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PLANNING MASS TRANSPORTATION SERVICES
FOR LOW-INCOME RESIDENTS

A THESIS

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FOR LOW-INCOME RESIDENTS

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SUMMARY

Transportation is an important problem in the low-income slums and ghettos of most large American cities. The high dependence of the poor on public transportation, the growth of low-wage employment in the suburbs, the inadequate service of existing mass transportation networks, and residential segregation by race are all factors which restrict the mobility of the poor. Yet, satisfactory urban living demands that the resident have access to job locations, medical centers, educational facilities, and recreational areas. Poor transportation contributes to the continued poverty and frustration of low-income residents. Recent urban unrest has focused some attention on improved transportation as one means of solving poverty-area problems.

The objectives of this study are to help the planner understand the poverty-area resident's need for mass transportation, to outline a study procedure which could be used in studying this need, and to suggest some basic considerations in planning a mass transportation system for the poverty area.

In undertaking research for this study, a review and analysis were made of existing literature related to the transportation problems of low-income urban residents, with particular attention to mass transportation planning. In addition, personal correspondence and interviews were carried out with appropriate authorities in the areas of mass transportation planning, poverty-area problems, and related fields.

Several conclusions were reached concerning the planning of mass

transportation for low-income urban areas.

Public transportation is the most logical answer to low-income areas' mobility problems. Where a city has, or is planning a rail transit system, service should be considered for the low-income areas. However, bus systems using a combination of regularly scheduled and limited-service routes will be the most common form of public transportation. Finally, some type of specialized individual-service transportation system may be required for poor residents whose transportation needs are critical but cannot be met by regular transit systems.

Since transportation to jobs is usually the most important mobility problem of the poor, employment access would likely be the major focus of a mass transportation needs study. The essential part of the employment access section is the matching of unemployed low-income residents with potential jobs in outlying employment areas. This matching process allows improved mass transportation services to be planned so they have the maximum effect in helping poverty-area employment.

Promotion is an essential part of any mass transportation service to low-income areas. Besides efforts to inform the poor about available transportation, an employment promotional program which places unemployed low-income residents with new job opportunities is a necessary follow-up to the job-matching process.

Few mass transportation services for low-income residents can be justified on a purely economic basis. As fare schedules must be low enough for low-income residents to afford, some form of public or private subsidy is almost a necessity. When evaluating a public transportation

system, social benefits other than those reflected in the fare revenues must be considered.

CHAPTER I

INTRODUCTION

We cannot-through the deterioration or loss of transit services-deprive large segments of our urban population of the means of seeking and holding a job, or of securing adequate medical attention, or of ready access to cultural and recreational centers. Public transportation can and must play an active role in breaking down the isolation of low-income neighborhoods by providing adequate access to and communication with the rest of the metropolitan area. Disadvantaged citizens must have an opportunity to escape the despair of the ghetto by linking themselves to opportunities outside the areas in which they now live.¹

These words were spoken in October, 1966, by Charles M. Haar, Assistant Secretary, Department of Housing and Urban Development. They are indicative of the concern that urban planners have recently begun to feel for the transportation needs of low-income residents.

Traditionally, transportation has been regarded as a physical problem. The goal of transportation planners has primarily been to provide the facilities necessary for present and future travel demands. Social considerations have often been involved but mainly in connection with the relocation of residents and the projection of future trip-making.

The 1965 summer riot in the Watts area of Los Angeles caused a new focus on transportation as one of the major factors underlying the social problems of urban slums. The McCone Commission report on the Watts riot cited inadequate transportation as a major contributing cause of ghetto unrest. The report stated: "It (lack of adequate transportation) has had a major influence in creating a sense of isolation with

its resultant frustrations, among the residents of ... the Watts
area."²

Early in 1966, following the publication of the McCone Commission's report, the Federal Department of Housing and Urban Development (HUD) became concerned with the transportation problems of the urban poor. The Department offered cities financial aid under the Urban Mass Transportation Act of 1964. To date, several cities have set up demonstration projects to improve transportation services in this area.

The increasing tempo of riots and unrest in the disadvantaged areas of American cities has intensified the need for prompt solutions. As a result, both governments and private interests have been prodded into acting to improve living conditions in low-income areas. The recently published, "Report of the National Advisory Commission on Civil Disorders," stresses the necessity of providing the urban poor
³with transportation to jobs.

The transportation problems of low-income urban areas will be subject to intensive study in the near future. Rising concern over urban poverty is increasing interest in better transportation as a solution. In the first half of 1968, thirteen U.S. cities had HUD grants
⁴approved for studies of this problem. In addition, organizations such as the National Alliance of Businessmen are backing transit improve-
⁵ments for the urban poor.

Although poor transportation is only one of a seemingly endless number of problems, it is of major importance. A certain amount of mobility is essential for urban living. When an individual lacks the means to travel about the city he is hindered in employment, education,

health, recreation, and other essentials of city life. Thus, transportation has a key inter-relationship with other important problems. Low-income residents who cannot afford automobile transportation and must rely on inadequate public transit systems are effectively prevented from maximizing opportunities that would improve their position.

Eliminating transportation problems would not, in itself, solve the difficulties of low-income city residents. Adequate transportation would, however, remove one important obstacle which underlies many of their problems. The challenge to urban planners is to determine the legitimate need for public transportation and provide the systems to meet this need.

Purposes and Scope of the Study

The purposes of this study are threefold:

1. to examine the nature of the transportation problems of low-income residents.
2. to outline a study that will examine low-income residents' need for mass transportation and recommend specific improvements.
3. to discuss additional factors which require consideration when planning the mass transportation system.

Chapter II discusses the transportation needs of low-income urban residents as they have been described by various research projects and literature sources.

This description of transportation needs is followed by Chapter III which discusses some types of mass transportation systems which can be

used in low-income areas.

In Chapter IV, the procedure for conducting a study of mass transportation needs in poverty areas is described. This study examines existing transportation problems and recommends specific improvements.

To fill out the mass transportation plan and determine operating characteristics various factors must be considered. These are described in Chapter V.

The scope of this thesis is limited to the mass transportation needs of low-income urban areas. In this context, mass or public transportation refers to the typical publicly or privately owned transit system which provides regular transportation services to the general public. Mass or public transportation contrasts with private transportation which refers to automobiles and taxis.

There are several reasons for limiting the study to mass transportation. Because they are unable to afford automobiles and other forms of individual transportation, many low-income residents are largely dependent on mass transportation for mobility. Moreover, since most cities have substantial transit systems in operation it is logical to consider mass transportation improvements as the first step in improving access about the city for the poor. Third, normal transportation studies provide for the personal transportation of those who have cars, however, these studies have not been designed to fully consider the mobility needs of low-income residents without automobiles.

Low-Income Urban Areas

For the purposes of this study, only low-income residential areas

in North American cities will be considered. Although rural and urban-fringe poverty areas may also have transportation problems, it is mainly in central city areas where the situation is causing concern.

The "poverty level," as defined by the Social Security Administration, is a good index of low incomes. The "poverty level," is a considered annual income figure below which a typical individual or family would be unable to meet the bare essentials of American life. For an urban family of four, the poverty level is currently set at \$3,335 per⁶ year.

A low-income urban area is a city residential area in which the majority of residents have incomes below the poverty level. However, this definition does not reflect the true picture in many problem areas. As an example, the area chosen by Atlanta for its Model Cities Project had 6,112 families with incomes below \$3,000 per year. More significantly,⁷ 1,123 of these families had annual incomes of less than \$1,000.

Many of the urban poor live in central city slums. These areas are characterized by overcrowded and substandard living quarters, substantial unemployment and underemployment, poor streets and public facilities, and unsanitary conditions. With the exception of public housing projects, those areas inhabited by large proportions of poor are usually substandard.

Nonwhites form a large percentage of the disadvantaged residents of low-income urban areas. Of the 10.1 million poor persons in central⁸ cities in 1964, 43.6 percent were nonwhites. Most large cities have at least one or more predominantly nonwhite slum areas known as "ghettos." It is in these ghettos that the greatest proportion of poor urban nonwhites live.

Unemployment is another important characteristic common to poor urban areas. Surveys taken in low-income neighborhoods of nine large cities by the Department of Labor in 1966 revealed an unemployment rate of 9.3 percent compared to 7.3 percent for nonwhites generally and 3.3 percent for whites. The sub-employment rate which includes unemployed, part-time employment, and full-time at less than \$3,000 per year was approximately 33 percent.⁹

Also, low-income areas generally have higher residential densities than other residential areas of a city. Poverty and racial discrimination produce overcrowding which is especially prevalent in nonwhite areas.

There is no "typical" low-income urban area. No single description of any one such area would accurately reflect another. However, this section has given some general characteristics which are common to most low-income urban areas. The areas to which this study refers will have many of these characteristics.

CHAPTER II

TRANSPORTATION PROBLEMS OF LOW-INCOME URBAN RESIDENTS

The major transportation problems of the urban poor are all related to access. Three areas of access are examined in this chapter: access to employment, access to community educational facilities, and access to other important destinations such as medical and recreational facilities.

Access to Employment

Access to employment is probably the most important transportation need of most low-income residents. Unemployment is the cause of many problems in urban slums and, therefore, the prevention of unemployment demands high priority. Transportation between residence and job location is one of the requirements of employment and when this transportation is deficient, job opportunities for low-income residents are limited.

