

# Who's On Board 2019




**How to Win Back America's Transit Riders**

TransitCenter works to improve public transit in ways that make cities more just, environmentally sustainable, and economically vibrant. We believe that fresh thinking can change the transportation landscape and improve the overall livability of cities. We commission and conduct research, convene events, and produce publications that inform and improve public transit and urban transportation. For more information, please visit [www.transitcenter.org](http://www.transitcenter.org).

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# **Who's On Board 2019 How to Win Back America's Transit Riders**

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# Executive Summary

No two transit riders are alike. People decide what trips to make and how to make them for unique reasons that, in aggregate, affect transit ridership. Well-studied “macro” trends—such as changes in gas prices or transportation technology—influence travel decisions. But one’s own transit use is also influenced by personal events and by local factors such as changes in regional demographics, development patterns, and the quality and quantity of transit service.

Amid falling ridership in their transit systems, industry experts and US transit agencies have sought answers. They have put forth many explanations for declining transit use, with varying degrees of evidence and certainty. What’s clear is that agencies must understand local ridership decline to address it.

We used an online survey of respondents in seven regions, as well as focus groups in three regions, to explore the spectrum of factors influencing decisions to take transit. Respondents were asked to describe how they used transit and other modes now and two years ago. Our survey creates much-needed longitudinal data on why individuals change their travel behavior.

As in the *Who’s On Board 2016* report, we categorize respondents based on how they ride transit, using the categories of all-purpose, commuter, and occasional riders. Two additional categories examine riders who altered their transit use over the past two years: increaser riders, who took transit much more, and decreaser riders, who took it much less.

Over the course of two years, 9% of respondents stopped using transit altogether, and 24% of respondents substantially decreased their transit use. Over time, fewer respondents are all-purpose and commuter riders, and more are occasional riders. These trends suggest that people cutting back on transit use—not leaving the system altogether—are driving transit-use decline. Where are riders going?

**Overwhelmingly, survey respondents who abandon or substantially scale back their transit use replace those trips with increased private car use.** Respondents who reported an increase in access to a private car over the past two years said their transit use had fallen by more than seven days per month.

Respondents whose private car access stayed the same reported a much smaller decline, of about one-and-a-half days per month. Over this study's two-year period, buying a car in the US became easier due to cheap financing, and lower gas prices have lessened the costs of operating a car. One's access to quality transit service also plays a major role in the substitution of transit trips with car trips.

The private car is transit's strongest competitor, but **transportation network companies (TNCs) like Uber and Lyft are nibbling away at some transit trips**, especially in dense cities such as Boston, Chicago, New York City, San Francisco, Seattle, and Washington, DC. Respondents who only slightly decreased their transit ridership used TNCs more, by up to an additional day per month. The growth of TNCs is most prevalent in large, dense cities, though it has contributed to worsening congestion, which slows surface transit, in central cities across the country. People take TNCs both to replace transit and complement it—focus group participants describe turning to TNCs when transit is unreliable or when transit stops short of their ultimate destinations.

Personal circumstances incite new travel patterns. An increase in household income tends to coincide with a decrease in transit use. In addition, foreign-born respondents reduced their transit use to a greater extent than respondents born in the US.

Increaser and decreaser riders (who substantially changed their transit use) are more likely to have moved in the past two years, to have increased their income, and to be under 40 years old. Of these, **moving has the largest impact on transit use—and generally, low-income respondents are pushed farther from transit when they move, threatening their ability to use transit**. On average, respondents with household incomes below \$25,000/year experienced much larger losses in transit quality near home—compared to households earning \$75,000/year—after moving. Transit accessibility at home and work (measured using the Center for Neighborhood Technology's AllTransit Performance Score) is associated with using transit.

The marketplace of urban modes has become more competitive. Travelers can choose from transit, private cars, ride-hailing services, and other shared modes. But are transit agencies at the mercy of market forces, wherein their customers will uniformly reject transit for other modes? No. After controlling for demographic and other





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factors, **respondents who report higher satisfaction with transit were more likely to increase their use of transit** over the past two years. In other words, the quality of the transit experience matters, and when transit works for riders, they're likelier to use it more. That being said, not all satisfied riders increased transit ridership.

**Overall, respondents cite frequency, crowding, safety, and reliability of transit as key priorities for transit agencies to address.** Women are more likely than men to cite the safety of getting to transit stops or the safety at the stops as a priority. Lower-income bus riders are much more likely than higher-income riders to cite the fare as a priority. But fares are generally less important than fundamentals like frequency, crowding, safety, and reliability—a finding of the *Who's On Board 2016* report as well.

**For urban transportation leaders, the most critical policy imperative is making opportunities accessible without a car.** New transportation technologies, like TNCs, shared bikes and scooters, and autonomous vehicles dominate headlines about “the future of transportation.” But the most important transportation choice today's mayors and agency leaders face is an old one: Do we build places where residents must use cars to get to most jobs, schools, and other destinations? Or, do we enable more people to meet their travel needs with public transit and a combination of other modes?

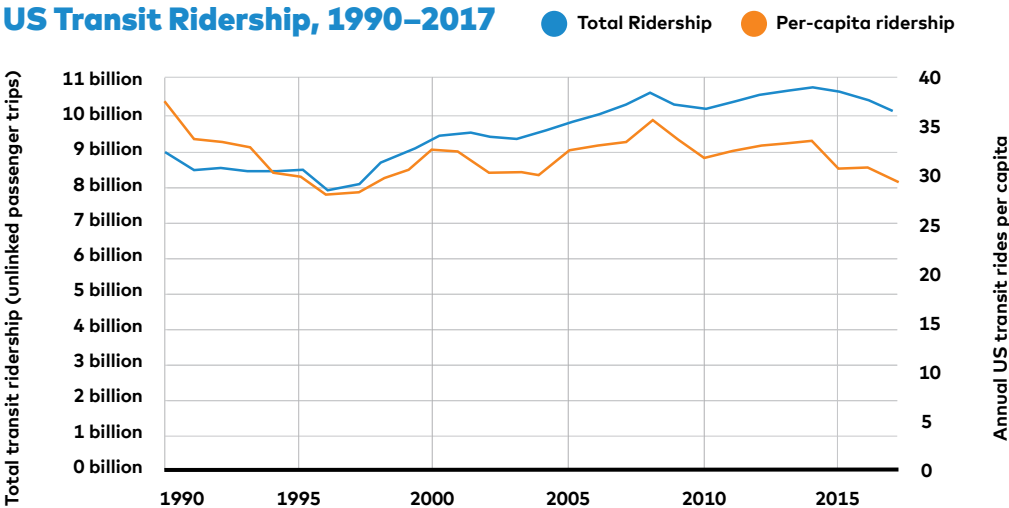


# All Transit Ridership is Local





The late 1990s and early 2000s seemed like boom times for public transit in America, with steady ridership growth. In 2014, national transit ridership reached 10.8 billion trips—a level not seen since the 1950s. Headlines have turned grim, though, with ridership decline ever since.



Source: APTA/US Census. Created by Yonah Freemark, The Transport Politic

In March 2018, the *Washington Post* ran an article headlined “Falling Transit Ridership Poses an ‘Emergency’ for Cities, Experts Fear.” Between 2016 and 2017, transit use fell in 31 of the 35 largest metropolitan areas in the country.<sup>1</sup> But these simple headlines focused on overall ridership obscure deeper realities. For one, transit ridership has declined more on a per-capita basis than overall. They also mask considerable differences across regions.

Several factors affect transit ridership, all of which vary by region. These include the macroeconomic (e.g., changes in gas prices or employment), the technological (such as the introduction of TNCs and other competing and complementary modes), the demographic and geographic (e.g., an influx of young workers, an exodus of jobs to the suburbs, or how land and streets are developed), and the quality of transit service (like buses that come more often or rail service that is becoming less reliable). Mineta Transportation Institute researchers found this last factor—the quality of service—to be the strongest determinant of bus ridership.<sup>2</sup>

**The divergent fortunes of transit in different cities show that “all ridership is local,” rather than a microcosm of the national story.**

Some transit agencies have also analyzed how these factors affect their service and used the findings to motivate and prioritize local improvements. But these research exercises can provide cover for agencies that want to address ridership somehow but still stop short of investing resources to reverse service decline. Other transit leaders simply note that falling ridership is a “national trend” that they can’t fix, implying that they are at the whim of an unstoppable, broader force. However, when discussing local transit ridership, there is little value in citing national trends alone; US ridership figures are skewed by the New York City region (where about 40% of US transit riders live) and a few other major cities. Focusing on how trip counts rise or fall also ignores other benefits of transit investment besides ridership.

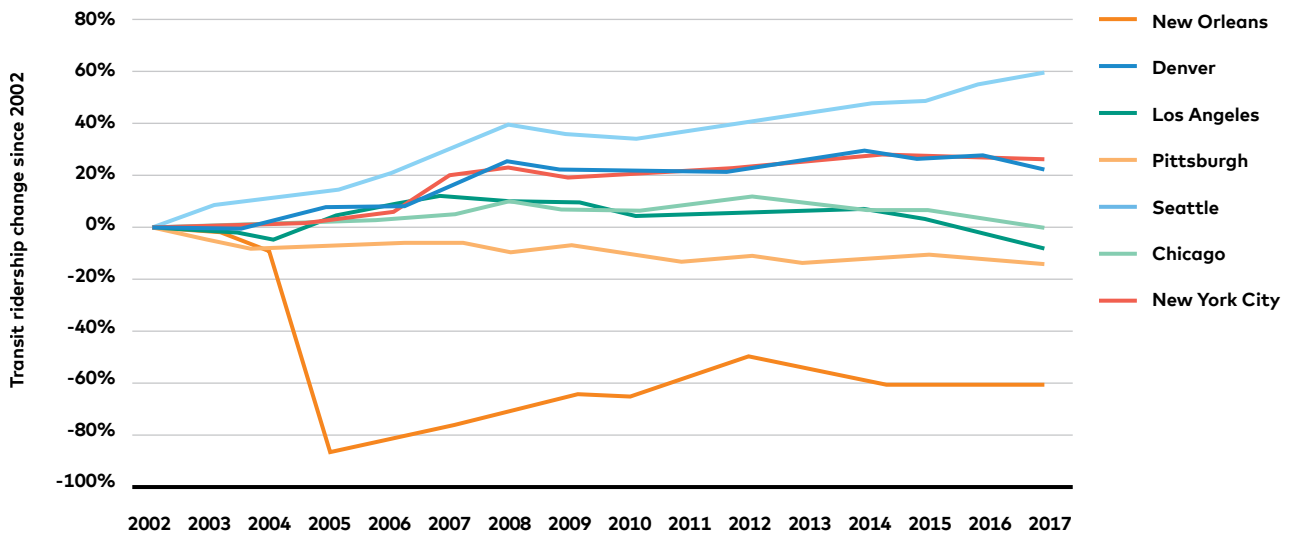
The divergent fortunes of transit in different cities show that “all ridership is local,” rather than a microcosm of the national story. On systems with deferred maintenance issues (like WMATA in Washington, DC), unreliability and service outages may be driving passengers away. In fast-changing cities like Portland, displacement of low-income residents may make it difficult for them to use transit. Transportation network companies like Lyft and Uber may be pulling people from transit, particularly at times of day when transit does not run frequently and in places like San Francisco with relatively low car ownership. Amid economic growth and transit expansion, Sound Transit and King County Metro (both in the Seattle region) and Metro in Houston have increased their transit ridership since 2014.



## Who's Still On Board?

We investigated why people change travel behavior, first by hosting a series of focus groups, and second by fielding an online survey which garnered 1,700 responses from seven regions: New York City, Chicago, Los Angeles, Pittsburgh, Seattle, Denver, and New Orleans. The study's regions have experienced different transit ridership trends recently.

### Transit ridership change since 2002, by region



Source: National Transit Database

Respondents of the survey—who used transit at least once a week, now or two years ago—were asked to describe their current travel behavior and their typical travel behavior two years ago. Respondents also noted changes in their home and work locations, the addition of children to the household, and changes in income.

Unlike other transportation surveys that detail travel behavior as a one-dimensional point in time, this survey uses an uncommon methodology to create longitudinal comparisons. In it, we explore why individuals have changed their travel behavior, and we track those changes by collecting both current and previous point-in-time measures of mode share, ridership levels, and satisfaction with transit.

Of note, time and aging inexorably affect the entire survey sample. Over the two-year study period, every respondent got older, and many also moved, changed jobs, got a raise, ended or started a relationship, or had kids. Getting older is negatively linked to transit use (see “Getting Older and Taking Transit Less”), and the *Who’s On Board 2019* data capture this in the two-year study period. Therefore this survey reflects more dramatic transit decline than standard cross-sectional data (such as the National Transit Database), which capture the full population’s transit ridership at each moment of measurement. Also, respondents self-reported their travel behavior based on memory; therefore ridership figures per mode are riders’ estimates and are subject to some error. For more information on the survey methodology, the metropolitan areas surveyed, and the sample characteristics, see “Methodology and Sample Characteristics.”

## Measuring Changes in Use of Transit and Other Modes

We used the approximate change in days per month that a respondent used a given mode to quantify how use of each mode has changed. We used the response to the multiple choice question “How often now and two years ago did you use [X travel mode]?” to calculate the approximate number of days per month that a respondent used a particular mode.

Note that this method estimates 20 days per month (5 days weekly times 4) as the maximum that a respondent used any single mode, because for most modes, “5 or more days per week” was the highest-frequency option in the questionnaire. So, even respondents using a mode every day would still be counted in this analysis as using it 20 days per month.

### Travel Mode Frequency Assumptions

Reported Frequency	Approximate Days Per Month
5 or more days per week	20
3–4 days per week	14
1–2 days per week	6
1–3 days per month	2
Less than one day per month	0.5
Never	0



We present use of each mode based on the number of days per month that respondents reported using each mode. To contextualize ridership change with the rider's perspectives, we sorted respondents into categories based on how they use transit and how their use has changed over the past two years. We used five categories to describe how respondents rode transit over the study period:

*The Who's On Board 2016* report originated the all-purpose, commuter, and occasional rider categories. Those category definitions differed slightly in *WOB 2016*: occasional riders were defined as those who used transit once per week or less, and commuters could have used transit for trip purposes other than school/work depending upon frequency of use.

- **All-purpose** riders use transit for a variety of purposes. In this survey, they are defined as respondents who use transit at least three days per week for reasons beyond commuting to work/school.
- **Commuters** use transit often—but only to get to work or school—at least three days per week.
- **Occasional** riders use transit every so often for diverse reasons, twice a week or less.
- **Decreaser** riders decreased their transit use enough over the two-year period to move down at least one category—from all-purpose to commuter or occasional, from commuter to occasional, or from any rider category to not riding transit.
- **Increaser** riders increased their transit use enough to move up at least one category—from occasional to commuter or all-purpose, from commuter to all-purpose, or from not using transit at all to any rider category.



## **Comprehensive transit networks and streets designed to prioritize transit and walking keep people in the habit of riding transit.**

Respondents from strong-transit regions—New York City and Chicago—used transit at least 11 days per month on average and were more likely to maintain their level of transit ridership than other respondents. About a third of New Yorkers and Chicagoans were all-purpose riders. TNC use also grew more in these regions than in the other five study regions. Comprehensive bus and rail systems, dense development, and a network of streets designed for non-car modes characterize these and other regions (like Washington, DC, or San Francisco) and enable more stable and extensive transit use and less private car use. The Center for Neighborhood Technology’s AllTransit Performance Score ranges from 0 to 10 and measures the quality of transit service in a given area. The AllTransit score quantifies better transit quality within the city limits of New York City (9.6) and Chicago (9.1) than in Seattle (8.1) and New Orleans (7.4), for example.<sup>3</sup>

### **Measuring Change in Transit Quality with the AllTransit Performance Score**

Transit quality near home or work is measured by the Center for Neighborhood Technology’s 2018 AllTransit Performance Score, a point-in-time measure of the overall quality of transit service in an area that considers routes within walking distance, frequency of service, jobs accessible on transit, and use of transit. The “change in home AllTransit score” calculation is the difference between the 2018 AllTransit scores for the respondent’s home ZIP code now and for the ZIP code where the respondent lived two years ago. The difference estimates how transit quality at home has changed. For respondents who have not moved, this value is zero. The value is positive for respondents who have moved to a ZIP code with better transit service and negative for those who have moved to a ZIP code with worse service. This comparison is also applied to work locations for people who have relocated.



## In Transit Riders' Own Words

During the fall and winter of 2017, we spoke with transit riders and former transit riders to inform the development of the survey. Resource Systems Group (RSG) conducted six focus groups in Chicago, Philadelphia, and Seattle. In each city, one focus group included participants who reported increasing their transit use over the past two years, and a second group included participants who reported decreasing their transit use over the same time period.

The focus groups help reveal the complexity of travel decisions.

A simple outcome—the number of times a person uses transit per week—is actually the sum of many individual travel decisions, each of which is a complex choice. Few participants reported making a conscious decision to shift to other modes, except in the case of major life events like moving, having a child, getting a new job, or having a car break down.

In Seattle—where transit has expanded and improved to a greater extent than most other cities—participants cited service improvements as playing a role in their decisions. But even where transit has not changed much in recent years, participants readily cited the importance of transit service characteristics like frequency, speed, safety, and walkability.

