

“Improving Access to Jobs via Effective Public Transportation: A Framework for Mobility in San Juan”

Introduction: Goals and Objectives

This research will develop a systems framework by which to analyze and bridge the spatial mismatch of low-wage jobs and the urban poor, via improvements to transportation services and related public policy. Its primary application will be in San Juan, Puerto Rico, where *Tren Urbano*, the city's first high speed passenger rail line, plans to begin revenue service in 2001. This research will use *Tren Urbano* as a tool for moving San Juan's poor and jobless to long-term, sustained employment.

Objectives of this research will be: (1) to evaluate the existing physical access of San Juan's poor to low-wage employment, (2) to forecast the potential impacts of *Tren Urbano* upon that accessibility, (3) to recommend transportation services and related public policies to bridge the likely spatial gap, (4) to evaluate future *Tren Urbano* extensions in terms of their abilities to better connect San Juan's poor and jobless to low-wage employment, and (5) to create a framework by which to frequently analyze and re-evaluate accessibility, identify deficiencies and implement changes to the transportation system and to the policies that support it.

Background and Problem Statement

Much research has shown that reasonable access to jobs significantly improves levels of employment, and also, that differing levels of access among urban neighborhoods or races of peoples affect similar patterns of differing jobless rates. A critical yet often neglected component of employment opportunity is job accessibility. The “spatial mismatch” debate of urban economics provides strong theoretical backdrop to this research. Spatial mismatch theory states in part that the segregation of housing markets in the U.S. has strongly and negatively affected the distribution and level of employment among non-white poor, specifically because non-whites who are concentrated in central city ghettos have extremely limited access to abundant low-wage jobs in suburban areas that are inaccessible. While this theory is well-understood, much uncertainty remains as to its level of independence from racial discrimination. Examining the spatial relationships of urban poor versus low-wage jobs in San Juan will provide additional insight to this unresolved topic.

This issue has become even more timely with recent U.S. welfare reform legislation. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 requires states and territories to shrink their welfare rolls by significant margins during upcoming years. The act provides incentives to states and territories that reach employment benchmarks for its formerly welfare dependent, but penalizes those that do not by

withholding Federal funds. Since only 6% of those leaving welfare rolls possess regular access to an automobile, job accessibility becomes a pivotal issue from the start. Providing job access to the poor is always of high societal and economic importance; recent welfare reform legislation asserts even greater relevance to examining long-term solutions to mobility. The fact that this research will use welfare recipients as a proxy for the urban poor is thus to its great advantage.

The 2001 implementation of Tren Urbano presents a great opportunity to positively affect the social and economic vitality of San Juan. For Tren Urbano to function effectively, it is likely that San Juan's público system must undergo major institutional changes and service re-deployment. Since públicos compose the lion's share of San Juan's public transportation, this transition marks a major "unfreezing" of the existing system, that allows for redefining públicos' role in the San Juan Metropolitan Area. Thus, examining employment access now capitalizes upon both the highly improved mobility that Tren Urbano will provide and the added possibility of more effectively using públicos as a flexible means toward improved accessibility.

Approach

The problem statement presents a simple goal, yet it entails many methodological challenges that require scrupulous planning. To begin, how does one measure accessibility? How does one define the "urban poor" or even model its location? In addition, which jobs should the research include, and how do wage, benefits and distance from the home relate? Also, how does one control for the co-dependence of job accessibility and land use? These questions each address important analytical issues that require careful planning.

Data Analysis. The analysis will begin by plotting and comparing the point locations of urban poor and low-wage jobs using welfare recipients as a proxy for the urban poor and Geographic Information System (GIS) software as a tool of spatial analysis. By geographically superimposing both the existing transportation network and Phase I Tren Urbano improvements, the research proposes to assess both the existing and pending accessibilities of low-wage jobs to the unemployed. To do so, it will define accessibility as a function of "access time" rather than airline distance (the traditional unit of accessibility measurement), to account for the greater dependence of accessibility upon time than upon spatial range. Doing so also recognizes many benefits of higher levels of transportation service and accounts for them via an objective measurement. "Access time" will comprise not only traveling time but also time spent visiting day care or other employment-related activities on the work trip. Demographics will thus be a necessary data set for ultimately calculating employment accessibility. Finally, the analysis will calculate employment "accessibility" in terms of net potential wage (including

benefits, but minus out-of-pocket transportation costs), divided by gross time required both to access and perform employment.