The actual problem that low-income residents have with access to employment can be stated quite simply. Large numbers of the urban poor who live beyond walking distance to their jobs are dependent on mass transportation for access to these jobs. Where mass transportation service is poor or too costly, low-income residents may be forced to pass up valuable employment opportunities. Where jobs are scarce, poor transportation may contribute directly to unemployment.

There is little factual evidence to indicate the magnitude of unemployment caused by poor transportation. It is, however, a common

complaint among the unemployed in poverty areas, and several studies have been able to show strong correlations between job vacancies that can only be reached by automobile and unemployed workers who have no automobiles.

Atlanta is a city where lack of adequate transportation hinders the employment of low-income residents. Officials from both Economic Opportunity Atlanta, Inc. and the Model Cities Program have stated that transportation is one of the prime problems in finding jobs for low-income residents. In various parts of Atlanta there are jobs that the unemployed could fill if they had some reliable means of traveling between home and job location.¹⁰

Several factors are related to the problems that low-income residents have with access to employment. They are: the heavy dependence of the poor on mass transportation, the decentralization of employment locations, racial segregation, and the cost of mass transportation fares. Although some of these factors are not limited to employment access problems, they will be discussed in this section.

Dependence on Mass Transportation

In nearly all American cities, many low-income people depend on mass transportation to get to work. For example, in 1960 for Washington, D.C., 60 percent of those residents working and living in the central city and earning between \$2,000 and \$4,000 per year used mass transportation to work. This percentage drops to 25 for those earning more than \$10,000. Meanwhile, for the \$2-4,000 income category, 30 percent of the workers living in the suburbs but working in the city used public transportation.¹¹ Although central city residents tend to use mass transit more than suburban residents, low-income residents use transit to a greater extent

than those with higher incomes.

Automobile ownership is a large factor in the poor's dependence on public transportation. The cost of purchasing and operating an automobile is too expensive for many low-income residents. Moreover, high residential densities in slums and ghettos discourage auto ownership. Many low-income residents lack the private space to store a car and parking in the streets runs the danger of theft and vandalism. As a result, substantial percentages of residents in poverty areas are without automobile transportation and, therefore, dependent on mass transportation. Data on Atlanta's low-income Model Cities area show that in 1960, there was one car for every four potential drivers. This compares with one car for every two potential drivers in the entire metropolitan Atlanta area.¹² Again, the 1963 Census of Transportation states that 59 percent of the public transit user households in the central cities of the USA had no automobile.¹³

Even in highly automobile-oriented cities such as Los Angeles, low-income residents often do not own automobiles. A 1965 survey of the low-income Watts district shows that 42.1 percent of the occupied dwelling units had no automobile available for use.¹⁴ As these figures indicate, large numbers of the urban poor have no private means of transportation beyond walking.

Decentralization of Jobs

In the last two decades there have been substantial changes in the distribution of jobs in North American Cities. Businesses and industries have begun to decentralize their locations in line with the growth of city suburbs. Although most central cities still contain the major concentrations of low-income jobs, the suburban areas are ex-

perienicing an increase in low-income employment. This is complicated by the fact that in most cities, the low-income residents are still largely located in central city residential areas. In early 1967, among city residents unemployed more than 15 weeks, it was calculated that about 60 percent were last employed in jobs for which vacancies existed in the suburbs.

Data from the U.S. Bureau of Labor Statistics supports the contention that jobs for low-income residents are increasing in the suburbs. Between 1950 and 1960, employment for blue collar and service workers in New York City decreased by 153,000 jobs. During the same period there were 175,000 new jobs in these categories created in the rest of the New York Standard Metropolitan Statistical Area.¹⁶

Again, the Tri-State Transportation Commission reports that in Suffolk and Nassau Counties, Long Island, outlying industrial parks have job vacancies for 5,000 unskilled and semi-skilled workers, while in the low-income urbanized areas of these counties there is substantial unemployment among semi-skilled and unskilled workers.¹⁷

The effects of decentralization on city employment are compounded by the migration of low-income residents into the central city. The demand for semi and unskilled labor in the central cities cannot always keep pace with the growth in the unskilled population. Moreover, economics and racial segregation often keep low-income residents from leaving the central city for suburban living areas.

The trend toward decentralization of job locations and the concentration of low-income residents in the central portion of cities has created an uneven distribution of jobs and workers. Recent studies

involving the Skokie Swift transit service in Chicago show that this unequal distribution has been the major employment problem in Chicago during the sixties. The report states that, while much of the increase in job opportunities has occurred in the suburbs such as Skokie, a large part of the labor supply has remained in Chicago where less expensive housing is available. An increasing number of these factory workers and office employees are commuting from the central city to jobs in the suburbs.¹⁸

The operation of many public transportation systems complicates commuting from the central city to suburban jobs. Since the major portion of mass transit users are traveling to the city center, transit service is naturally oriented to serve it. This situation results in a radial pattern of transit routes which converge on the central core. To get to his suburban job by transit, the low-income commuter often must first travel to the central business district and then take a radial route to his job location.

Los Angeles' mass transportation demonstration project, "Transportation Employment," made this observation.

As in most other large urban areas, the public transportation system has been oriented to the Los Angeles central business district, and during the years of decentralization there has been little opportunity for public transit to adjust its operations to meet changing conditions. The relatively low traffic volumes between points other than to and from the central business district generally make the operations of such transit services economically unsound.¹⁹

A study of the effects of employment decentralization on core city workers of Boston discloses some pertinent findings. When firms from the central city relocated in the suburbs, commuting distances from the core area increased and as the new sites were often beyond the area served

by public transportation, some workers had to find other means of transportation such as the automobile with its higher costs. After relocation, those workers residing in the core had their commuting times increased by two thirds and the percentage using public transportation to work decreased from 21.7 to 2.1 percent. For those workers who separated from the firms after relocation, higher commuting cost to the new job sites was the most important reason.²⁰

The situation in Boston is typical of most large American cities. As employment concentrations decentralize from downtown locations and scatter throughout the metropolitan area more low-income residents are forced to travel from the central city to the suburbs for jobs. Their heavy dependence on transit systems which are not geared to handle this function makes their commuting costly in terms of both time and money.

Race and Access to Employment

Race is an important factor in the problem of access to employment. Many of the statistics involving the journey to work show significant differences between whites and nonwhites. Findings of the major metropolitan transportation surveys in the United States reveal that nonwhites generally have lower work-trip mobility than whites.²¹ In addition, the U.S. Census of Transportation showed that 21 percent of nonwhite males and 28 percent of nonwhite females spent over 35 minutes in traveling to work. Comparable figures for white males and females were 19 and 15 percent.²²

Although the average distance to work for nonwhites is lower than that for whites, this fact does not hold for low-skilled workers. Non-

white laborers and service workers travel substantially further to work than their white counterparts and it is this grouping that is most
 23
 pertinent to low-income urban areas.

Housing segregation is probably the most important factor in relating race and transportation to employment. Because nonwhites are usually confined to ghettos and semi-slums in the older areas of most American cities, the workplaces of nonwhites are very unevenly distributed throughout the urban area. The pattern of work trips is often quite different for white and nonwhite workers because of differences in residential location. Studies in Chicago show that work trips by whites are more radial in character than those of nonwhites, whereas, nonwhites
 24
 experience more cross-town and intersector travel than whites.

When nonwhite residents are restricted to living in certain areas of the city their opportunities for employment become closely linked with transportation. Since most ghetto areas are near the city center and transit systems are usually oriented toward the center, employment there presents few transportation problems. However, increasing numbers of low-income nonwhites are traveling to jobs in the suburbs. Larger percentages of nonwhites than whites reverse-commute to the suburbs
 25
 from the central city. Since housing segregation generally prevents nonwhites from living in the suburbs, those who work there are forced to travel longer distances than they might otherwise choose. As public transportation is often inadequate many possible employment opportunities are thus inaccessible to low-income nonwhites.

The situation is aptly summed up by the following quote from, "The Urban Transportation Problem," by J.R. Meyer, J.F. Kain, and M. Wohl.

Noncentrally employed nonwhites seem to travel relatively long distances to work while noncentrally employed whites usually manage to live reasonably close to their work. In general, the evidence is that discrimination forces minority groups into a disproportionate amount of cross-hauling and reverse-commuting. Ghettos and their counterparts are located near CBDs; accordingly, since more and more workplaces are located at the fringes of cities, more and more Negroes will be travelling to and from work in directions opposite to the main commuter streams unless housing discrimination is lessened.²⁶

Cost of Mass Transportation

The cost of transportation to employment is sometimes a problem facing low-income residents. Although mass transportation fares are generally not excessive for the average transit patron, for low-income residents the cost of transit can be a substantial percentage of their daily incomes. Detailed fare schedules for 14 major cities, from the American Transit Association, show that fares on public transit lines from the central city to the closest suburban area range from 30 cents one way in one city to 65 cents in another. For low-income residents traveling to work in the closest suburbs, transportation costs would require a minimum of \$15 monthly.²⁷ Data from Los Angeles shows that in 1967, Watts area workers had to pay an average of \$2 per day to reach decentralized job locations.²⁸ It is obvious that for low-income residents, many of whom earn no more than \$60 per week, mass transportation costs are important. In some cases, poor residents remain unemployed for when considering transportation costs, available jobs do not pay enough to be worthwhile.

Access to Education

Transportation to educational facilities may also be an important

need for low-income residents. Access to particular schools and colleges may be difficult, limiting the choice available to the poor. Secondly, the housing of low-income students to schools in other parts of the city may be an important part of city education policy.

