



Poverty, policy, and public transportation

Thomas W. Sanchez*

*Department of City & Metropolitan Planning, University of Utah,
375 S. 1530 E. Rm 235 AAC, Salt Lake City, UT 84112, United States*

Received 18 May 2005; accepted 1 January 2008

Abstract

By all appearances, the circumstances surrounding employment and income distribution in the United States have remained notably the same over the past 30–40 years. At the same time, policies for improving the conditions of low-income persons have remained relatively unchanged. Relevant published accounts continue to cite poorly integrated residential and employment location patterns and poor public transportation service as critical obstacles to improving the economic and social conditions of low-income persons. The relationship between poverty and public transportation was researched extensively during the late 1960s and the early 1970s; however, little recognition has been given to these efforts by more recent research efforts. To learn from the past we should review public transportation policies from 1960 to 2000 to highlight federal policies that affected urban areas during this time period, especially in relation to low-income transportation mobility.

© 2008 Elsevier Ltd. All rights reserved.

Keywords: Poverty; Low income; Public transportation

1. Introduction

The connection between transportation mobility and poverty is laden with untested assumptions, neglecting to account for the evidence (however sparse) that shows how and when mobility increases provide tangible benefits and how and when they do not. Not unique to the area of transportation policy, success is frequently gauged by the quantity of resources applied rather than through measurable outcomes. One factor is that appropriate project monitoring and evaluation rarely occurs. Again, like other policy areas, particular approaches have been recycled which reflect a lack of innovation such as the application of several new technologies.

The most visible periods of policy activity associated with transportation mobility and poverty came during periods of social crisis. Like other public policy issues, priority and visibility are only sufficiently elevated at the point of crisis or system failure. For transportation mobility the two most notable periods

* Tel.: +1 801 585 9354; fax: +1 801 581 8217.

E-mail address: tom.sanchez@utah.edu

occurred during the civil rights or race relation disturbances of the 1960s and 1990s. At these times, the poor seem to have been “rediscovered” and became the objects of visible action and federal policy making. These two time periods are important to examine because they represent the broadest, most resource intensive, and ambitious efforts to confront perceived social and economic problems associated with poverty and transport mobility. It can be argued, however, that the efforts of the 1960s were more concerned with quelling social unrest. Similarly the efforts of the 1990s focused more on reforming the federal welfare system than being genuine efforts to combat poverty. While little published evaluation or assessment exists about either of these periods, lessons can still be drawn from related research which contributes to the overall understanding of the dynamics between transportation mobility, employment, and poverty.

The following two excerpts illustrate similar perspectives regarding the relationship between poverty and public transportation. They mention how low transportation mobility levels and unemployment (or under-employment) are connected. Over time, however, researchers and policy analysts have recognized that traditional public transportation services have limited capacity to meet the travel needs of persons with little or no access to automobiles.

Why do central city residents and Negroes experience such high unemployment even in times when the overall demand for labor is strong and hiring standards consequently are quite relaxed? Inferior quantity and quality of education, poor health, low motivation, and racial discrimination are the traditional explanations. Recently, an additional hypothesis has been advanced which suggests that the location of jobs and workers and the existing transportation network within metropolitan labor markets may also play a culprit role. The availability, speed, and price of public transportation facilities may significantly and adversely affect employment opportunities for Negroes and people with low earnings capability. This relatively new problem results from the suburbanization of industry, primary reliance on the privately owned automobile as a means of reaching suburban worksites, and residential segregation (Kalachek, 1968).

Transportation and welfare studies show that without adequate transportation, welfare recipients face significant barriers in trying to move from welfare to work. These challenges are particularly acute for urban mothers receiving welfare who do not own cars and must make multiple trips each day to accommodate childcare and other domestic responsibilities and for the rural poor who generally drive long distances in poorly maintained cars. Existing public transportation systems cannot always bridge the gap between where the poor live and where jobs are located. These existing systems were originally established to transport inner-city residents to city locations and bring suburban residents to central city work locations. However, the majority of the entry-level jobs that welfare recipients and the poor would be likely to fill are located in suburbs that have limited or no accessibility through existing public transportation systems. Furthermore, many entry-level jobs require shift work in the evenings or on weekends, when public transit services are either unavailable or limited (US GAO, 1998).

