

Abridgment

PUBLIC TRANSPORTATION PLANNING FOR THE SUBURBS

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Due to the demographic characteristics of suburban areas and the unusual transportation problems they present, effective public transportation planning demands flexible and innovative approaches. This paper describes a unique procedure used in a recent planning assignment for Camden and Burlington Counties, the New Jersey suburbs of Philadelphia. They typify the diversified geographic, socio-economic and population attributes and limited planning resources of such areas across the country. The essence of the planning methodology was a "prototype" approach which entailed:

- *Formulating a list of the bi-county transportation problems which was then condensed to a shorter list of "model problems."*
- *Selecting a "prototype" for each particular problem within the general categories of: transit user groups, geographic areas and major trip attractors/generators.*
- *Developing a unique solution for each problem.*
- *Analyzing each prototype solution for adaptability to other similar problems within the same group.*

Using this mechanism as the primary tool for public transportation planning for suburban areas maximizes the impact of available resources by concentrating upon solving specific problems while concurrently establishing the basis for wide application of results and recommendations.

Public transportation planning for suburban areas presents a variety of problems which, in their number and diversity, stand in stark contrast to the relatively common and homogeneous issues comprising the planning agenda in urban areas. Other than in the few heavily-traveled corridors linking residential suburbs with the central city, travel patterns are unfocused. Major employment centers are isolated and often consist of a single employer rather than the very heavy concentrations found in commercial or industrial sections of the city. Schools, hospitals and governmental activities are scattered. Pockets of transit dependents, particularly the elderly, are dispersed. Development patterns range from concentrated small cities to commercial strips or isolated regional shopping centers to rural. And the transportation infrastructure, in terms of both institutions and facilities, is fragmented.

Compounding these difficulties, the resources

available to support the planning effort and, perhaps more significant, the implementation of changes and improvements, are severely limited.

Innovative approaches are necessary to deal successfully with these problems. Comprehensive regional plans emphasizing traditional area-wide public transportation systemic approaches must give way to individualized elements geared to addressing unique sub-regional problems. In a recent planning effort for Camden and Burlington Counties, the New Jersey suburbs of Philadelphia, an unusual planning methodology was developed, tested and applied.

The key element in this procedure was termed a "prototypical" approach. It consisted of:

- grouping all the particular public transportation deficiencies in the two counties by aggregating those of a similar nature, thus producing a relatively short list of problems, each of which might be amenable to a common solution;
- selecting one particular situation or geographic area from each group as a prototype for that type of problem;
- developing a unique solution for each of the prototypes chosen; and
- examining the applicability of that solution to other problems in the same group.

Certainly this concept of "prototypical solutions," if not the name, is neither new nor startling. Borrowing an idea which works in one city, and adapting it to fit a similar situation in another, is a legitimate, appropriate and frequently used tool in the planning process. What is different in this instance is the systematic application of this procedure as the principal planning mechanism in a public transportation study.

The balance of this paper describes how the prototypical approach was applied in Camden and Burlington Counties. But first it is necessary to describe briefly the public transportation environment in which the study was performed.

The Transportation Setting

The bi-county area is typical of suburban areas across the country in many respects. Population has increased rapidly -- by more than 80% since 1950 -- from about 437,000 to the current level of about 805,000 residents. There is great diversity in socio-economic, developmental and land-use patterns. The character of development varies from core city urban

Table 1. Prototype Candidates.

Category	Criteria	Examples of Candidates	
		Camden County	Burlington County
User Groups			
Senior Citizens	Areas with high concentrations and 4,000 elderly people or more	Pennsauken Merchantville	Riverfront Communities
Handicapped	Entire Bi-County Area		
Low-Income	Entire Bi-County Area		
Geographic Areas			
Multi-Units	Communities with high concentrations of residential land use	Lindenwold Pennsauken	Burlington City Mt. Holly
Isolated Single-Family Homes	Greater than 200 dwelling units	Winslow Crossing Glen Oakes	Medford Lakes Ramblewood
Rural	50% or more of its area devoted to non-residential use and density less than 500 people/square mile	Chesilhurst Waterford	Bass River Lumberton
Trip Attractors/Generators			
Town Center	Central Business District and greater than 200 employers	Haddonfield Gloucester City	Mt. Holly Burlington City
Regional Commercial Center	Regional influence and greater than 500,000 sq. ft. of gross leasable space	Echelon Mall Cherry Hill Mall	Moorestown Mall Willingboro Plaza
Single Employers	Over 2,000 employees at one location	RCA Campbell Soup	Public Service E&G RCA
Industrial Park	None	Fishers Dike	East Gate/Mt. Laurel
Hospitals	Greater than 100 beds	Cooper Our Lady of Lourdes	Garden State Comm Deborah
Colleges	More than 2,000 students	Rutgers (Camden) Camden Community	Burlington Community
Government	Regional Influence	Camden City Hall Lakeland	Burlington County Complex

to suburban to rural, even to wilderness in eastern Burlington County. Communities vary from older well-established towns with mature institutions to newer areas still establishing their structures. Income levels vary from very high to so low as to approach poverty levels -- median family incomes range from a high of \$15,786 to a low of \$7,279. Residential population density varies from 56,590 to 360 persons per square mile of residential area.