Although access to elementary and secondary schools in low-income areas may present no real problems, access to more specialized facilities may be difficult. Technical and job-training schools are important for poor residents, yet, their locations may be quite difficult to reach by mass transit. Moreover, many such courses are offered at night when transit service is generally less frequent.

Similarly, poor mass transportation limits the choice of colleges for students of low-income areas. Where colleges and universities were once found predominantly in central city areas, decentralizing trends have caused many of the newer ones to locate in the suburbs. Public transit systems in some cities supply poor access for low-income students to outlying educational institutions. For example, in 1966 and 1967, surveys of high school graduates in the Watts area of Los Angeles showed that many believed transportation made it difficult to reach the colleges of their choice. Students wishing to travel to East Los Angeles College, a distance of only 12 miles, had to spend up to 65 cents and one and one-half hour in three buses for access one-way.

Bussing may be another significant transportation need related to education. Basically, bussing is a product of attempts to achieve a better racial and academic balance among the various city public schools. This balance is partially achieved by transporting or "bussing" students from one residential area to schools in other areas. When used ex-

tensively throughout the school system, bussing requires a substantial amount of mass transportation.

Bussing is a controversial issue which involves much more than transportation. The bussing of nonwhite students to schools in white areas and vice versa is often advocated to reduce racial segregation in the school system. Also, where schools are overcrowded, it may be more economical to transport students to under-utilized facilities than to build new schools for a changing population structure. Thirdly, bussing can also be used to achieve a better academic balance between schools in slums and in suburban areas.

In all cases, bussing involves the use of mass transportation as one alternative course of action in solving educational problems.

Other Transportation Problems

Low-income city residents have other transportation problems besides getting to employment areas and educational facilities. Most modern urban activities involve some necessity for transportation. Two more specific transportation problems will be mentioned in this section: transportation to medical facilities and transportation to recreational facilities.

Access to Medical Facilities

Health services to the urban poor can be hindered by poor transportation. Mass transportation systems often are not designed to supply quick, convenient service from low-income areas to medical facilities. The McCone Commission found that, in Los Angeles, it took residents of Watts two hours to get to the County General Hospital by bus.³⁰ Because the urban poor are so dependent on mass transportation, poor service helps

deprive them of needed medical care.

The Community Council of Atlanta has documented such a situation. In a survey of Atlanta's poor, 23 percent of the residents said transportation problems had kept them from taking their children to the doctor. The Grady Hospital clinic is the facility most used by the poor in Atlanta, however, from only one blighted area it is possible to reach this facility by bus without a transfer. Long trips by public transportation plus the waiting periods at the clinic, force the poor to allocate an entire day for their trip to the hospital. As a result, the³¹ health of some low-income residents suffers from neglect.

Mass transportation service to medical facilities is especially important to low-income residents because of the heavy reliance they place on centralized medical clinics. Low incomes and custom keep the poor from using private physicians, and as a result, there are generally few private medical practices in urban slum areas. For example, within Atlanta's Model Cities Area there are 43,000 people and not one private³² practicing physician or dentist. The residents of such areas are dependent on hospital clinics and public health centers for most of the medical treatment that they receive.

Transportation to medical facilities is critical for aged and non-ambulatory patients. Low-income urban areas generally have large numbers of older citizens who have neither the money nor the ability to use automobiles. For these people, long trips on crowded buses, transfers, and walking and waiting times, can be very arduous. Inadequate public transportation forces them to spend needed money on taxis and ambulance service or to forego medical treatment.

Access to Recreation

Extensive recreational facilities are seldom found in low-income urban areas. The poor tend to live in older sections of the city, most of which were built up when public recreational areas were not considered to be an important city service. Increased residential densities and changes in the income-character of these older areas have intensified their need for recreational facilities, yet many have not been provided with adequate playing fields, swimming pools, and recreational programs. As a result the low-income residents must either travel to where facilities are available or do without.

Public transportation systems that fail to provide good access to employment and educational facilities generally provide poor access to recreational facilities. Few systems have been designed to consider recreation needs of low-income people. Service levels are low during the evenings and on weekends--the prime times for most recreational activities. Moreover, excessive traveling times and expensive fares may be such that poor residents are discouraged from making trips for recreational purposes.

Residents in low-income areas may also lack information about what recreational opportunities are available to them and can be reached by mass transportation. In Los Angeles there were complaints from low-income youth that beaches and recreational facilities were inaccessible to those without cars. The Transportation-Employment demonstration project distributed a booklet to school children showing points of recreation and how to get to them by bus. A follow-up survey showed that half of the recipients had found new places to go. Slightly less

than one third of these had travelled by bus. 33

CHAPTER III

MASS TRANSPORTATION SYSTEMS FOR LOW-INCOME AREAS

Before the procedure for studying the mass transportation needs of low-income residents is discussed it is necessary to consider the types of mass transportation systems which are most feasible for use in poverty areas. This chapter describes some of the advantages and requirements of various mass transportation systems.

Mass transportation is not the only solution to the mobility problems of low-income residents. In certain cases it might be more feasible, for example, to promote automobile ownership as the answer to transportation problems. However, as the Introduction explained, mass transportation is the main concern of this thesis. Moreover, it is logical to consider mass transportation improvements first for most cities have a sizeable investment in transit which is presently providing some service to the poor. Furthermore, it seems likely that cities will continue to need their transit systems in the future.

Three types of mass transportation system are discussed in this section. They are rail transit, bus transit, and specialized transportation systems which offer nearly individual service. When planning a transportation system for a low-income area, either one or combinations of these types of systems can be chosen in accordance with the particular needs of the area.

Rail Transit

Rail transit refers to rapid transit trains which run on fixed tracks above, below, or at surface grade. Only a few of the larger American cities presently have rail systems, however, several cities are planning new systems for the near future.

The application of rail transit to the problems of low-income areas depends on one major condition. Either the city must have an existing rapid transit system or be planning one for the future. Where rail transit already exists, it may be feasible to consider the extension of routes to directly serve low-income areas. Where a new system is being planned, special consideration can be accorded to the needs of poverty areas. However, it is very unlikely that rail transit can be economically justified as a transportation system solely for a low-income area.

A rail transit system has several requirements which limit its application to low-income area transportation problems. First, because of its high cost, rail transit is a city-wide transportation solution and it must be based on a city-wide need. Rail transit must be designed to fill regional transportation priorities which may not meet the particular local needs of low-income areas. Also, because rail transit routes require heavy passenger volumes, they are unable to provide the fine degree of service that low-income residents require. Transit stations must be situated in high density areas and unless good feeder bus systems are used, the poor in low density areas will not be adequately served.

When rail transit is feasible, its high speed enables it to help

solve some of the transportation problems in disadvantaged areas. Because it is the fastest method of moving passengers over large areas of a city, rail transit can reduce the travel times of low-income residents and give them greater accessibility to outlying areas.

An example of this type of service is the Skokie Swift demonstration transit line connecting the suburb of Skokie with Chicago. It opened up new employment opportunities for low-income city residents. Suburban firms reported that the rail transit service increased the availability of four types of workers: women, nonwhite, skilled blue collar, and unskilled. The demonstration report stated, "the new rapid transit service had especially opened job opportunities in these suburbs to nonwhite workers living in Chicago."³⁴

If an urban area is planning to construct or improve a rail transit system, it is important that its potential in the low-income area be considered. Low-income residents will still have access problems when rail transit is present unless special consideration is taken of their needs.

The recent corridor impact study of Atlanta's proposed rail transit system stresses the need to consider problems in low-income areas. This study recommends extending rail transit lines into the heart of low-income areas and connecting them with major community facilities such as hospitals, schools, and the government center. Service to low-income public housing projects is also urged. The report stresses that the fare structures must take special note of potential transportation costs to poverty area residents to ensure maximum benefit to this group.³⁵

The economic realities of rail transit should not be forgotten,

however. Rail transit can only be extended to serve low-income areas where the passenger volumes will be sufficient to justify the route or where some other ensuing benefit will be great enough to offset the cost.

Where rail transit already exists or is a possibility, it is important that other programs for poverty areas be planned in conjunction with it. Such programs might include the construction of new public housing near transit stations, the development of low-wage industries along transit lines, and the redevelopment of areas around transit stations in poverty areas.

Bus Systems

Two types of bus transit are considered. The first is the familiar type of bus system which offers service along particular routes at regular intervals throughout the day. The second is direct limited service between the low-income area and a particular destination. This service is specialized and is only operated for limited periods during the day.

Regular Bus Service

When planning mass transportation systems for low-income areas, it is likely that regular bus service can meet many of the transportation needs of the poor.

Regular bus transit is a logical consideration when the city has an existing bus system which provides some service to low-income residents. An operating system is present to use as a base and much of the equipment, facilities, and personnel are readily available. Also, low-income residents are familiar with the operation of regular bus systems.

Moreover, improvements to existing routes and service can often meet the needs of the poor without involving excessive costs.

Regular bus service is usually operating, at present, in low-income areas which are large enough to have a fairly heavy demand for mass transportation services throughout the day. Regular service is generally supplied along the major streets running between the low-income area and the central business district. However, as Chapter II indicated, this service is seldom adequate for residents who are entirely dependent on mass transportation for their mobility.

Two types of routes are usually needed to improve the regular transit system so that it gives better service to the poor. The radial routing of most bus systems is a common complaint in low-income areas. Therefore, where there is sufficient demand, cross-town service should be provided to reduce the orientation of transit systems to the central business district and improve the mobility of low-income residents. Also, new routes are often needed to directly connect public facilities and other destinations of the poor with low-income areas. Quicker and cheaper bus transportation may be needed to hospitals, educational centers, and employment areas. To guarantee the availability of transportation it is often necessary to maintain regular, although uneconomical, transit links in areas where volumes are lighter.