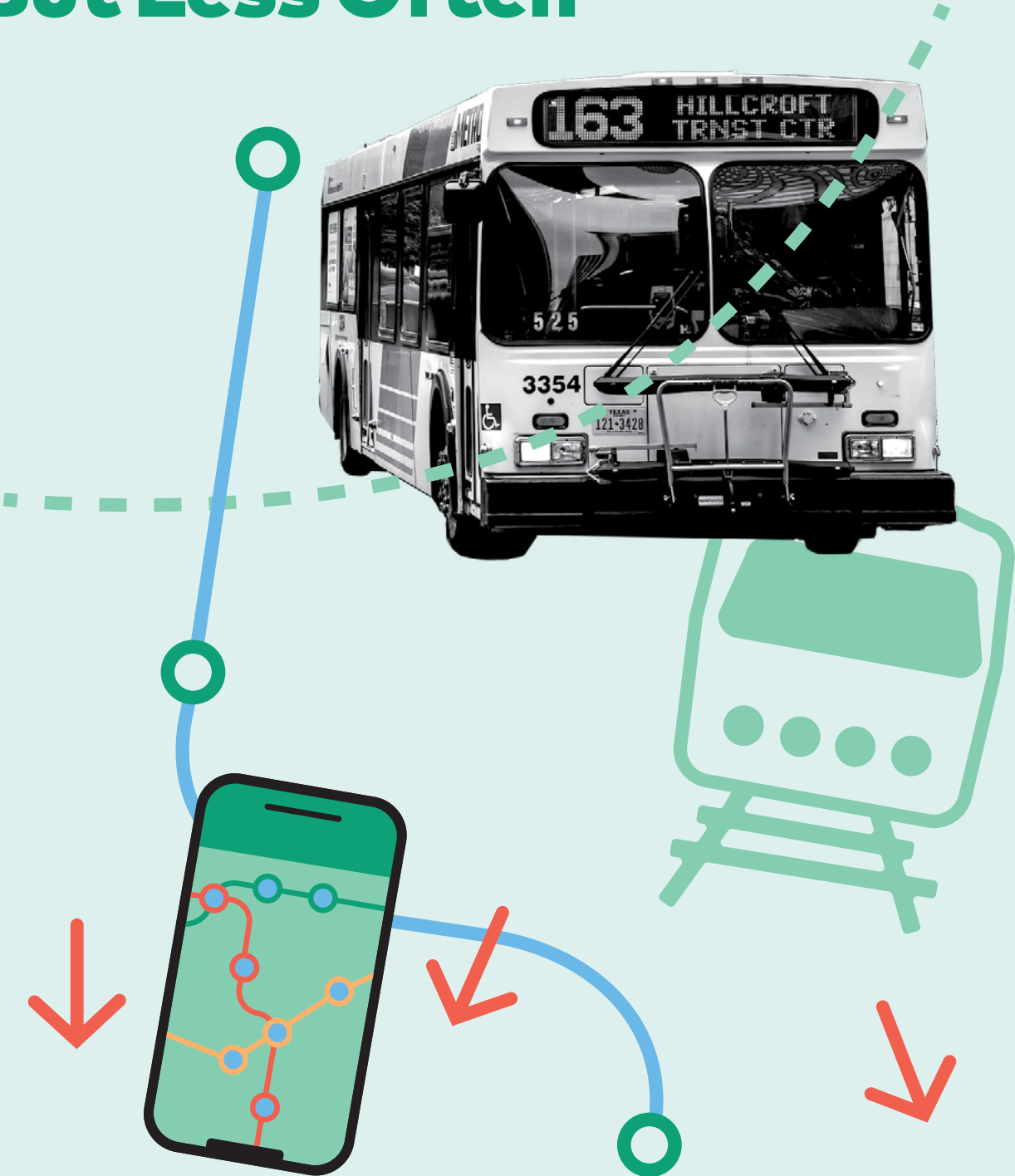
Throughout this report, participant stories will be used to highlight how factors in and out of transit agencies' control affect rider decision-making. All participants' names are pseudonyms.



# Findings



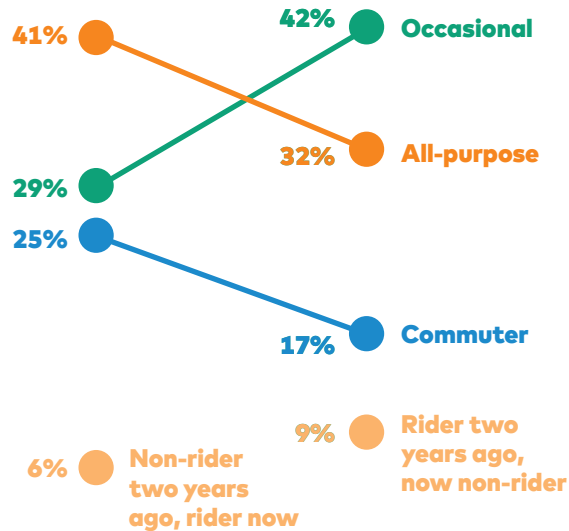
# Finding 1. Taking Transit, But Less Often



## Taking Transit, But Less Often

Transit riders are reducing their transit use. The data show that there are fewer riders who use transit multiple times per week. And on average, respondents—regardless of why they use transit—are using transit on fewer days per month. Riders who reduce—but still take some transit trips—drive the overall decline observed in the survey, rather than customers who abandon transit service altogether.

### Transit use, now and two years ago



Two Years Ago

Now

n=1,704 (full sample)

**Many riders are reducing their transit use but not abandoning transit entirely.**

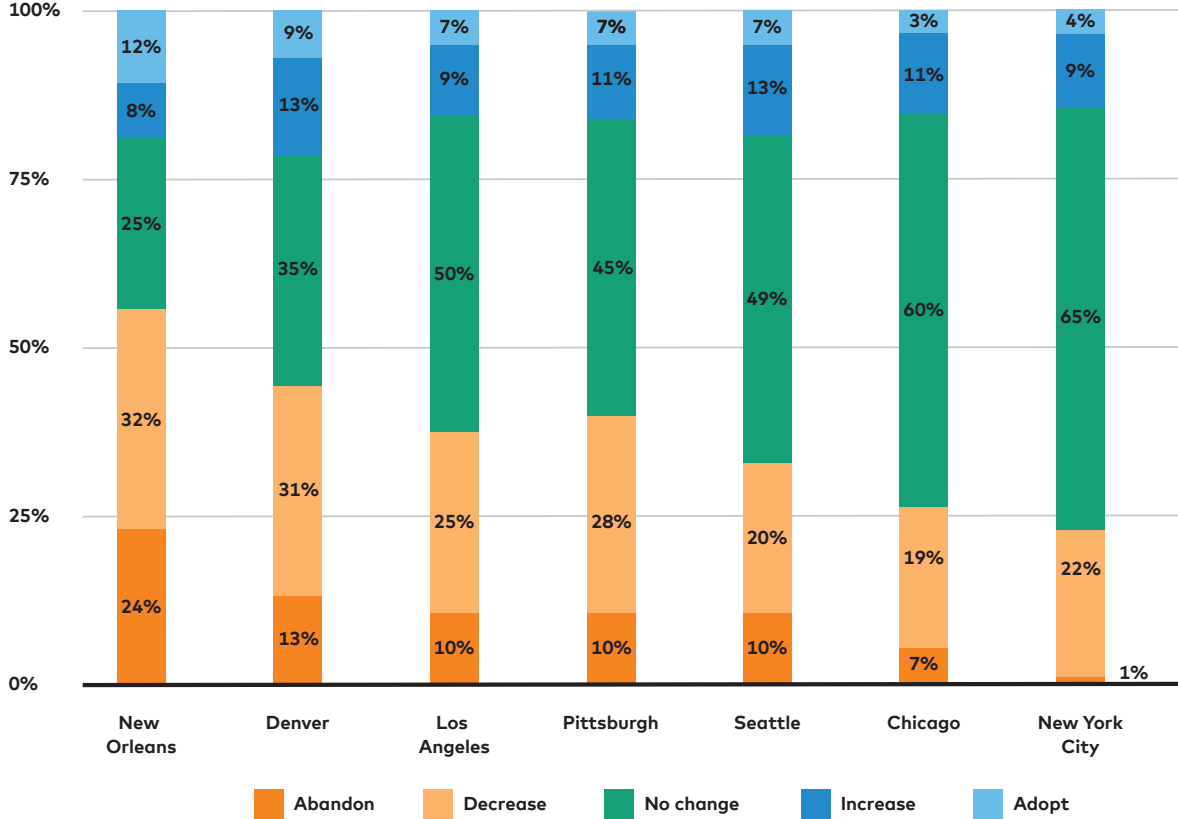
Fewer respondents are all-purpose riders and commuters now, and there are more occasional riders compared to two years ago. Nine percent of respondents stopped using transit altogether. Respondents use transit less on weeknights now compared to two years ago. They are increasingly choosing to “pay as they go” rather than purchase an unlimited pass, suggesting they may be less committed to transit than they once were.

Our analysis found that more respondents are decreaser riders than increaser riders. This was true even in places where transit

ridership has increased overall, like Seattle (see “Who’s Still on Board?” for more information on why the survey’s unique nature yields this result).

The sample shows that in strong-transit regions—New York City and Chicago—more riders had steady transit use (meaning they were in the same rider category in both periods) than in other regions. All-purpose riders are also most numerous in New York City and Chicago. This indicates that strong-transit regions are better able to support all-purpose riders and stable transit ridership than other regions. On the other hand, as many New Orleans respondents abandoned transit completely as maintained stable transit ridership over the two-year period.

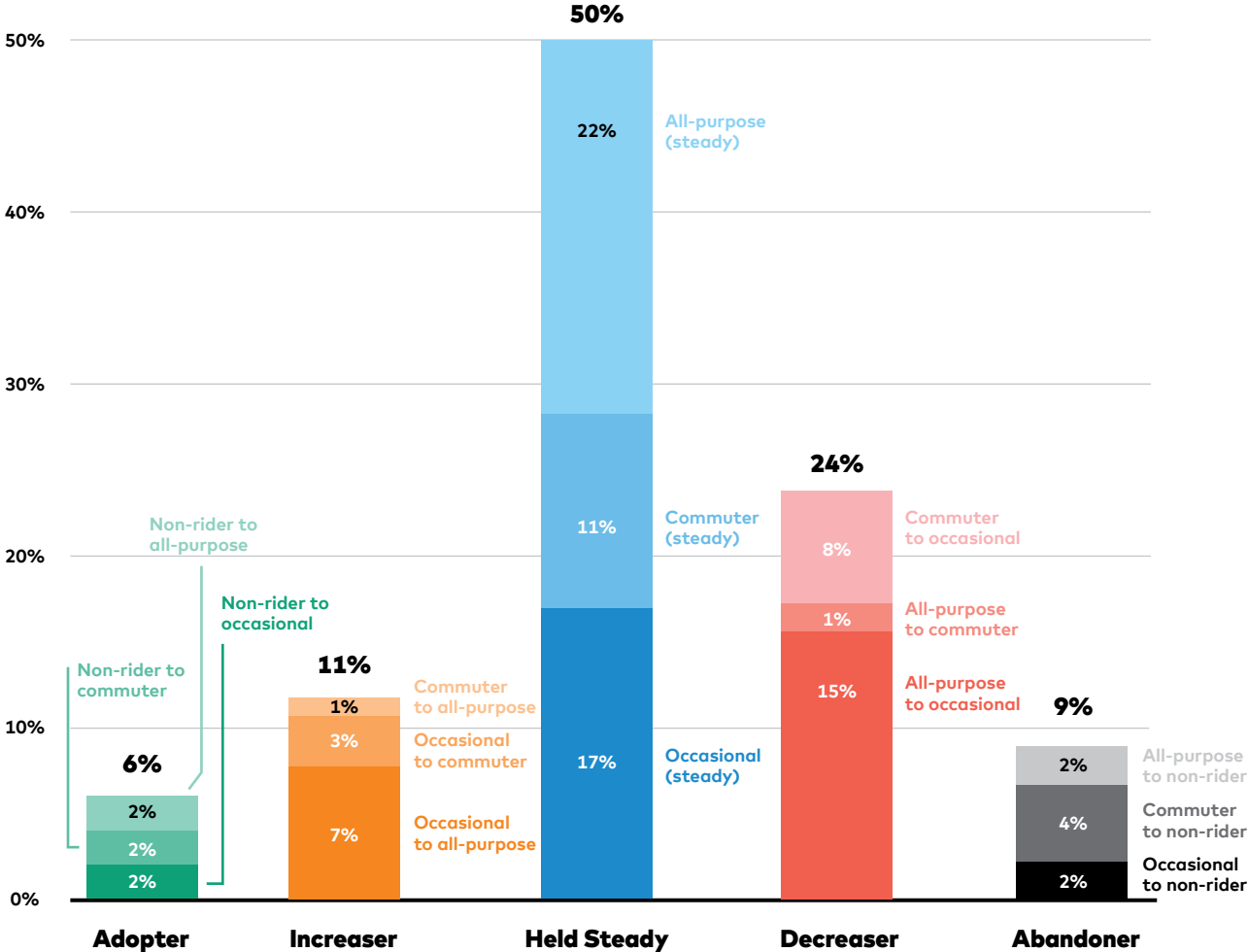
**Riders by shift in transit use, by region**



n=1,704 (full sample)

Overall, half of respondents had steady transit use over the two-year period. A third of respondents were decreaser riders, including 24% who decreased but didn't stop using transit completely. Most decreaser riders were all-purpose riders two years ago who now occasionally use transit. Comparatively, about half as many respondents—17%—were increaser riders who substantially increased their transit use over the period, including 6% of respondents who began using transit over the past two years.

### Riders by how their transit use has changed

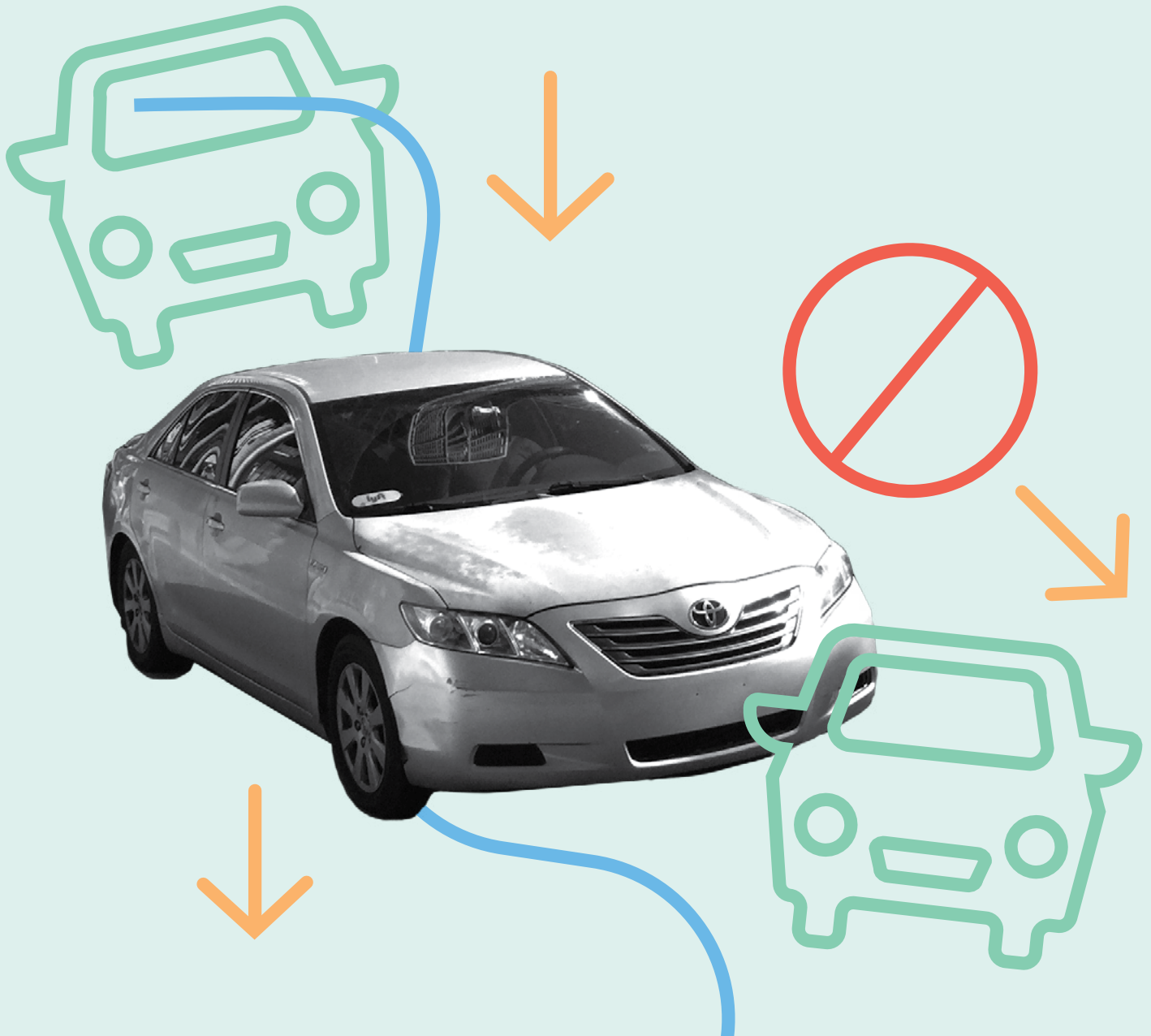


n=1,704 (full sample)



Despite net declining transit ridership, there has not been a blanket rejection of transit. Decreaser riders who cut back on transit but haven't abandoned it completely fueled the decline in ridership observed in the sample. Abandoners, who no longer ride transit at all, were responsible for just 25% of total ridership decline. This finding suggests that while transit does not meet riders' needs as well as it did two years ago, riders still rely on transit for some trips. Also, transit agencies are enticing some current customers to ride more and attracting some new riders. Established transit users who increased their ridership are more numerous than adopters who started riding transit over the last two years.

# Finding 2. In the Transportation Marketplace, the Car is the Competition



An uptick in driving dominates changes in the transportation market, as car trips unambiguously replace trips on transit and other modes of travel. As buying a car gets easier in a car-friendly world and demanded trips increase and disperse geographically, more people are driving, and more often. At the same time, travelers are using transit and its complementary modes less—except for TNC travel. Elevated use of TNCs has additional complex effects on transit.

## Change in use of travel modes, by region

Mode	New Orleans	Denver	Los Angeles	Pittsburgh	Seattle	Chicago	New York City
Transit	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓
TNC	↑	↑	↑	↑	↑	↑	↑
Car	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑	↑
Taxi	↓	~	↓	~	~	↓	↓
Carshare	↓	↓	↓	~	↑	↓	↑
Telecommuting	↓	↓	↓	↓	↑	↑	~
Bike	↓	~	↓	↑	↑	↓	↓
Walking	↓ ↓	↓ ↓	↓	↑	↓	~	↓

n=1,238 (Respondents who did not move)

↑ ↑ indicates absolute change of 1+ days;

↑ indicates absolute change of 0.1-1 days;

~ indicates absolute change less than 0.1 days

## How Do Travelers Change Modes in the Transportation Marketplace?

Travel modes are used together or substituted for each other—which means that as use of one mode changes, use of other modes adjusts as well (see below and correlation table in Appendix). A “high tide,” positive correlation exists across transit, TNCs, walking, taxis, and car-sharing, so when someone increases her overall travel, she tends to spread it across each of those modes.

The only significant negative correlations relate to private car use, which includes driving oneself or getting a ride from someone who isn’t a hired driver. Private car use displaces transit travel and, to a lesser degree, TNCs, taxis, and walking. Any increase in private car use is associated with an incremental decrease in transit use. This means that for each additional day that someone used a private car, he used transit 0.4 days less (and decreased walking, taxi, and



TNC travel days as well). Overwhelmingly, decreaser riders replaced transit trips with private car trips, while increaser riders used transit several days more and used private cars several days less per month.

## Travel Mode Correlations

On average, for every **1 day/month** respondents increased their use of **transit** over the past two years...

They **increased** their use of

- Walking by **0.27 days/month**
- TNCs by **0.15 days/month**
- Taxis by **0.09 days/month**
- Telecommuting by **0.11 days/month**

And **decreased** their use of

- Private cars by **0.41 days/month**

For every **1 day/month** respondents increased their use of **TNCs** over the past two years...

They **increased** their use of

- Transit by **0.15 days/month**
- Taxis by **0.2 days/month**
- Carshare by **0.07 days/month**
- Telecommuting by **0.07 days/month**
- Walking by **0.09 days/month**

And **decreased** their use of

- Private cars by **0.14 days/month**

For every **1 day/month** respondents increased their use of **private cars** over the past two years ...

