

Rail Transit: Cost and Benefit Arguments of Rail

Introduction

Is rail transit worth the cost? Like so many controversial topics, the answer is quite clear: it depends. Depending on the criteria (and the sponsors of the evaluation), every rail project seems to both succeed and fail. Critics claim that ridership is well below expectations while construction and operating costs are more than expected. Proponents argue that critics are shortsighted, misrepresent facts, and fail to see the “big picture.” Nevertheless, rail transit is increasingly proposed as a key part of transportation policy aimed at relieving urban congestion and pollution as well as a tool to promote economic development, channel urban growth, and provide more equitable access to mass transit (Richmond 1996, Black 1993, Zimmerman ND, Thompson & Matoff ND).

Rail transit is, however, not cheap. The capital costs for what appear to be relatively small systems are staggering. Recent rail projects have cost from a half a billion to as high as six billion dollars for new and expanding systems (Pickrell 1992). Although now delayed due to financial difficulties, the Los Angeles rail system is expected to cost at least 78 billion dollars for a 300-mile system (Richmond 1999, Moore 1992). Despite these costs, new rail transit plans continue to be proposed around the country—but at what cost for what benefit? A complete cost evaluation of all rail transit is outside the scope of this paper. Instead, this paper briefly addresses a sample of the cost and benefits arguments associated with current rail transit. The first section briefly reviews the history and current rail transit policy. The second section explores the cost and benefit arguments of rail transit. Finally, the efficiency, equity, environment, an experience of rail transit are discussed.

Part I: Rail Policy

From the arrival of rail transit in the late 1800’s until the automobile takeover in the 1940’s, many of the nation’s urban areas relied on privately run rail transit to move people in and out of the urban core. The 1930’s Public Works Administration brought some of the first heavy federal spending on rail transit projects in New York City and Chicago (FTA 2003). Yet, by the mid-1950’s, streetcars had virtually faded from existence as transportation policy shifted to automobile transportation and, to a lesser degree, bus transit (Richmond 1996, Black 1993).

In the 1950’s, federal policy and funds were directed at the new interstate system (Thompson & Matoff ND). Automobile transportation funding promoted city expansion, auto-centered developments, and encouraged development of polycentric cities—none of which are conducive to rail transit (Moore & Thorsnes 1994). The 1964 Urban Mass Transportation Act (UMTA) attempted to resuscitate mass transit development in the name of providing expanded transportation opportunities for the disadvantaged (FTA

2003). Although small in today's terms, the UMTA provided 375 million dollars for all types of transit projects, including rail transit. By the 1970's and 1980's, however, increasing congestion and pollution pushed rail transit construction forward in several major cities, including the popular and controversial Washington DC, Los Angeles, San Francisco, and Atlanta subways systems.

The 1991 ISTEA (Intermodal Surface Transportation Equity Act) provided more than 31.5 billion federal dollars for transit expansion (Black 1995). The 1998 ISTEA reauthorization bill, known as TEA-21 (Transportation Equity Act of the 21st Century), continues to provide in upwards of 42 billion dollars of federal funds toward mass transit projects, including the Minneapolis Hiawatha light rail line (TEA-21 Summary 1998). These acts strongly promote multimodal transportation facilities and direct funds towards multimodal development. However, for a transportation project to receive TEA-21 funds, it must be shown to be the most cost-effective approach among alternatives, which critics claim rail fails to do. Since federal funds provide only 50-80% of total funds needed to build many rail transit projects, transit agencies must access local funds to build rail projects (Pickrell 1992).

Nevertheless, by 2001, there were 23 rail transit additions or new systems under construction with an additional 21 transit project proposed (Free Congress 2000). There are approximately forty rail transit systems currently in operation in the United, though many cities, e.g. Los Angeles and New York, have more than one type of rail transit system (Free Congress 2000, National Transit Database 2000).

Part 2: Rail Transit Cost and Benefit Argument

Tracking the monetary cost and ridership of rail transit is easy—interpreting the results is difficult. While direct costs are certainly important, the primary benefits or goals of rail are difficult to measure and quantify. Accurately evaluating rail is important for receiving federal and local funds; however, the results of rail evaluations are decidedly mixed. The cost and benefit argument of rail is complex and only some of the arguments can be touched upon in this report. The first section reviews the actual costs of building and operating rail transit lines. The second section looks at the claimed effects of increased ridership.

