



# FACTORS AFFECTING TRANSIT RIDERSHIP

## INFLUENCES AND TRENDS

Transit ridership is the most well known and most scrutinized measure for evaluating transit performance. Understanding the factors influencing ridership has long been a focus on transportation planning research. And a recent reduction in ridership nationwide is leading to further refinement of understanding. This white paper summarizes **historical and emerging factors affecting transit ridership** and **identifies possible root causes for the recent downturn**.

## WHAT AFFECTS TRANSIT RIDERSHIP

<b>FACTORS AFFECTING TRANSIT RIDERSHIP</b>	
Ridership has been shown to be affected by both internal and external factors <sup>1</sup> :	
<p><b><u>Internal Strategies</u></b></p> <ul style="list-style-type: none"> <li>Service Coverage</li> <li>Service Frequency</li> <li>Service Span</li> <li>Fares</li> <li>Marketing / Promotion</li> <li>Public Policy</li> <li>Information Technology</li> </ul>	<p><b><u>External Forces</u></b></p> <ul style="list-style-type: none"> <li>Employment Rates</li> <li>Incomes</li> <li>Transportation Alternatives &amp; Costs</li> <li>Land Development Patterns</li> <li>Land Costs</li> <li>Demographics</li> </ul>

The factors influencing transit ridership are generally organized into two groups: Internal Strategies and External Forces. Internal Strategies are those factors a transportation agency or associated agency can directly influence, and whose benefits are accrued almost entirely by an individual transit provider. External Forces are those factors outside of the control of the transportation agency, and can be local, regional, or national in scale, influencing transit ridership up to nationwide.

The factors influencing transit have been the focus of significant study<sup>1</sup>. The studies are consistent in the identification of internal and external factors. Internal factors are generally different service implementation, promotion, and coalition strategies, such as service design (coverage, frequency, span, etc.), pricing, marketing, information technology, and associated public policy such as land use or parking policies. External factors revolve around economic success, transportation alternatives, spatial and demographic characteristics: economic cycles, per capita

income, cost and availability of alternative transportation modes – cars, ride-hailing services, walking, cycling – spatial land development patterns, and even rider demographics all influence ridership.

From early on, the research into ridership has maintained external factors have a greater impact on ridership than do internal initiatives. For example, one study found a 1% increase in per capita income reduced ridership by 0.7%, while a 1% increase in service provision would increase ridership by 0.3-0.35%<sup>2</sup>. A different study estimated no strategy would increase ridership in the DC area more over the next 20 years than would population growth<sup>3</sup>. However, internal strategies continue to have an important role to play in transit ridership<sup>4</sup>.

<sup>1</sup> Example studies from TCRP alone include at least the following; *Research Results Digest 4, Research Results Digest 29, Research Results Digest 69, Research Report 27, Research Report 111, and Research Report 195*

<sup>2</sup> (1996) Gomez-Ibanez, *Big-City Transit Ridership, Deficits and Politics Avoiding Reality in Boston*

<sup>3</sup> (2003) WMATA *Regional Bus Study – Final Report*

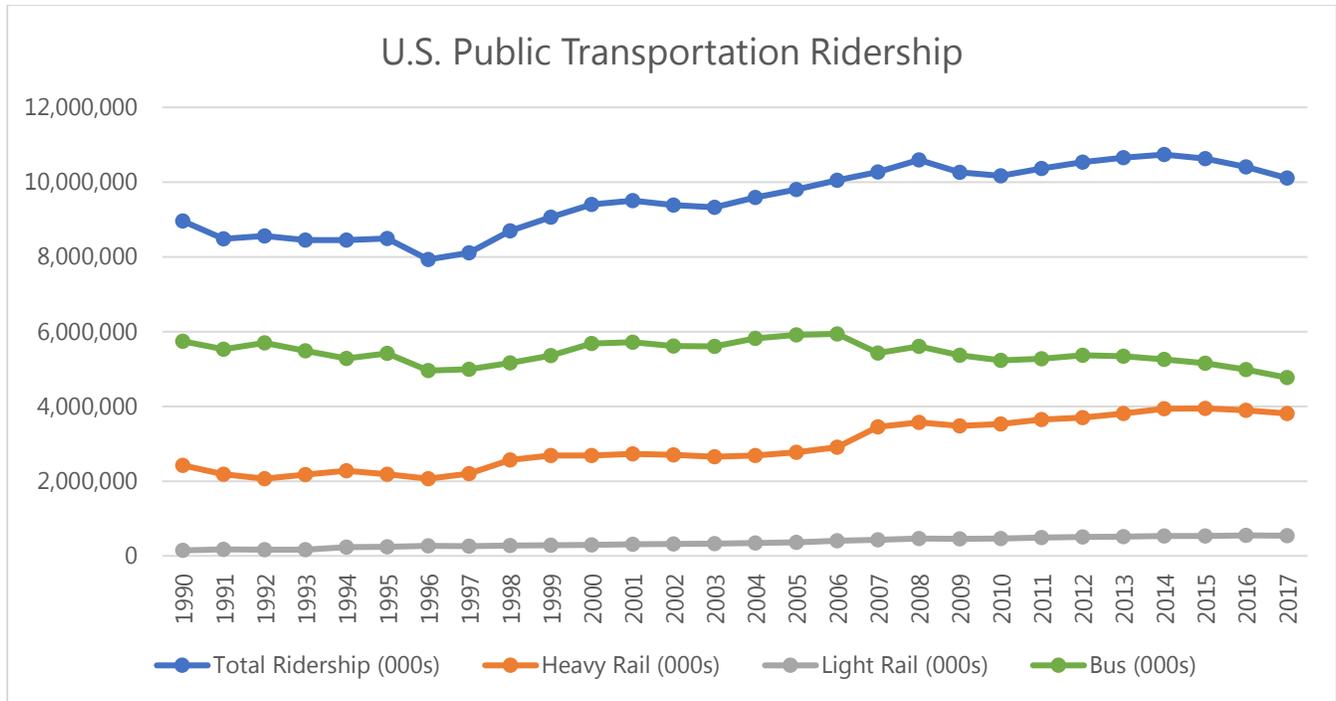
<sup>4</sup> (2018) TransitCenter, *The Path to Partnership*



