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Midterm Paper

October 17, 2017

Rail as a Route to Density: The Role of Rail Transit in a Dynamic Urban Future

 The American cities’ transit systems play a critical role in shaping cities across the country. The cities of today are conglomerate imprints of past generations’ choices around how to plan for and plan around transportation needs. Imprints of the pedestrian age of Pre-World War I, the streetcar era of the 20’s and 30’s, early rail transit project, and the like have had lasting impacts on the oldest cities whose modern landscapes still have a denser development pattern. However, few cities escaped the stark impacts of transit disinvestment and car-oriented cities which led to the kinds of sprawling, dehumanizing spaces that reinforce modern car culture. In light of these precedents, the question lies at the feet of today’s planning practitioners as to what role rail transit should play in shaping the cities of the future. Technological advancement and economic disruptions will test the true competitiveness of rail as a competitive mobility product. The core functionalities of rail such as capacity, speed, and reliability, can be compared with the qualities offered and demanded by these disrupting influences, revealing that there is still a critical role for rail to play. Rail transit will play the role of density intensifier in American cities of the future.

 In the first half of the twentieth century, rail transit played a crucial role in developing walkable core neighborhoods. As streetcar suburbs grew around new transit lines, a walkable suburban form sprung up that ensured long-term success of the transit lines (Levinson & Xie, 2009). To this day in the United States 80% of all-purpose transit users and over half of commuters and occasional users (broadly speaking, including bus transit modes) walk to access their transit trip (Transit Center, 2016). The historic and present day connection between rail and walking is at the core of why rail will facilitate and demand density in future cities. By pairing land use strategy that has contributed toward transit’s success in the past, we can ensure that new rail continues in this pattern and can continue to lay the foundation for the next generation of walkable neighborhoods. The large proportion of transit users who access transit by walking combined with the high capacity of rail produces a natural increase in demand for walkable places in communities, when built into places conducive to walking or newly developed to be walkable.

 Going forward in cities where several mechanisms will be placing incentives for cities to spread outwards, investment in rail will be a strong magnet for centralized growth. For the first time since the introduction of the automobile, urban transportation options are expanding to include new and evolving technology-enabled modes. Much as the city has changed its form in response to transportation technology changes in the past, it is nearly certain that these new technologies will change the form of American cities of the future. In turn, they will also drastically impact consumers’ relationship with transit, and specifically rail transit. When people make choices about how to get from point A to point B, the two most important factors to them are “travel cost in time and money” (Polzin, 2016). Autonomous vehicles, rideshare and other varied technology-enhanced modes will change the user’s transportation choice decision process, and rail transit’s role in the mobility landscape will need to adjust in response.

 We are entering an era where autonomous vehicles will decrease the cost in time for commuters to commute in via single occupancy vehicles. Even if there are not the cumulative benefits in operational speed predicted by some, people may be willing to commute longer distances since they can be occupied with activities other than driving, whether productive or leisurely (Polzin, 2016). This perceived decrease in the cost in time of commuting will be an incentive for people to live further away. If want to combat this sprawl effect, cities will need to provide time-cost competitive travel alternatives that make it advantageous to maintain proximity to the urban core. Rail is the commonly seen as fastest mode of public transit, since it has the most dedicated right-of-way of any of the modes, off-board payment, and other passenger experience features that add to a perception of speed and ease. When rail is invested in as a mass transit mode to compete with autonomous vehicles, it will contribute to maintaining a vital community backbone of varied destinations within a dense urban form in this era of pressure to expand outward.

 Another disruptive force in the urban transportation landscape is ridehailing in private vehicles, which will decrease the cost of using cars to get around and increase access to individualized transportation. With lower financial costs of using cars and possible drastic decrease in financial burden of owning a car if the market continues to grow toward the “mobility as a service model,” ridehailing is causing number of vehicle miles travelled to increase significantly (Clewlow & Mishra, 2017). In a market where decreased price induces increased demand for automobile ridehailing trips, rail will still be needed to operate where density is high enough that individualized trips are spatially inefficient and congested. In most urban areas, transit is maintaining cost competitiveness, even in comparison with ride sharing services like Uber Pool. For instance, an evaluation was done between ride time and ride cost between Uber and the DC Metro line and concluded that “for longer trips between the center of the city and the suburbs, Metro tends to be both more cost-effective and quicker than Uber. But for trips within the city that require a Metro transfer, Uber is often quicker than Metro, especially when Metro wait times are long” (Moored & Wilkens, 2017). Though DC is just one city, similar data is becoming available for other cities and, if it corresponds to the scenario in DC, may paint a picture of a mobility world where rail plays the role of connecting distant, highly-active destinations.