Construction, Operating, and Opportunity Costs

In 2000, capital costs paid for with federal and local funds totaled slightly less than six billion dollars for rail and approximately three billion dollars for bus transit (National Transit Database 2000). Operating costs in 2000 were just over seven billion dollars for rail and eleven billion dollars for bus operations (National Transit Database 2000). Rail capital costs were double that of bus but operating costs were just 70% that of bus transit. To put this into greater perspective rail transit carried 3.3 billion passenger trips and buses carried 5.6 billion passenger trips in 2000 (APTA 2000). Based on these rough

numbers, operating costs were slightly better per passenger than bus, but capital costs were significantly larger for rail. Of course capital costs are future investments, but one could also argue that an extra thirteen billion dollars would significantly expand bus operations that already carry more people to more destinations than rail transit.

As rail systems have been built, construction costs have far outstripped original estimates in most rail projects (Richmond 1996, Black 1993, Pickrell 1992). A study conducted by Pickrell (1992) shows that construction costs ranged 17-150% above original projections in seven of eight studied projects. Rail advocates admit that rail transit cost and ridership were off the mark in the 1980's; however, rail supporters argue that there were few past models to base cost and ridership projections (Weyrich & Lind (2001). However, some critics (Richmond 1996, Pickrell 1992, Pickrell 1989, Public Purpose 1997) take this a step further and accuse rail supporters of intentionally falsifying projections in their favor to secure federal funding.

Many rail supporters contend that operating costs for rail are less than bus operating costs. Strictly looking at operating costs, light rail does tend to be cheaper per passenger than buses because rail can adjust capacity throughout the day and rail can carry more passengers per trip than buses, which reduces costs per passenger (Black 1993). However, Black (1993) also found that light rail is more than twice the cost per passenger than bus when capital costs are included.

Transportation, whether roads or mass transit, requires subsidies to be built and operate. However, subsidies are not equal. Richmond (1996) writes that bus lines tend to recover more of their cost than rail lines thereby requiring fewer subsidies. For example, Los Angeles recovered 10-13% of total rail costs in 1995 while bus transit recovered nearly 33% of total costs (Richmond 1996). A study conducted by the Buckeye Institute in Ohio (1999) does not dismiss the fact that roads are heavily subsidized but claims that rail transit subsidies per passenger are more than double that of even automobile subsidies. However, Zimmerman (ND) and Weyrich & Lind (2001) counters this arguments with data from the Federal Highway Administration that highway users cover no more than 70% of their costs and this figure does not include other external costs such as pollution, social costs, or accidents.

There are three main alternatives to rail: expand highways, expand bus systems, or do nothing. Doing nothing is not a widely accepted alternative. Additionally, research continually shows that expanding highways does little to relieve congestion. Richmond (1996) strongly promotes the idea of reduced bus fares and expanded bus services in place of rail transit. In 1982, Los Angeles introduced an experimental program that lowered bus fares. In 1985, the funds used to reduce bus fares were transferred to rail transit construction and bus ridership fell by 47.8 million passenger trips, which is more than twice the expected ridership of the new rail transit (Richmond 1996). In many cases, alternative costs and benefits are difficult to assess since they are not implemented. Few authors cited in this report

deny the need for transit; instead, there is a strong base of support for significantly expanded bus service and designated bus ways, which is claimed to be far cheaper.

Transit Ridership: Guiding Urban Growth and Benefits

Transportation planners promote transit ridership hoping to direct urban growth, relieve congestion, and reduce pollution. Each of these goals is based on increasing transit ridership. With declining downtowns and sprawling suburbs, rail proponents declare that rail will help workers and shoppers get downtown more efficiently thereby promoting downtown revitalization and rail can serve as a growth corridor in the suburbs. Unfortunately, it is difficult to measure these potentially long-term hopes against current dollar costs. Zimmerman (ND) writes that Virginia collected an additional 700 million dollars in taxes near metro stations due to increased development, and Cervero (1984) agrees that rail transit is more likely than bus line to affect nearby economic growth. While this is far from a proven causation, it does suggest that rail transit can have a positive economic effect near transit lines that may not be immediately measurable or even possible to reliably estimate.