The South Central and East Los Angeles Transportation-Employment Project is experimenting with route additions to an existing system. This HUD mass transportation demonstration project is attempting to solve the mobility problems in the low-income ghetto areas of Los Angeles. Under this program, two new cross-town routes have been integrated into

the existing transit network to improve the service in low-income areas.³⁶

Of the new connecting routes, the Century Boulevard line is the longest and most important. It connects the low-income ghetto of Watts with the Los Angeles Airport and several industrial areas and was set up to test the assumption that increased public transportation can substantially improve employment opportunities for residents of a disadvantaged area. This line serves primarily as a cross-town route, intersecting the various radial routes oriented to the central part of the city.

Although the Century Boulevard line's revenues cover only half of its operating costs the experiment has achieved some noteworthy results in solving transportation problems of low-income residents. Before the line was begun, cross-town travel in this part of Watts required several transfers with their accompanying costs in time and money. Once the Century line was opened travel-times and fare costs were substantially reduced and access to new employment opportunities was created.³⁷

The Century route certainly has not been an economic success, however, when the project is completed it may be considered a social success. The new route has provided Watts residents with improved access to many opportunities. If the social benefits are great enough they can justify the necessary public subsidy.

Limited-Service Bus Systems

Limited-service bus transportation refers to the limited service

that transit systems often provide for specialized transportation needs. This service is usually offered to a relatively small number of passengers on a regularly scheduled basis and it fills a need that the regular transit system cannot economically meet. Limited services may be operated by the transit company as part of its overall service network or they may be run by other organizations which charter buses for this purpose. The Atlanta Transit System has an extensive network of specialized bus services known as "Limiteds." These routes perform many important roles from providing transportation to outlying employment areas to special services for shoppers.

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For low-income residents, the most important advantage of limited-service transit is its ability to meet very specialized transportation demands. Because their schedules are limited to serve very selective needs they can be used to provide service where passenger volumes would be unable to justify a regularly scheduled bus route. Atlanta Transit System's specialized express service for transporting low-income domestics to and from high-income areas is one example.

Limited services have another advantage in their speed. Because they have few stops and often use express routings they are much quicker than regular transit service.

Despite its advantages, limited-service bus transit has some drawbacks. Because the routing and frequency of service are tailored to a specific purpose, limited-service routes are not very satisfactory for serving general low-income travel needs. For example, service to employment centers usually coincides with the work shifts at these centers with the result that buses might only run between 6:00 and 7:00 a.m. and 3:00

and 4:00 p.m. Also, limited-service routes do require a minimum number of passengers from one origin going to one destination. In a typical urban area such concentrations of trip purposes are relatively few.

Several recent Department of Housing and Urban Development mass transportation demonstration projects have specifically set up limited-service bus systems to meet the transportation needs of low-income residents.

Nassau and Suffolk Counties' HUD demonstration program operates limited-service transit routes to connect low-income areas with outlying employment concentrations. These two counties have substantial numbers of low-income urban residents with high unemployment rates and virtually no access to job vacancies in outlying industrial areas. The project's objective is to improve the economic status of the low-income groups as much as possible by providing adequate transportation services.
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A total of five bus routes have been developed by the demonstration project. Four of these provide specialized peak-hour transportation only. All routes are new in the sense that they are not integrated or connected to other bus systems.

Although the Nassau-Suffolk Counties project is just a year old, it has achieved some success in enabling poor residents to reach employment possibilities. For the four peak-hour services which provide transportation to jobs only, 42.6 percent of the riders claimed they did not make the trip before the service was started. To date, however, passenger revenues have not covered more than 50 percent of total costs on any one line.
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Another example of limited-service bus lines are those operated by public corporations as part of the Los Angeles demonstration project. There, community-operated home-to-work bus services were established to provide low-cost transportation to widely scattered industrial areas which previously were inaccessible by existing public transportation. To date, these community-operated, limited-service lines have not been successful. Although some residents have been provided with cheap transportation from home to work, passenger volumes have been discouragingly⁴¹ low. These services will be discussed further under the section on promotion in Chapter V.

Individual-Service Systems

The conventional concept of mass transit implies a condition of large numbers of people traveling from an area of origin along several corridors to a few destinations. However, in many low-income areas, reality may show many small groups needing to go to many dispersed locations. Public transportation may not be the solution to all of these nearly individual transportation needs, yet, there are special cases where low-income residents do require public transportation for individual service. The third type of public transportation system to be mentioned here is that which supplies individual door-to-door service to low-income residents.

An individual-service transportation system is applicable to a low-income area when some of the residents have pressing transportation needs which cannot be met in any other way. For example, the young, sick, aged, and handicapped poor are often unable to use conventional mass

transit and cannot afford private transportation. Yet, the success of poverty programs in medical care, day-care service, and education may depend on these people having transportation. However, individual-service systems must be almost totally subsidized, and so should only be considered where the benefits are substantial.

One type of transportation system which offers very specialized service is frequently operated by neighborhood service agencies in low-income areas. Small buses or vans are used to transport children to day-care centers, deliver surplus foods to the elderly, take non-ambulatory patients to medical clinics, and meet similar needs. The vehicles may schedule some of these services or remain on call for emergencies. Private companies are usually not involved in the operation of these systems because of the heavy subsidy that is generally required.

Atlanta's poverty areas have had some experience with this type of transportation service. Economic Opportunity Atlanta, Inc. has several neighborhood service centers in poverty areas which have experimented with specialized individual-service transportation for poor residents. E.O.A. administrators stress the needs for such transportation services but admit there is a major problem in restricting emergency
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service to truly emergency cases.

Taxi service is a possible solution to those individual transportation needs which can be scheduled. Instead of using its own vehicles, an agency working with low-income residents could contract with private taxi companies for regular services such as transporting children to day-care centers. In the Atlanta area, Marietta uses taxis to supplement a
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bus operation for transporting children in the Head-Start Program.

A third solution is reliance on community organizations and volunteer groups to meet the very specialized transportation needs of poor residents. Church groups, service clubs, and community groups often have the resources to provide solutions to some of the transportation problems faced by residents in the neighborhood. However, the task of mobilizing the resources of voluntary groups may be difficult and lack of unity in approaches may leave significant transportation needs unmet.

Other Solutions

Although this thesis deals expressly with mass transportation, there may be other feasible solutions to the transportation problems of the poor. Since low automobile ownership rates are a prime factor in the dependence of many low-income residents on transit, it would seem logical that increasing the availability of cars for the poor would help reduce their transportation problems. Moreover, cars would be able to meet the specialized needs which bus systems cannot.

Several ideas on automobile transportation have been considered by planners although none has been tested to date. One possibility involves short-term car rental schemes for the poor. Also, government subsidies to slum residents for auto repairs are being considered because many slum dwellers own cars which are unfit for use on high speed highways. Another possibility is the promotion of car-pools among low-income residents.

All of these possible solutions have substantial problems, yet, in some cases they may be the most feasible answers to a particular problem. New ideas must be given due consideration when planning solu-

tions to poverty area transportation problems.

CHAPTER IV

STUDY OF MASS TRANSPORTATION NEEDS

A study of the need for mass transportation service is advisable if suitable solutions are to be planned for the mass transportation problems of low-income residents. Such a study should cover the whole scope of the poverty area's need for transportation. It must examine problems of access to employment and other destinations, evaluate existing mass transportation service and recommend improvements.

A conventional urban area transportation study is no substitute for an examination of the low-income area's mass transportation needs. The scale of a typical city transportation study is too large to properly consider the particular characteristics of one low-income area. Moreover, city-wide transportation studies base their future demand predictions on present transportation patterns, however, for low-income areas, future travel demand may not be similar to the present travel pattern. In many cases, the present travel of low-income residents is restricted by their dependence on poor mass transportation service.

Routing studies conducted by the typical mass transit company also often fail to discover the real needs of low-income residents. Surveys of employers and mailed questionnaires are commonly used but they do not reach those residents who need transportation the most. Even expensive surveys which directly contact low-income residents may be unsuccessful for many residents may not really know how they can use transportation to increase

their opportunities.

Study Outline

This chapter presents one possible outline of a mass transportation study for a low-income urban area. The purpose of this study is to determine an efficient mass transportation system which will solve the major transportation problems of the residents. The study would recommend specific mass transportation routes and the general type of service that would be needed to meet the anticipated passenger demand.

Figure 1 illustrates the study of mass transportation needs. Each box represents a step in the procedure and will be explained in the rest of this chapter. The numbers after each heading refer to the numbering of the boxes in Figure 1.

Several study areas may be involved within the scope of the overall mass transportation needs study. In this outline three study areas are considered: employment access, educational access, and other transportation needs such as access to medical and recreational facilities.

The employment access study can be done jointly by the transportation planning agency and an organization responsible for employment programs in low-income areas. This joint approach will ensure that both the employment and mass transportation factors are adequately handled.

Examination of the other areas of mass transportation service can be done best by agencies concerned with these areas. For example, the study on the need for transportation to educational facilities should be part of an overall study done by education planners. However, all of these studies need to be kept closely coordinated with the work of the transportation planning agency.

