

New Jersey Department of Transportation
Bureau of Research
RESEARCH PROJECT
Request for Proposals
2012 Program

Date of RFP
04/09/2012

Closing Date
05/25/2012

Integration of Bus Stop Count Data with Census data for Improving Bus Service and Efficiency

Project No. 2012-13

1. RESEARCH PROBLEM STATEMENT, BACKGROUND AND OBJECTIVES

This project will link new bus stop level ridership on/off patterns with survey and detailed 2010 Census data to develop relationships between local demographics and characteristics and bus ridership for 5 different type areas of New Jersey; namely, large urban areas, small urban areas, suburban centers, South Jersey urban areas, and intercity NJ markets. The project will identify relationships between ridership and various factors to explain differences in ridership potential and be used to assist in predicting bus ridership and service needs. This project is essential now, as new Census data has become available for 2010, and updating the model will allow for predictions based on current, rather than old, data.

Theoretically, a simple aggregate model of workers who commute to work by transit or by non-transit means will be built to establish a theoretical relationship between transit's usual and actual mode shares.

2. TASKS

PHASE I – Literature Search

Team will focus research on relationships between demographic variables and data at the small area geographic area to establish relationships between local bus ridership and underlying demographic data from the US Census. Because of the change in Census data, 5 year ACS data using 2006-2010 and when available updated 2007-2011 Census data with new 2010 Census geography will be focus of this research. PUMA data and 1% and 5% sample data can also be utilized. Team will focus on past research efforts to establish relationships between bus ridership and local area demographics, with a concentration on areas in the northeast of the USA.

PHASE II –

Task 1- Identification of Detailed Analysis Areas based on Type of Area

The research team, in consultation with NJT Staff, will identify 5 specific areas of the state of New Jersey which will represent the 5 types of local geographic areas that relationships between local bus ridership and local demographics will be investigated. These five area types are representative of the major differences in types of land use patterns for bus ridership across New Jersey. Five areas will be selected, which will consist of groupings of census tracts or other areas defined by the research team.

The five area types and typical examples are:

1. Large urban Areas- These will include major cities like Jersey City, Newark, Paterson, and Elizabeth and surrounding similar areas of Essex, Hudson, Union, and Passaic counties.
2. Smaller Urban Areas- These will include smaller urban centers like Hackensack, Trenton, New Brunswick and Morristown that are less than 100,000 in population.
3. Suburban Centers- Areas with significant employment that are suburban in nature, but have significant amounts of bus services. Examples include Paramus, Parsippany, Wayne, Woodbridge, Cherry Hill, Summit, Secaucus, etc. Centers should contain a mix of office and retail employment centers.
4. South Jersey Urban Centers- Camden, Atlantic City, Vineland are examples.
5. Intercity NJ markets- Major suburban areas which only have express bus service to New York City or Philadelphia, and minimal local bus service.

For each of these 5 areas, the research will examine relationships between bus ridership and demographic variables. Research team will identify one localized area in each of the 5 areas for detailed analysis. Each of the areas selected should be a typical representative of the area type indicated.

Task 2- Identification of Detailed Analysis Areas based on Type of Area

The research team, in consultation with NJT Staff, will identify 5 specific areas of the state of New Jersey which will represent the 5 types of local geographic areas that relationships between local bus ridership and local demographics will be investigated. These five area types are representative of the major differences in types of land use patterns for bus ridership across New Jersey. Five areas will be selected, which will consist of groupings of census tracts or other areas defined by the research team. The five area types and typical examples are:

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Task 3- Development of NJT Ridership Data and Demographic Data for Each Area Type

This task will collect and analyze NJT ridership data for each of the five selected area types. There are two types of NJT data the consultant can collect. One is local and Interstate Bus survey data that NJT has collected over the past 5 years. NJT will make this data available in SPSS or other formats. NJT also may have by the time of the study, ridership count data or ridership request data at the bus stop level. This will come from NJT Bus Service Planning, as a new detailed, stop by stop ridership count program, if available, will be generated by new fareboxes and stop sign codes for cell phone use. Research team will assess the availability of this data at the time information is needed. If not available, then the zone to zone farebox data and summary data from the farebox downloads will be made available for analysis.

The research team will also utilize ACS 5 year data, and other census data that is available at the census tract and block group level of detail. This will include demographic data, commuting data, and other socio-economic data available at the detailed level needed for the 5 area types selected in Task 3.

Task 4- Analysis of Ridership and Demographic Data and Findings for Each Geographic Area

This task will analyze the relationships between bus ridership and demographic data and identify relationships between the two for each of the 5 detailed types of geographic areas indicated in Task 2. The analysis will identify mathematical and statistical relationships between bus ridership, travel for work and non-work purposes, and other relationships identified for each geographic area. Key differences between each of the 5 types of areas will be examined and a summary of findings of the work of this task will be indicated for each of the 5 areas. Where appropriate, differences and similarities in variables or relationships that explain bus ridership or bus transit market shares will be highlighted

Task 5- Summary of Findings

This task will summarize the findings of the research, identify possible models or mathematical relationships to assist in understanding or estimating bus ridership, and also identify areas for future research.

3. IMPLEMENTATION AND TRAINING PLAN

The PI must meet with the Research Project Selection and Implementation Panel (RPSIP) and other NJDOT units to present the findings and as appropriate train these personnel in the use the project results.

The PI will develop an implementation plan as per the guidelines provided by NJDOT Research Bureau.

4. DELIVERABLES:

[List of minimum deliverables necessary to complete the project]

- Presentation of Summary of Literature Search Results
- Discussion to Support and Refine the Project Tasks
- Project work plan.
- Technical Memorandum on the survey results
- Technical memorandum on the measures that are working or not working
- Technical memorandum on actions taken
- Interim Status reports suitable for Senior Leadership if required

- Quarterly Reports and Final report with appropriate tables, graphs and charts in hard copy version, PDF file format, Word, and on CD ROM. Two copies plus one per RSIP member of each presentation, technical memorandum, draft final report and Final Report (plus 10 copies).
- The Final Report and Tech Brief are due three (3) months before the end date of the project to allow time for review by the Research Project Selection and Implementation Panel. Final Acceptance will be granted upon receipt of ten copies of the approved final report.

5. CONTRACT TIME:

The PI must provide the anticipated research study duration based on the proposed tasks. Consideration should be given to potential impediments so that adjustments are incorporated into the schedule minimizing the need for time extensions.

12 – 18 months

6. CONTACTS:

A meeting may be scheduled with interested parties after the RFP's are distributed to refine the objectives and deliverables and to promote a better understanding of the research needs. Questions on this topic **shall not** be directed to any Research Project Manager, Research Customer, or any other NJDOT person. All questions and answers would be addressed **during this meeting or through email**. Contact Camille Crichton-Summers (Camille.CrichtonSummers@dot.state.nj.us) on or before April 20, 2012 to indicate your interest in participating in such a meeting or to make inquiries.

7. DEADLINE

Proposals (10 single-bound copies) are due at the NJDOT Bureau of Research no later than 4:00 p.m. 05/25/2012

Authorization to Begin Work: -- estimated or as negotiated

8. DELIVERY INSTRUCTIONS:

For private, paid messenger services such as Federal Express, DHL, UPS, etc., or for hand-carried deliveries:

2012 PROPOSAL-NJDOT
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