Bus vs. Light Rail

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Public transit is frequently seen as a key to ameliorating economic inequality and addressing climate change. However, only a limited number of cities have material transit ridership. In the US, out of 234 metropolitan areas measured, there are only six with a public transit mode share of 10% or more for commuting. All of them are large metropolitan areas with over three million residents. An additional 13 have a public transit commute mode share of 5-10%, including larger metro areas with more than a million people but also some smaller ones such as college towns like Ann Arbor, Boulder, and Champaign-Urbana, Illinois. [1]

A handful of large cities dominate the public consciousness of what public transit is, especially New York City with its famed subways. Cities like San Francisco, Chicago, Washington, Boston, and Philadelphia also all have extensive rail transit networks. The presence of these rail systems in large transit cities often help to orient civic leaders in other cities towards rail transit approaches to boosting their own low transit ridership numbers. Cities like Dallas, Denver, Charlotte, Phoenix, Los Angeles, and Portland have all built new rail systems, predominately light rail technology, sometimes extensive rail systems.

Unfortunately, most American cities lack the characteristics that would lead to the high ridership levels necessary to support rail transit. Among these characteristics are large central business districts, high densities, urban form, comprehensive transit service that eliminates the need for parking garages, severe traffic congestion, and legacy systems.

Cities with high transit usage tend to have large central business districts with a significant share of regional employment. Manhattan, for example, has over 2 million jobs.[2] Chicago's central area has nearly 600,000.[3] San Francisco, Washington, and Boston also have large, concentrated employment zones in the center. This enables the hub and spoke networks that work best for rail. Most American cities have comparatively small central business districts and highly dispersed origins and destinations of trips.

Cities with high transit usage also tend to have high population densities. They also have extensive areas build to a pre-automobile era urban form: with mixed use, little to no street setbacks, high quality environment for walking, etc. Outside of a handful of very large cities, there simply is not that much high density, truly urban development zones in most American cities.

The high transit usage cities also often have comprehensive coverage, both in city and in suburbs with commuter rail, which allows the majority of regional residents to access the central business district via transit. This in turn allows major downtown office buildings to be

constructed without parking. In turn that facilitates much greater density of development and the ability to design the central business district in a way that does not give primacy to the automobile. Much of this comprehensive network is the form of legacy rail lines that were built a hundred or more years ago.[4] These cities grew up around their rail systems, giving them a fundamentally different urban architecture from most American cities, which are designed around the car. Even if those smaller cities were able to build rail lines, realistically most people will still commute to even the central business district by car, meaning that district must be designed with the car in mind.

These factors mean that, in the short term at least, rail transit is not a good fit for most cities because they will be unable to generate the ridership necessary to justify the cost of constructing and operating it. Rather, these cities should look to provide significantly improved bus service in the near term.

There are a number of things cities, including smaller cities, can do to improve bus transit. One trend has been towards network redesigns that shift bus systems toward a higher frequency core network, sometimes with a more grid like design. Many bus routes date from long in the past and may no longer reflect contemporary realities. Additionally, many networks were designed to maximize coverage. This means they often have low ridership routes or route segments. A higher frequency core network shifts the balance away from geographic coverage to higher ridership, though at the cost of eliminating some segments on which a limited number of people depend. Rider share or other options can help mitigate this loss of service.

Another trend is towards fareless transit. In smaller cities, fares collected account for a relatively low percentage of operating costs, often 20% or less, and are not an especially large source of revenue. These systems are almost entirely tax supported already. Migrating to a fareless system would increase ridership, eliminate the cost of hardware and operations associated with the fare system, and eliminate fare enforcement costs. Fareless transit especially benefits low income riders.

Fareless transit has already shown positive results in some cities that have recently adopted it in part. Streetcar systems have often underperformed projections, but in Kansas City ridership has exceeded projections. [5] The Kansas City streetcar is fare free. The city is presently looking to make its entire transit network fare free. Similarly, in Columbus, Ohio a local downtown service district provided free bus passes to all workers in its service area. Subsequently the share of people riding the bus to work increased by five percentage points or more. [6]

Another trend is to build Bus Rapid Transit (BRT) in lieu of light rail. BRT is an umbrella term with a wide range of definitions. In the US, key features can include pre-paying the fare prior to boarding, all door boarding, level platforms, wider stop spacing, higher frequencies than normal, traffic signal priority, and exclusive lanes. Not all systems include all of these features.

Of course, simply adding additional service, whether in the form of increased frequency, longer service hours, or new or extended routes, is also a way to improve bus service. As are adding bus only lanes, constructing improved transit centers, adding bus shelters, etc.

Indianapolis is one city implementing a variety of these strategies. Voters there approved a 0.25% increase in the local income tax to expand service, implement a redesigned bus network around higher frequency core routes, and build a network of three BRT lines. Based on projected federal funding levels, the BRT network would require a local capital construction outlay of $220 million for a 62 mile, 97 station network. The first line was already built at a cost of $96 million, of which the federal government paid $77 million. That's an order of magnitude cheaper than building light rail. By comparison, Nashville's proposed light rail based system was projected to cost $5.4 billion. Indianapolis is not going fare free but is implementing a new fare system. [7]

Cities should invest in their bus system using a variety of these techniques instead of building rail systems. In the event they are able to successfully build a large rider base using buses, then light rail can be constructed later. Seattle is presently making a major investment in rail – but only after decades of building bus ridership levels to one of the high percentages of transit commuting in the country.

ENDNOTES

1. Census Bureau, American Community Survey 1yr 2018, Table B08301
2. https://www.bls.gov/regions/new-york-new-jersey/news-release/countyemploymentandwages_newyorkcity.htm
3. https://www.chicagobusiness.com/greg-hinz-politics/warning-sign-city-hall-should-heed
4. San Francisco and Washington both built large suburban serving rail systems in the modern era
5. https://www.kansascity.com/news/local/kc-streetcar/article148797874.html
6. https://www.columbusunderground.com/downtown-bus-ridership-has-doubled-over-past-year-we1
7. https://www.citylab.com/perspective/2019/08/indianapolis-electric-bus-rapid-transit-system-routes-brt/596470/