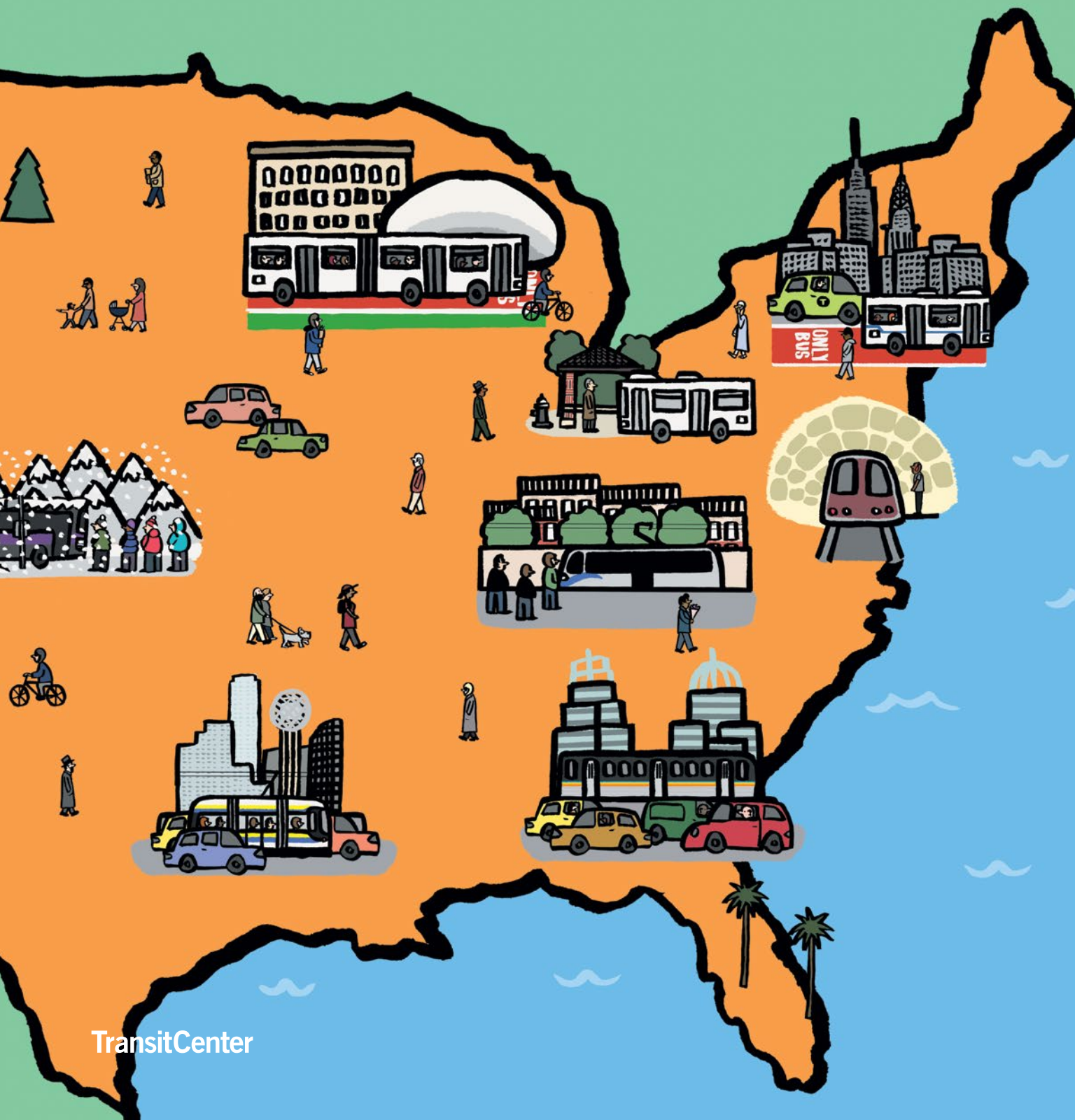
Who's On Board 2016

What Today's Riders Teach Us About Transit That Works



TransitCenter

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TransitCenter is a foundation that works to improve urban mobility. 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.