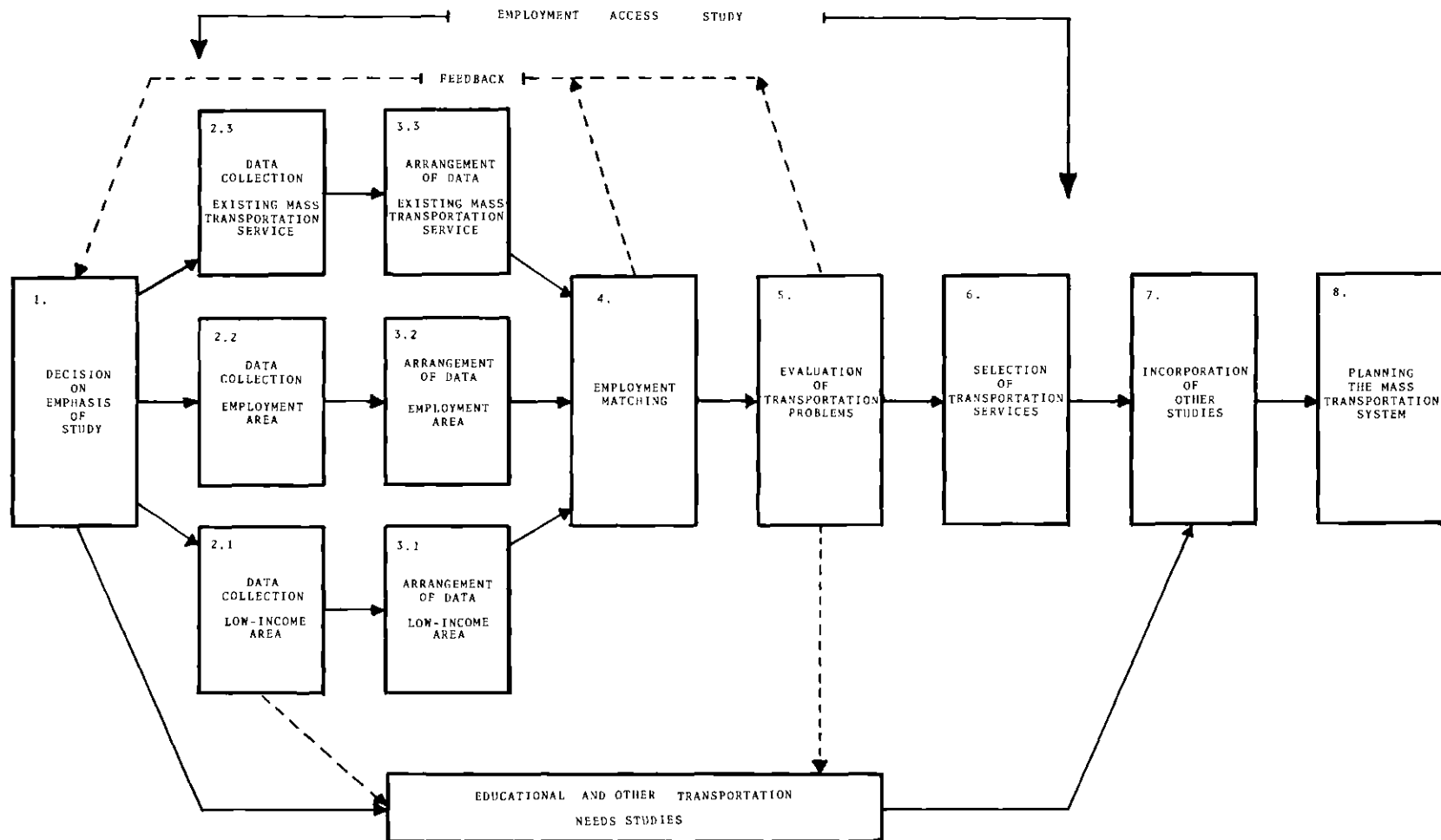


FIGURE 1

OUTLINE - MASS TRANSPORTATION NEEDS STUDY

Emphasis of Study (1)

Once the mass transportation planning agency has decided to examine the mass transportation problems of poverty areas, the first step is to decide on the emphasis of the study. Some problems will be more significant than others and the study may need to concentrate on them. This decision can best be made by a policy board consisting of representatives of the low-income community, the mass transportation planning agency, and other involved organizations.

In the study outline considered in this chapter the main emphasis is placed on employment access. Since transportation to employment locations is usually the major transportation need in most poverty areas the employment access section is most likely to form the basis of most mass transportation needs studies. As sections involving the educational and other transportation needs are less complex and secondary in importance, they are not described in detail.

In Figure 1, steps 2 through 6 refer primarily to the employment access study. It begins with an examination of three particular subjects: the labor market in the low-income area, the job market in the employment areas, and the state of the existing mass transportation system.

Data Collection (2)

The step entitled data collection is broken down into three subdivisions based on the types of information needed. These are: data on the characteristics of the low-income area (trip origins), data on the employment areas (trip destinations), and data on the existing mass transportation service.

Low-Income Area (2.1) Before mass transportation improvements can be planned to reduce unemployment in a low-income area, extensive information is needed on the employment situation of the low-income residents and its relationship to mass transportation. Present and past occupations, permanency of employment, location of employment, mode of travel to job, and any existing transportation problems are all important information categories.

Information on the characteristics of the labor force must be comprehensive enough to show the employment potential of the residents. In addition to education and skill level, some insight is needed into the cultural background and motivation of area residents. It is necessary to know why the poor are underemployed and how employment can be improved.

Some of the labor market data can be obtained from fairly standard sources. Special U.S. Census surveys and state and local departments of employment can generally supply a good overall picture of employment in the area.

Agencies dealing with employment often use the Dictionary of Occupational Titles (DOT) Code to classify the occupations of job applicants. This six-digit code enables data from various sources to be compared on a common basis.

More detailed information on the characteristics of the labor force can be collected by community surveys. If necessary, in-depth interviewing can be used on a small sample of residents to uncover less superficial characteristics of the labor market such as the attitudes and motivations of the unemployed. In addition to information on employment access problems, the community survey should also collect data which might

be needed for educational and other needs studies. Relevant information can then be supplied to the agencies which are studying these various areas of mass transportation need.

Employment Areas (2.2) While information is being collected on the low-income areas, data can be collected on the employment areas. It is necessary to know that employment opportunities are available before transportation service can be planned to help the unemployed get jobs. For major employment centers information is needed on location, wage levels, the number of vacant positions, and the skill-levels required to fill them. Information is also needed on the policies that employers have concerning the hiring of low-income and nonwhite unemployed and on their attitudes toward employee transportation to work.

As with the labor market data, information on the job market can be obtained from a combination of standard data sources and special surveys. Data on major employers may be available from related agencies such as departments of employment. However, special surveys of area employees will have to be made to get current detailed information on employment vacancies and hiring policies.

Again, a classification system, the Standard Industrial Classification (SIC) Code, is often used to classify employees by type of business. In both the Los Angeles and St. Louis transportation demonstration projects the matching of labor force occupations with possible job openings was simplified by use of the SIC Code.⁴⁵

Existing Mass Transportation Service (2.3) If mass transportation exists, data on its service to low-income areas is the third type of infor-

mation which must be collected.

Complete information on the service supplied by the present mass transportation system is needed. This information should cover routing, headways, travel-time, fares, volume of passengers, and other similar factors. Such data are readily available from transit companies and when collected, can be compiled for use in evaluating transportation service.

At the same time, information can be collected on other types of mass transportation systems which might be applicable to the low-income area. As Chapter III indicated, solutions such as rapid transit, regular bus service, charter and limited bus service, special individual-service systems, and methods of transport other than mass transportation may be feasible. For each system considered, information is needed on such factors as passenger capacity, passenger comfort, routing capabilities, volume requirements, right-of-way requirements, and operating cost.

Arrangement of Data (3)

The third step in the outline of the study is the arrangement of data collected in step 2. As three groups of data were collected their arrangement is considered in separate sections: low-income area, employment area, and existing mass transportation system.

The data are arranged with reference to factors which will influence the employment of low-income residents in outlying job locations. Of these, occupation is most important. The educational and skill level of the job seeker has to match that required by the position. Secondly, the employer must be willing to hire low-income and nonwhite employees. Similarly, the unemployed residents must be willing to work at suburban

job locations for the wages offered. A fourth factor is the availability of transportation from the low-income areas to the job location.

Low-Income Area (3.1) The low-income study area is first divided into transportation zones. Each zone consists of one or more city blocks which are adequately served by an existing or potential mass transportation stop. The pertinent information for matching unemployed residents with potential jobs is arranged on this basis.

For each transportation zone it is desirable to have the data assembled into the following categories:

1. the number of unemployed, underemployed, and employed residents,
2. an occupational breakdown to four or five general levels based on past and present employment, educational, and skill levels,
3. some factor to indicate the likelihood of low-income unemployed accepting jobs (based on attitude, potential wage level, etc.),
4. the means of transportation to jobs,
5. an indication of those presently employed who would change jobs if better transportation were available,
6. a listing of major problems involving transportation to jobs.

Employment Areas (3.2) A procedure similar to that used for study area data is used to analyse and assemble data on the employment areas. First, the locations of the major employment centers are identified and

then the data are arranged in categories for each employment center, similar to the following list:

1. the number and occupations of potential vacant jobs,
2. a factor indicating the likelihood of a low-income resident being employed (based on employer attitude and wage levels),
3. the number of residents presently employed from the low-income area,
4. the maximum distance employees could be expected to travel to job locations.

Existing Mass Transportation Service (3.3) Before the existing mass transportation service can be evaluated, the information collected on it must be assembled into a usable form. One method would be to construct a map of the existing system and include information on scheduling, fare levels, and similar categories. The map would then be a graphical model of the mass transportation system. If the existing system will be used as part of a computerized operation, the network of services can be coded.