The primary mode of public transportation remains to be fixed route bus service. Scheduled service along predefined routes, where users must adapt to service availability is the traditional public transit model. Beyond fixed route services, other service options focus on increased flexibility and seek market-based competition to improve quality and lower costs to the consumer. These options include jitneys, shuttles, demand responsive service, and taxis. Federal government policies during the late 1960s and early 1970s and the late 1990s have attempted to promote a wide range of service types, including private sector options.

The following will briefly discuss some major elements of transportation policy initiatives from the 1960s and also the 1990s. While the transportation mobility actions during the 1960s tended to be project oriented, and during the 1990s was more process oriented, much can still be learned by comparing and contrasting some major components of these policies. First, I provide a very brief overview of some topical research related to transportation mobility and poverty. Following that are brief overviews of (1) the Urban Mass Transportation Administration (UMTA) demonstration projects and (2) federal policies related to welfare reform and transportation mobility. The conclusions are simple – more research as well as policy analysis is needed to help us better understand how to generate positive social benefits by addressing transportation mobility needs of low-income persons.

2. Background

One of the earliest examples of research focusing on the travel needs of low-income persons is Oscar Ornati's *Transportation Needs of the Poor* (1968), published at the time of the UMTA demonstration projects of the late 1960s. Ornati discussed the challenges facing poor persons in the context of urban public transportation. He used the New York City region as a case study for his examination. While New York is certainly a good example of a city or region that places significant demands on the public transportation system, New York is not representative of US cities because of its highly concentrated and dense urban fabric along with its mature public transit system. Ornati highlighted many of the challenges involved with analyzing urban transportation mobility, especially in terms of public transportation serving employment. Ornati concluded by recommending that the transportation planning process should be modified to more effectively serve the poor and transit dependent.

Other discussion about transportation mobility issues for low-income persons has been associated with land use patterns, social, and economic conditions of urban areas. Shortly following the Los Angeles civil rights protests of the 1960s, the McCone Commission identified inadequate transportation as contributing to high rates of unemployment among the black urban population (Kain and Meyer, 1970). In 1968, the National Advisory Commission on Civil Disorders (NACCD, also known as the Kerner Commission) released its report on the causes and effects of riots in US cities. Among their recommendations for enhanced employment opportunities for central city residents was the creation of improved transportation links between ghetto neighborhoods and new job locations in the suburbs (NACCD, 1968). Many years later, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 promised to improve the mobility of the economically disadvantaged through "intermodal connections between people and jobs, goods and markets, and neighborhoods" (Bullard, 1996). Subsequently, the Personal Responsibility and Work Opportunity Act of 1996 (PROWA), "welfare-to-work", and job access programs again brought attention to low-income mobility problems (Willis, 1997; US DOT, 1998). In addition to concerns about unequal job access, other related issues have also arisen over the fairness of transit service pricing and the quality of service provision (Hodge, 1995; Hernandez, 1996; Bullard and Johnson, 1997).

Unfortunately, over the last 30–40 years very little evidence has been presented that identifies successful transportation mobility strategies related to the policies previously mentioned. A relatively significant amount of research, however, has dealt with the relationship between labor force participation and the spatial separation of jobs and houses; however, most analyses concentrate on commuting time or distance as a function of automobile accessibility. Few studies have considered the relative impacts of employment accessibility resulting from public transportation services, while continuing to recommend increased public transportation expenditures for addressing urban unemployment problems (e.g., NACCD, 1968; Blackley, 1990; Hughes, 1991). The emphasis of contemporary research is on the measurement of commuting costs, which can only consider persons who have a job (and usually a car) – while the unemployed (or car-less) are ignored. Unemployment levels are indirectly accounted for in analyses of transit impacts on income distribution (Frankena, 1973; Dajani and Egan, 1974; Sanchez, 2002), but these analyses do not address the significant difference between neighborhoods with employed persons in poverty and neighborhoods with unemployed persons in poverty (Wilson, 1997).

