The Costs of Not Investing in Transit

Introduction

Municipal governments are constantly faced with the challenge of meeting demands on the local infrastructure with limited budgets. As a result, municipal leadership must sometimes defer some items in favor of other needs. Transit services can be one casualty of such decision-making, especially where transit may be needed but not currently provided. Indeed, developing the political will to cover the cost of a capital-intensive transit project can be a challenge. It is easy for decision-makers to see the projected capital and operating costs and be put off by the prospect of uncertain long-term benefits in the face of immediate needs and competing funding priorities.

This paper examines some of the costs of foregoing an investment in transit service. While it is impossible to accurately quantify the potential costs and benefits without a specific transit system in mind—and even when a specific transit system has been proposed, some of the costs and benefits do not lend themselves to a quantitative economic analysis—the question can be addressed qualitatively.

Cost of Car Ownership

One of the defining differences between public and private transportation is that, whereas in public transportation, the right-of-way, the vehicles, and the driving responsibilities are publicly provided, in private transportation the individual must purchase and operate a vehicle to use the transportation network, or else depend for transportation on someone else. In some households, the purchase, registration, insurance, and maintenance of a vehicle can represent a significant expense, especially for an object that will spend the majority of its time not being used. Even in multi-car households, the perceived need for an additional car can represent a strain on the household economy. The American Public Transportation Association (APTA) estimates that eliminating the costs of a car can save about $6,202 annually. These savings could then be deployed elsewhere in the economy. Such savings, however, are likely unattainable in areas where transit is limited or not provided at all: a car becomes necessary to provide access to work, shopping, medical facilities, leisure activities, and other opportunities.

Cost of Congestion

As an area grows, there are simply more people who need to travel to jobs, shops, and other destinations. In the absence of a comprehensive transit system, these potential travelers must compete for space on the roadway, leading to the loss of time due to congestion delays. The exact value of the time lost is a matter of some discussion in the planning field, since people may value time differently. The Texas A&M Transportation Institute's *2019 Urban Mobility Report* estimated the 2017 value of delay time to be $18.12 per hour for passenger vehicles, based on the median hourly wage rate for all occupations, though other calculations may be used. In any event, the time lost represents an opportunity missed for some activity other than sitting in traffic, whether that activity is employment, family time, recreation, or shopping. This can represent a significant impact on quality of life, especially aggregated across a large metropolitan area.

In addition to the value of time, operating costs can be higher in congestion, as fuel efficiency goes down and the vehicle experiences greater wear and tear on parts such as brakes and cooling systems.

These costs are borne by the vehicle owners and represent a cost that could be reduced by replacing personal trips with transit trips. The APTA estimates operating costs for cars to be 6 cents per mile higher in congested conditions than in free flow conditions.

Moreover, congestion produces environmental effects such as the pollution generated by idling vehicles. This factor may be mitigated as the overall fleet transitions to hybrid or electric vehicles. However, the energy wasted by sitting in traffic represent personal costs that could be reduced through transit. While the operation of larger transit vehicles may also have an environmental impact, this impact is offset by the potential for such vehicles to carry more people, reducing the overall number of vehicles on the road. Additionally, the transit industry has demonstrated a trend toward adoption of electric power that has been faster than the aggregate fleet of personal vehicles, resulting in less of an air quality impact due to vehicular emissions.[1]

Space requirements for private vehicles

In the attempt to mitigate congestion, one frequent strategy is to increase the number of lanes on a particular roadway. In practice, this strategy has limitations. While increasing the capacity of part of a road may succeed in removing the bottleneck at a particular location, the bottleneck may re-form at a new location as the demand exceeds the capacity further down the road. Also, practice has shown that increasing the capacity on a roadway can have the effect of inducing additional demand until the roadway is as congested as it was before, especially in a rapidly growing area like Dallas-Fort Worth. The notion of a region building its way out of congestion is thus as illusory as it is expensive, as more and more right-of-way must be acquired, constructed, and maintained in pursuit of an ever-elusive goal. Moreover, increasing roadway capacity to meet peak-hour demand may result in long periods where the facility is underutilized.

The issue of widening roads to accommodate increasing numbers of vehicles is part of the broader question of the amount of real estate that must be devoted to personal vehicles in a transit-less transportation system. Dependence on private vehicles also requires the supply of ample parking, driving up development costs and occupying space that could be used for other, more profitable purposes. While the issues caused by surface parking lots can be mitigated somewhat by using parking structures, this solution still imposes significant design, construction, and maintenance costs that must be either borne by the public or passed on to the users of the development.

Public transit vehicles, on the other hand, have a larger carrying capacity that can make better use of road space and reduce the need for parking real estate in valuable city centers. Also, a public transit system can, in general, be more easily scaled to meet demand, avoiding wasted investment.