They **decreased** their use of

- Transit by **0.41 days/month**
- TNCs by **0.14 days/month**
- Taxis by **0.06 days/month**
- Walking by **0.28 days/month**

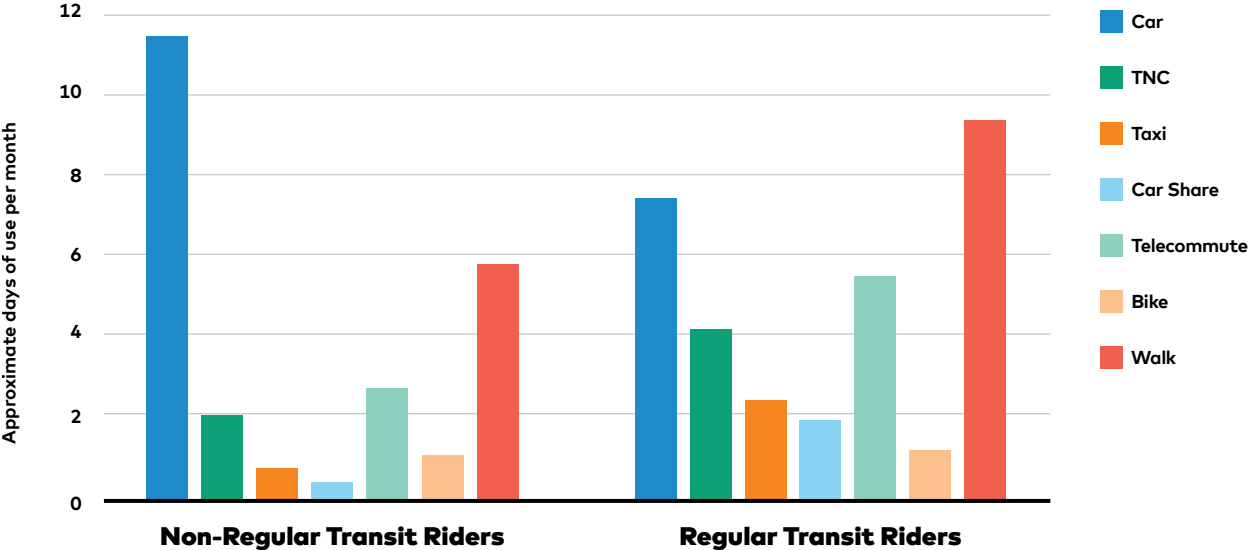
These correlations should not be taken to suggest that TNCs have no competitive impact on transit, taxis, or other modes. But they suggest two contrasting patterns of change among the survey's respondents: those who increase private car use tend to do so at the expense of

other modes, while those who increase use of any other mode tend to also increase their use of all other non-private car modes (see full correlation table in Appendix).



Frequency of transit use corresponds to travel on other transportation modes. Regular transit riders—respondents who ride transit three or more days per week—drive private cars less and take other modes more often than those who take transit less regularly. Regular transit users tend to rely on a bundle of transportation modes—not just transit—to get around, while less regular transit riders mostly drive. All-purpose riders take more modes more often than any other category of rider. They also travel by private car less than half as often as riders in other categories.

**Ridership for travel modes, by regularity of transit use**



n=985 (Respondents who did not move or change jobs in the past two years)

This survey identified the pervasiveness of transit ridership decline. Respondents with steady transit use still marginally reduced their transit, walking, and biking days. In fact, increaser riders are the only category not to reduce transit use.





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Kostner Ave  
1/4 MILE

Pulaski Rd  
Irving Park Rd

WEST  
Kennedy Expy  
e - Rockford  
HT 3/4 MILE

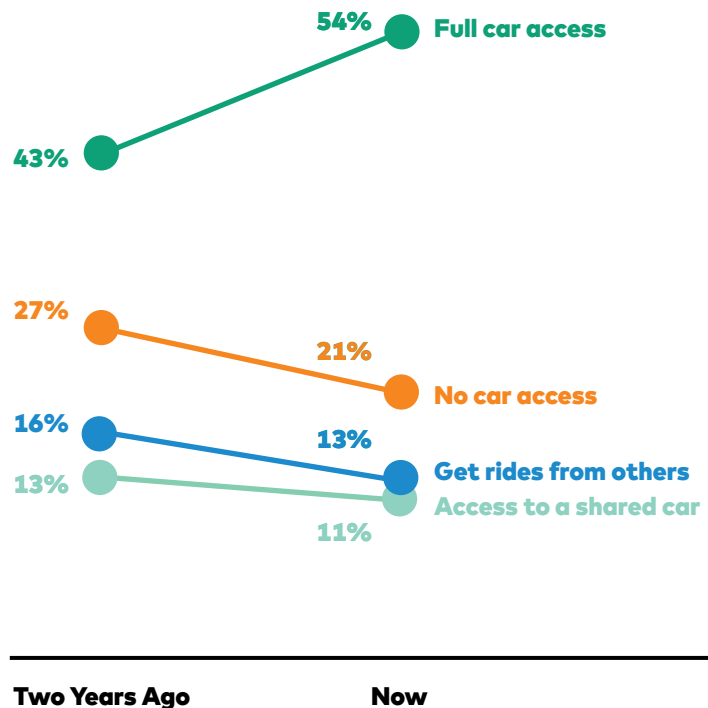


## Have Car, Will Drive

Using a private car requires first purchasing the car, then providing for regular gas and insurance, occasional maintenance, parking, and use of roads. In the US, land use and financing policies privilege car use. The vast majority of US parking and roads are “free” to the driver at time of use, paid for by taxpayers. And in 2018, buying a car was relatively easy, because cheap credit and eager lenders made financing a car affordable for more individuals.<sup>4</sup> Access to private cars in the US is high and rising, which contributes to increasing car travel.<sup>5,6</sup>

Respondents indicated their private car access has increased, with 54% saying they now have full car access (meaning they don't share the car with anyone), compared to 43% who had full car access two years ago. Fewer respondents have no car access now compared to two years ago. Purchasing additional cars (new or used) propelled respondents' increasing private car access.

### Access to a car, now and two years ago



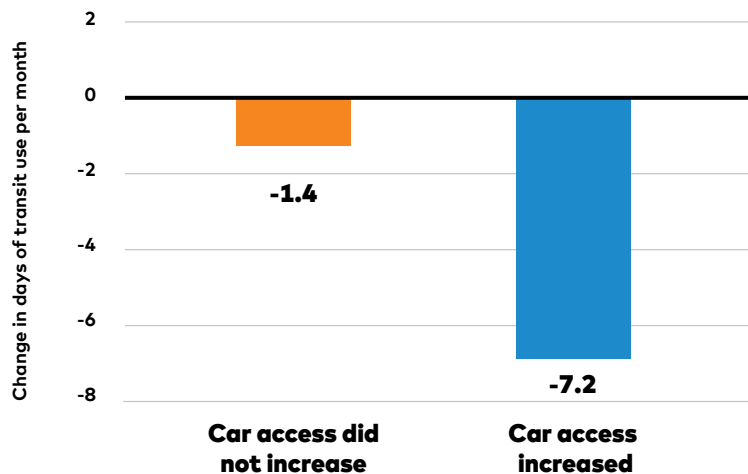
n=1,704 (full sample)

## Nationally, access to private cars has increased steadily since the Great Recession.

Nationally, access to private cars has increased steadily since the Great Recession, as no-car households become rarer and households with at least two cars become more common.<sup>7</sup> New-car sales and leased vehicles peaked in 2016, and used-car sales reached a new level in 2017.<sup>8,9</sup> The total miles driven on US roads has increased each year since 2011, and Americans drove more miles than ever in 2018 (per capita, the number of miles driven has increased since 2014).<sup>10</sup>

The survey data demonstrate that, in practice, access to a vehicle has a large negative impact on transit use. Respondents who gained private car access traveled by transit six days less per month than respondents who didn't increase their car access.

### Change in transit use, by how car access has changed

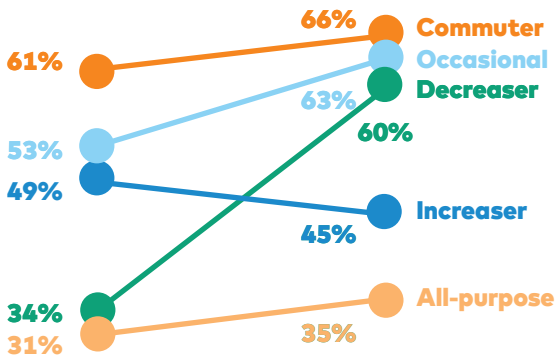


n=1,704 (full sample)

Among decrier riders, full access to a car nearly doubled. Only a third of all-purpose transit riders have full car access, compared to two-thirds of commuters and occasional transit riders. And increaser riders were the only category to decrease their car access over the past two years.

Research conducted at UCLA for the Southern California Association of Governments concluded that expanded access to cars was the most plausible reason for over a decade of transit ridership declines in Southern California.<sup>11</sup> While most transit agencies did

**Full access to a car by transit rider category, now and two years ago**



**Two Years Ago**

**Now**

n=914 (respondents with full car access now) and n=726 (respondents with full car access two years ago)

**Cheap auto-loan financing has fueled greater access to private cars.**

not make appreciable service cuts or fare increases, the share of households without vehicles fell 30 percent between 2000 and 2015, with even steeper declines among foreign-born residents (who are more likely to ride transit).

Cheap auto-loan financing has fueled greater access to private cars. Almost half of respondents received a loan for their recent car purchase, and of those, 56% said that getting a loan was easier than they had expected (less than 10% found it harder than expected). This finding reflects that cheap credit, widely available across the country, has lessened the effective price of a car. Since the Great Recession, financiers have offered auto loans with lower interest rates and longer terms to more low-credit borrowers. Nearly one-fifth of auto-loan debt is subprime debt, which has doubled since



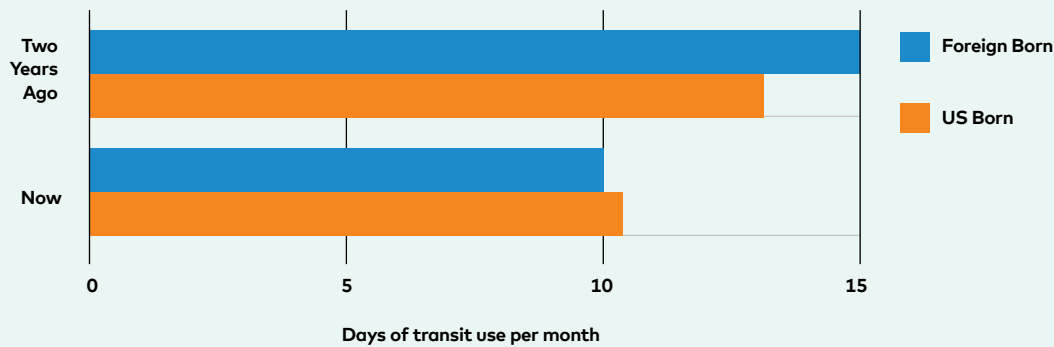




## Foreign-Born People Are Taking Transit Less

Foreign-born US residents ride transit more than US-born people.<sup>12</sup> But we found that the propensity is weakening as foreign-born private car use increases. According to the data, two years ago foreign-born respondents used transit more per month than US-born respondents. But these foreign-born respondents are now using transit less often than the US-born respondents. Only 14% of foreign-born respondents are increaser riders, compared to 26% of US-born respondents.

### Change in transit use, by foreign-born status



n=1,704 (full sample)

In the survey data, being born outside the US has a significant, positive relationship to change in car use, as well as a significant, negative relationship to change in transit use. All things being equal, foreign-born respondents have been quicker to replace transit with driving over the past two years than US-born respondents (see Travel Mode Models in Appendix).

Several states recently granted undocumented immigrants the ability to get driver's licenses, which research has shown slightly increases driving among foreign-born people.<sup>13,14</sup> Also, foreign-born people tend to drive more the longer they live in the US, which may be captured over the survey's two-year period.<sup>15</sup>

2010.<sup>16</sup> These practices have made it possible for more households to purchase cars. In 2018, US auto-loan debt reached a record \$1.3 trillion, equal to 9.3% of all US household debt.

Cheap auto loans and their impact on sales are not sustainable. Interest rates are rising, which makes borrowing for loans costlier and contributes to declining car sales.<sup>17</sup> Also, easy car financing does not mitigate the financial burden of actually owning a car (though car ownership is also linked to social and economic benefits, particularly where alternatives like transit are less available).<sup>18</sup> Of respondents who cut back on private car use, 51% attributed the reduction to costs: the expense of maintaining a car or the inability to keep up with car loans. Car costs are a particular financial burden for the lowest-income households, who spend 30% of after-tax income on private cars (compared to about 10% for the highest-income bracket).<sup>19</sup> Overall, poor families are more likely to transition in and out of car ownership than others. The same is true for immigrant families and families of color. Short-lived car ownership presents financial hardships and can risk employment if someone takes a job that's only accessible by car and then loses the car.<sup>20</sup>

## **Declining transit service quality can push riders to drive more.**

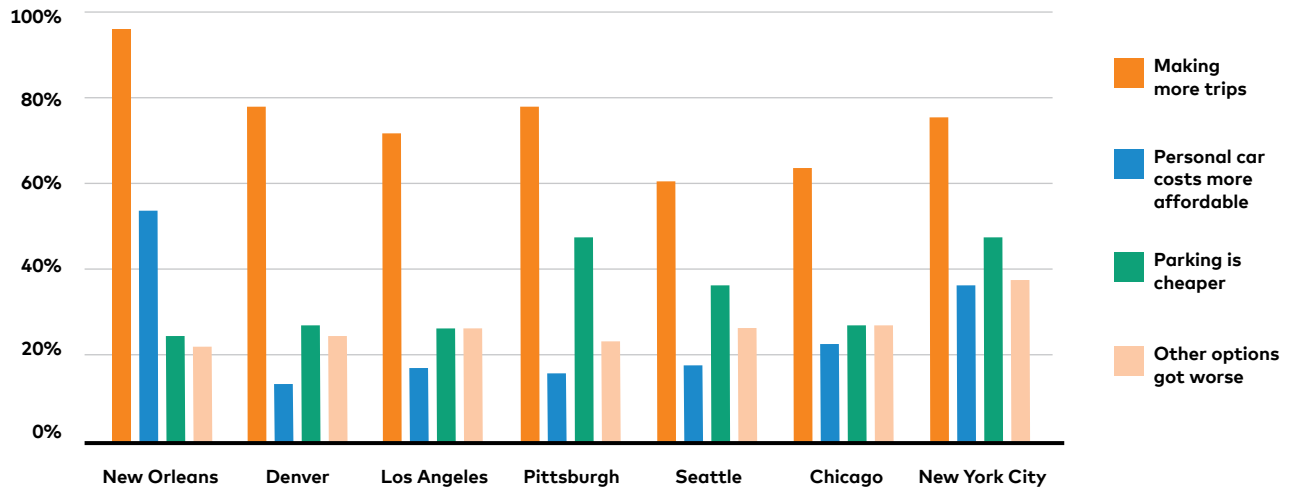
### **Why do People Choose Cars over Other Options?**

Local factors contribute to the overarching trends of lower transit use and more driving, “pulling” people into car use and “pushing” others away from transit use. Driving costs (tolled or free streets and parking), land-use regulations (mixed- or single-use zoning), development patterns (high-density or sprawl), transportation investments (transit or highways), and streetscape (streets with sidewalks or wide roads) determine the efficiency of driving a car or riding transit. These factors are independent of individual behavior and vary locally. All personal characteristics being equal, a New Yorker is more likely to travel by transit than someone living in New Orleans; a Los Angeles resident is more likely to drive than someone in Chicago.

Respondents from strong-transit regions were more likely to trace their changing car use to the caliber of non-car modes. This suggests that quality of transit service can persuade people to drive more or retain them as transit customers—particularly where transit is a prevalent part of urban living. And in regions with more unregulated

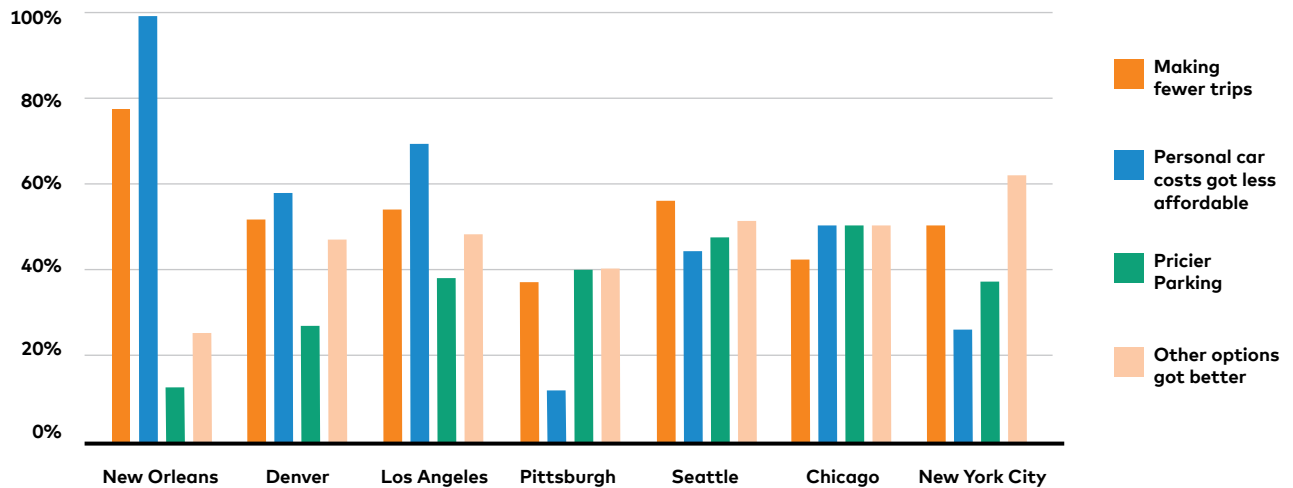


## Why did you increase your private car use over the past two years?



n=355 (Respondents who increased car use)  
 Respondents selected up to three reasons, so percentages do not equal 100%

## Why did you decrease your private car use over the past two years?



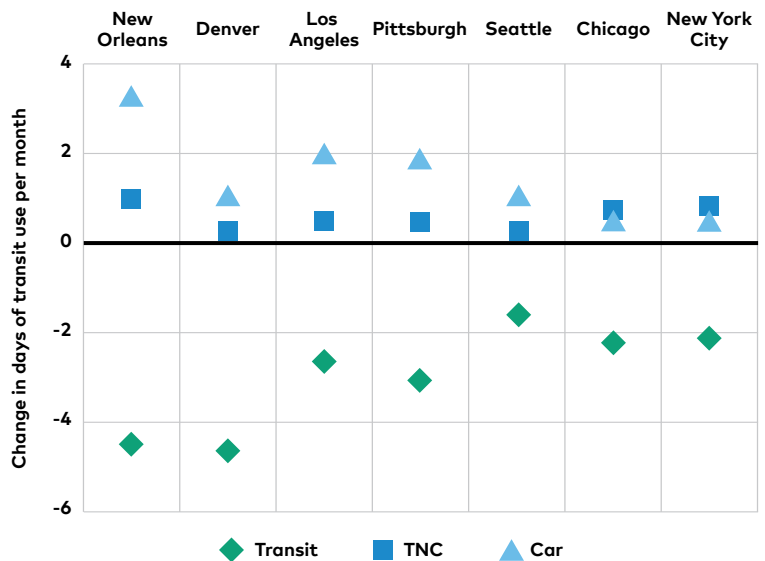
n=190 (Respondents who decreased car use)  
 Respondents selected up to three reasons, so percentages do not equal 100%

parking, respondents were less likely to cite parking costs as a reason for shifting their car use up or down. Parking fees are a persuasive control of driving; absent regulations, people have fewer reasons to limit their car use.