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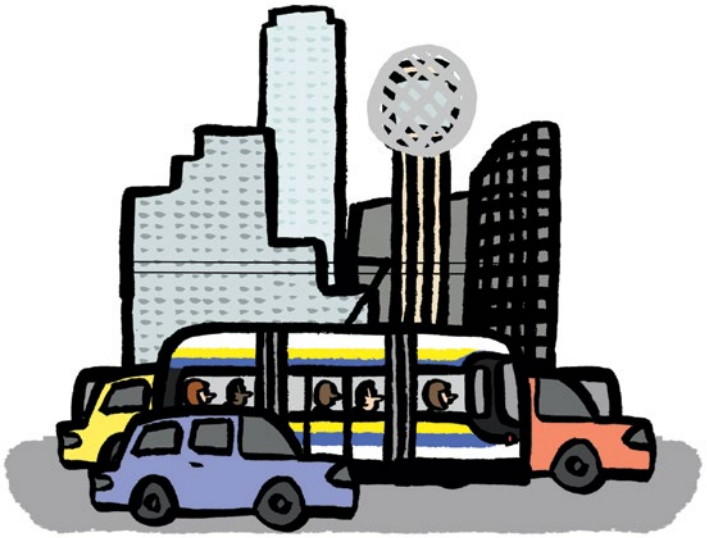
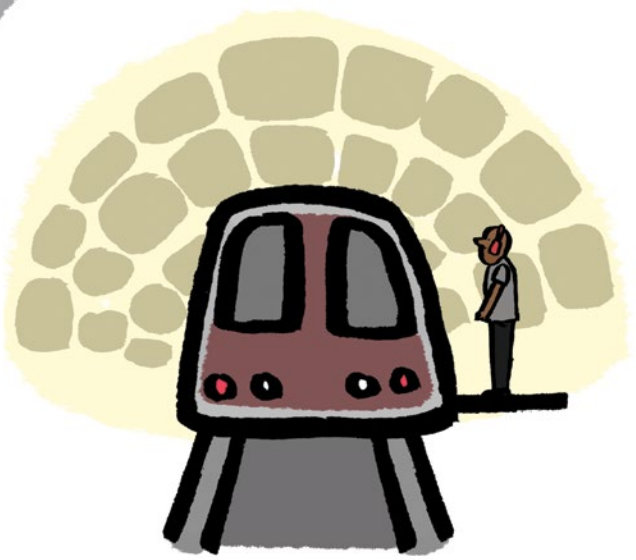




Summary of Key Findings

How People Use Transit

We find three common patterns of transit use: occasional riders who take transit once in a while, commuters who take transit regularly but only for work, and all-purpose riders who take transit regularly for multiple purposes.

- There is significant demographic diversity within each group, and the proportion of each group varies greatly by city. Occasional riders are the largest group of riders in cities with poor transit. Greater transit access and quality leads to more all-purpose ridership.
- These categories prove far more illuminating in the real world of transit use than transit-industry dogma that divides people into "choice riders" and "captive riders." The idea that people without cars are "captive" and will use transit regardless of quality is severely overstated. It often stands as an implicit excuse for poor service in denser neighborhoods that would use transit the most, lack of market orientation, and over-commitment of resources to chasing "choice" riders in low-density suburbs.
- The majority of transit riders typically walk to transit. An overwhelming share — 80 percent — of all-purpose riders do so. Just over half of commuters and occasional riders walk to transit.
- All-purpose ridership is stronger where it's easy to walk to transit and where transit itself is frequent and provides access to many destinations.