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## CAUSES OF THE RECENT RIDERSHIP DOWNTURN

Nationwide transit ridership peaked in 2014 and has declined every year since<sup>5</sup>. This is not the first multi-year downward trend in recent history, with ridership reductions occurring every decade since 1990. However, this current downturn looks to have different root causes than previous downturns, which coincided with major national economic downturns. Among the most discussed root causes are income improvements and the emergence of ride-hailing services. These concepts and others are discussed below.



## REAL INCOME

Real per capita disposable income rose nearly \$4,000 from 2013 to 2017 after a half-decade of stagnation. This is a more robust growth rate than any time in the previous 30 years. There have been improvements in employment rates over the same period, which are generally associated with ridership improvements. However, improvements in real per capita income are allowing former transit riders to have increased access to non-transit modes, which is mitigating to some extent the transit ridership boost from economic activity. Trends in VMT support this hypothesis, as after nearly a decade of declining or steady total VMT, travel has been increasing again since 2013<sup>6</sup>.

<sup>5</sup> Data on ridership shown in chart is from the American Public Transportation Association

<sup>6</sup> [http://onlinepubs.trb.org/onlinepubs/futureinterstate/1\\_Panel\\_TravelForecast/PolzinSteven.pdf](http://onlinepubs.trb.org/onlinepubs/futureinterstate/1_Panel_TravelForecast/PolzinSteven.pdf)



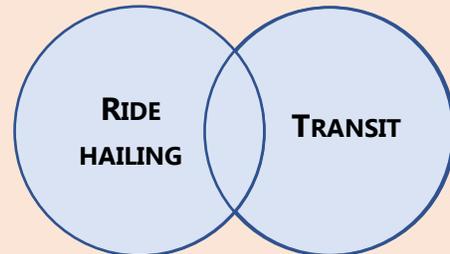
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## RIDE-HAILING SERVICES

Ride-hailing services such as Uber, Lyft, and others are transforming transportation throughout the U.S. With ride-hailing's surge in availability and ridership being such a recent phenomenon, there are very few studies on the impacts ride-hailing has on public transportation. The largest study to date on ride-hailing's impact on transportation behavior found the majority of ride-hailing service users did not have any change in transit use after adopting ride-hailing as a mode choice<sup>7</sup>. A minority of respondents reported change in transit use after adopting ride-hailing. The overall change in behavior was limited but showed declines for the primary transit modes and technologies. For those with a change in transit use, bus use declined 6% and light rail use declined 3% while commuter rail increased by 3%. These findings, along with demographic data on ride-hailers (who are generally more affluent and own more cars than transit users as a whole) suggest ride-hailing users and transit users have only modest overlaps, and ride-hailing replaces transit in only certain circumstances. Results from the same research showed ride-hailing is a substitute for travel for all the primary modes of surface transportation, including for local and regional trips (see graphic on the right). Other surveys of ride-hailing customers have found one-quarter to one-half of riders would have otherwise traveled via public transportation for their trip<sup>8</sup> and understanding this dynamic within each region would require additional study.

Other studies pertaining to ride-hailing and public transportation found more mixed results. A Pew Research Center study found frequent ride-hailing users are less likely than other Americans to own a car – but also rely heavily on a range of other transportation options, suggesting ride-hailing and transit are mutually beneficial as ride-hailers abandon cars and add transit as a travel mode<sup>9</sup>. This is corroborated by an APTA report noting ride-hailing services often see service demand in the 10pm – 4am time period when public transit is infrequent or unavailable, furthering the complementary nature of the service<sup>10</sup>. Conversely, a study focused on mobility in New York City noted during 2015 and 2016 when ride-hailing services expanded substantially in New York, bus ridership declined both years while

### RIDE-HAILING IMPACTS TRANSIT



*Ride-hailing seems to have at least some overlap with transit, as survey results show some trips formerly taken by transit are now done through ride-hailing. When ride-hailing users were asked which transportation alternatives they would have used for the trips they currently make<sup>7</sup>:*