Employment Matching (4)

The third step in the employment access study is the matching of unemployed residents from the origin zones with potential jobs in the destination zones. The end product is a set of figures for each employment destination which indicates the potential employment matches between the employment center and each origin zone, assuming transportation is available and employment is promoted.

To match the unemployed with potential jobs, each employment center is considered individually with each origin zone. The likely employment between zones is figured on the basis of those zonal factors listed under the analysis of data which determine the potential employment. Both present employees and low-income area unemployed are considered. The potential mass transportation patronage between the zones can be obtained by evaluating the transportation options of the low-income residents and calculating the split between mass transportation and other modes.

If the project is large enough to warrant it, the matching process between employment centers and low-income origin zones can be computerized for more efficient operation.

Evaluation of Transportation Problems (5)

The next step of the employment access study is an evaluation of the transportation problems experienced by low-income residents. Information from the survey of study-area residents will have defined various problems with existing service to employment centers. These problems can now be compared with the assembled information on the existing system. Therefore, this step acts as a check on the validity of low-income residents' complaints about service to employment. It also points out important problems that need attention.

At the same time, problems which have been expressed concerning access to educational, medical, and other facilities can be evaluated. Since the education study and the other transportation needs study also rely on community surveys for their information on problems, this check against the existing transportation system helps eliminate unimportant complaints.

Information from the employment matching operation plus the major mass transportation problems evaluated in this step provide a good basis for the design of the system. Needs and problems related to access can be solved by the selection of transportation services while other problems with the mass transportation system can be met when the remaining details of the system are planned.

Selection of Transportation Services (6)

The selection of mass transportation services connecting low-income areas with potential employment centers is the most important step in the employment access study. This step involves two parts: determining the types of mass transportation systems that can be used and selecting the actual routes and degree of service. The decision on the type of system is the first to be made for it will control both routing and service.

The actual selecting of the type of mass transportation should be done by the policy board on the advice of the mass transportation planning agency. This advice should be based on an examination of data collected on existing service and other mass transportation systems as well as potential passenger volumes and available funds.

The existing mass transportation system and the nature of low-income area demand determine the type of system which is needed. Any new transit system must be compatible with any existing services that will be retained. It must also meet the requirements for flexibility, passenger capacity, and cost. For example, Chapter III stated that rapid transit service to low-income areas is usually only feasible where the potential

route is of sufficient length and volume and there is a strong city-wide need for rapid transit.

The most frequent choice of mass transportation is between the various types of bus system described in Chapter III. Besides expanding regular city bus systems to provide better service to low-income areas, new limited-service and charter bus systems can be implemented to provide specific services such as twice-daily transportation to suburban employment areas. Another possibility is a type of mini-bus system offering door-to-door service in low-income areas for very specialized transportation needs.

Non-mass transportation solutions are also possibilities that may be chosen. Where potential origins and destinations are too scattered to develop feasible mass transportation services it may be preferable to provide more individual systems such as increased use of car-pools and auto-renting programs.

Once the type of mass transportation system has been chosen the actual routes and the degree of service between low-income areas and potential employment centers can be selected. In most cases this operation can be done manually, for the number of major employment destinations is not likely to be large and there will only be a limited number of feasible transportation routes between the low-income area and each destination. By using a sequential procedure nearly optimal routes can be chosen.

There are certain constraints and variables which control the possible mass transportation routes between poverty areas and employment locations. The type of mass transportation system is one of the most

important. If, for example, bus transportation is to be the mode, possible routes must use those streets which are suitable for bus traffic. Also, potential routes must meet the criteria of a minimum number of passengers and a reasonable distance and travel-time between origin and destination. These factors will determine whether service to employment areas can be provided directly between origins and destinations or whether low-income residents will first have to travel to major transfer or pick-up points.

A step-by-step procedure can be used for choosing new mass transportation routes and service levels. Beginning with the existing system, additions to it are compared for their service in providing better access to job locations. Potential new routes are introduced and evaluated for service to the low-income area. As each criterion and constraint is considered, the number of feasible alternatives is narrowed. The remaining routes are evaluated for efficiency and those which will carry the maximum number of passengers at the minimum operating cost are recommended.

In some cases where the low-income area is large and there are many trip destinations, it may be preferable to use a computerized procedure. If a program can be developed it would be possible to automatically test all feasible route configurations until the optimal system is found. The job-matching and route selection procedures could possibly be combined in one computerized operation. With a less sophisticated program, individual route networks could be coded and their efficiency checked.

The selection of transportation services finishes the employment access study. Unemployed poverty-area residents have been matched with potential jobs and new transportation services have been recommended to make this employment possible. However, much more is required if these

new services are to be successful. Once the services are operational, the employee-job matching process must be supplemented by an employment-placement program that works to see that low-income residents use the service to get these jobs. Chapter V will discuss this topic further.

Incorporation of Other Studies (7)

To solve all of the mass transportation needs of the poor, some provisions will likely have to be made for access to other destinations besides employment locations. Therefore, once the employment access study is completed it is necessary to incorporate the recommendations from other studies considering the need for mass transportation improvements. Two such studies which this chapter has mentioned are those concerned with access to education and other transportation needs.

The chief purpose of the study on education is to examine how mass transportation can be used to improve education for low-income residents. Part of this study would be aimed at examining specific access problems to educational facilities. However, the main emphasis of the education study should be on the use of mass transportation as an alternative to ordinary education practices. For example, it may be cheaper and more feasible to improve the quality of education in urban ghetto areas by bussing children to better schools in other parts of the city than by trying to increase teacher quality and racial integration within the low-income area itself. In this manner, the use of mass transportation provides alternatives in educational policy.

The third study mentioned earlier in this chapter considers the relationship between mass transportation and medical, recreational, shopping,

and similar facilities used by low-income residents. This study examines present problems and recommends ways to further the poor's use of these facilities. Again, the emphasis of the study is on the alternatives that mass transportation can provide.

The study should determine, for example, whether the transporting of low-income residents to a centralized medical facility would be a better alternative than constructing decentralized medical clinics throughout the low-income area. Similarly, good transportation of residents to outlying recreational areas may be preferable to costly clearance projects for providing recreational facilities within the low-income area.

The policy board representing the low-income community, the mass transportation planning agency, and other involved organizations would be best suited to determine the final mass transportation policy. This board would examine the recommendations of all transportation study sections and set the priorities to suit the overall needs of the low-income area.

Incorporation of the recommendations of the education and other needs studies may require some adjustments in the service to employment areas. In most cases, the number of additional services will not be large and this adjustment can be made manually.

Planning the Mass Transportation System (8)

The first seven steps of the mass transportation needs study have delineated the specific needs for better transportation service in the low-income area. Also, mass transportation routes and general service levels have been decided. However, major operational details of the system still

have to be planned by the mass transportation planning agency.

Various important factors must be considered when completing the planning of the system. Service standards such as vehicle frequency, travel-time, and comfort have to be set. Decisions must also be made on financing, fare schedules, and service promotion. All of these factors are important for they will shape the character of the mass transportation service and largely determine its adequacy. They will be discussed more extensively in Chapter V.

Revision Procedures

The diagram in Figure 1 illustrates a procedure by which the direction of the transportation needs study can be changed if the emphasis on employment access is too heavy. During step 4, Employment Matching, it will become evident whether or not there are potential jobs for low-income unemployed in outlying employment centers. If the degree of matching is not significant, the emphasis of the study can be changed. Similarly, during step 5, Evaluation of Transportation Problems, it may be apparent that the most pressing need for mass transportation improvements is not for employment access but for some other problem. Again, the study emphasis can be changed. These two revision possibilities are indicated on the system diagram by the dotted arrow labelled, "Feedback".

Once the mass transportation study is operating there must be provisions for constant evaluation and revision. Routes and other aspects of the service must be flexible and able to meet changing conditions in the area such as new employment centers, new changes in origin, and new modes of travel.

A continuous revision process requires continuous evaluation of the mass transportation service. The transportation planning agency must keep regular contacts with the education, employment, and other involved agencies. Neighborhood service centers can be used to collect complaints from the low-income residents, and sample surveys of both riders and households can be taken at intervals.

Limitations of Study Outline

The outline of the mass transportation needs study which this chapter has presented has several limitations.

The major drawback is that during the study stage the match between low-income unemployed residents and potential job vacancies is only one of statistics. There is no guarantee that once transportation is provided, poverty area residents will use it to reach the new job opportunities. Although employment-placing agencies should be involved in the planning of the transportation system and although employment promotional campaigns are considered necessary to its operation, it is difficult to project the success of the transportation program in advance. The mass transportation system's aid to low-income employment is only certain after it has been operating for some time.

The procedure's second limitation is that it relies heavily on special-interest agencies to develop recommendations for mass transportation service. Although educational, employment, and similar organizations are best suited to understand mass transportation problems in their respective fields they may tend to exaggerate the importance of these problems. Unless the mass transportation planning agency can integrate

these areas of interest, the overall mass transportation system could be strong in some areas while weak in others.

A final limitation is that the mass transportation needs study outline may be too complicated and expensive for some cases. In cities where the mass transportation needs of the low-income residents are fairly simple, the solution may be self-evident after a relatively small investigation. In such a case the thorough procedure outlined in this chapter would not be justified.