Everywhere, respondents reported the need for more trips as the main reason for their increased private car use. This finding suggests that when one’s travel demand reaches a certain level, a private car may stand out as the best way to meet those needs.

In each region, TNC and private car use increased while taxi, carshare, and nearly all non-car modes decreased. But New York City and Chicago respondents increased their TNC use by more than they increased their private car use. This finding indicates that in transit-rich places, TNCs are more attractive than private cars as a substitute for transit and other modes. In those places, many people can use non-car modes for a majority of trips. The costs of having a car exceed its benefits for the trips where driving is preferred, and TNCs can be used to fill that gap at a lower overall cost than car ownership.

### Change in ridership by mode and region



n=1,238 (Respondents who didn't move)

## Some TNC trips complement regular transit use, while others replace transit trips.

### TNCs Nibble Away at Transit

The relationship between TNC use and transit ridership is positive but complicated. Transit riders are more likely than others to use TNCs, and increasing TNC use is associated with higher transit ridership. Focus group participants said that they take TNCs for “first-mile/last-mile” connections to transit or use TNCs to get to destinations only reachable by car. However, it is unclear how many TNC trips are *in addition* to regular transit use and how many are *to replace* regular transit use.

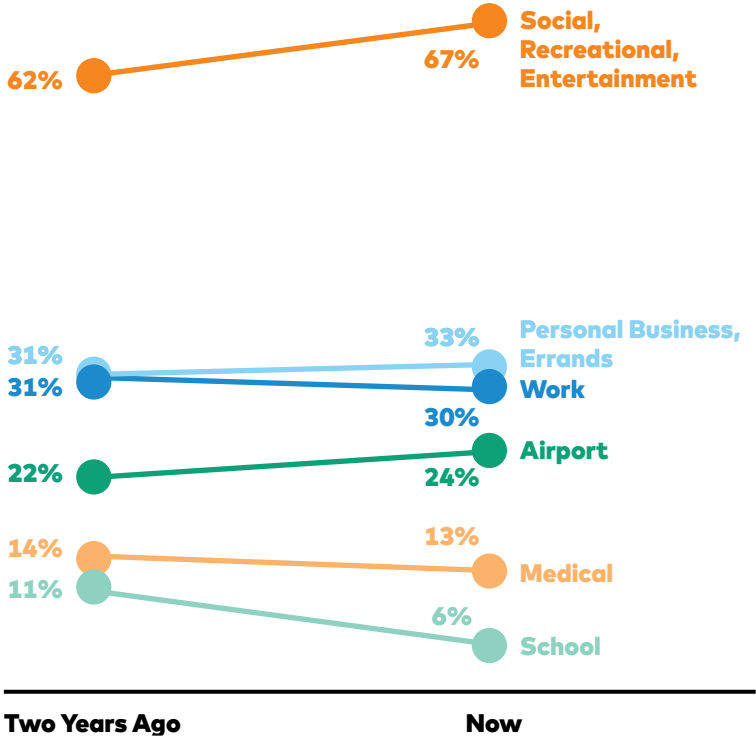
TNC ridership was 2.61 billion in 2017 and was forecast to surpass bus ridership in 2018.<sup>21</sup> TNC riders are more likely than not to be young, affluent, highly educated, and residents of urban areas.<sup>22, 23</sup> While TNCs are used for all purposes and all the time, they are most often used for social trips and on weekend nights (when transit runs less often).<sup>24</sup> Increasingly, respondents use TNCs to get to social events and for errands compared to two years ago. All-purpose, commuter, and increaser riders use TNCs about three days per month, a full day more than occasional and decreaser riders.

Ride-hailing companies argue that their services disrupt car ownership. Research supports these claims: 9% of surveyed Uber/Lyft riders said they got rid of at least one vehicle after taking up TNCs.<sup>25</sup> Transit riders who used an array of shared modes (rideshare, bikeshare, carshare) owned fewer cars on average than transit-only riders.<sup>26</sup> Our survey revealed that over the past two years, each additional day of TNC use corresponded to increases in transit, walking, taxi, carshare, and telecommuting use and lower private car use (see correlation table in Appendix). There is also evidence that TNCs provide transportation for some trips that otherwise wouldn't have occurred. One-fifth of surveyed TNC riders indicated that they would take fewer trips if those services were unavailable.<sup>27</sup>

However, TNC's growth in ridership does not hinge on car ownership (or lack thereof). Regardless of private car access, TNC-riding respondents increased their use by 2.2–2.5 days per month.

TNCs also substitute for individual transit trips, which reduces transit use. In practice, respondents in the same rider category for both periods did travel by transit slightly less, and they also traveled by private car a fraction more and by TNC nearly a full day more. Increaser riders also scaled up TNC travel, by more than one day. This suggests that TNCs are nibbling away at transit trips. Decreaser

### For what types of trips do you typically use TNCs?



n=1,188 (TNC users now) and n=819 (TNC users two years ago)  
 Respondents selected all trips that applied, so percentages do not equal 100%

### The rapid growth of TNCs has also contributed to worsening traffic in cities.

riders are the only category that cut down on TNC use, exchanging those trips for driving a private car.

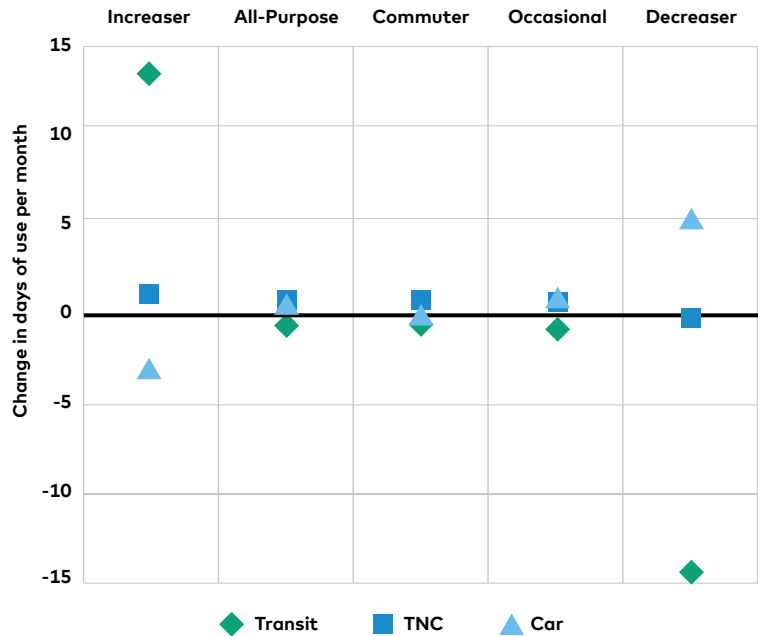
Uber’s arrival has lowered transit ridership, particularly in smaller cities with high transit ridership (such as Ithaca, New York).<sup>28</sup> Surveyed Uber and Lyft riders said that they rode bus, light rail, or bikes less often after taking up ride-hailing. All told, riders reduced their transit use by 6% after taking up ride-hailing.<sup>29</sup>

The rapid growth of TNCs has also contributed to worsening traffic in cities, which slows surface transit.<sup>30</sup> Ride-hailing, even shared rides like UberPOOL, produce at least 20% more vehicle miles traveled compared to the same trip driven alone in a private car.<sup>31, 32</sup> This is because drivers idle on streets and drive to the pick-up location before any riders have been picked up. TNCs often



Many who decide between riding transit or a TNC consider trade-offs.

### Change in mode ridership by transit rider category



n=1,238 (Respondents who didn't move)

make trips that would have been made regardless, by more space-efficient modes. Nearly 40% of Uber/Lyft trips were taken in place of biking, walking, or taking transit, according to the TNC user survey.<sup>33</sup> Half of ride-hail users in New York City would have taken transit if ride-hailing was not available.<sup>34</sup> The TNC workforce also adds more private cars on the road. Seven percent of *Who's On Board* respondents who bought a car said the reason was to drive for a ride-hailing service.

Many who decide between riding transit or a TNC consider trade-offs. TNC riders who switched from transit cited slow speeds, limited hours of service, unreliability, and too few stops or stations as their main reasons for the substitution.<sup>35</sup>

## **Transportation Network Companies**

**Transportation network companies are ubiquitous in urban settings. In each focus group we held, participants reported using TNCs more than they did two years ago.**

**Some participants had not even heard of Uber or Lyft two years ago; others felt more open to using them than they used to.**

**Celeste**

I think the idea that anybody that owned a car could be a [TNC] driver was weird, but now it's not. It's normal; it's not weird.

**Several participants described promotional pricing by TNCs as a factor in their decision making, like Mary (an occasional transit rider in Seattle).**

**Mary**

Uber does "Ride Passes" between two places. [For example, between] your home and your job, or your home and downtown. I frequently get an Uber Ride Pass for \$1.99. So I can take an Uber from my house in Queen Anne downtown to where I need to be for work for \$1.99, which is cheaper than the bus. So why wouldn't you?

**Some participants described taking trips that combined public transit and TNCs, generally when they were reaching the edge of the transit service area.**



**Laila** I'll go as far as the bus will take me, and then, if [my destination is] like five blocks off the bus stop, I'll just pay the \$3 or \$4 and get a Lyft ride [for the rest of the way]. I'll just take the bus as far as it will take me. I end up taking the bus almost every day, but I take Lyfts about three to four times a week.

**Elijah** Where I work, I would have to walk two miles [from the bus stop], which will probably take an extra 30 minutes. And that is only like \$4 on Uber.

**Other participants chose TNCs in situations where they could have taken transit but felt TNCs were valuable because they were faster or more convenient.**

**Kris** Like at 5pm rush hour, I'm probably not going to use Uber, because I'm going to be sitting in traffic anyway and so why would I want a meter running when I'm sitting in traffic? So then I'll take the bus. But whenever it's like 11pm or 1 in the morning, the roads are typically clear, so then it's easier [to take a TNC].

**Whitney** I'll take the bus to the store, it'll take an hour and a half, whatever. And then, on the way home, I'll take a Lyft or an Uber, because I got 39 bags with me.

**It was obvious that the speed and quality of transit service played a role in decision making.**

**Hayden** If I can get there on a subway, I would take the subway instead. But if I can only get there on a bus, then I would just take an Uber, because the bus usually gets stuck in the traffic, too.

**Tia** When I have to be at work in the next 20, 30 minutes, I can't stand there and wait for a bus. I know I could just pull out my phone and request an Uber and get there in five minutes.

**Interviewer** You're waiting at the bus stop and seeing it's not coming, and then you order an Uber?

**Tia** Yeah.

# Finding 3. When Life Happens, Transit Use Responds





Personal characteristics like age, race or ethnicity, and income are linked to transit ridership.<sup>36</sup> Similarly, changes to personal circumstances—such as moving or increased earnings—affect individual transit demand.

Respondents who reported a big event in their personal lives over the two years shifted their transit use more than average. Moving to a new home and relocating for work were associated with large shifts in transit travel. Respondents whose incomes increased also reported large shifts in ridership.

The degree to which respondents altered their transit use following major life changes reflects regional transit qualities. Respondents from New York City and Chicago shifted their transit use much less following a big event, compared even to riders who didn't undergo a big change in other regions. This suggests that in strong-transit regions, transit use is more resilient to personal change. Put another way, in these regions transit is indispensable or broadly available, regardless of personal circumstances.

### Change in transit use following big life events, by region



n=1,704 (full sample), 466 (moved), 489 (work move), 602 (income change), 129 (had kids)

## The lowest-income respondents endured the greatest loss in transit quality after moving.

### Moving Matters

Access to transit near destinations affects one's ability to use transit to get to around. For most people, home is a very common destination. The survey demonstrates that changes in residential or job location—which usually changes transit quality—are powerful influences on transit use.

Only 32% of respondents who moved reported no change in how often they rode transit, compared to 58% of respondents who lived in the same home over both periods. Similarly, only 33% of respondents who changed work locations used transit the same amount.

The transit quality in one's neighborhood has a positive relationship with transit use and an equally negative relationship with private car use (see Travel Mode Models in Appendix). With each incremental improvement to transit quality near home, respondents were more likely to increase transit use and more likely to decrease driving. Work relocations resulting in better transit quality are also linked to taking transit more. But moving homes is a stronger factor in increasing transit trips than work relocating. This result coincides with research finding that the built environment affects transit use, even after controlling for self-selection, wherein people who prefer taking transit choose to locate in transit-accessible places.<sup>37, 38</sup>

Among respondents who moved, increaser and decreaser riders experienced the largest changes in transit quality. Increaser riders' new home ZIP codes were 0.4 points higher on the AllTransit score; decreaser riders moved ZIP codes with 0.6 points lower AllTransit scores, on average. For context, there is a 0.5-point difference in the AllTransit score between the outer-borough neighborhood of Bay Ridge, Brooklyn, and Midtown Manhattan.

Increaser or decreaser riders who changed work locations experienced a 1–2 point difference in their work location's AllTransit score—similar to transferring to a Staten Island office from Midtown Manhattan. This suggests that a relatively small change in transit quality near home can incite a substantial change in transit use; it takes a much greater change in transit quality near work to alter transit use to the same degree.

## About AllTransit

The AllTransit tool (<http://alltransit.cnt.org/>), developed by the Center for Neighborhood Technology (CNT) and TransitCenter, combines transit schedule data from more than 800 transit agencies across the US.

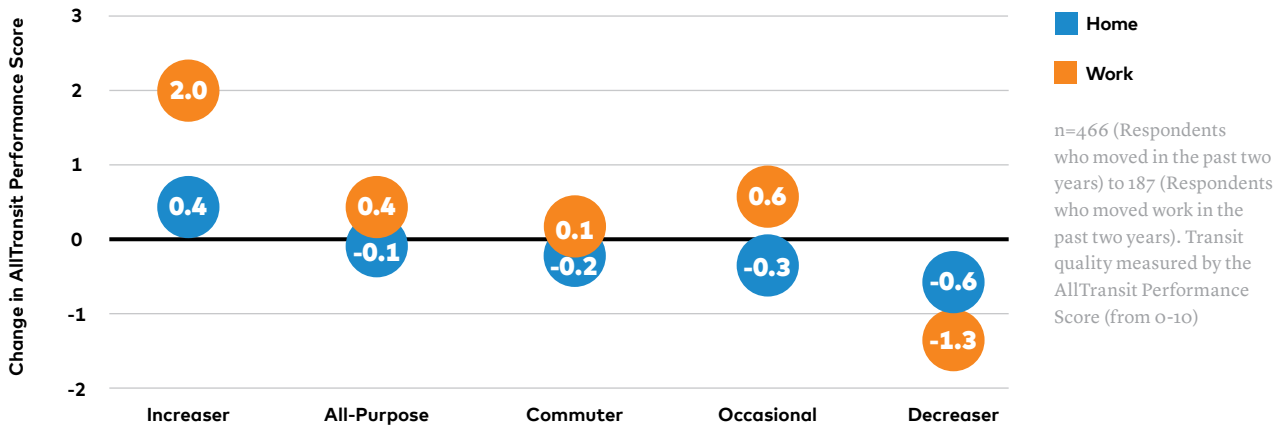
Released in 2016 and updated in 2018, AllTransit sheds light on the nuances of transit provision at the census-block level in all metropolitan areas with more than 100,000 residents. Users of the site can see where transit is at its best and worst in their own communities. CNT, founded in 1978 and based in Chicago, is an award-winning nonprofit “innovations laboratory” for urban sustainability.

Source: Center for Neighborhood Technology, AllTransit Tool. Scores possible from 0-10

### US neighborhoods by AllTransit Performance Score

Neighborhood	AllTransit Performance Score	Neighborhood Type
Midtown, Manhattan, NY	10.0	Core New York City
Downtown, Los Angeles, CA	9.8	Core Los Angeles
Downtown, Kansas City, MO	9.5	Core Kansas City
Bay Ridge, Brooklyn, NY	9.4	Neighborhood, New York City
Roxbury, Boston, MA	9.4	Neighborhood, Boston
Uptown, Minneapolis, MN	8.9	Neighborhood, Minneapolis
Berkeley, CA	8.8	Inner-ring city near San Francisco
Evanston, IL	8.6	Inner-ring city near Chicago
Little Havana, Miami, FL	8.4	Neighborhood, Miami
St. George, Staten Island, NY	8.1	Outer-ring neighborhood, New York City
White Plains, NY	8.0	New York City suburb
South Congress, Austin, TX	7.6	Neighborhood, Austin
Lawrenceville, Pittsburgh, PA	7.5	Neighborhood, Pittsburgh
Pasadena, TX	6.1	Houston Suburb
Downtown Birmingham, AL	5.1	Core Birmingham
Alpharetta, Georgia	3.3	Atlanta suburb

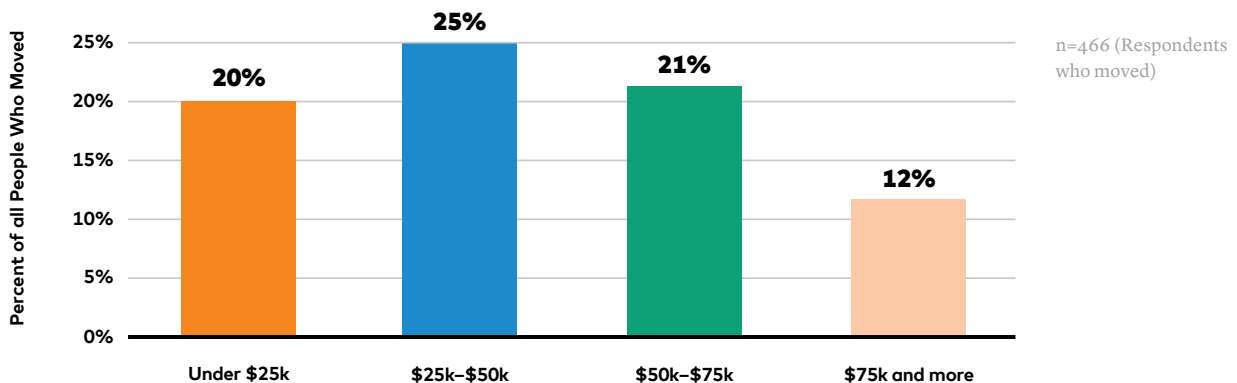
## Change in transit quality at home or work, by transit rider category



### Low-Income Riders are Being Pushed Away

The survey found that people who use transit the most have modest annual household incomes (\$25,000–\$75,000) and live in areas with good service (AllTransit score of 8.0 or more). But housing costs in transit-accessible neighborhoods are higher than in similar areas with worse access, and where transit expands, costs rise precipitously—conditions that low-income residents are less able to afford.<sup>39,40</sup> Among respondents who moved, respondents with household incomes of less than \$75,000 were twice as likely to select “wanting cheaper housing” as a reason for moving.

