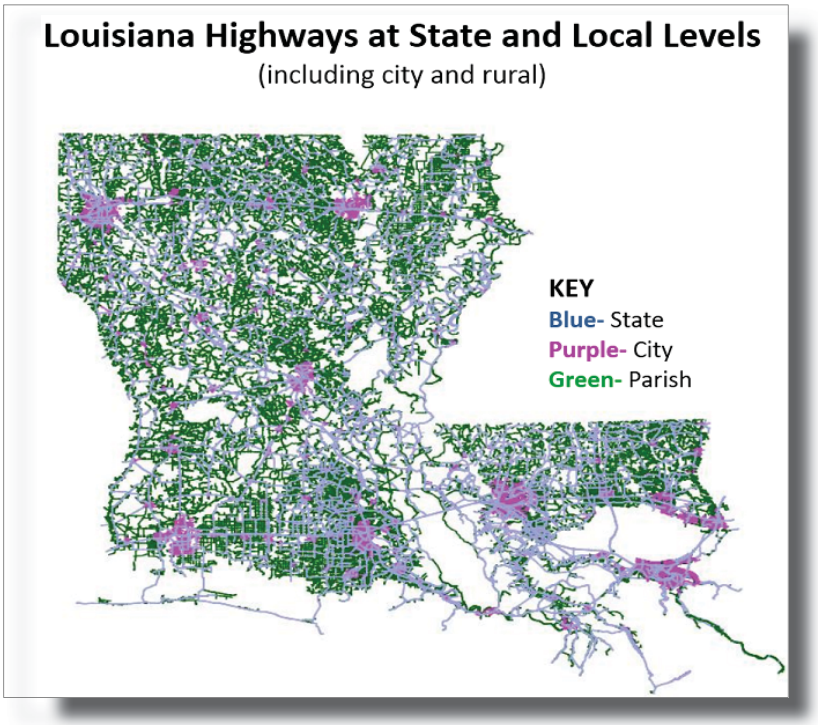
PROBLEM

Annual Average Daily Traffic (AADT) is a key input in operations and transportation planning for the state departments of transportation (DOTs), because AADT provides information for the planning of new road construction, determination of roadway geometry, congestion management, pavement design and maintenance, air quality assessment, and safety evaluations. Accurate AADT data are vital to the calibration and validation of travel demand models. AADT is also used to estimate state-wide vehicle miles traveled on all of the roadways and is used by local governments and the environmental protection agencies to determine compliance with the 1990 Clean Air Act Amendment. Additionally, AADT is reported annually by the DOTs to the Federal Highway Administration (FHWA).

The DOTs and local transportation agencies traditionally use AADT count programs to meet their demand. However, the focus of these traffic count programs is on higher classes of roadways, consisting mainly of interstates and arterials. Due to budgetary constraints, the collection of traffic count is limited by most local and state governments. The traffic count on local roads or in rural areas is not covered in most of these cases. Typically, when traffic count data are inaccessible, estimates are made based on comparisons to similar types of roadways. This technique typically results in major errors due to false assumptions, and also may not be repeated often enough to remain current. FHWA's Highway Performance Monitoring System (HPMS) does not require any explicit procedure for the sampling of local road traffic volumes. The procedure to be used for estimating vehicle miles traveled (VMT) on these roads is expected to be selected by respective DOTs, and in many cases they use archaic or erratic traffic volume data on local roadways.



As illustrated in the figure, local roads constitute a large percentage (60% to 70%) of the total mileage of a state's roadway network. However, traffic volumes on these roads are fairly low, and thus VMT on these roads is much less compared with that on interstate or arterial roads. Usually, local road VMT on a

state's entire road system is nearly 10% to 15% of the total VMT. In recent years, however, more attention has been given to local road VMT, because it has been recognized as an important component of air quality emissions from mobile sources. More importantly, to effectively reduce crashes on local roadways, AADT must be used as an input parameter in safety evaluation and crash problem screening models. Lack of AADT information hinders decision making process for highway safety improvement projects.

Currently, the Highway Safety Research Group (HSRG) maintains a crash database that contains geocoding for most crashes in Louisiana. With this geocoding and AADT count, it is possible to develop Crash Modification Factors (CMF) and Safety Performance Functions (SPF) for each road class in Louisiana. There is no current formal method of collecting traffic volume count on local roads in Louisiana, creating a large gap in the data needs of many research projects in the state. Nonetheless, it is also not financially feasible to collect AADT on 44,000 miles of local roads; it has been shown, however, in various research projects that estimating AADT is possible, with or without a previous volume count, by using available basic US census and driver information.

OBJECTIVE

The goal of this project is to develop a methodology for estimating AADT on all local roadways in Louisiana with an emphasis on local rural roadways. This will be done by exploring different AADT estimating procedures established previously and new data collection technologies. Specifically, the objectives of the proposed project are to identify and document the local roadways in Louisiana with and without AADT counts; identify all variables related to AADT estimation such as population, demographic characteristics, layout of local roadway network, distance to permanent and mobile AADT counts, and etc.; explore the relationship between these variables and AADT; develop a methodology for reliable and practical AADT estimates; conduct a case study site to demonstrate the application of methodology; and validate the model by comparing the collected actual traffic counts and the estimated AADT.

METHODOLOGY

The research objectives will be met by accomplishing the following tasks:
Task 1: Information Review
Task 2: Documenting Louisiana Roadways with and without AADT Counts
Task 3: Developing an AADT Estimation Method for Local Rural Roads
Task 4: Interim Report and submittal of work plan for Task 5
Task 5: Model Validation (Case Study)
Task 6: Exploring AADT Estimation on Urban Local Roads
Task 7: Final report documenting the research effort, findings, and recommendations

IMPLEMENTATION POTENTIAL

Louisiana has approximately 33,000 miles of local rural roadways. It is expected that this project will offer information on the most feasible approach to count traffic volume on roadways where traffic count has not been evaluated before. The recommendations will be made at the end of this project based on the analysis results, which should help to improve the statewide demand model and enhance decision-making processes for local agencies in Louisiana.