Cost of Lost Opportunities for Higher-Density Development

The allocation of a large amount of real estate to accommodate private vehicles tends to reduce the overall population density of an area. Adding additional travel lanes and parking spaces not only

[1] Assumptions about the positive impact on climate change of conversion to electric vehicles inevitably depends on an increase in the share of renewable sources to feed the overall electric grid; otherwise, the source of the energy merely shifts from gasoline to coal or natural gas. While even in this contingency, the conversion to electric vehicles can improve the air quality in a metropolitan area by removing a source of ozone, it does little to reduce carbon emissions overall.

occupies space that could be used for human-scale activities, but increases the space between the activities that remain, encouraging further vehicle trips and driving demand for more transportation infrastructure. Moreover, the additional travel lanes enable development further away from the city centers—perhaps not even in the community itself. This reduces the potential economic benefits associated with greater density, requiring the residents of the community to support an increasing amount of physical infrastructure while foregoing a higher tax base.

A sufficient public transit system, on the other hand, could enable the development of transit-oriented developments (TOD). Such developments are characterized by higher density and accommodations for forms of transportation other than cars. This reduces the per capita infrastructure burden by concentrating economic activities, presenting economies of scale not only in streets but also power, water, and sewer lines. TODs also tend to be mixed-use developments, potentially eliminating some street trips by placing origins and destinations within walking or cycling distance and increasing the potential customer base of the transit system. This concentration of economic activity provides a potentially higher tax base than can be achieved with traditional suburban low-density development.

The placement of permanent transportation infrastructure such as a rail, streetcar, or bus rapid transit line can also help focus development by signaling a long-term infrastructure investment in station areas. This benefit can manifest itself as a higher-density and higher-value development pattern. A study performed for Dallas Area Rapid Transit (DART) by the University of North Texas' Economics Research Group in May 2020 found $5.138 billion worth of property investment had occurred within a quarter of a mile of DART light rail stations (exclusive of the four downtown Dallas stations) from 2016-2018, creating a $10.27 billion economic impact to the region. The study found that the projects generated $286.4 million in state and local tax revenue. Not only does such development provide direct revenue for local budgets, but some of the value may be captured through tools such as tax-increment financing districts or tax increment reinvestment zones to help recover the costs of other infrastructure needed by the increased development.

Finally, by mixing land uses, TODs can enable shared parking, in which land uses whose parking needs peak in one part of the day coexist with land uses whose parking demand peaks at other times. For example, a set of restaurants, whose peak parking requirements tend to occur in the evening, could share a parking lot or structure with an adjacent office tower, whose peak demand would occur during the day. This reduces the need for parking areas even before transit ridership is considered.

Examples of TODs in the Dallas-Fort Worth area include the developments around Mockingbird Station in Dallas and CityLine Station near the State Farm development in Richardson.

Cost of Lack of Job Access

Economic activity depends on the successful connection of employees to job locations. The ability to travel to a place of work in a reasonable amount of time is something that many people may take for granted. However, when transit is not available, the ability to reach a job depends on access to private transportation in some form. This requirement can present a significant or prohibitive barrier to employment, especially in the lower-income sector or among persons who may not be able to operate a vehicle. One potential solution is the location of housing near the employment locations; however, this may not be an option for low-income jobs in an area of relatively high property values.

The VTPI's report *Evaluating Public Transit Costs and Benefits* highlights several studies citing the availability of transit as a significant factor in job accessibility, especially among students and adults with disabilities.

From the perspective of the employer, the unavailability of workers represents an operating challenge. Employers must either raise the wage offered for the unfilled job until it is attractive to nearby job seekers or must cover the transportation costs of workers farther afield; the alternative is to allow positions to remain unfilled. Either option potentially makes the business less competitive as the higher cost of labor may be passed on in the form of higher prices or reduced quality. In an extreme case, the business may become untenable, forcing it to close and reducing the market choice of local residents, who may have to drive further to reach a similar business.

By establishing a comprehensive transit network, a community can assist in the connection of employees to jobs, increasing economic opportunities, as well as market choices. In this case, transit provides the solution to land use decisions and an imbalance in the job/housing market.

Additional Costs of Driving

Besides the costs of acquisition and operations, car ownership generates a number of other costs that may fall either on the owner or on society at large. For example, the Victoria Transport Policy Institute's report *Transportation Cost and Benefit Analysis* cites many costs that are associated with vehicle travel but not explicitly covered in the preceding discussion and attempts to express them in terms of their public cost. For example, the cost of crashes includes not just the cost of damage to the vehicles and potential medical care to those involved, but the cost of police support and other clean-up activities, potentially the cost of repairs to the roadway, the cost of delay to other motorists, and the cost of higher insurance premiums. The report attempts to aggregate these costs and reduce them to a per-mile rate that can be used to evaluate the costs and benefits of transportation projects.

Other costs examined in the report include air pollution, taking into account the health and climate change impacts of various car exhaust products; noise, based on the impact on local property values; and water pollution, based on the cost and environmental impact of stormwater runoff from roads, herbicides, spilled petroleum products, etc. While this paper does not attempt to provide a comprehensive benefit-cost analysis for a particular project, the point remains that all of these factors are aggravated by pursuing a cars-only transportation strategy and result in an often-overlooked public cost.

Conclusions

While the capital and operations costs associated with a public transit system can be substantial, they are offset by other costs associated with a transportation network solely dependent on private vehicles. In addition to mitigating quality-of-life issues associated with not having (or being able) to drive, a public transit system can make a more efficient use of physical infrastructure devoted to the transportation system, reducing such costs and diverting space to more beneficial purposes.

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