**22% Fewer trips would be taken**

**21% Car**

**18% Carpool**

**17% Walk**

**15% Transit**

**7% Bike**

**1% Taxi**

<sup>7</sup> (2017) Clewlow & Mishra, *Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States*

<sup>8</sup> (2018) Schaller Consulting, *The New Automobility: Lyft, Uber and the Future of American Cities*

<sup>9</sup> (2016) Pew, *The New Digital Economy: Shared, Collaborative and On Demand*

<sup>10</sup> (2016) APTA, *Shared Mobility and the Transformation of Public Transportation*



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subway ridership declined sharply from 2015 to 2016<sup>11</sup>. Looking more closely at the types of trips taken via ride-hailing services, the number of trips under 3 miles were effectively unchanged from 2013 to 2016, while the number of trips above 3 miles and particularly longer than 5 miles grew exponentially.

## OTHER POSSIBLE ROOT CAUSES OF TRANSIT RIDERSHIP DECLINE

There is less research on other root causes of ridership decline, but other possibilities have been discussed.

### *Regional growth and urban settlement patterns*

Regional growth patterns and low-income household settlement patterns have changed significantly over the past several decades. All of the major regions of the country have seen urban footprints grow significantly, even those not seeing significant increases in population. Transit coverage has not been able to keep up with the expanding geography of urban areas. Transit systems have not expanded, changed service delivery model or added routes to adequately serve developing areas. Many systems cover areas substantially the same as they have been for decades. The reasons for this are complex, but the limitations can mostly be explained by lack of funding, lack of understanding of benefits of different service delivery models, lack of ability or regional will to expand transit systems across jurisdictional lines, and lack of rationale for serving suburban and exurban areas not designed to support transit – either in transportation infrastructure or physical development. In addition to the challenges of serving most newly developed areas with transit, there is the challenge of serving the older, inner ring suburbs first built in the 1950's, 1960's and 1970's. Some of these neighborhoods have transitioned from lower-middle to middle income neighborhoods into low-income neighborhoods where a higher percentage of the population have transit needs or a propensity to ride transit. This same demographic shift has been seen in the mill villages and industry-oriented neighborhoods of North Carolina. These were designed around walking to work and getting goods and services in the neighborhood or nearby downtowns. The current day residents of these neighborhoods seek employment and services outside of the neighborhood. They are potential transit riders, but the design of their communities, and lack of transit therein, is not helping to grow transit ridership.

### *Demographics*

Some have suggested changing demographics have been a part of ridership decline. For instance, per Census data immigrant workers are more likely to commute via transit than native-born workers, and the longer an immigrant stays in the U.S., the less likely they are to use transit. As immigration rates decline, so too would transit ridership<sup>12</sup>. Similarly, there might be transit commuter ridership losses due to baby-boomers aging out of the workforce.

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<sup>11</sup> (2017) Schaller Consulting, *Unsustainable? The Growth of App-Based Ride Services and Traffic, Travel and the Future of New York City*.

<sup>12</sup> <https://www.citylab.com/transportation/2017/01/the-newest-americans-getting-off-the-bus/512048/>



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## *Housing Displacement of Lower Income Transit Riders*

America's cities are getting more expensive, and it may be lower income transit riders are being priced out of neighborhoods with transit. The following table shows growth in rent from 2010-2016 for three types of areas within North Carolina: Census tracts in counties without fixed route transit, tracts adjacent to fixed route transit, and tracts in counties served by fixed route transit, not adjacent to transit.

<b>Areas</b>	<b>Count of Tracts</b>	<b>Average of 2010 rent</b>	<b>Average of 2016 rent</b>	<b>Avg Pct Change Rent</b>
No Fixed Route Transit in County	880	\$ 476.95	\$ 546.79	14.6%
Counties with Fixed Route Transit	1214	\$ 639.24	\$ 737.43	15.4%
<i>Adjacent to Transit</i>	753	\$ 661.99	\$ 769.79	16.3%
<i>Not Adjacent to Transit</i>	461	\$ 602.08	\$ 684.56	13.7%
Grand Total	2094	\$ 571.04	\$ 657.31	15.1%

## *Retail Trends*

Electronic commerce is likely influencing transit ridership, especially among transit-dependent populations. E-commerce retail sales have grown from approximately \$40 billion per quarter in 2010 to over \$120 billion per quarter in 2018<sup>13</sup>. Shoppers are likely making fewer trips to brick and mortar establishments. There has also been a notable decline in the growth rate of retail employment starting in 2016 after several years of strong growth in the wake of the Great Recession's peak effect<sup>14</sup>.

## *Other*

Additionally, changes in congestion levels, lack of planning for faster transit in congested corridors, cross jurisdictional travel required due to lack of affordable housing closer to the jobs, changes in fuel prices, slowdowns in transit service expansions, changes in car ownership rates, increases in telecommuting, and new bicycle and pedestrian infrastructure also play roles in the level of transit ridership.

<sup>13</sup> U.S. Bureau of the Census

<sup>14</sup> U.S. Bureau of Labor Statistics