3. UMTA demonstration projects

The isolation of inner city and underemployed persons from suburban employment opportunities was identified years ago as the "ghetto transportation" or "poverty transportation" problem. From the transportation perspective, the reverse commute represented a significant challenge for these persons because many did not own automobiles and because transit service did a poor job of serving these types of trips (Crain, 1970). To address what was perceived as a transportation problem, the Urban Mass Transportation Administration (UMTA), which was established by the Urban Mass Transportation Act of 1964, awarded grants for transit system development activities. Until early 1968, these grants were first administered by the Department of Housing and Urban Development (HUD), when UMTA was formed within the Department of Transportation. The act

Table 1
Example UMTA projects

City	UMTA project
St. Louis, MO	Bus service to industrial complex 20 miles NW of inner city
Buffalo, NY	Bus service to several suburban job sites, serving 1st, 2nd, 3rd shifts for new hires
Los Angeles, CA	Service along Century Blvd to LAX, including early morning and late evening hours
Long Island, NY	Multiple bus routes from low-income communities to job concentrations
Washington, DC	Bus routes to shopping center employment and adjacent counties
Baltimore, MD	New bus routes serving morning, afternoon, and evening shifts
Boston, MA	Bus routes to industrial complexes, day shifts only
Omaha, NE	Bus service from low-income neighborhoods to industrial area, serving morning, afternoon, evening shifts
Cleveland, OH	Bus service from low-income neighborhoods to steel plant and regional hospital
Twin Cities, MN	Two bus routes to airport employment complex, including early and late service, suburb to central city service
Gary, IN	Bus routes from low-income neighborhoods to major steel plants, serving three shifts
Kansas City, MO	Bus service to large employer locations, serving three shifts
Chicago, IL	Express bus service connecting transit station to O'Hare, with 24-h, frequent service for commuters and travelers
Detroit, MI	Two bus routes from inner-city neighborhoods to suburban job locations

Adapted from Crain (1970).

provided for a research, development, and demonstration program with an initial budget of \$150 million per year for reverse commute and employment facilitation (see Table 1 for example projects).

Many of the reports issued through the UMTA demonstration projects included little systematic evaluation of performance and project outcomes. Some conceded that there are inherent difficulties in determining the effectiveness of such programs, which include having no accepted performance measures and an inability to control for intervening factors such as those affecting the employability of certain individuals. In addition, some reports noted that as low-income workers benefit from increased job access they have the opportunity to purchase an auto, which would end their reliance and use of public transit.

UMTA projects such as the St. Louis TEMPO, South Central and East Los Angeles Transportation Project, and the Nassau and Suffolk County demonstration projects used similar approaches and reached similar outcomes. Like most of the other demonstration projects, these projects carefully identified concentrations of low-income or unemployed workers and suitable employment concentrations. The primary transportation service they provided linked residential and employment locations with dedicated or enhanced fixed route bus service, generally in "reverse commute" fashion. Most of these transit lines were incapable of achieving or sustaining financial feasibility. However, the question of whether financial feasibility was an adequate means for evaluating these projects has been frequently raised. The following excerpt from a report about the St. Louis TEMPO (UMTA demonstration project) highlights some of these points:

Foregoing analyses of Operation TEMPO ridership, passengers, and financial performance shows that the lines produced far below their potential. The analysis of the survey data on the type of passengers served by TEMPO indicated that the bus services were indeed helping the type of inner-city resident it was designed to assist. But, in aggregate, it provided these valuable services to too few riders to justify the costs of operating lines (Human Development Corporation of Metropolitan St. Louis, 1970, p. 116).

A considerable obstacle faced by most of these projects was the limited duration of funding and project support. In most cases, these projects were not treated as being public services, which by definition, cannot easily be self-sustaining or feasible as private ventures. In summarizing the UMTA demonstration projects Rosenbloom (1992) concluded that, "The earliest reverse commute projects were generally failures whether measured by jobs gained or new transportation services created and sustained. The only possible 'successes' were those that did little more than effectively use underutilized outbound capacity on traditional peak hour bus service" (p. 17).

While both the UMTA demonstration projects and the transportation funds made available as part of welfare reform had implications for low-income persons, the policies of the 1960s were more directly focused on transportation services and projects and less so on transportation or welfare policies. As will be discussed, the greatest effects of the policies of the 1990s were on the administration of welfare in the US. While these

programs did provide resources for transportation projects, an emphasis was placed on devolving programs to the state and local level, emphasizing multimodal approaches to transportation mobility.