CHAPTER V

FACTORS FOR CONSIDERATION IN THE
DEVELOPMENT OF THE MASS TRANSPORTATION PLAN

After the necessary routes for the mass transportation system have been selected the mass transportation plan can be completed. Chapter IV outlined the type of study needed to examine the various problems and recommend a system of improved mass transportation services. The next task is to plan the operational details of the mass transportation system so that it will provide the service that low-income residents require.

Chapter V considers various factors which are a necessary part of the transportation plan: service standards, promotion, financing, and evaluation. The combination of these factors which are used in the actual transportation plan for a low-income area will have to be developed to suit the particular needs of the disadvantaged residents.

Service Standards

Service standards are important considerations when planning mass transportation to serve low-income areas. An increase in service is often all that a system needs to make it serve the needs of low-income areas more effectively. Moreover, if adequate mass transportation is to be provided, low-income residents will require higher standards in many areas of service, justified on the basis of their greater dependency on public transportation.

There are three service standards that deserve special consideration

in relation to the transportation needs of the urban poor. These service standards are convenience, travel-time, and comfort.

Convenience

For low-income residents, convenience is largely a function of access to the transit system. Since a substantial percentage of poor residents are solely dependent upon mass transportation, its convenience or accessibility will largely effect their mobility within the city. For any scheduled transit system convenience standards are a major consideration in poverty areas.

Accessibility to the transit system is dependent upon the walking distance to the transit stop and the frequency of bus service.

For low-income residents, walking distances between their homes and the transit stops should be kept to a minimum. A fairly fine degree of service can be justified because low-income residents are usually highly dependent on transit and many are elderly and unable to walk long distances. However, there is no recognized standard for walking distances in poverty areas. Various references on transit standards suggest 1,320 feet as a maximum distance for all cases.⁴⁶ In poverty areas a more suitable maximum distance would be 1,000 feet. Where individual-service transportation systems are used, walking distance would present no problems, for door-to-door service would be provided.

Frequency, or the time spacing between buses on a transit route, is also important to the convenience of mass transportation for low-income residents. Inadequate frequencies obstruct the mobility of poor residents by limiting the time during which they can travel.

For regular, scheduled bus systems frequency should be often enough to meet the needs of the passengers. Where passenger volumes are high, bus frequency will be high and service will be no problem. However, if volume were the sole criteria for frequency, service would be non-existent during very slack periods on low-volume routes. Because poor residents are dependent on transit as their only means of access, frequencies on all regular-service routes should be at least once every hour. Low-income residents also need good service on weekends and holidays for transit often provides their only access to leisure activities.

With limited-service and specialized transportation systems, frequencies are less of a problem. The transportation service is tailored much more closely to the specific needs of the low-income passengers and the vehicle frequencies arranged accordingly.

Travel-Time

Travel-time is another service level which is important to low-income residents. Unless travel-times are exceptionally long they do not have a large effect on the demand for mass transportation by those low-income residents who are dependent on it. However, travel-times do affect their accessibility to other parts of the city. Long journeys by transit effectively bar poor residents from job opportunities and various important urban activities.

Overall travel-times for low-income residents should be kept at reasonable levels. This time level is difficult to quantify and will vary with trip purposes. The Census of Transportation reports that 51 percent of those using public transportation require 36 minutes or more to get to

work.⁴⁷ Generally, for low-income residents, overall travel-times from home to employment should be kept as short as possible, for when wages are low, long travel-times reduce the incentive for employment.

Comfort

Comfort is a service that demands some consideration when planning mass transportation for low-income areas. Residents from poverty areas usually work at low-wage laboring jobs which require physical exertion. Long journeys as a standee in a crowded bus contribute to the discouragement and frustration so common in urban poverty areas. Although seating for every passenger is desirable, it would be infeasible to provide during rush-hour peaks. Where the urban poor must travel long distances to reach low-wage laboring jobs, the journey should be made as comfortable as possible.

A suitable transit system serving poverty areas should also give some thought to providing weather shelters at high-volume stops and transfer points. Less important stops, where waiting periods are often much longer, could be equipped with benches. Protection from long periods of standing and exposure to the weather at transit stops would be an important contribution to the comfort of the mass transportation service.

Promotion

Two types of promotion are necessary if a public transportation service is to adequately serve low-income residents. First, there must be promotion of opportunities made available to low-income residents by improved transportation. This form of promotion involves active measures designed to connect low-income residents to new opportunities by means

of the transportation system. The primary activity of this type is matching unemployed residents with new job opportunities. The second form of promotion is informing the residents about available transportation services.

Promotion of Employment Opportunities

The provision of new opportunities for employment of low-income residents is one of the chief aims of public transportation improvements in poverty areas. The most critical mobility problem that the urban poor have is access to employment. However, the solution demands more than the simple provision of better transportation.

Three conditions are necessary if improved transportation is to result in increased employment. First, there must be a demand for excess labor in the employment centers under consideration. Second, there must be an effective supply of work-seekers available in the origin zones who can meet the labor requirements. Third, there must be a means of transporting these work-seekers to the employment area and matching them with available jobs. This matching of job vacancies with unemployed job-seekers is the key to a successful operation.

The St. Louis demonstration project expressed this idea in their first report.

The act of employment does not take place automatically given the existence of a qualified worker, a suitable job opening, and a connecting bus service. The three elements must be brought together. The worker must be motivated to use the bus service to gain and retain employment, and the employer must be aware of the availability of this new source of workers. Then, a specific worker must be placed in a specific job opening. It seems unlikely, no matter how well we design the transportation service, that it will realize its potential without a major promotional program.⁴⁸

In Chapter IV the outline of the employment access study described how the matching of potential job opportunities with unemployed residents was an important part of the study. Data on the existing unemployed were compared with employment opportunities in various locations so that specific transportation improvements could be recommended.

However, as Chapter IV stated, the matching process must be carried beyond the study stage. Once the mass transportation improvements have passed to the implementation stage they must be supplemented by an active employment program. Job-placement agencies must seek out individuals among the low-income unemployed and place them in specific job opportunities. The new transportation links provide connections between their homes and the employment locations. Only with such a program will enough residents make use of the transit service to justify its existence.

This job promotion program is especially essential for limited-service systems for they are often planned for the specific function of providing access to employment areas.

The public non-profit transportation corporations, set up under the Los Angeles demonstration project to provide transportation to jobs, are good examples of why a program matching unemployed residents with jobs is essential. It had been expected that when job vacancies were linked to the low-income areas many of the unemployed would find work. However, employment increases due to the improved transportation have been slow. These corporations have found that connecting a low-income area with potential jobs by means of public transportation is not in itself a guarantee that employment will be increased. Improvements in transportation must be accompanied by programs to seek out the unemployed, train them if

necessary, and match them with existing job vacancies.⁴⁹

The importance of matching jobs and unemployed is again illustrated by the demonstration project underway in Nassau and Suffolk Counties, Long Island. The bus route that is carrying the largest number of new job holders is one which is closely coordinated with a hospital therapy program. Plants in the employment areas have hired several of the hospital's patients and the transit service carries them to and from work.

The Long Island project is also starting a more detailed program of matching people and jobs. This program will seek underprivileged people in need of jobs, guide them to employment opportunities, show them how to use public transportation, and provide any other necessary guidance. Mobile employment services will tour low-income areas. In this way it is hoped that suitable job-seekers can be linked to employment opportunities by means of public transportation.⁵⁰

Mass Transportation Promotion

Besides using employment promotion programs to boost passenger volumes, it is also necessary to carry on ordinary promotion programs. First, the poor must be informed of the mass transportation services which are available to them. Second, employers, doctors, merchants, and officials on the destination end of the transportation link should know of the available transportation services. They can then deal with low-income residents, knowing what their transportation opportunities are.

In many poverty areas, residents lack knowledge of the existing public transportation services. They are generally familiar with mass transportation to the downtown but have a serious lack of awareness of the

overall system. Consequently, when transportation opportunities are improved, few residents will be aware of the change unless informed by a promotion campaign.

Promotional activities can be grouped into three categories: the conventional advertising by paper, radio, and television, activities which involve personal contact, and attention-attracting activities.

Newspaper, radio, and television advertisements plus speeches to community groups are important and should be used, however, they cannot be depended upon to inform many in poverty areas.

Information is spread most easily in low-income areas by word of mouth, consequently, those promotional activities which involve personal contact are important. The Los Angeles demonstration project had various programs which provided this contact. Printed information on mass transportation was distributed door-to-door by local community organizations, and the distributor personally explained the new transit services. Community forums were held in poverty areas to explain the new bus routes. Also, transit information booths were set up at the Watts Summer Festival.⁵¹

Attention-attracting promotions were also used effectively by the Los Angeles project. Parades were held through low-income areas to inaugurate new bus routes and special "Get Acquainted" days were held which offered free bus service to airport tours and art displays. Special bus hostesses explained the new service to passengers.⁵²

Besides promoting mass transportation services among the poor, it is also necessary to inform potential employers, job placement and counselling agencies, and others who deal with low-income residents. If they are kept aware of transit services they can advise citizens on how

to solve their access problems. Both the Long Island and the Los Angeles projects received good cooperation from employers who were interested in what public transportation was available and willingly informed existing and potential employees about it.

Public participation is related to promotion. Although active participation is often difficult to develop in poverty areas, if residents are involved in determining their transportation needs and in planning the transportation system, they will be willing to support the effort. By participating in its design, they become familiar with the transportation services available and are able to communicate this information to their neighbors.

Financing

As with other services, financing is a crucial factor in mass transportation operations. In the post-war period, rises in the cost of labor and transit equipment coupled with declines in transit patronage and the necessity of expanding routes into the suburbs have made the profits from most transit operations very marginal.