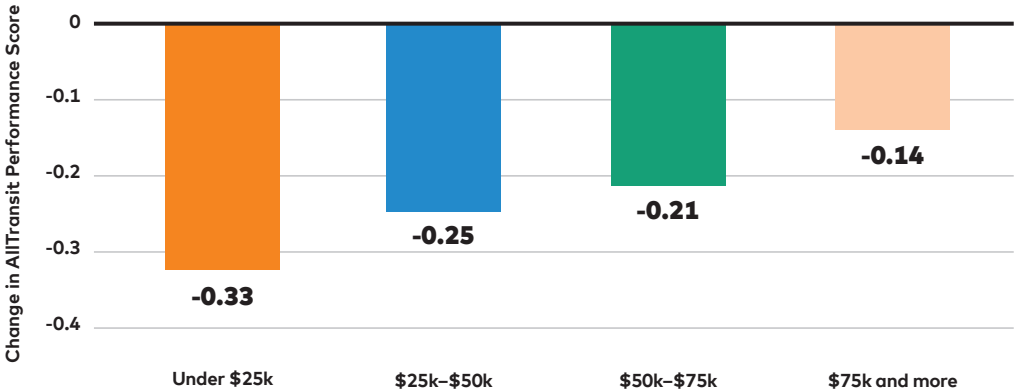
## Moved in past two years, for cheaper housing





The lowest-income respondents endured the greatest loss in transit quality after moving. Their lesser transit access at their new homes is similar to transit in Baltimore, Maryland, compared to Washington, DC, or that in Astoria, Queens, compared to Midtown Manhattan: a marked decrease in quality arising from lower frequency, fewer routes, and less within reach of transit.

**Change in transit quality at home, by income**



n=466 (Respondents who moved)  
 Transit quality measured by the AllTransit Performance Score (from 0-10)

**The lowest-income respondents endured the greatest loss in transit quality after moving.**

This might contribute to ridership loss in the regions surveyed and beyond. Residents who can no longer afford a high-quality transit neighborhood are pushed to less accessible places, jeopardizing their own transit use, and higher-income people, who are less likely to use transit there, replace them. Of respondents who moved because of housing costs during the two-year period, half reduced their transit use, while only a fourth used transit more. A study of people in Los Angeles living near the Expo Line light rail found that low-income households increased their transit use to a greater extent than high-income households after the line opened.<sup>41</sup> An analysis by TriMet staff “found substantial overlap between areas where real market home value increased and transit ridership decreased the most.”<sup>42</sup>

Underlining the urgency of worsening transit access for low-income people, a change in transit quality impacts more than just transit access. Moving to a neighborhood with different transit

## **Displacement**

**Kris, who lives in Northwest Seattle and takes transit 1-2 days a week, told interviewers that moving further from transit led to big changes in how he gets around.**

**Kris**

Initially, we lived in the Interbay area and I used transit for basically everything. I would park the car and not use the car for weeks ... I ended up moving then, out over to the Matthews Beach area.

I ended up having to use two buses at minimum to get everywhere. The commute times ended up doubling, so I started using the car a lot more often because of that. I also changed jobs and had a free parking spot versus having to pay for parking every single day ... having a free spot was a good incentive to drive in every day.

**Interviewer**

If you don't mind me prying, why did you move?

**Kris**

...Our apartment complex was being renovated into fancy new apartments, so we were all kicked out before the construction happened. It was just kind of—you jump on the first place that you can afford, so that's what we did.



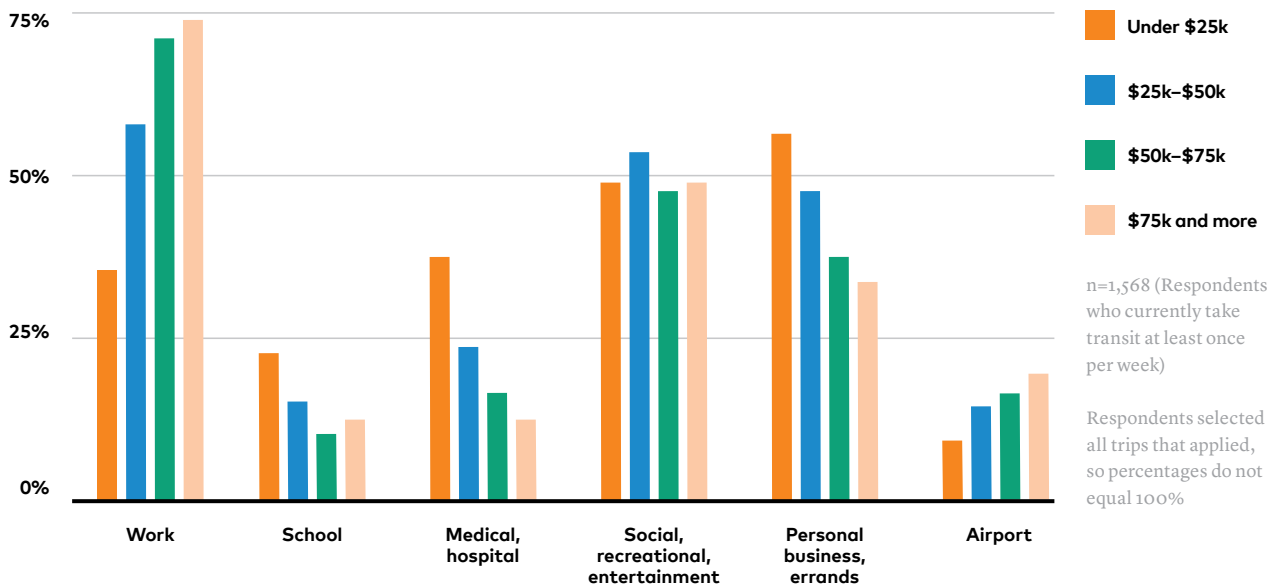
## People of varying economic means use transit for different purposes.

service affects use of all transportation modes. As transit quality improves, TNC and walking trips increase; better neighborhood transit also leads to lower private car use. While moving to a transit-rich neighborhood makes taking transit more viable, it also supports walking and TNC use. Oppositely, we found that lower transit quality decreases the viability of other modes. Living near quality transit also implies access to other enriching assets of urban living: walking distance to groceries, health services, and education; density of jobs nearby; and presence of cultural institutions.

People of varying means use transit for different purposes. Respondents with household incomes under \$50,000 indicated they took transit to more destinations overall than did higher-income respondents. Lower-income respondents were much more likely to use transit to run errands or to access vital services in schools or medical facilities than higher-income respondents. Respondents of all incomes are equally likely to use transit for social or recreational purposes. The high-income bracket was the most likely to report commuting on transit.

This distinction reflects widespread planning practice that stacks good transit service in the AM and PM rush hours (neglecting non-9–5 shifts) and to central business districts.<sup>43</sup> These service priorities

### For what types of trips do you typically take transit?



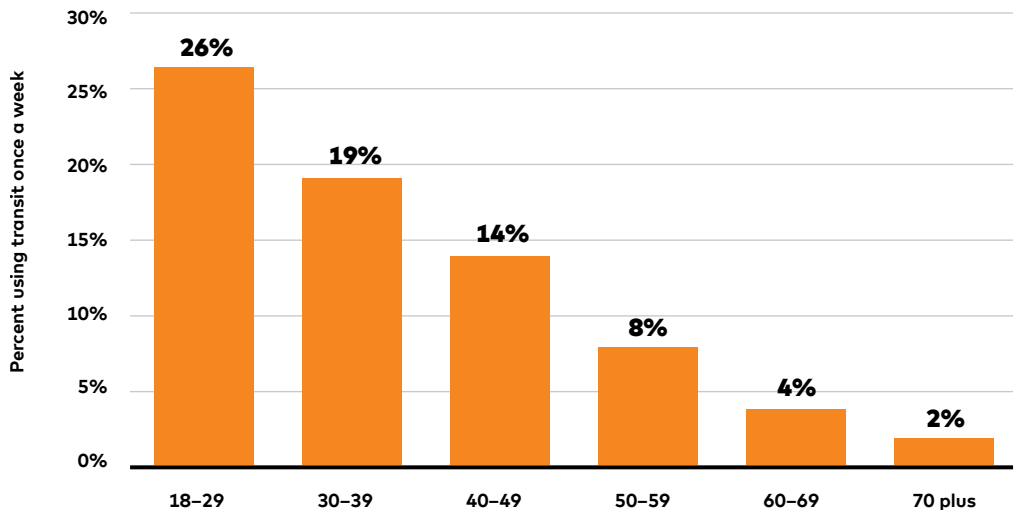
disadvantage low-wage workers, who in many regions are more likely to commute in off-peak hours or directions, making transit a less-viable commute option for them.<sup>44, 45, 46</sup>

## Age, race or ethnicity, and location are critical predictors of transit use.

### Getting Older and Taking Transit Less

The survey confirms widespread research that transit use decreases with age. Even considering home location, workplace, income, and other factors, respondents who were at least 40 years old used transit less often than those under 40. The 2014 *Mobility Attitudes Survey* found that age was the one of the most important predictors of transit use.<sup>47</sup> New research from the Transit Cooperative Research Program also suggests that age is a critical predictor of transit use, along with race or ethnicity and location.<sup>48</sup> Nearly two-thirds of transit riders are between 25 and 55 years old; use of transit drops among adults ages 55 and over.<sup>49</sup> An analysis of National Household Travel Survey data confirms that people ages 16–24 take almost twice as many transit trips than people ages 55 and over.<sup>50</sup>

### Transit use by age group



Source: TransitCenter, *Who's on Board 2014*



Some transit agencies enjoyed a “demographic bump” over the past decade, as Millennials (i.e., those born between 1981 and 1996)<sup>51</sup> entered the workforce and used transit more than prior generations. Yet Millennials now face the life changes that tend to push people away from transit, and just like generations before them, getting older means their propensity for using transit has gone down. Members of Generation Z have not fully replaced Millennial transit use—contributing to rider-ship decline.<sup>52</sup>

## Growing Families and Transit

The survey found that having a child does not have a significant bearing on transit use. Respondents who had a child over the two-year period are as likely to maintain their level of transit use as those who did not have children.

All things being equal, a new child in the household has a small, negative, insignificant effect on travel by transit, TNCs, and private cars. It may be that newborn children lead adults to decrease their travel overall. Having a child in the household who reaches school age may have more noticeable effects on travel, but we did not collect information on the age of children in the respondent’s household.



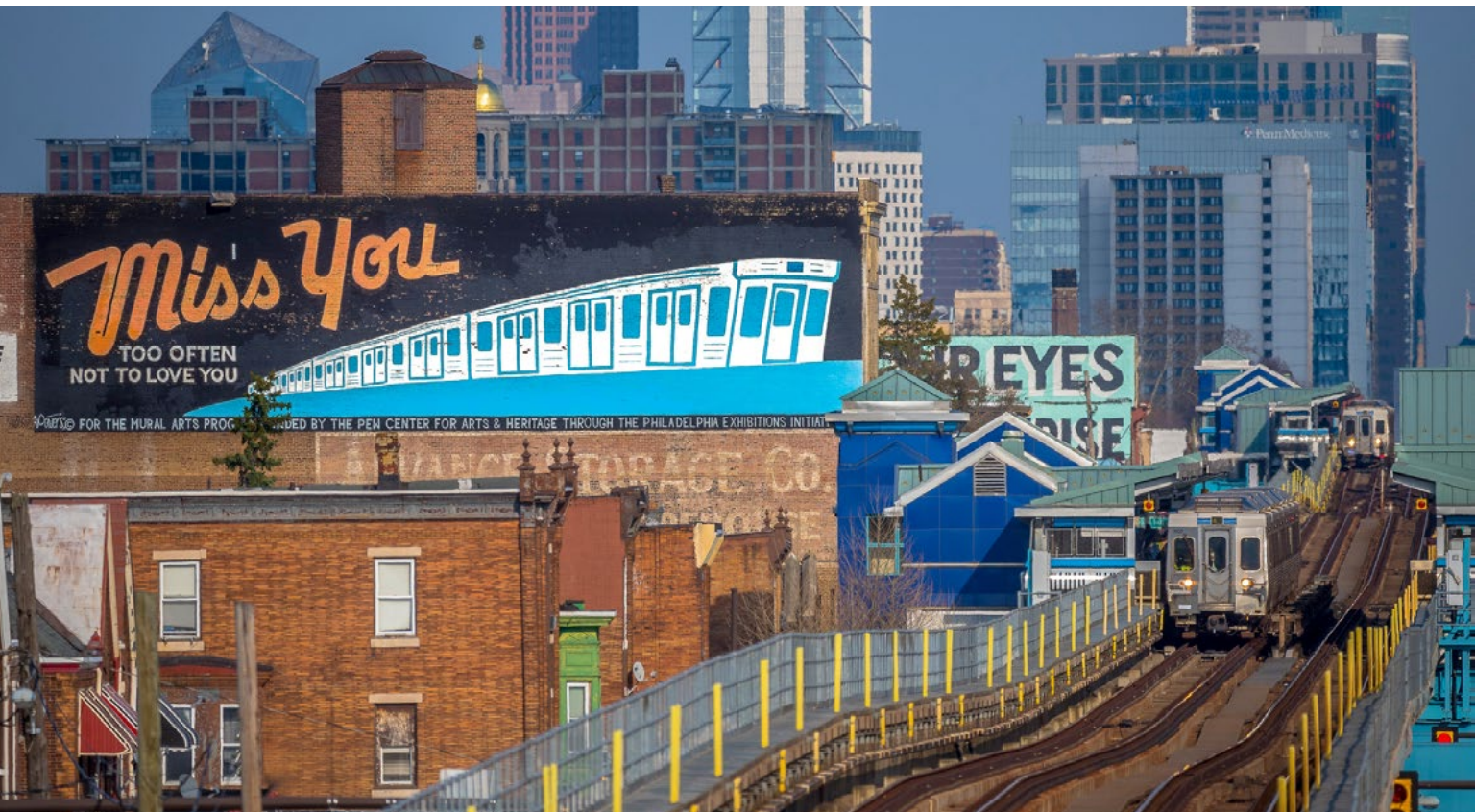
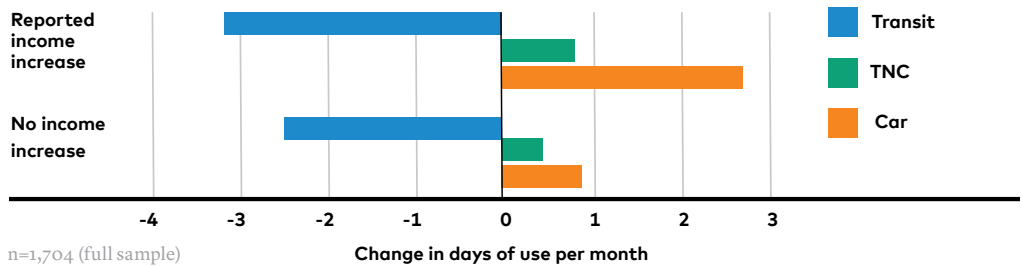


## Rising Income Buys More Car Use

Income is positively associated with changes in private car travel. Moving to a higher income bracket equated to 1.5 days more of private car travel per month and 0.3 days more of TNC use (see Travel Mode Models in Appendix).

Respondents who moved up an income bracket added nearly two days more of private car use, compared to others. Income-increasers also increased their TNC use more rapidly than respondents with the same or lower income. Conversely, income-increasers reduced their transit use by nearly a full day per month more than those with no income increase.

### Change in mode ridership by income change



# Winning and Keeping Riders





**One factor that agencies control can affect ridership: the quality of the transit service itself.**

A transit agency can try to adapt to some of the factors that influence ridership, even though it cannot control all of them: auto-oriented land-use patterns, population and demographic shifts, economic growth or recession, local jurisdictions that fail to build sidewalks and make transit unreachable, and longstanding national policies that provide huge hidden subsidies to private cars, transit’s primary competition. Those external factors beyond an agency’s control create a challenging environment for transit. But an effective agency will do what it can to influence them in a more positive direction by recruiting allies in government who control zoning, street design, and transportation funding.

The survey finds that one major factor under agency control can either build or discourage ridership: the quality of the transit service itself. Reliability and frequency in corridors of great demand, connectivity, stop facilities, and cleanliness are service characteristics within the agency’s power to improve, and we found that they are important factors of rider satisfaction.<sup>53</sup> And higher satisfaction with transit (one point on a five-point scale) is associated with higher transit use: almost one extra day a month, even controlling for age, home and work location, changes in income, and other demographic and household factors (see Travel Mode Models in Appendix).





Listening to riders should be the baseline for agency efforts to improve service. Existing riders, particularly, are crucial advisors because they are the prime candidates to increase transit patronage in the future. Speculating about what hypothetical riders might want or focusing exclusively on the “supply side” (e.g., new routes or technologies) without reference to factual understanding of the “demand side” is a subjective approach that can lead agencies to poor investment and service-planning decisions.

### Which are the three most important areas for improving bus service?

Area for Improvement	Increaser	All-purpose (steady)	Commuter (steady)	Occasional (steady)	Decreaser
Frequency of bus service	35%	36%	33%	40%	34%
Safety while waiting at or getting to the bus stop	28%	30%	31%	24%	35%
Safety while on the bus	29%	25%	28%	25%	31%
Reliability/predictability of trip time	32%	26%	28%	30%	29%
Delays/traffic while on the bus	19%	22%	22%	16%	17%
Handling of major service disruptions (breakdowns, reroutes, etc.)	7%	15%	13%	7%	10%
Crowding on the bus	31%	33%	34%	31%	29%
Fare for bus trip	21%	24%	16%	16%	21%
Facilities around bus stop (shelters, sidewalks, lighting, etc)	19%	17%	18%	24%	20%
Quality/availability of info about departure times and delays	25%	22%	18%	20%	21%
Access to the places I need to go	22%	24%	17%	32%	25%
Other	2%	2%	1%	3%	3%

n=1,439 (respondents who use(d) bus now and two years ago)  
 Respondents selected up to three areas, so percentages do not equal 100%

## Which are the three most important areas for improving train service?

Area for Improvement	Increaser	All-purpose (steady)	Commuter (steady)	Occasional (steady)	Decreaser
Frequency of train service	29%	30%	25%	29%	27%
Safety while waiting at or getting to the train station	25%	27%	26%	26%	31%
Safety while on the train	25%	34%	32%	25%	32%
Reliability/predictability of trip time	27%	23%	22%	25%	23%
Delays/traffic while on the train	23%	26%	25%	21%	20%
Handling of major service disruptions (breakdowns, closures, etc.)	25%	29%	27%	29%	21%
Crowding on the train	31%	34%	36%	39%	33%
Fare for train trip	27%	23%	23%	24%	27%
Facilities around train station (platforms, sidewalks, lighting, etc.)	14%	13%	21%	16%	16%
Quality/availability of info about departure times and delays	23%	20%	12%	17%	22%
Other	4%	2%	1%	4%	2%

n=1,022 (Respondents who used rail now and two years ago)

Respondents selected up to three areas, so percentages do not equal 100%

### Improving Service Fundamentals Attracts Riders

Our *Who's On Board 2016* report identified the fundamental ingredients that make transit useful by researching riders' preferences. Frequency, speed, reliability, and accessibility by foot in walkable urban neighborhoods are key to good transit service.