4. Welfare reform

Passage of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) moved the existing welfare system – administered by the US Department of Health and Human Services Department (DHHS) – from a cash assistance program to one with a principal goal of transitioning participants from welfare to work. This act constituted devolution of primary responsibility for welfare administration from the federal government to states and localities through block grant allocation of funds. Additional legislation supported this initiative and involved other federal agencies in achieving the goal of moving unemployed persons receiving public assistance to stable employment. The Balanced Budget Act of 1997 then established the Welfare to Work Program in the US Department of Labor (DOL). Welfare reform legislation recognized several barriers to employment, among them being transportation mobility. The Transportation Equity Act for the 21st Century (TEA-21) recognized the role of the US Department of Transportation (USDOT) in these efforts and committed resources to addressing the mobility needs of welfare recipients. The following discusses these three legislative measures, including transportation provisions of each measure and evaluation of the efforts to date.

4.1. Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (DHHS)

Effective October 1, 1996 the AFDC and Job Opportunities and Basic Skill Training (JOBS) programs under the Social Security Act (SSA) were replaced with a single, combined program. Block grant funding was provided to states by this program for fiscal years 1996–2002 with federally approved plans for Temporary Assistance for Needy Families (TANF) with a minor child. Once authorized, a state could use the block grants “in any manner reasonable calculated to accomplish TANF purposes; or in any manner. . . under the former AFDC and JOBS programs” (Pub. L. 104-193). During the application process, state representatives were required to assess a recipient’s skills, prior work experience, and employability to determine the level of support needed to achieve self-sufficiency. An Individual Responsibility Plan was to be developed for each recipient that could include assistance for substance abuse treatment, childcare, and medical care needs. The state could also use program funds for pre-pregnancy family planning services; home heating and cooling costs; other social service programs; funding development accounts for first home purchase and other qualified purchases; and for payments to job placement agencies. Both the authority and the flexibility to use grant funds and those provided under the JOBS program allowed program funds for transportation purposes. Use of funds for transportation was not expressly provided for in the bill and therefore each state differed in their respective policies about such provisions.

4.2. Specifics for transit mobility and low-income wage earners

The Welfare Reform Bill of 1996 sought to provide a variety of incentives for TANF recipients to achieve and maintain employment. The bill also increased the flexibility of states to develop programs that addressed the unique needs of their populations. Because a majority of welfare recipients do not own automobiles, many need an alternative form of transportation to get to and from work. The bill did not, however, specifically recognize or address the transportation needs of low-income wage earners.

4.3. Welfare to Work Program – title IV, part A of Social Security Act (DOL)

WtW funds were specifically allowed to be used for transportation services under “Support Services” (20 CFR 645.220(f)(1)); however, few details or guidance were given pertaining to these types of services. Further, other communications from the agency (Transmittal No. TANF-ACF-PA-00-2) indicated that WtW funds cannot be used for personal vehicle acquisition and cited part of the 20 CFR 645. There is no mention in the federal regulations, however, regarding exclusion of WtW funds for vehicle acquisition.

4.3.1. Evaluation of efforts

In May 1998, the Government Accounting Office (GAO) issued a report entitled, “Welfare Reform: Transportation’s Role in Moving From Welfare to Work” (GAO/RCED-98-161). This report followed the adoption of the PRWORA and during the deliberation on passage of the TEA-21 (Pub. L. 105-178). The purpose of the report was to (1) determine if current studies and research demonstrate the importance of transportation services in implementing welfare reform, (2) assess the preliminary results of FTA’s current welfare-to-work programs and the Department of Housing and Urban Development’s (HUD’s) Bridges to Work program, and (3) determine how an Access to Jobs program would support welfare reform (GAO/RCED-98-161, p. 1).

The GAO report provided a profile of welfare recipients, showing that 75 percent of them live in either the central city or rural areas, with the other 25% living in the suburbs. Fifty percent of welfare recipients lived in central cities, compared to 30% of the total population. The majority of welfare recipients were single mothers with approximately half having children under school age. In addition, nearly 75% of these females had a high school diploma or less education.