The co-dependence of accessibility and land use will be controlled for by treating land use temporarily as a constant. Doing so accounts for the relative flexibility of transportation services – and of San Juan's in particular – to change and adapt rapidly to more gradually shifting land use.

Evaluation Criteria and Alternatives Analysis. Using these calculated measurements above, the research will project future accessibility deficiencies in the simple base case of Tren Urbano Phase I and identify potential avenues for improvement. Subsequently, alternative sets of policies and transportation services will be developed and then evaluated, based on the same measuring and evaluation criteria applied in the base analysis. In this manner, evaluation may compare both among alternatives and to the original base case.

Phase II Evaluation. Using projected labor data and demographic growth by census tract (or by more specific area if possible), the research will apply the same data analysis methodology to each planned Phase II Tren Urbano extension. In this case, each possible Phase II extension will be treated as an alternative, and supplementary transportation services and policies will be treated as extensions to each alternative. The research will then evaluate and compare the final accessibility improvements of each alternative.

A literature review will supplement the analysis with a broader perspective that will lend insight to the results.

Theoretical Contributions

There exist at least two main contributions of this research to theoretical fields of interest. First, this research will expand the set and type of data available for further analysis of the spatial mismatch theory of urban economics. It will approach the problem differently from previous studies in that instead of using "airline distance", it will measure accessibility in terms of time required to access and perform employment, as well as time consumed traveling to work-related destinations and net potential wage. Second, the research will develop a framework by which to frequently re-evaluate accessibility, identify deficiencies and implement transportation services or public policies to bridge those accessibility gaps. This framework may be applicable not only to San Juan, but also to other cities in the Caribbean or Latin America with similar mobility and employment issues.

Thus, in terms of theoretical contributions this research will:

- Present an important step toward expanding knowledge of spatial mismatch theory to cities outside the mainland U.S.
- Provide a framework for analysis and policy-making that may be appropriate for application to several other cities both within the U.S. and beyond.

Contributions to Tren Urbano and San Juan

The primary motivation behind investigating the implementation of rail rapid transit may first lie in attempting to mitigate unruly congestion – a common and frustrating phenomenon in San Juan. However, the effects of doing so reach far beyond street traffic, affecting important social and economic issues such as equity, accessibility, land use and costs to society, among others. Tren Urbano presents a valuable opportunity to positively affect San Juan's social and economic vitality. The probable reorganization of San Juan's público system and institutional framework, that is likely to result from Tren Urbano's implementation, expands this opportunity several-fold.

In terms of Tren Urbano and the transit system, this research will:

- Recommend supplementary services during Phase I of Tren Urbano – in terms of public policy (e.g., fare discounts to the poor) and re-deployed or new transportation services.
- Improve the effectiveness of públicos in context of San Juan's transportation needs; better integrate públicos into a cohesive regional transit system; provide an important ridership market for públicos.
- Greatly improve the effectiveness of Tren Urbano and thereby better justify the construction of future extensions.
- Evaluate and prioritize Phase II extensions of Tren Urbano in terms of their potentials to provide improved access to jobs.

The San Juan Metropolitan Area affords both great incentive and remarkable opportunity to better serve its poor and unemployed. Particularly with passage of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, San Juan possesses added impetus to improve its ability to provide jobs to its poor and specifically to those leaving the welfare rolls. Thus, examining the role of Tren Urbano in delivering unskilled labor to low-income jobs is a critical and timely project for many important reasons, including: San Juan's future economic vitality, recent welfare reform legislation, the anticipated "unfreezing" of the público system, transit's societal and economic goals, and Tren Urbano's opportunity to address and capitalize upon these issues in San Juan.

This research will contribute to the greater metropolitan area as well. In terms of the San Juan Metropolitan Area, results of this research will:

- Better utilize Tren Urbano's high-speed service to extend the boundary of accessible jobs, and as a result bring many poor and jobless San Juan residents to sustained, long-term employment.
- Develop a framework for the San Juan Metropolitan Area to periodically reassess its poor's access to jobs and to subsequently recommend transportation services or public policies that local regulators should pursue.
- Aid Puerto Rico's efforts to absorb the effects of recent welfare reform legislation and to support those persons leaving the welfare rolls.

Each of these results is quite valuable in itself to both Tren Urbano and San Juan. To a large extent, moving San Juan's poor to work depends on the effectiveness of public transportation. Conversely, the long-term success of Tren Urbano depends upon its ability to serve the economic and societal needs of San Juan. This research will address both components of this important issue by greatly improving access to jobs via more effective public transportation in San Juan.