The report also recommended ending the oversimplified trope of people as either "choice riders" or "captive riders." This inaccurately implies that the latter class of people has no alternative

but to ride transit and therefore agency management can take them for granted. *Who's On Board 2019* further discredits that implication by finding that regular riders can and do reduce their transit usage. Contrary to the terminology, riders do have choices—though they may have bad choices, like skipping doctor's appointments, not applying for jobs that are inaccessible by transit, overspending on TNC fares, or saddling themselves with risky levels of subprime debt to obtain a car.

Fortuitously, the elements of transit service quality that retain all-purposes riders are similar to the elements that convert occasional riders to more regular users and that attract new riders. Overall, respondents cite service frequency, crowding, safety, and reliability as the most important areas for improving transit. Service attributes like frequency and reliability are rated as important to improve regardless of whether respondents are all-purpose riders, occasional riders, or have substantially changed their use of transit

*Who's on Board* research showing the importance of fundamentals to service quality corroborates internal analyses from transit agencies, including those where ridership has dropped precipitously in recent years. Speed and travel time matter—for example,



## **Quicker and more reliable bus trips depend on transit agency and local government collaboration.**

Los Angeles Metro has found that the transit mode share dips considerably for trips where transit travel time is more than 25% longer than driving, and that transit is not competitive once travel time becomes more than twice as long as driving.<sup>54</sup> Similarly, a ridership model developed for the Washington Metropolitan Area Transit Authority suggests that a 10% increase in bus speeds on a route leads to 3.9–9.9% increase in ridership.<sup>55</sup>

Quicker and more reliable bus trips require that the industry and its allies in local government increase their efforts for more bus-only lanes, bus-stop balancing, transit signal priority, all-door boarding, and other measures proven to speed up buses. Proactive and data-based dispatching practices can also improve bus-system reliability. Rail can also be affected by intrusions into the transit right-of-way. Los Angeles is infamous for a “downtown slowdown,” where the journeys of thousands of Expo Line and Blue Line light rail riders are repeatedly delayed by car traffic.<sup>56</sup> Even without external interference, obsolete technology can slow rail trips unnecessarily. Policy changes and modifications to New York City’s aged subway signals have slowed trains over the past 20 years.<sup>57</sup>

Several municipalities in the Boston area have deployed “pop-up” bus-only lanes, using cones and signs to reclaim parking space for buses, spurred by local advocacy groups and civic organizations. The Mayor of Everett, Massachusetts, recognized that traffic on the main route through town delayed bus riders, so he directed the installation of a bus lane during the peak hour. Within days, thousands of his constituents had shorter and more reliable commutes. With municipal support, similar projects can improve service in weeks, not years.

Transit agencies have the power to redraw the map, literally, to be more responsive to demand. There is evidence that clean-sheet bus network redesigns, where bus routes are redrawn from scratch to respond to development changes and to emphasize high-frequency routes, correlate positively with ridership gains. In recent years, several implemented redesigns have either resulted in increased bus ridership or halted ridership declines. In addition to expanding service hours and frequency, Central Ohio Transit Authority’s 2017 redesign in Columbus put high-frequency service within reach of 110,000 more jobs and provided all-day service to 24,000 more jobs, compared to the old network.<sup>58</sup> Similarly, Capital Metro’s redesign of





Austin’s bus network focused on adding more high-frequency service as a means of improving access to jobs and services in the region.<sup>59</sup>

Relatively quick and inexpensive initiatives, like network redesigns and pilot bus lanes, can provide the public confidence needed to win the staffing capacity and funding for bigger improvements. For example, Columbus followed up its bus network redesign with the launch of a new rapid-bus line, the CMAX. Austin and Houston’s network redesigns both prompted conversations about potential rapid-transit expansions. After bus lanes in a few locations proved successful at speeding up transit and popular with the public, Mayor Marty Walsh of Boston announced that the city transportation department would expand to include its first-ever “transit team,” five staffers who will plan, install, and monitor new bus-lane projects.<sup>60</sup>

## **Speeding Up the Bus**

**During a Philadelphia focus group, participants complained about the plodding pace of buses in the city and expressed skepticism that service would improve.**

<b>Interviewer</b>	What is it about the bus?
<b>Dewayne</b>	They got to stop at every corner. That's going to be an inconvenience if you are trying to get someplace fast.
<b>Interviewer</b>	Anything else about the bus that keeps you away?
<b>Hayden</b>	How they don't come. Like, you will just wait at the corner and they don't come. And sometimes the bus will come but it will just go right by you, so you have to wait for the next one. It happens way too much for me.
<b>Interviewer</b>	Sounds like it does happen a lot.
<b>Hayden</b>	They are just overcrowded, the ones that pass you. They won't let people on because they are too full. People are like, in the windshield of the bus.
<b>Interviewer</b>	So, what if the bus got better? If you knew that the bus was going to take less time than the Uber, would you switch back to the bus?
<b>Hayden</b>	I would.
<b>Natalia</b>	Definitely.
<b>Dewayne</b>	I couldn't foresee that [happening], though.

**Yet a “bus turnaround” is possible. In one of the Seattle focus groups, several participants praised RapidRide, a series of rapid-bus lines that are faster and more reliable thanks to bus-only lanes, all-door boarding, and better stop spacing.**



**Interviewer**

Kris, how long have you been using transit?

**Kris**

It's really ramped up since the C Line—when the city implemented those RapidRide buses—so it's been a couple of years. They are coming more consistently. They stop fewer times. Just the efficiency of it makes sense to me....The dedicated bus lanes make a big difference. On RapidRide, we would just be passing all the cars.

**Interviewer**

Do you guys like those?

**Group**

Yes.

**Carol**

Oh yeah.

**Kris**

They save so much time in the morning.

**Carol**

If [the buses] have to join traffic at any part, then it takes just as long as to take the car.



## **Safety — getting to and waiting at transit stops — is a prime concern of transit riders.**

### **Feeling Safe and Secure**

Safety ranked high among the list of factors which respondents say transit agencies need to address. Decreaser riders disproportionately cited safety as a concern.

Among bus riders, 33% of female respondents say safety while waiting at or getting to stops is an important area for improvement, compared to 25% of male respondents. Among train riders responding to the same question, 31% of female and 23% of male respondents found safety important. There is not a gender difference regarding safety on transit vehicles.

This finding is consistent with an NYU Rudin Center study that found that women are more likely than men to be harassed, feel unsafe, or feel at risk on public transit. Women spend \$25–50 more on private car travel than men to avoid perceived safety risks on transit.<sup>61</sup> A study from UCLA found that transit security programs tend to focus on transit vehicles but neglect “open and public” spaces like bus stops and parking lots, where women riders actually feel more fear.<sup>62</sup>

Notably, riders may define “safety” broadly—not only in reference to the absence of acts of overt criminality, but also





to capture psychological comfort, like the absence of unwanted verbal attention, graffiti, staring, or fellow passengers playing loud music. Researchers from Monash University have found that whether someone feels comfortable traveling with strangers does more to predict whether they feel unsafe on transit than whether they had been personally attacked or threatened, or witnessed an attack or threat.<sup>63</sup> And transportation researchers have found only a weak relationship between perceptions of insecurity and actual crime rates. But agencies should not presume the disparity is a misperception that measurable crime statistics can correct.

Addressing untreated mental illness or addiction leading to vagrancy in transit stations can help to mitigate some riders' negative interactions that lead to perceptions of unsafe transit; in 2016, Los Angeles Metro began contracting with homelessness outreach teams, who have connected homeless people with services and housing.<sup>64</sup> Philadelphia's SEPTA has partnered with local nonprofits to open a homeless service center in one of its major stations.<sup>65</sup>

The physical design of transit vehicles, stops, and stations also contributes to a sense of safety. A substantial body of research has found that the design of transit facilities and the characteristics of neighborhoods where transit sits play roles in feelings of safety. Darkness and lack of others make people feel less secure—so do transit facilities that cut off people's lines of sight.<sup>66</sup>

Service characteristics also have implications for safety, such as the prospect of a long wait for transit that makes riders feel more vulnerable. At bus stops without shelters, riders perceive waits as longer than they actually are, especially in neighborhoods they view as unsafe.<sup>67</sup>

Transit agency responses to rider concerns defined broadly as “safety” need to be nuanced. The role of law enforcement officers is the most visible issue that transit officials must consider carefully. At the Philadelphia focus group, some participants expressed a strong desire for more police presence on transit. Similarly, enhanced security on buses in Detroit seems to correlate to ridership gains, indicating that to many potential riders, additional law enforcement is welcome.

On the other hand, some activists suggest that police officers on transit make some riders uncomfortable rather than comfortable. These divergent views on policing may depend on the intended

## **Safety**

**In each of the focus groups we held, transit riders could cite instances where they felt unsafe. Respondents discussed the importance of station design. Some agreed that the presence of security cameras made them feel safer, while others said a human presence was more reassuring.**

**Whitney**

I was sitting at the “El” stop a couple of nights ago and there was an older woman there, like in her 60s, and she was saying that she didn’t like the stop that we were at. The area I live in is really nice, but it’s just dark. Like, there’s no streetlight over on that particular side, and the buses do run really infrequently at nighttime, so I could see how she would feel unsafe, someone like her, sitting out there at night.

**Elijah**

I think they can create more building-type things [shelters] where the bus stops at.

**Whitney**

Even if they don’t do it at every stop, at major stops, it’s really important to have some type of, like—

**Raven**

Lighting fixture.

**Whitney**

Camera, anything.

**Leah**

They used to have police that walked the trains, and police used to be on the bus—they would ride for a certain amount of time, then would get off, and they would get in the car. But they don’t do that anymore. You know what they’re doing? They’re using the cameras and stuff on the bus now. That’s what they’re calling security.

**Interviewer**

Do you think about the cameras, or not?

**Joshua**

A camera’s not going to help you until it’s too late.

**Andrea**

I think so. Just the fact that they’re there might deter someone. One out of ten maybe? I don’t know.

**Karen** I know I feel safer [on the bus than on the train], because there's the driver. You know what I mean? At least on a bus I feel like I'm above ground and if someone was bothering me you'd have the driver to say "Hey, help me with this."

**Feelings of insecurity were sometimes compounded by a sense that help would not arrive when needed.**

**Vanessa** My bus driver called [for help] because there was a woman on the bus that had some [mental health] problems, and nobody came. I waited for 15, 20 minutes. When the woman who had the issue got out, there was [feces] all over the chair. I let the bus driver know and she's like, "I called for somebody to please come and deal with this," because she can't. And nobody came. If they are not going to respond to their own drivers, are they going to respond to us?

**Many reported that seeing bad behavior on mainstream and social media affected their feeling of safety.**

**Dewayne** [On YouTube] you can type in "subway craziness" and you'll see ... just as many videos come up of craziness to make you want to drive to work, or even walk.

**Interviewer** How many of you have seen a video online of something you might describe as "craziness" taking place on public transportation?

**(The majority of respondents in the room raise their hands.)**

**As the research suggests, there was substantial diversity in how witnessing or experiencing safety incidents affected people's willingness to ride transit. One focus group participant reported witnessing a shooting on the bus (in Oakland) and said that her partner had been assaulted on the train in Seattle, but she continued to ride transit daily and preferred it to other options. Another participant said she had "never ridden the bus" because of bad behavior she had seen on videos shared on Facebook.**

function of the assigned personnel. Routine fare inspections are particularly divisive. Some advocates contend that this deployment implies that riders are not guests but potential criminals and turns a civil matter or potential misdemeanor into an interaction with an armed officer.<sup>68</sup> Treating fare enforcement as a customer relations matter that civilian staff of the transit agency carry out and defining the role of police as maintainers of public safety may make transit feel safer for all riders.

**Regardless of income, bus riders rate fares as less important than service basics like frequency.**

### **Fares and Price Sensitivity**

Respondents rate the importance of transit fares differently, depending on their income levels. In our survey, only 16% of bus riders from households making over \$75,000 identify bus fare as an important issue to be improved, while 25% of riders do from households making under \$25,000. There is no divergence for rail fares—perhaps because they are often expensive enough that even high-income riders find them costly.

Even low-income bus riders rate fares as less important to address than frequency of service, crowding, safety, and reliability. This suggests that if a transit agency had to choose between devoting funds to reducing fares or to maintaining or improving service, most riders would prefer the latter. It also suggests that the notion of making transit “free”—though politically appealing—would provide





## **Low-Income and Youth Fares**

**The Seattle region not only offers the ORCA Lift card for low-income riders, but some public schools offer free transit cards. There is also a discounted pass for youth aged 6–18. Several focus group participants took advantage of those programs, which they said were convenient.**

**Interviewer**

Was [the ORCA Lift] hard to figure out?

**Karen**

No, actually—because I live in a low-income building, they came to us and brought the paperwork that they needed. They did [the sign-up] right then and there, and they even loaded [money on the card] for us for the first time, so it made it really easy for us. But I heard there's destinations where you could go to, to submit the paperwork and get it taken care of as well.

**Teresa**

They actually came to my children's school because [the transit agency] runs an after-school bus and an extra-activity bus. They actually brought [the transit passes] to my kids. They actually pay it every month, the school does.

**Sharon**

It was easy to get it because in Tacoma, they have [a transit center] where you walk in there and you do everything there. I think, in downtown Seattle, too, they also have a hub for ORCA where you can just go in there and they talk to you about it if you don't know.

**Veronica**

It makes it so cheap. My monthly pass is like 56 dollars a month, and that's why I'm like, "I'll take a bus." It's cheaper than my phone bill, and I can really just go anywhere.

## Regional Differences

While there are remarkable similarities in what different categories of transit riders list as priorities for improvement, there are also remarkable differences in what respondents from different *regions* cited as key priorities.

### Which are the most important areas for improving bus service? Responses by region

	New Orleans	Denver	Los Angeles	Pittsburgh	Seattle	Chicago	New York City
Safety	74%	48%	76%	51%	55%	68%	47%
Fundamentals (reliability, frequency)	96%	94%	84%	95%	98%	79%	84%
Information & Facilities	43%	36%	45%	44%	39%	38%	40%
Quality of trip (crowding, delays/traffic, major disruptions)	60%	54%	51%	56%	61%	57%	77%
Fares/Other	12%	27%	15%	22%	23%	22%	29%

n=1,439 (Respondents who used bus now and two years ago)  
Respondents selected up to three areas, so percentages do not equal 100%

## Which are the most important areas for improving train service? Responses by region

	New Orleans	Denver	Los Angeles	Pittsburgh	Seattle	Chicago	New York City
<b>Safety</b>	39%	49%	81%	37%	49%	71%	53%
<b>Fundamentals (reliability, frequency)</b>	86%	59%	52%	48%	59%	43%	49%
<b>Information &amp; Facilities</b>	47%	38%	39%	35%	30%	35%	32%
<b>Quality of trip (crowding, delays/traffic, major disruptions)</b>	60%	64%	72%	84%	69%	79%	100%
<b>Fares/Other</b>	29%	38%	17%	23%	28%	30%	28%

n=1,022 (Respondents who used rail now and two years ago)  
Respondents selected up to three areas, so percentages do not equal 100%

Los Angeles respondents are by far the most likely to cite safety as an area needing improvement, which perhaps reflects widely publicized local issues with homelessness and mental illness. New Yorkers are most likely to cite transit delays and the handling of service breakdowns, showing that riders are “feeling the pain” of a maintenance crisis on the subways and worsening traffic that has slowed bus service.

Across regions, the top concern of bus riders is frequency, while the top concern of rail riders is crowding (which frequency improvements would help to ameliorate).

**Transit agencies that care about long-run ridership growth also must be plugged in to local housing policy.**

less utility to the public than if the equivalence in foregone revenue were spent improving service and continuing to charge a fare.

Nonetheless in regions where fares are high, offering discounted fares for low-income riders has merit, particularly if subsidies can be provided without sacrificing service levels due to the decreased revenue. Transit providers in Seattle collaborate to offer the ORCA Lift card, which offers half-priced fares for people with a household income that is less than twice the federal poverty line. Other systems—including New York and Denver—also offer discounted fares for low-income riders.

Transit agencies should also devote attention to fare policy and pricing strategies. Practices like charging for transfers—in essence, asking customers to pay more for a less convenient trip—can be counterproductive to attracting ridership. On the other hand, a fare-capping policy, practiced in London and Portland, Oregon, rewards the most loyal customers by providing a discount for regular use without the cash flow burden and uncertain calculations inherent in buying a monthly or weekly pass.

**Shaping and Responding to the Changing City**

To promote their commitment to ridership growth, progressive transit agencies need to assert themselves in municipal zoning and other land-use processes, which are long-term determinants of transit demand. Transit agencies should exert influence on local governments to encourage the development of housing, jobs, and retail centers in compact, urban settings that transit can serve. Land uses that, left unchecked, sprawl across the region sentence residents to car-dependence because transit cannot serve such low-density development.

In the short term, as an alternative to full-blown network redesigns, transit agencies can make targeted changes to routes to better serve new travel patterns. Small, intentional changes in transit service can provide meaningful connections to jobs and services for residents. The New Orleans Regional Transit Authority extended the 39-Tulane bus line to the Ochsner Medical Center, previously outside of its service area; workers, patients, and families can now take advantage of the 24/7 service.<sup>69</sup> TriMet launched two new bus routes that connect the poorest communities in Portland, Oregon to



Weekends to Chambers St  
Weekday mornings take **M**

**M** To Fore  
via 6 A  
weekda





2:55 PM TRACK 1  
GREEN MINNEAPOLIS 6 MIN  
GREEN MINNEAPOLIS 15 MIN

HAMLIN AVENUE

TICKETS

AVAILABLE







an industrial job center.<sup>70</sup> These decisions to adapt service patterns should be conscious of the social or economic purpose and the ridership that will be served. Transit agencies should not dissipate their limited resources by trying to serve every job center in low-density, transit-inaccessible locations.

Transit agencies that care about long-run ridership growth also must be plugged in to a city's housing policies. Our research underlines how housing costs can threaten riders' access to transit. Initiatives to create and preserve dense, affordable housing near urban transit provide equitable access to housing and transit, and they boost the viability of transit systems by ensuring that many potential riders live near quality transit.