Urban congestion is another primary reason that rail is promoted, but rail has done little to demonstrate reduced congestion in all but a few cities where the majority of downtown trips are taken by rail, such as New York, Chicago, and Philadelphia (Weyrich & Lind 2001, Zimmerman ND). Without rail transit, the cost for additional parking, road construction, and even bus facilities would be high in these cities. Weyrich & Lind (2001) agree that rail may not do much for eliminating congestion costs initially but neither does building highways, which is also an expensive and potentially unpopular alternative. Zimmerman (ND) argues that much more investment is needed in rail in order to secure any congestion reduction benefits and if the full cost of highways were passed to automobile drivers, rail would be a more viable and acceptable option.

Rail transit is often promoted as a way to increase transit ridership and provide faster transit options. However, several studies cited by Richmond (1996) and Pickrell (1992) show that between 60-80 percent of rail riders were previous bus riders. While this is still a gain for rail transit, this further reduces the number of actual new riders to transit. Despite billions of dollars in rail investment in Los Angeles, transit ridership has decreased nearly 35 percent since 1985 after a 40 percent increase from 1982-1985 when fares were reduced (Public Purpose 1997, Richmond 1996, Moore 1992). A report from the Minnesota Transit for Livable Communities (Thompson & Matoff ND) counters this claim with research claiming that bus ridership increased after rail transit in St. Louis and San Diego. Even Richmond (1996) admits that parts of San Diego's rail line have been a surprising success.

New rail transit lines around the country almost consistently produced ridership well below expectations (Richmond 1996, Black 1993, Pickrell 1992). However, Zimmerman (ND) contradicts this

argument with data from St. Louis that shows ridership 50% above expectations. However, the 10,000 riders per day expectation was lowered from an original 100,000 rider per day projection by St. Louis transit planning. After the light rail opened and ridership reached 15,000 riders per day, the transit agency declared the line a success (Richmond 1996).

Evaluation: The Four E's

Efficiency

Is rail transit the most efficient method of slowing congestion, relieving pollution, and guiding urban development? Unfortunately, the nature of urban planning does not allow us to peer into the future to see how current rail projects perform as urban areas continue to grow. Although it is unlikely that current under-performing rail lines will be shut down, new proposals must have accurate capital costs, operating costs, and ridership projections to ensure that the most appropriate transit plan is followed. Alternatives to rail should be analyzed further and given thoughtful consideration. Several rail critics have suggested that local funding should be a greater part of funding in order to make local leaders more accountable (Richmond 1996, Pickrell 1992). Rail transit certainly has a place in urban America but rail is not the most efficient form of transit for every city.

Equity

Since rail transit is a highly localized benefit, it is not easy to make rail transit an equitable service. Theoretically, reducing congestion and pollution is good for everyone. Since in many areas transit riders are primarily minority populations, it is imperative that rail transit not be built at the expense of reduced service for disadvantaged populations. Unfortunately, rail transit in Los Angeles is disproportionately white despite even where rail runs through minority neighborhoods where rail replaced existing bus services (Richmond 1996).

Environment

Rail transit is offered as one partial solution to the degrading urban environment. It is virtually uncontested that sprawl is ravaging the urban fringe, air pollution is getting worse, and congestion shows no sign of slowing. While rail may have some affect on congestion and pollution, the literature suggests that any effect will be small. Except for places Manhattan, rail transit removes only a small fraction of total traffic. Rail transit, at least in most cities, is not the solution for pollution.

Experience

As Zimmerman (ND) points out, as experience with rail transit grows, planning will get better, costs will be kept under control, and rideship projection will have better estimates. Unfortunately, urban planning does not allow real world laboratory demonstrations of expensive public projects. It is difficult to compare rail transit to its alternatives since the alternatives are not built and alternative costs and

benefits are not realized. The most unfortunate part of urban planning is that mistakes are expensive and difficult to fix.

Conclusion

As demonstrated above, rail transit is not easy to evaluate. Many of the benefits are hard to quantify and realize in the short-term, while costs are all too apparent almost immediately. TEA-21's support for multimodal transit and local political leaders that support rail seem to be relying too much on uncertain costs and even more uncertain benefits. Undoubtedly some rail transit projects are mistakes while others will grow into wonderful successes. Unfortunately, there is not a formula for rail success. One thing is certain, however, rail transit was not built in a night and its benefits cannot be measured over night. Is rail worth the cost? Only time will tell.

On a scale of one to four, with one being the highest, I would give recent rail projects a four due to consistent overestimating of ridership, underestimation of costs, and a failure to demonstrate results on most issues discussed in the evaluation section. Despite the literature, I also give rail transit a one under the guise of hope. Rail transit is important for cities and sometimes risks need to be taken for future benefits.

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