The lack of transportation mobility among welfare recipients was illustrated by the low rates of vehicle ownership, in some cases as low as 6%. In addition to low incomes, another factor contributing to the low vehicle ownership rates may have been associated with previously established asset limitations in federal law of \$1000 per vehicle. This represented a significant challenge given that most states had overall resource limits of \$3000 (depending on household size, age of household members, program participation, etc.). Approximately 26 states have since instituted rules that exempt the value of one or more vehicles from the resource limitation calculations. Some argue that asset limitations force welfare recipients to own older, poorly maintained vehicles, which appears to contradict other federal policy objectives such as the Clean Air Act for vehicle emissions and fuel efficiency standards (Dill, 2001). With exemption of the value of the first vehicle, welfare recipients are no longer forced to sell their transportation in order to qualify for benefits.

The GAO report found that transit services inadequately met the travel needs of welfare recipients. The report found that 70% of such jobs (entry-level jobs are typically in the manufacturing, retailing, and wholesaling sectors) were located in the suburbs. Only 32% of these employers were within a quarter mile of a transit stop. Some of these locations were served by commuter rail, which was considered by many to be too expensive for low-income wage earners. The GAO report also found that entry-level jobs typically have non-peak hour work shifts. Given that most welfare recipients are single mothers with children needing day care, the added travel requirements make transit significantly more time consuming compared to automobile travel. To meet these travel needs, more flexible approaches would need to be implemented as will be discussed in a review of FTA’s JARC program.

The GAO report also focused on evaluating other existing welfare reform programs. One demonstration program described was JOBLINKS. In Louisville, Kentucky for instance, the program provided an express bus to an industrial park, reducing the commute from 2 h to 45 min. In Fresno, California, the program provided transportation services to employment training centers in attempts to reduce the dropout rate. Of 269 participants, only 20 completed the program and three had found jobs. These numbers were not particularly impressive on their own; furthermore, no baseline data were provided to indicate increases in program completion. The cost of the program was not provided, but speculation about the cost-benefit of such a program leads to questionable conclusions about its success.

Another program, HUD’s Bridges to Work, attempted to address the perceived geographic mismatch of unemployed and underemployed workers with available jobs. One strategy was to provide better access to those jobs. The overall program goal was to place 3000 participants in five cities in suburban jobs within four years. After two years, only 429 individuals had been placed in jobs. Some observers concluded that the reason for the low success rate was that the program only accepted job-ready applicants; however, the numbers of so-called “job-ready applicants” were not provided to support this conclusion.

The conclusions from the two demonstration projects combined with the knowledge of welfare recipient profiles and existing transportation systems led the GAO to make specific recommendations for implementation of the Job Access program. Principally, the GAO recommended that any program should be designed and implemented to include requirements for coordination among agencies and service providers. It was also recommended that “coordination” – as referenced in the authorizing legislation – be defined or have general

guidelines provided to agencies making application. Considerable focus was placed on developing program objectives and specific criteria for project outcomes to ensure a means to measure the success of the program. The GAO noted that currently, under the Government Performance and Results Act of 1993, the USDOT does not have a benchmark to measure the success of moving people to jobs – rather, such benchmarks focus on the “building and sustaining of transportation systems” but not examining how they function to address the needs of society.

4.4. Transportation Equity Act of the 21st Century (USDOT)

The FTA Access to Jobs program was comprised two types of projects, Job Access and Reverse Commute. The Job Access projects were intended to provide new or expanded transportation services to help welfare recipients and eligible low-income individuals (those at or below 150% of the poverty line) get to jobs and other employment related services (education, training, childcare, etc.). These projects could cover the capital or operating costs of equipment, facilities, and maintenance; promote transit use by workers with non-traditional schedules; support the use of transit vouchers; and support employer-provided transportation, including the transit pass benefit under the Internal Revenue Code of 1986 (section 132). Typically these services have included shuttles, vanpools, and additional busses to local scheduled service.

The Reverse Commute projects are those that transport individuals to suburban employment centers from urban, rural, and other suburban locations for all populations. Specifically, projects have included subsidies for additional reverse commute bus, train, carpool, van routes, or service; subsidized van or bus purchases or leases by a non-profit organization or public agency to shuttle employees from their residences to suburban workplace; or anything to facilitate the provision of public transportation services to suburban employment opportunities.