Seattle's Sound Transit sells its land at a discount for low-income housing development, and Los Angeles Metro offers low-interest loans to low-income housing developers.<sup>71</sup> Both Minneapolis and

**Governments must correct deep-rooted planning and financing policy that forces car dependence.**

Chicago have passed laws enabling denser housing near frequent transit lines.<sup>72,73</sup> They also allow developers to build housing near transit without parking minimums that drive up construction costs and rents and encourage driving in transit-accessible places. In 2018, the Metropolitan Transit System in San Diego announced it would develop housing on some of the underused parking lots near its light-rail stations, converting land being used for car storage into homes for people—who will be likely transit riders.<sup>74</sup> In general, transit stations surrounded by stores, offices, and homes generate far higher ridership than transit stations that are surrounded by car storage.

### **Leveling The Unfair Playing Field: Dealing With The Car**

One of the study’s primary findings is that the private car is transit’s major competitor—regardless of the recent growth of TNCs, the hype around scooters, or speculation about “hyperloops” or jet packs. Indeed, US transportation policy and finance are backwards-looking, characterized by huge hidden public subsidies to roads and cars. As long as policies make driving artificially cheap and local zoning regulations encourage the dispersal of jobs and housing, transit in the US will be at a competitive disadvantage.

To preserve transit ridership—and other sustainable modes that supplement transit use—federal, state, and local governments must correct these systemic, deep-rooted urban planning and financing regimes that force car dependence. Where tenable non-car options exist, cities should charge drivers for parking and street use to reflect their true public costs and to rein in traffic. Charging a value that reflects the scarcity of street space can reduce unnecessary car use, make other modes more competitive, and open up street space for surface transit. Crucially, these fees can be committed back to transit, providing the funding needed to improve service fundamentals and make it a more efficient and desirable travel option.

Most research suggests that in dense, transit-oriented cities, TNCs hurt transit more than they help. Increasingly, city governments are taxing and regulating TNCs in order to capture the true costs imposed on society. Some cities use the revenue to support transit—for example, as of October 2018, Washington, DC, charges a 6% fee on TNC trips that is split between WMATA and the



Department of For-Hire Vehicles.<sup>75</sup> Despite the press and policy attention, the impact of TNCs compared to private cars should be kept in perspective. In New York City, “for-hire vehicles” (taxi and TNCs) still represent just 3% of trips; ten times as many trips are taken in private cars.<sup>76</sup>









# Conclusion

Transit ridership in cities is a dynamic system; “who’s on board” is always changing because of personal circumstances and the availability of other travel modes. People move to transit-friendly neighborhoods and start taking the bus or train for the first time. Some take transit often but cut back if they realize that some trips are prone to slowness or delays. People regularly buy and shed cars in response to job and household changes. And when transit doesn’t meet their needs, people adjust by using cars—private or otherwise—more often, even in traditional transit strongholds like the Chicago and New York regions. Substantial increases in driving come at the expense of traveling on other modes, and transit in particular.

This means that the task of growing ridership is actually several different, albeit related, tasks: getting more people to try transit, keeping them as customers over time (even as they get older or increase their income), providing access to enough places so that riders can keep using transit after they move homes or jobs, and doing all of this in an increasingly crowded transportation marketplace.

The data confirm that transit agencies have to compete harder than ever for customers. Millennials, though still more predisposed to use transit than their predecessors, are entering a stage of life where people tend to reduce their transit use. Suburbanization of poverty is forcing some of transit’s core customers to move to places where transit service is weak. TNCs and other modes provide alternatives to transit that were less widespread just a few years ago and are most competitive in strong-transit regions like New York City and Chicago. And private cars are cheaper to purchase now than in the recent past.

But when it comes to transportation, mayors and transit leaders face the core question: Is the combination of transit, walkability, and other modes in your city effective enough to convince residents that they can get around without depending on the private car?

Despite challenges, some regions have continued to increase transit ridership or staved off decline. For the most part, these are not places where transit improvements have been confined to a few new lines. Rather, they are places where transit agencies have committed to system-wide improvements focused on key drivers of ridership.

## The only responsible course for public transit leaders is continuous service improvement

They are places where transit agencies have partnered with local governments to address issues like sidewalks near transit, quality shelters, development around transit, and space devoted to cars. And they are places that have used quick, modest wins to build momentum for major improvements. They are places where transit agencies have partnered with local governments to address issues like sidewalks near transit, quality shelters, development around transit, and space devoted to cars. And they are places that have used quick, modest wins to build momentum for major improvements.

Transit is central to creating great cities. Without effective transit, it becomes harder for people of all incomes, ages, and abilities to access the opportunities they need. Falling transit ridership can be an inconvenient truth. But it can't be explained away as the result of economic trends, demographic change, or new technologies. The only responsible course for public transit leaders is continuous service improvement. Examples around the country show that reforming transit—to make it faster, more frequent, more reliable, and safer—grows ridership. It also builds the political environment that enables future transit improvements. And the ultimate prize is the growth of economically robust, socially just, and environmentally sustainable places that are possible only with great transit.





# Making Transit Work: Resources

TransitCenter offers detailed resources to help transit agency staff, city leaders, and transportation advocates understand what makes public transit useful for more people, and how to achieve it.

These include:

- *Untangling Transit: Bus Network Redesign Workshop Proceedings*
- *From Sorry to Superb: Everything You Need to Know about Great Bus Stops*
- *All Transportation is Local: A Field Guide for City Leaders*
- *The Path to Partnership: How Cities and Transit Systems Can Stop Worrying and Join Forces*

Find these reports and more (including regular blog posts featuring transit success stories from around the country) at [transitcenter.org](https://transitcenter.org).

TransitCenter has also supported the National Association of City Transportation Officials in creating a series of resources, including:

- *Transit Street Design Guide*
- *Better Boarding, Better Buses: Streamlining Boarding & Fares*
- *The Structure of Success: A Playbook for Cities to Build Successful Transit Programs*
- *Making Transit Count: Performance Measures That Move Transit Projects Forward*

Find these at [nacto.org](https://nacto.org).

## Region of Survey Respondents

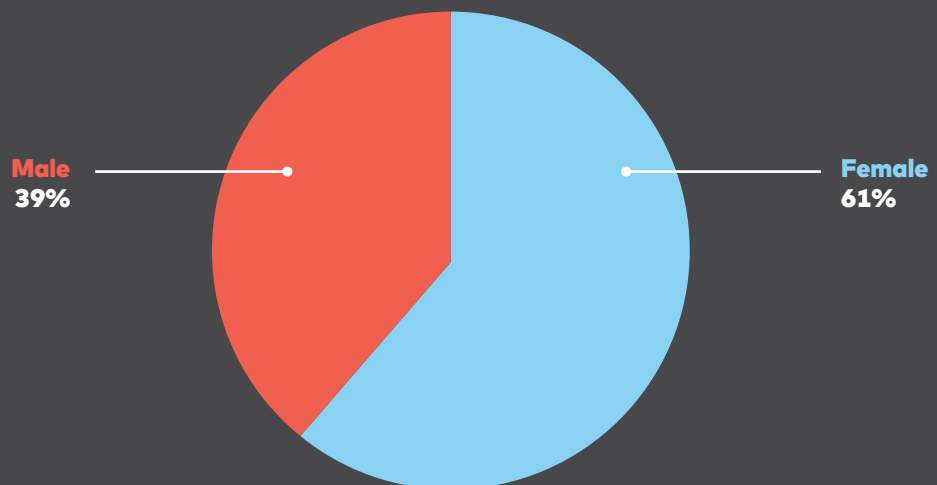
Market	n
New Orleans	76
Denver	184
Los Angeles	266
Pittsburgh	254
Seattle	283
Chicago	274
New York City	367
<b>Total</b>	<b>1,704</b>

## Methodology and Sample Characteristics

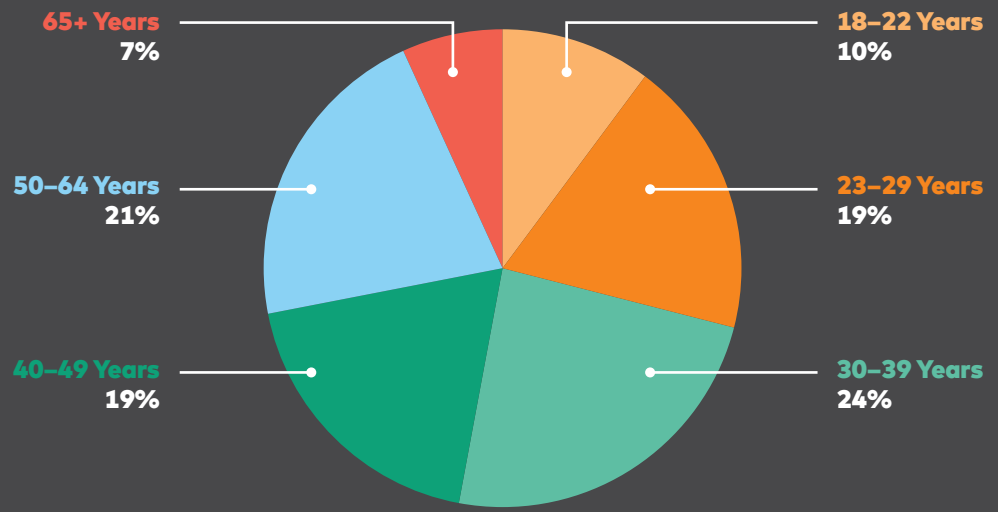
The goal of this study was to better understand the behavior, needs, and attitudes of transit riders across a range of US cities. We began by speaking with transit riders and former transit riders. Resource Systems Group (RSG) conducted six focus groups in Chicago, Philadelphia, and Seattle. In each city, they conducted one group with respondents who reported increasing their transit use over the past two years, and a second group with respondents who reported decreasing their transit use in that time period. In Chicago, RSG recruited focus group participants from a Chicago Transit Authority customer mailing list. In Philadelphia and Seattle, respondents were recruited by the focus group facilities.

Next, RSG conducted an online survey of transit riders in seven regions: the New York, Chicago, Denver, New Orleans, Los Angeles, Pittsburgh, and Seattle metropolitan statistical areas (MSAs). Respondents were solicited from throughout each MSA, but they had to indicate using transit at least once a week for at least one of the periods of study to complete the survey. As a result of this selection criteria, the respondents largely live close to transit, including a majority that live in or near the urban core of each region.

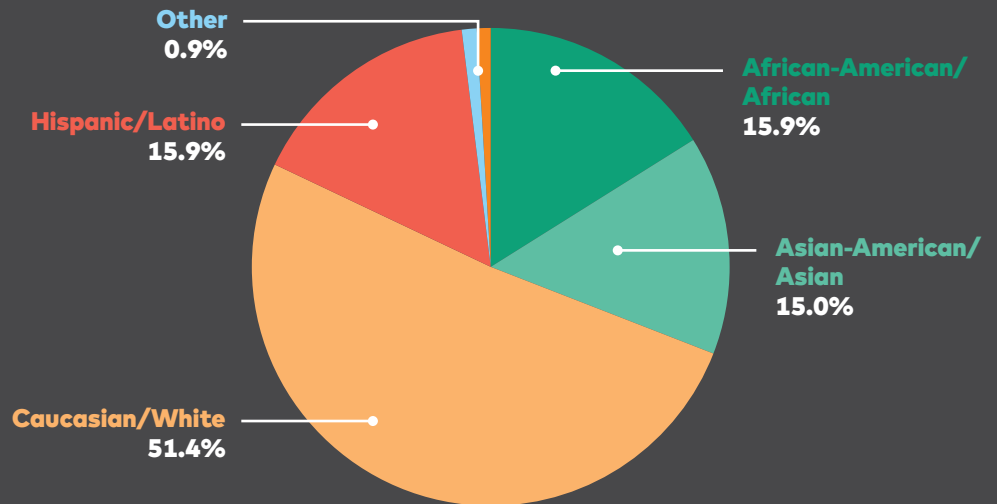
### Gender of survey respondents



## Age of survey respondents



## Race/ethnicity of survey respondents



Respondents were recruited through Full Circle Research, an online sample provider. Online sample providers give small incentives to participants in carefully maintained research panels. Panelists are not recruited for any particular survey topic, which minimizes the risk of self-selection bias.

The survey was fielded between July 11, 2018, and August 8, 2018. After removing inconsistent responses, a total of 1,704 responses were included in the final data set. The survey was offered in both English and Spanish; 97% of respondents took it in English.

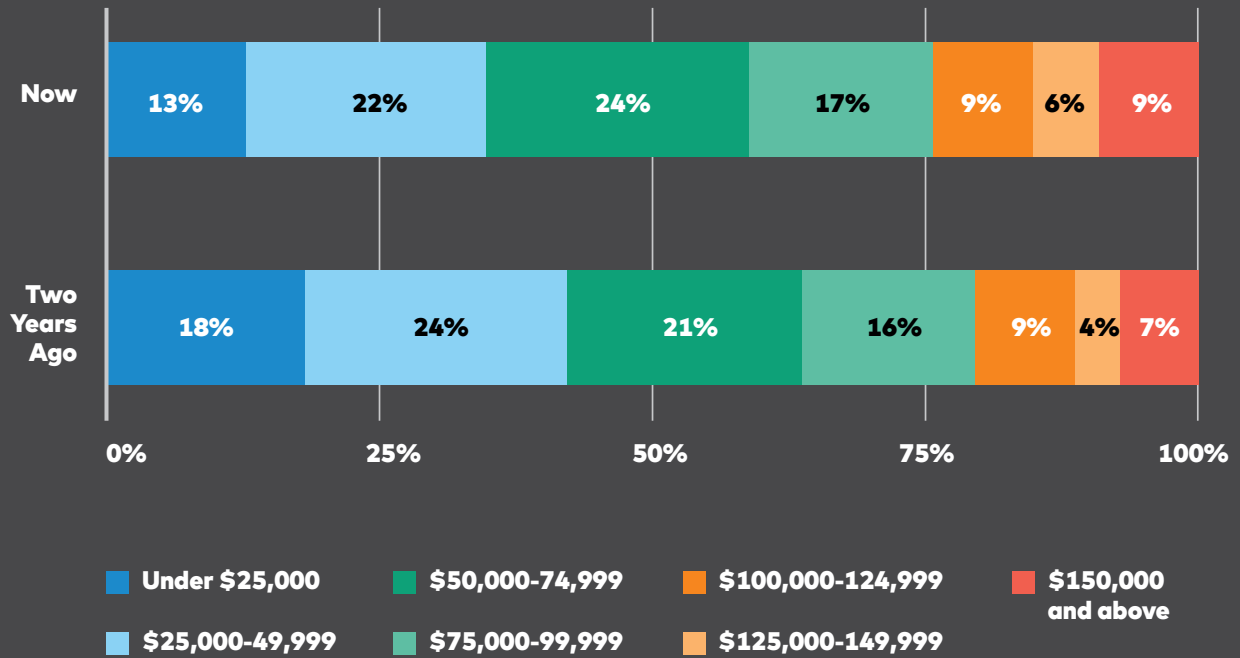
The sample is reflective of transit ridership age and gender characteristics, except that people under age 18 were not surveyed. Sixty-one percent of respondents identified as women, which matches other estimates. The American Public Transportation Association (APTA) estimated in a report from 2017 that 55% of American public transit riders are women, and recent customer surveys from Philadelphia’s SEPTA and the Chicago Transit Authority suggest over 60% of riders in both cities are women.<sup>77</sup> Less than 1% of respondents selected “other” to indicate another gender than male or female.

It is likely that the survey under-sampled low-income riders and over-sampled riders with household incomes between \$50,000 and \$99,999. APTA’s report estimates that in major cities, 32% of riders have household incomes below \$25,000, compared to 13% of our respondents. The APTA report also estimates that 15% of transit riders have household incomes between \$50,000 and \$74,999 and 10% earn between \$75,000 and \$99,999, compared to 24% and 17% in our survey.

Most respondents in the survey take the bus, though slightly fewer take the bus now—and slightly more take rail—compared to two years ago. These trends parallel analyses of National Transit Database ridership data.<sup>78</sup>



## Income of survey respondents



## Transit Service Type Used by Time Period

Service Type	Now	Two Years Ago
Bus	76%	79%
Rail	55%	53%
Disability service	4%	3%
Other (ferries, etc.)	8%	6%

n=1,559 for “now” (all who use transit now)

n=1,602 for “two years ago” (all who used transit then)

# Appendix

Based on the survey data, we estimated a series of regression models that predict a respondent's two-year change in transit, TNC, and car use. Independent variables (predictors) for all three models included age, changes in income, changes in home and work transit score, overall satisfaction with transit, whether the respondent had children in the intervening two years, and the respondent's home region. The regressions allow us to compare the effect that a given predictor has on one mode of travel compared to others.

Of note, there are many factors influencing travel that cannot be captured in the models. And within the models themselves, the biggest predictor of change for each of these modes is the simple passage of time. Over the two years of the study, respondents simply became less likely to use transit and more likely to drive and use TNCs, even without any other changes.

## Travel Mode Models (Multiple Regression)

Predictor	Interpretation	Transit Model	TNC Model	Car Model
Square of Change in Home AllTransit score	Change in days of use per 1-point change in transit quality at home on a 0–100 scale	.068 *	.031 *	-.069 *
Square of Change in Work AllTransit score	Change in days of use per 1-point change in transit quality at work on a 0–100 scale	.038 *	.007 *	-.006 *
Age 18–22	Change in days of use for respondents 18–22 compared to respondents over 40 in same conditions	3.139 *	.499	1.591
Age 23–29	Change in days of use for respondents 23–29 compared to respondents over 40 in same conditions	-1.316 *	.177 *	1.131 *
Age 30–49	Change in days of use for respondents 30–39 compared to respondents over 40 in same conditions	1.397	.149	-.237
Higher Income Bracket	Change in days of use when respondent reported a higher income than two years ago	-.113	.304 *	1.455 *
Foreign-born	Change in days of use when respondent reported being born outside the US	-.113	.304 *	1.455 *
Satisfaction with transit	A composite 1–5 score of bus and rail satisfaction for whatever time periods bus or rail were used	.920 *	-.375	-.189
Additional child in household	Effect on days of use of a new child entering the home within the two-year period	-.719	-.412	-.136
Denver	Change in days of use for respondents from Denver as compared to Los Angeles	-.330	-.628	-1.232
Chicago	Change in days of use for respondents from Chicago as compared to Los Angeles	1.187	-.304	-1.117
Seattle	Change in days of use for respondents from Seattle as compared to Los Angeles 2%	.710	-.583	-.787
Pittsburgh	Change in days of use for respondents from Pittsburgh as compared to Los Angeles	1.267	-.325	-.330
New York	Change in days of use for respondents from New York as compared to Los Angeles	1.385	-.321 *	-1.847 *
New Orleans	Change in days of use for respondents from New Orleans as compared to Los Angeles	-2.432 *	-.580	.895

\* Denotes statistical significance at 95% confidence  
n=1,704 (full sample)

The correlations table shows the correlations in the change in monthly days of use for each mode over the past years. For example, a positive correlation between TNC and transit indicates that respondents who increased the number of days they used TNCs also tended to increase the number of days they used transit, and vice versa.