The major trip market is focused on Philadelphia, but the Trenton area also exerts considerable influence. Intra-county travel is increasing dramatically as industry continues its migration to the suburbs and regional shopping and service centers develop. Interspaced throughout the counties are specialized types of travel generators, creating their own unique needs.

Of particular interest in considering possible public transportation improvements are the 'transit dependents' who either have no automobile available to meet their mobility needs or who have only limited access to an auto. These people comprise a relatively significant proportion of the bi-county population and include the young (about 30% of the bi-county population); the elderly (9% of Camden County's population and 6% in Burlington County); low-income families (5% of the families in Burlington County and 7% in Camden County); and zero-auto households (10% of Burlington County households and 16% in Camden County).

The transportation infrastructure serving the bi-county travel market is severely limited. Conrail service connecting the area with Atlantic shore communities is the single surviving railroad passenger link. The highway network includes only perhaps half a dozen major arterials, all operating at or

near capacity. Substantial volumes of local traffic move on the three limited-access facilities which pass through one or both counties.

The institutional framework is fragmentary at best. The Delaware Valley Regional Planning Commission coordinates planning activities, but transportation operations are subject to no single controlling authority. The Interstate Commerce Commission, the Delaware River Port Authority, New Jersey DOT, New Jersey PUC, and county and municipal authorities are all variously involved in regulating and operating highway and transit facilities.

It is not surprising that the public transportation system which has developed in this setting is diverse and poorly coordinated. It has grown rapidly and includes as its major components:

- Transport of New Jersey (TNJ) buses on radial, intercity and feeder routes, many subsidized by New Jersey DOT.
- Delaware River Port Authority High Speed Line (PATCO) rapid transit service.
- Community or social service agency-supported special transit services, primarily oriented to serving the elderly and handicapped.
- About 25 taxicab operations ranging from small, one-cab, owner-operated services to larger fleet-type operations involving as many as 75 vehicles.

Prototype Approach

The diversity of travel needs and desires, the shortfalls of existing transit services and the variety of public transportation operations in the two counties made it highly unlikely that there would be a single solution to the area's public

Table 2. Summary of Prototypical Service Improvement Proposals

CATEGORY	FACILITY/AREA	SERVICE IMPROVEMENT PROPOSALS
Government Center	Burlington County Complex	<ul style="list-style-type: none"> ● Employee Carpooling ● Rover Bus Service
College	Burlington County Community College	<ul style="list-style-type: none"> ● Improved TNJ Service ● One Club Bus Route ● Employee Vanpooling
Elderly	Burlington County Riverfront Communities	<ul style="list-style-type: none"> ● Improved Rover Bus Service
Elderly	Pennsauken/Merchantville	<ul style="list-style-type: none"> ● Free-fare Community Loop Route
Town Center	Mount Holly	<ul style="list-style-type: none"> ● Improved TNJ Service ● Three Jitney Routes
Employer	Campbell Soup	<ul style="list-style-type: none"> ● Expanded Shuttle Service ● Fare Reduction Program ● Employee Vanpooling
Regional/Commercial Center	Echelon	<ul style="list-style-type: none"> ● Improved TNJ Service ● Shared Taxi Service

transportation problems. Rather, it appeared that a series of different proposals and concepts would be required to accommodate current and short-range needs.

In order to guarantee wide applicability of results, the study was designed to develop prototypical service improvement proposals. The prototype approach involved selecting "model problems" aimed at specific user groups, geographic areas or major trip generators and detailing specific solutions for particular problems. Thus, a transit service plan developed for a regional commercial center could be readily adapted to other regional centers. A service plan aimed at travel needs of a town center could be adapted to any other town center in either county with similar land-use and socio-economic characteristics. With a series of such service modules, improvements could be implemented incrementally as funds and equipment become available.

Three general kinds of prototypes were identified early in the study -- transit user groups, geographic areas and major trip attractors/generators. Each of these was then examined in more detail to identify more specific categories. The next step was to specify for each category a set of criteria which would specifically define the category and permit the selection of candidate areas or sites for analysis as prototypes. Results of this categorization process are summarized in Table 1.

Transportation Solutions

From the list of candidates, a single prototype was selected in each category. Each was analyzed from the standpoint of solving the specific transportation problems associated with it. In effect, each prototype analysis was by itself a self-contained transit study.

Prototype solutions for each of the chosen candidates were developed through:

1. Identification of its particular geographic and socio-economic characteristics;
2. Definition of the travel needs and desires associated with it;
3. Evaluation of the adequacy of existing public transportation services;
4. Review of alternative public transportation solutions designed to meet the particular travel needs;

5. Development of recommended public transportation solutions including estimates of costs and revenues;

6. Definition of a program of implementation; and,

7. Review of the application of the solution to other candidates in the same group.

Table 2 summarizes the results of this analysis for six different categories of prototypes (service for the elderly was examined for one community in each county). The recommended prototype solutions covered a wide range; including modification of existing fixed-route service, car- and van-pooling, jitneys, club and shuttle buses and shared-ride taxi services.

Conclusion

The prototype approach developed in this study offers a systematic method for conducting public transportation planning in suburban or small urban areas where problems are diverse and planning resources limited. It maximizes the impact of these resources by concentrating upon specific solutions to specific problems while laying the groundwork for wide application of results and recommendations.