While the JARC grants provided funding specifically for transportation projects, TANF and WtW also made funds available for the same purposes (providing mobility for low-income persons). The focus of the JARC grants appeared to be the strongest in the areas of mass public transportation funding. The requirement of coordination for JARC grants is a hallmark in transportation planning. By contrast, TANF and WtW programs do not require such extensive coordination. The JARC coordination requirement may serve to ensure that transportation service providers are in direct contact with persons with transportation mobility needs.

4.4.1. Evaluation of efforts

In October 1999, the GAO published a report on transportation efforts in welfare reform. The report, entitled “Transportation Coordination: Benefits and Barriers Exist, and Planning Efforts Progress Slowly” (GAO/RCED-00-1), was commissioned to review (1) the benefits of and incentives for human services transportation coordination; (2) DHHS’ and FTA’s efforts to identify barriers to transportation coordination; and (3) DHHS’ and FTA’s efforts to enhance coordination through state and local transportation planning.

Addressing the first purpose, the GAO identified studies that concluded that coordination of transportation services resulted in cost savings. Specifically, the Community Transportation Association of America concluded that the average cost per passenger trip decreased from \$7.92 to \$4.06 and the average cost per vehicle hour declined from \$12.83 to \$6.89 when services were coordinated (CTAA, 1998). CTAA also found that in the experience of Medicare transportation services coordination, issuance of monthly passes instead of per trip reimbursement may have substantial cost savings. Specifically, it was estimated that if just 1% of Medicare recipients in metropolitan areas went to a monthly pass rather than individual tickets, savings of \$215 million annually would result. The Flint (Michigan) School District provided students with passes on the Michigan Transit Authority instead of providing a separate school bus network, which lowered the average transportation cost per student from \$660 to \$264. The GAO also reported that coordination of transportation would improve clustering of passengers to utilize fewer one-way trips and to encourage sharing of equipment, personnel, and facilities. Reduced duplication of services and economies of scale were also anticipated. Such efforts were purported to improve overall regional mobility.

The report described a coordinating council between DHHS and USDOT (FTA’s parent agency). The council struggled to agree on both planning guidelines for coordination and a strategic plan. The problems in reaching agreement were attributed to uncertainty regarding federal responsibilities for transportation

(statutory, regulatory, and programmatic), fragmented accounting and reporting, uncertainty about using resources for other than program constituents, and prohibition against charging fares under the Older Americans Act. Other barriers identified included inadequate information technology (such as linking of internet resource sites), the need for better data for project evaluation, and the challenges of coordinating between different levels of government.

The agency comments on this report spoke to the “devolution” initiative – the movement to reduce federal imposition into local issues. The imposition of the various legislation and programs is moving USDOT, DHHS, DOL, and other agencies towards a multi-centered federalism with shared responsibilities in meeting the needs of society. Rarely have transportation providers had to coordinate with social service providers (DHHS, DOL, etc.) and they have limited experience working with each other. Similarly, DHHS under a system of providing checks to constituents or participants has not had to concern itself with the issue of why individuals are unable to find and maintain employment. Problems arise around the ambiguity of agency goals as well as differences in principal missions and objectives. Traditionally, the USDOT has been a single-mission organization, while DHHS and DOL have had multiple objectives. These agencies also have generally different constituencies. These factors contribute to the problems surrounding coordination of services.

The GAO found that in 1999, 67% of the grantees were traditional transportation organizations. The non-traditional organizations that participated included human service agencies, employers, and metropolitan planning organization (MPO) agencies. Arguably, the last category of organizations – MPOs – were not new to applying for transportation grants and therefore were in a position to take a leadership role for coordination in metropolitan areas. Further, legislation requires coordination through MPOs in areas with population over 200,000. Most of the grants were to be used for expanding or providing links to existing transit and for information and education. Of the 181 grants awarded, 122 went to transit agencies, 13 went to community organizations, and the remainder were awarded to other government agencies. Half of the funding went to existing services and the other half went to non-traditional services including vans, shuttles, and demand-responsive systems. Other services included guaranteed ride home, vouchers, and traveler information systems targeted at low-income wage earners. Some of these services may also benefit all users of the transit system, beyond just low-income or unemployed persons.