### Travel Mode Correlations Table

	Transit	TNC	Car	Taxi	Carshare	Telecommuting	Bike	Walking
Transit	—	0.15	-0.41	0.09	0.01	0.11	0.01	0.27
TNC	0.15	—	-0.14	0.20	0.07	0.07	-0.02	0.09
Car	-0.41	-0.14	—	-0.06	0.00	-0.05	0.00	-0.28
Taxi	0.09	0.20	-0.06	—	0.03	0.06	-0.01	0.09
Carshare	0.01	0.07	0.00	0.03	—	-0.01	0.07	0.03
Telecommuting	0.11	0.07	-0.05	0.06	-0.01	—	0.02	0.05
Bike	0.01	-0.02	0.00	-0.01	0.07	0.02	—	0.11
Walking	0.27	0.09	-0.28	0.09	0.03	0.05	0.11	—

n=1,704 (full sample)



The following tables display the estimated monthly days of use for each mode now and two years ago, respectively, from which the change calculations are derived. These tables highlight how much less all-purpose riders use cars compared to commuters or occasional transit riders.

### Current monthly days of use for all modes, by transit rider category

Category	Transit	TNC	Car	Taxi	Carshare	Telecommuting	Bike	Walking
Increaser	16.5	2.9	8.0	0.8	0.4	3.6	1.9	8.6
All-purpose (steady)	18.3	2.9	5.0	2.1	1.2	4.8	1.1	10.2
Commuter (steady)	18.3	3.3	9.5	2.0	1.3	5.9	1.1	7.1
Occasional (steady)	4.0	1.6	9.6	0.8	0.3	2.3	0.9	5.9
Decreaser	3.5	2.0	10.8	0.8	0.4	2.6	1.0	5.6

n=985 (respondents who did not move or change jobs in the past two years)

## Monthly days of use two years ago for all modes, by transit rider category

Category	Transit	TNC	Car	Taxi	Carshare	Telecommuting	Bike	Walking
Increaser	5.3	1.9	9.4	0.9	0.4	3.0	1.8	7.7
All-purpose (steady)	18.4	2.1	4.8	2.2	1.4	4.7	1.5	10.4
Commuter (steady)	18.6	3.0	9.7	2.3	1.5	5.8	1.4	7.0
Occasional (steady)	4.8	1.1	9.2	0.9	0.4	2.7	1.0	6.0
Decreaser	17.1	1.9	6.7	1.4	0.6	3.8	1.3	7.2

# Citations

1. Faiz Siddiqui, “Falling Transit Ridership Poses an ‘Emergency’ for Cities, Experts Fear,” *Washington Post*, March 24, 2018.
2. Bhuiyan Alam, Hilary Nixon, and Qiong Zhang, Investigating the Determining Factors for Transit Travel Demand by Bus Mode in US Metropolitan Statistical Areas (San Jose: Mineta Transportation Institute, May 2015), <http://transweb.sjsu.edu/PDFs/research/1101-transit-bus-demand-factors-in-US-metro-areas.pdf>
3. AllTransit, Center for Neighborhood Technology, 2018, <https://alltransit.cnt.org/>
4. Federal Reserve Bank of New York, Quarterly Report on Household Debt and Credit, May 2018, [https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC\\_2018Q1.pdf](https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC_2018Q1.pdf)
5. US Census Bureau, “Bo8201: Household Size by Vehicles Available,” 2005–2017 American Community Survey 1-Year Estimates, <https://factfinder.census.gov/>
6. Mike Colias and Adrienne Roberts, “Annual US Car Sales Drop for First Time Since Financial Crisis,” *Wall Street Journal*, January 3, 2018, <https://www.wsj.com/articles/u-s-auto-sales-slip-in-december-1514993454>
7. US Census Bureau, “Household Size.”
8. Colias and Roberts, “Annual US Car Sales.”
9. Edmunds, “Automotive Lease Volume Reaches Record High in 2016, According to New Edmunds Report,” January 26, 2017, <https://www.edmunds.com/about/press/automotive-lease-volume-reaches-record-high-in-2016-according-to-new-edmunds-report.html>
10. FRED, “Vehicle Miles Traveled,” Federal Reserve Bank of St. Louis, 2018, <https://fred.stlouisfed.org/series/TRFVOLUSM227NFWA>
11. Michael Manville, Brian D. Taylor, and Evelyn Blumenberg, *Falling Transit Ridership: California and Southern California* (Los Angeles: UCLA Institute of Transportation Studies and Southern California Association of Governments, January 2018), [https://www.scag.ca.gov/Documents/ITS\\_SCAG\\_Transit\\_Ridership.pdf](https://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf)
12. Eric Jaffe, “Why US Immigrants Drive Less than Natives,” *CityLab*, November 25, 2013, <https://www.citylab.com/transportation/2013/11/why-us-immigrants-drive-less-natives/7689/>
13. Gilberto Mendoza, “States Offering Driver’s Licenses to Immigrants,” National Conference of State Legislatures, November 30, 2016, <http://www.ncsl.org/research/immigration/states-offering-driver-s-licenses-to-immigrants.aspx>
14. Jesus M. Barajas, “The Effects of Driver Licensing Laws on Immigrant Travel.” 98th Annual Meeting of the Transportation Research Board, Washington, DC, January 13–17.

15. Jaffe, “Why US Immigrants Drive Less.”
16. Federal Reserve Bank of New York, *Quarterly Report*.
17. Matthew Rocco, “Auto Sales Dinged as Interest Rates Spike,” Fox Business, October 2018, <https://www.foxbusiness.com/personal-finance/auto-loan-interest-rates-car-sales-gm-ford-toyota>
18. Urvia Neelakantan et. al., “The Importance & Impact of Cars for Family Economic Success.” The Federal Reserve Bank of Richmond, December 9, 2010. [https://www.nclc.org/images/pdf/conferences\\_and\\_webinars/auto\\_webinars/presentations/ImportanceAndImpactOfCars12.10.pdf](https://www.nclc.org/images/pdf/conferences_and_webinars/auto_webinars/presentations/ImportanceAndImpactOfCars12.10.pdf)
19. Brookings Institution Metropolitan Policy Program, *Modernizing Shared Transportation: Public Responsibilities in the Digital Age* (Washington, DC: Brookings Institution, 2018), <https://www.apta.com/resources/mobility/Documents/Brookings%20-%20King%20County%20Metro%20-%20Mobility%20Future%20Keynote.pdf>
20. Nicholas J. Klein and Michael J. Smart, “Car Today, Gone Tomorrow: The Ephemeral Car in Low-Income, Immigrant and Minority Families,” *Transportation* 44, no. 3 (October 2015): 495–510, [https://www.researchgate.net/publication/282860397\\_Car\\_today\\_gone\\_tomorrow\\_The\\_ephemeral\\_car\\_in\\_low-income\\_immigrant\\_and\\_minority\\_families](https://www.researchgate.net/publication/282860397_Car_today_gone_tomorrow_The_ephemeral_car_in_low-income_immigrant_and_minority_families)
21. Bruce Schaller, *The New Automobility: Lyft, Uber, and the Future of American Cities* (Brooklyn, NY: Schaller Consulting, July 2018), <http://www.schallerconsult.com/rideservices/automobility.htm>
22. Regina R. Clewlow and Gouri Shankar Mishra, *Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States*, research report, University of California, Davis, Institute of Transportation Studies, October 2017, [https://itspubs.ucdavis.edu/wp-content/themes/ucdavis/pubs/download\\_pdf.php?id=2752](https://itspubs.ucdavis.edu/wp-content/themes/ucdavis/pubs/download_pdf.php?id=2752)
23. Alejandro Henao, “Impacts of Ridesourcing—Lyft and Uber—on Transportation including VMT, Mode Replacement, Parking, and Travel Behavior” (PhD diss., University of Colorado Denver, 2017), [https://media.wix.com/ugd/c7a0b1\\_68028ed5eff47a1bb18d41b5fba5af4.pdf](https://media.wix.com/ugd/c7a0b1_68028ed5eff47a1bb18d41b5fba5af4.pdf)
24. American Public Transportation Association and *Shared-Use Mobility Center*, *Shared Mobility and the Transformation of Public Transit* (Chicago: Shared-Use Mobility Center, March 2016), <https://www.apta.com/resources/reportsandpublications/Documents/APTA-Shared-Mobility.pdf>
25. Clewlow and Mishra, *Disruptive Transportation*.
26. American Public Transportation Association and Shared-Use Mobility Center, *Shared Mobility*.
27. Clewlow and Mishra, *Disruptive Transportation*.
28. Jonathan D. Hall, Craig Palsson, and Joseph Price, “Is Uber a Substitute or Complement for Public Transit?” *Journal of Urban Economics* 108 (November 2018): 36–50, <https://doi.org/10.1016/j.jue.2018.09.003>
29. Clewlow and Mishra, *Disruptive Transportation*.
30. Schaller, *The New Automobility*.



- 31.** Ibid.
- 32.** Clewlow and Mishra, *Disruptive Transportation*.
- 33.** Ibid.
- 34.** New York City Department of Transportation, *New York City Mobility Report*, June 2018, <http://www.nyc.gov/html/dot/downloads/pdf/mobility-report-2018-screen-optimized.pdf>
- 35.** Clewlow and Mishra, *Disruptive Transportation*.
- 36.** 36. Matt Coogan et al., Transit Cooperative Research Program Research Report 201: Understanding Changes in Demographics, Preferences, and Markets for Public Transportation (Washington, DC: The National Academies Press, 2018), <http://www.trb.org/TCRP/Blurbs/177709.aspx>
- 37.** Reid Ewing and Robert Cervero, “Travel and the Built Environment,” *Journal of the American Planning Association* 76, no. 3 (May 2010): 265–94, <http://dx.doi.org/10.1080/01944361003766766>
- 38.** Robert Cervero and Michael Duncan, “Residential Self Selection and Rail Commuting: A Nested Logit Analysis,” (working paper, University of California Transportation Center, 2008), <http://reconnectingamerica.org/assets/Uploads/604.pdf>
- 39.** Keith Wardrip, “Public Transit’s Impact on Housing Costs: A Review of the Literature,” Center for Housing Policy, August 2011, <http://www.reconnectingamerica.org/assets/Uploads/TransitImpactonHsgCostsfinal-Aug102011.pdf>
- 40.** Alanna Finn, “How Much is One Point of Transit Score Worth?” Redfin, March 20, 2017, <https://www.redfin.com/blog/2017/03/how-much-is-one-point-of-transit-score-worth.html>
- 41.** Steven Spears, Marlon G. Boarnet, and Douglas Houston, “Driving Reduction after the Introduction of Light Rail Transit: Evidence from an Experimental-Control Group Evaluation of the Los Angeles Expo Line,” *Urban Studies* 54, no. 12 (September 2017): 2780–99, <http://journals.sagepub.com/doi/full/10.1177/0042098016657261>
- 42.** Tom Mills and Madeline Steele, “In Portland, Economic Displacement May Be a Driver of Transit Ridership Loss,” TransitCenter, November 14, 2017, <https://transitcenter.org/2017/11/14/in-portland-economic-displacement-may-be-a-driver-of-transit-ridership-loss/>
- 43.** Christof Spieler, *Trains, Buses, People: An Opinionated Atlas of US Transit* (Washington, DC: Island Press, 2018).
- 44.** Laura Bliss, “How the DC Metro’s Service Cuts Will Affect Low-Income Riders,” *CityLab*, May 19, 2016, <https://www.citylab.com/transportation/2016/05/dc-metro-shutdown-service-cuts-low-income-riders/483090/>
- 45.** Adam Forman, *Left in the Dark: How the MTA is Failing to Keep Up with New York City’s Changing Economy* (New York: Office of New York City Comptroller Scott M. Stringer, March 2018), <https://comptroller.nyc.gov/reports/left-in-the-dark-how-the-mta-is-failing-to-keep-up-with-new-york-citys-changing-economy/>

46. Eric Jaffe, “Far Beyond Rush Hour: The Incredible Rise of Off-Peak Public Transportation,” *CityLab*, February 6, 2014, <https://www.citylab.com/transportation/2014/02/far-beyond-rush-hour-incredible-rise-peak-public-transportation/8311/>
47. Resource Systems Group, *Who’s On Board 2014: Mobility Attitudes Survey* (New York: TransitCenter, 2014), <http://transitcenter.org/wp-content/uploads/2016/11/WhosOnBoard2014-ForWeb.pdf>
48. Coogan et al., *Understanding Changes in Demographics*.
49. Hugh M. Clark, *Who Rides Public Transportation*, (Washington, DC: American Public Transportation Association, January 2017, <https://www.apta.com/resources/reportsandpublications/Documents/APTA-Who-Rides-Public-Transportation-2017.pdf>
50. Resource Systems Group analysis of National Household Travel Survey data from 1995, 2001, 2009, and 2017, provided for this report.
51. Pew Research Center’s definition.
52. TransitCenter analysis of National Household Travel Survey data from 2009 and 2017 (US Department of Transportation, 2018), <https://nhts.ornl.gov/>
53. Alam, Nixon, and Zhang, *Determining Factors for Transit Travel Demand*.
54. Los Angeles Metro, “NextGen Bus Study: Transit Competitiveness and Market Potential,” Presentation, September 2018.
55. Washington Metropolitan Area Transit Authority, “Stabilizing and Growing Metro Ridership,” internal memo, May 2018, published in *Washington Post*, accessed October 2018, <https://apps.washingtonpost.com/g/documents/local/metros-internal-plan-to-grow-ridership/3226/>
56. Matt Tinoco, “Why the Expo Line Is Slow—And Why It Might Not Be That Way Forever,” *Curbed Los Angeles*, February 20, 2018, <https://la.curbed.com/2018/2/20/17028842/expo-line-metro-slow-explained>
57. Aaron Gordon, “The Trains Are Slower Because They Slowed the Trains Down,” *Village Voice*, March 13, 2018, <https://www.villagevoice.com/2018/03/13/the-trains-are-slower-because-they-slowed-the-trains-down/>
58. Central Ohio Transit Authority, “Here’s How COTA Improved Its Route Network,” 2017, <https://www.cota.com/initiatives/tsr/>
59. Caleb Pritchard, “Capital Metro Takes Its Bus Network Realignment to the Riders,” *Austin Monitor*, September 20, 2017, <https://www.austinmonitor.com/stories/2017/09/capital-metro-takes-bus-network-realignment-riders/>
60. City of Boston, “Join Us in Transforming Boston’s Transportation System,” press release, Sept. 7, 2018, <https://www.boston.gov/news/join-us-transforming-bostons-transportation-system>
61. Sarah M. Kaufman, Christopher F. Polack, and Gloria A. Campbell, *The Pink Tax on Transportation: Women’s Challenges in Mobility* (New York: NYU Rudin Center for Transportation, November 2018), <https://wagner.nyu.edu/impact/research/publications/pink-tax-transportation-womens-challenges-mobility>

62. Anastasia Loukaitou-Sideris and Camille Fink, "Addressing Women's Fear of Victimization in Transportation Settings: A Survey of US Transit Agencies," *Urban Affairs Review* 44, no. 4 (February 20, 2008): 554-87, <https://doi.org/10.1177/1078087408322874>
63. Graham Currie, Alexa Delbosc, and Sarah Mahmoud, "Perceptions and Realities of Personal Safety on Public Transport for Young People in Melbourne," paper presented at 33rd Australasian Transport Research Forum Conference, Canberra, Australia, September 29–October 1, 2010.
64. Elijah Chiland, "Metro's Homeless Teams 'Surprised' by Level of Need on Red Line," *Curbed Los Angeles*, March 22, 2018, <https://la.curbed.com/2018/3/22/17152426/metro-homeless-encampments-red-line-outreach>
65. Heather Redfern, "Transit Facility Center Gives Help, Hope to Those 'With Nowhere to Go,'" *Metro Magazine*, April 17, 2018, <http://www.metro-magazine.com/blogpost/729382/hope-for-helping-the-homeless>
66. Loukaitou-Sideris and Fink, "Addressing Women's Fear of Victimization."
67. Yingling Fan, Andrew Guthrie, and David Levinson, *Perception of Waiting Time at Transit Stops and Stations* (Minneapolis: University of Minnesota Center for Transportation Studies, February 2016), <http://hdl.handle.net/11299/180134>.
68. Alex Zielinski, "Are TriMet's Fare Enforcement Tactics Constitutional?" *Portland Mercury*, August 29, 2018, <https://www.portlandmercury.com/news/2018/08/29/22518175/are-trimets-fare-enforcement-tactics-constitutional>
69. New Orleans Regional Transit Authority, "City of New Orleans & Jefferson Parish Leaders to Take Inaugural Ride on #39 Tulane Line Extension to Ochsner," press release, October 16, 2018, <https://www.norta.com/About/Press-Releases/39-Tulane-Line-Extension-to-Ochsner?documentid=2412>
70. Amelia Templeton, "New TriMet Bus Lines to Ease Commutes in Gresham, Beaverton," *Oregon Public Broadcasting*, March 5, 2018, <https://www.opb.org/news/article/trimet-oregon-portland-beaverton-gresham-new-bus-lines/>
71. TransitCenter, "Affordable Housing: A Next Frontier for Transit?" *The Connection*, February 6, 2018, <http://transitcenter.org/2018/02/06/a-next-frontier-for-transit/>
72. Eric Roper, "Minneapolis Relaxes Parking Requirements to Reduce Housing Costs," *Star Tribune*, July 10, 2015, <http://www.startribune.com/mps-relaxes-parking-requirements-to-reduce-housing-costs/313286521/>
73. Steven Vance, "New TOD Ordinance Will Bring Parking-Lite Development to More of Chicago," *Streetsblog Chicago*, September 28, 2015, <https://chi.streetsblog.org/2015/09/28/new-tod-ordinance-will-bring-parking-lite-development-to-more-of-chicago/>
74. Melanie Curry, "San Diego Transit Board Approves New Housing Policy for Its Parking Lots," *Streetsblog California*, October 11, 2018, <https://cal.streetsblog.org/2018/10/11/san-diego-transit-board-approves-new-housing-policy-for-its-parking-lots/>

- 75.** So Jung Kim and Robert Puentes, “Taxing New Mobility Services: What’s Right? What’s Next?” Eno Center for Transportation, July 23, 2018, <https://www.enotrans.org/etl-material/eno-brief-taxing-new-mobility-services-whats-right-whats-next/>
- 76.** NYC Department of Transportation.
- 77.** Clark, *Who Rides Public Transportation*.
- 78.** TransitCenter, TransitCenter National Transit Database Ridership Analysis 2002-2017, May 2018, [https://drive.google.com/file/d/1CA8HATOV\\_UTfL5OC5yuzYyRzoZiqov2O/view](https://drive.google.com/file/d/1CA8HATOV_UTfL5OC5yuzYyRzoZiqov2O/view)

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- 0.** The Regional Transportation District
- 3.** Haven Thompson
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- 11.** The Regional Transportation District
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- 24.** Jose M. Osorio/Chicago Tribune
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- 53.** Seattle Department of Transportation
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- 57.** Seattle Department of Transportation
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