Both private and public transit companies are faced with an increasing dilemma. As costs rise, they must either raise fares, increase the public subsidy, or reduce service. Both increased fares and reduced service will result in fewer riders. Because cash profits are so slim there is little money for experimenting with new routes or equipment unless public funds are available.

When planning mass transportation for low-income residents there are two prime financial considerations: fares and public subsidies.

Fares

As Chapter I indicated, the cost of mass transportation as reflected in passenger fares is a critical factor for low-income residents. Transit fares can amount to a considerable percentage of a poverty-level income and poor residents are frequently cut off from sources of aid and opportunity because of fares.

Various types of fare schedules are available for use with mass transportation systems in low-income areas. However, all types have disadvantages. When planning the transportation service the fare schedule has to be chosen to fit the particular requirements of the poverty area. Basically, the need for fare-box revenues must be balanced against the ability of low-income residents to pay.

The basic flat fare, used by most mass transportation systems, has some disadvantages for low-income residents. The flat fare system is one in which a uniform amount is charged for any transit ride, regardless of the distance traveled. It is occasionally modified by grants of discounted fares to special groups such as school children. The flat fare tends to kill off the short-haul traffic and it is especially hard on the less-mobile poor who may only wish to travel a short distance. However, flat fares are advantageous for the poor who must travel long distances to jobs.

As an alternative to flat fares, variable or graduated fares can be used. Variations in cost according to the distance traveled would come closer to the actual cost of transportation than the flat fare. However, such a variation could have the effect of confining low-income residents to travel within a certain radius of their homes. Fares can also be graduated to match the demand levels during the day. This type of vari-

ation is difficult to administer but has no particular effects on low-income groups.

Often transit companies levy a special fare, the transfer charge, which is detrimental to low-income riders. The transfer charge generally takes the form of an extra five cents, or similar amount, which must be paid when the passenger transfers from one route to another. It is especially hard on passengers who are heavily dependent on transit and must make complicated journeys requiring several transfers. The urban poor are frequently in this category.

Free mass transportation is a possibility which should be considered. A free system would greatly aid low-income residents by providing them with a mobility about the city completely divorced from cost. However, for such a public subsidy to be justified, considerable benefits would have to be realized.

The corridor impact study of Atlanta's proposed rapid transit system summed up the concern over fare structure as it relates to low-income residents.

If the system is to better serve the poor, the poor should not be penalized for being poor. Fare structure considerations must take special note of potential costs to poverty area residents to insure maximum use at minimum costs.⁵³

Subsidies

It is unlikely that a mass transportation system can meet the needs of a low-income area without some form of subsidy. For transit service to pay its way, passenger volumes on the routes have to be substantial. However, because of the trend in city decentralization, this requirement precludes adequate service for those dependent on transit. Mass transpor-

tation can seldom break even and also keep fares at a reasonable level while meeting the access requirements of low-income residents. Therefore, when planning improvements to the mass transportation service in poor areas, sources of subsidy are almost a necessary consideration.

Examples from the HUD mass transportation demonstration program, referred to earlier in this thesis, tend to verify this opinion. None of the experiments with transit improvements for poverty areas have been self-supporting in terms of revenue. Those mass transportation services that can be economically successful have usually already been instituted by transportation companies.

In some cases, subsidies for mass transportation services may only be a short-term requirement. If better transportation is part of an overall program to improve economic and social conditions for the urban poor, the end result could be that poor residents can pay higher fares or make other arrangements for transportation. Subsidized service would then no longer be necessary.

Financial help from local governments is a common form of subsidy to mass transportation. If the transportation system is privately owned, the local government can make direct payments or offer tax concessions to the company in exchange for certain specified transportation services. However, in many cities mass transportation services are operated by public corporations or authorities. With publicly owned systems, subsidized service is more common for local governments often underwrite some of the costs of these operations. Adequate transit service can be provided in poverty areas with less attention to the profitability of

each operation.

Besides direct allocations for mass transportation service there may be indirect subsidies. Transportation service for educational needs may be financed through the educational budget, with the department of education either operating a transportation system itself or contracting for service with the main mass transit system. Similarly, governmental agencies in charge of recreation and employment may allocate a portion of their budgets for special mass transportation services in low-income areas. Such expenditures are indirect public subsidies for mass transportation.

In the last few years, Federal programs have provided a new source of public subsidy for mass transportation. Under the provisions of the Urban Mass Transportation Act of 1964, the U.S. Department of Housing and Urban Development (HUD) is authorized to financially assist local governments with mass transportation programs.

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Following the Watts riots in Los Angeles, HUD became increasingly interested in programs designed to solve transportation problems in low-income areas. As a result, the demonstration projects in Los Angeles, Long Island, Nashville, and Saint Louis, which are exploring these problems, are financed entirely or in part by Federal grants. Other non-demonstration projects have obtained HUD grants covering up to two-thirds of the total cost.

Sometime industrial firms and other private interests are willing to subsidize certain mass transportation services. Employers who are dependent on low-income residents for their workforce may find that these residents have difficulty in reaching job locations because of the cost

or the routing of the mass transportation system. In such cases, the firms may consider a transit subsidy a good investment if it ensures them a dependable supply of workers. When planning mass transportation improvements for the poor, the possibilities of private as well as public subsidies should be investigated.

Evaluation of Benefits

Evaluation of benefits is an important final consideration when planning a mass transportation system for low-income areas. Most adequate mass transportation systems would prove to be uneconomical if revenues were the only benefits considered. A true assessment of a system's worth includes gains accruing directly to users of a transportation facility or service and desirable effects experienced by the community at large. Likewise, both direct operating costs and indirect costs must be considered as well.

Direct Benefits to Users

The main function of public or mass transportation in low-income areas should be to meet the transportation needs of residents dependent on the transportation system. The system's most obvious benefits are those which the low-income residents themselves experience.

Access to employment areas is one of the more important benefits to the poor. An improved transit system can result in time savings for those who are already employed but have difficulty in reaching their jobs. More important, the system makes new job opportunities available for the unemployed.

Access to community facilities is a benefit closely related to access to employment. For some low-income residents good mass transportation providing access to major facilities may mean one less obstacle in the way of better health care, education, and recreation.

Cost savings are another direct benefit to the urban poor. A mass transit system which is adequately designed to serve low-income areas will have a fare schedule which the poor can afford. Unlike many existing transit systems, residents would not have to pay a premium for their dependency on mass transportation.

A fourth benefit that low-income residents receive from good mass transportation is the increased opportunity to enjoy city life. Increased comfort and convenience lead to savings in energy and effort and increased mobility can result in less isolation for the poor with its accompanying frustrations.

Indirect Benefits to Community

In some respects, the entire community benefits indirectly from a mass transportation system that has been designed to help low-income areas. These indirect benefits vary directly with the extent of the improvements that good transportation furthers in the lives of the urban poor. Mass transit may enable low-income residents to find more and better jobs, causing their incomes to rise and the entire community to benefit from their increased productivity. Improved mass transit may help increase the standards of health care and education available to the urban poor, causing the entire community to save due to decreased welfare payments. If better transportation can help supply more jobs, better recreational

opportunities, and an escape from the ghetto and slum environment, the entire community benefits from any reduction in the frustrations of the urban poor and the related danger of urban riots. These, and other indirect benefits resulting from improved mass transportation in poverty areas are all important when evaluating the transportation system.

Mass transportation improvements should also be considered as alternatives to other courses of action which might be more costly. When the urban poor have a particular problem, the most economical solution may be some improvements to their mobility. For example, where there are large concentrations of unemployed, improved transportation to outlying job centers may be more economical than locating low-wage industries in the poverty area or helping residents to move elsewhere. Savings due to the use of mass transportation improvements in lieu of other more expensive solutions are an important consideration when evaluating indirect benefits.

Evaluation of Mass Transportation Improvements

Mass transportation systems for low-income areas cannot be evaluated solely in economic terms. In most cases the revenues from the transportation system would not cover costs. Transit which serves residents who are dependent on it for their mobility cannot be tied to passenger volumes. A certain minimum level of service must be provided regardless of demand. Also, mass transportation may be used to achieve certain social goals, yet few of the actual benefits of this service to low-income residents are reflected in the fare revenues. When residents do not have a choice, fare rates seldom reflect the actual demand for a service.

A benefit versus cost analysis is the usual procedure for evaluating transportation projects. However, such an analysis often considers only the direct costs and those benefits which are included in the revenues.

It is difficult to accurately evaluate mass transportation service to low-income areas in terms of benefits and costs. Many of the social benefits resulting from good mass transportation cannot easily be quantified. However, a benefit-cost analysis could be successfully used if the social benefits were thoroughly studied and included in the analysis. In London, England, social benefits of the Victoria underground transit line were evaluated. Factors such as time, convenience, and comfort savings were measured, transferred to dollar terms and compared against costs.⁵⁵ However, present techniques for evaluating social benefits are not very accurate and therefore, benefit-cost analyses for transportation improvements in poverty areas are of dubious value.

Mass transportation service for low-income areas may be designed to meet certain political objectives which are often unrelated to costs and benefits. The public goal may be to provide a certain level of mobility for low-income residents. Although the cost of using mass transportation as an alternative to some other means of achieving this goal should be considered, a comparison of the actual dollar value of this increased mobility against the cost of achieving it may well be irrelevant. Basic social and legal objectives may often form the basis for improved mass transportation and this factor should be considered when evaluating a particular system.

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