5. Conclusions

Unfortunately the real lesson to be learned about the transportation policies discussed is that we know very little what effect they had on creating opportunity or improving the well-being of families in the grip of poverty. A simple explanation for this is that inadequate resources are provided to evaluate the effectiveness of programs that have direct social implications. This is not the case however, for transportation research that focuses on physical infrastructure like roads, bridges, operations, etc., where elaborate testing facilities and research centers spend many millions of dollars annually. Although TEA-21 allocated \$3.3 billion over six years for surface transportation research and development to ensure that the United States will be a world leader in these areas, only a relatively miniscule fraction of those funds are spent on research examining transportation's effect on poverty and social outcomes.

References

- Blackley, P.R., 1990. Spatial mismatch in urban labor markets: evidence from large US Metropolitan Areas. *Social Science Quarterly* 71, 39–52.
- Bullard, R.D., 1996. Introduction: environmental justice and transportation. In: *Environmental Justice and Transportation: Building Model Partnerships: Proceedings Document*. Clark Atlanta University.
- Bullard, R.D., Johnson, G.S. (Eds.), 1997. *Just Transportation: Dismantling Race & Class Barriers to Mobility*. New Society Publishers, Gabriola Island, BC.
- Crain, J.L. 1970. The reverse commute experiment: A \$7 Million Demonstration Program. Prepared for Urban Mass Transportation Administration, SRI Project MSU-7598, Stanford Research Institute, Menlo Park, California.
- Dajani, J.S., Egan, M., 1974. Income distribution effects of the Atlanta transit system. *Transportation Research Record* 516, 35–46.
- Dill, J., 2001. Older vehicles and air pollution: Insights from the 1995 NPTS. *Transportation Research E-Circular*, Number E-C026, Transportation Research Board, Washington, DC.
- Frankena, M., 1973. Income distributional effects of urban transit subsidies. *Journal of Transport Economics and Policy*, 215–230.

- Hernandez, M., 1996. Public transit in Los Angeles. In: *Environmental Justice and Transportation: Building Model Partnerships: Proceedings Document*. Clark Atlanta University.
- Hodge, D.C., 1995. My fair share: equity issues in urban transportation. In: Hanson, Susan (Ed.), *The Geography of Urban Transportation*. The Guilford Press, New York.
- Hughes, M.A., 1991. Employment decentralization and accessibility: a strategy for stimulating regional mobility. *Journal of the American Planning Association* 57, 288–298.
- Human Development Corporation of Metropolitan St. Louis, 1970. *Operation TEMPO: Final Report of the Saint Louis Mass Transportation Demonstration Project*. Urban Mass Transportation Administration, St. Louis.
- Kain, J.F., Meyer, J.R., 1970. Transportation and poverty. *The Public Interest* 18, 75–87.
- Kalachek, E., 1968. In: *Ghetto Dwellers Transportation and Employment: Conference on Transportation and Poverty*, Brookline, MA.
- National Advisory Commission on Civil Disorders, 1968. *Report of the National Advisory Commission on Civil Disorders*. Washington: US Government Printing Office.
- Rosenbloom, S., 1992. *Reverse Commute Transportation: Emerging Provider Roles*. University of Arizona, Drachman Institute for Land and Regional Development Studies, Tucson, AZ.
- Sanchez, T.W., 2002. The impact of public transportation on US Metropolitan wage inequality. *Urban Studies* 39 (3), 423–436.
- US Department of Transportation, 1998. *Access to Jobs: A Guide to Innovative Practices in Welfare-to-Work Transportation*. Community Transportation Association of America, Washington, DC.
- US General Accounting Office, 1998. *Welfare Reform: Transportation's Role in Moving From Welfare to Work (GAO/RCED-98-161)*, Washington, DC.
- Willis, N., 1997. Welfare to work: where community and transportation advocates meet progress. *Surface Transportation Policy Project* VII (8), 5–6.
- Wilson, W.J., 1997. When work disappears. *Political Science Quarterly* 111, 567–595.