 Even beyond the forces influencing individual modal choices in cities, the role of rail is going to respond to the dynamic value of land in cities. In an era where housing prices are rising steadily and businesses are increasingly seeing value in staking places in the urban core, rail transit will play a key role in ensuring communities can access the hubs of housing and jobs they need. As these forces shift the economics of land use in the city, rail will still play an important role in creating dense hubs of activity in and around the city center.

Rapidly rising housing prices are becoming a big issue in many cities’ downtowns. On-board surveys of public transit riders have shown in cities across the country that transit riders’ median incomes are significantly lower than the population as a whole (American Public Transit Association, 2007). Low- and middle-income city residents are facing an affordable housing crisis while much of the residential development in central cities is being focused on middle to upper income people who rely on transit much less (Ryan, 2016). This shift in housing demand will mean that as low- and middle-income people seek to move further out of the city to find housing that meets their needs, rail transit will be a key part in maintaining the transportation options they need for employment and other necessities.

 Similarly, large corporations and employment hubs are increasingly seeing transit, especially high quality transportation like light rail, as essential to attracting and keeping the next generation of talent. From Amazon’s search for a second headquarters in a transit-rich city (Bliss, 2017), to local reports of 3M Corporation seeking to move from its headquarters in Maplewood to downtown St. Paul (Melo, 2017), it is clear that change is afoot. The next generation of the highly educated workforce are showing a preference for transit accessible workplaces (Kane & Tomer, 2014). In order to support heightened employment density in the urban core, rail transit will be needed to connect these jobs with the kind of employees needed, both skilled and unskilled, to fill the demand. With those employees being necessarily spread throughout the metropolitan region, investment in a strong regional rail network provides the broadest pool of workforce potential to support demand for employment centralization.

 The form of the city is malleable and must adjust to the transportation and land use dynamics of the future. Whether the counterbalancing the sprawling influence of autonomous vehicles, complementing the mobility-as-a-service market, or connecting vital housing and employment resources, the role of rail transit is rich and multi-faceted. Demand for walkability and therefore density is only going to grow as housing options become scarce and employment becomes more centralized. Communities that plan around incorporating rail transit will find themselves better poised to meet the demand social, economic and ecological demands of the next generation.

# Works Cited

American Public Transit Association. (2007). *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys.*

Bliss, L. (2017, September 17). *Amazon's HQ2 Hunt is a Transit Reckoning*. Retrieved October 17 2017, from CityLab: https://www.citylab.com/transportation/2017/09/amazons-hq2-hunt-is-a-transit-reckoning/541296/

Clewlow, R. R., & Mishra, G. S. (2017). *Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States.* University of California, Davis, Institute for Transportation Studies.

Kane, J., & Tomer, A. (2014, October 7). *Millenials and Generation X Commuters Commuting Less By Car But Will the Trends Hold*. Retrieved October 17, 2017, from Brookings: https://www.brookings.edu/blog/the-avenue/2014/10/07/millennials-and-generation-x-commuting-less-by-car-but-will-the-trends-hold/

Levinson, D., & Xie, F. (2009, July 9). How streetcars shaped suburbanization: a Granger causality analysis of land use and transit in the Twin Cities. *Journal of Economic Geography, 10*(3).

Melo, F. (2017, August 17). *3M reportedly eyeing space in downtown St. Paul*. Retrieved October 2017, from Pioneer Press: http://www.twincities.com/2017/08/16/3m-manufacturing-reportedly-eyeing-space-in-downtown-st-paul/

Moored, G., & Wilkens, J. (2017, October 11). *Metrorail vs Uber: Travel Time and Cost*. Retrieved from District, Measured: https://districtmeasured.com/2017/10/11/metrorail-vs-uber-travel-time-and-cost/

Polzin, S. E. (2016). *Implications to Public Transportation of Emerging Technologies.* National Center for Transit Research. University of South Florida.

Ryan, M. (2016, April 16). *Transit and Affordable Housing Should Go Hand In Hand*. Retrieved October 17, 2017, from MobilityLab: https://mobilitylab.org/2016/04/28/affordable-housing-and-transit/

Transit Center. (2016). *Who's on Board.* Retrieved October 17, 2017, from Transit Center: http://transitcenter.org/wp-content/uploads/2016/07/Whos-on-board-2016-fact-sheet-1-1.pdf