What People Value in Transit

- The two most important factors driving satisfaction with transit are service frequency and travel time.
- Riders also value station and stop conditions, real-time information, and service reliability.
- Transit riders say the least important improvements are power outlets and Wi-Fi (out of a list of a dozen potential service improvements). Our findings call into question the fad among transit agencies touting free Wi-Fi for customers who don't care strongly for it.

Transit Riders' Use of Other Modes

- All-purpose riders are more likely than commuters and occasional riders to use non-car means of transportation when not using transit and are the most likely to use carsharing and bikesharing systems.
- Most commuters and occasional transit riders use personal cars when not using transit, but significant numbers of occasional riders use bicycles, taxis, and smartphone-based car services.

Introduction / Executive Summary

Useful transit is essential for cities to thrive. It supports development and economic growth while mitigating congestion, reduces the public health and environmental harms of transportation, and provides an affordable choice so that residents can access jobs and services without the expense of a private vehicle.

For these reasons, cities across America have been expanding and improving transit. From a ridership perspective, however, the results of these efforts have been mixed. A three-mile extension of Sound Transit light rail in Seattle increased the line's ridership from 35,000 to 57,000 per day.[1] Meanwhile, Atlanta's new downtown streetcar (also three miles long) is drawing just a thousand riders a day, one-sixth of projected ridership.[2]

1 Lindblom, "Sound Transit to Add Longer Trains to Meet Unexpected Light-Rail Demand."
2 Klepal, "Atlanta Streetcar Ridership Takes a Plunge in 2016."

When do people choose transit, and in what conditions? We answer these critical questions by examining how people use transit, using information gathered from a survey of 3,000 people who ride transit in 17 regions and through focus-group discussions with riders in three cities.

We begin with a user-centric approach: looking at how people actually use transit. We find three common patterns of transit use: **occasional riders** who take transit once in a while for specialized reasons, **commuters** who take transit regularly but only for work, and **all-purpose riders** who take transit regularly for multiple purposes. Occasional riders make up about half the sample, commuters one-seventh, and all-purpose riders a third. The proportion of each segment, however, varies greatly by city. Occasional riders are the largest group of riders in cities with poor transit. As transit access increases, all-purpose ridership grows.

This method of categorizing proves more illuminating than dividing people into "choice riders" and "captive riders," as the transportation industry has done for a half-century. Longstanding dogma has been that people without cars are "captive" to transit and will use it regardless of service quality, while car owners have "choice" and must be won over through better service and luxe amenities. On the contrary, we find that the "captivity" of transit riders is severely overstated.

Using survey responses, we find that **walkability is critical to transit**. The majority of transit riders typically walk to transit — and 80 percent of all-purpose riders walk to transit (compared to just over half of commuters and occasional riders).

Our survey finds that **transit riders greatly value improvements in frequency and travel time**, and these two factors appear to drive overall satisfaction with transit. Station and stop conditions, real-time information, and reliability are also highly valued.

Further support for these conclusions comes from the AllTransit database, a new spatial-analysis tool developed by the Center for Neighborhood Technology and TransitCenter. We show that all-purpose transit riders tend to live in neighborhoods with frequent transit that provides access to many destinations.

Walkability, frequency and speed are what transit riders are shown to value most.

Growing Transit Ridership

Increases in all-purpose ridership are an important sign that transit is serving multiple needs, and the data suggest a clear policy framework for growing all-purpose transit ridership. **Policymakers can grow all-purpose transit ridership by enabling more people to walk to useful transit.** To expand transit ridership, policymakers should:

1. **Concentrate development around transit corridors, and make the walk to transit safe, easy, and pleasant.**

2. **Concentrate transit improvements in walkable places with large numbers of residents and destinations.**

3. **Pay special attention to increasing frequency and reducing transit travel time.**

We would expect to see strong ridership in places that follow this formula and weaker ridership in places that don't. For example, park-and-ride stations will draw mostly commuters and occasional transit users, while stations surrounded by walkable development will grow all-purpose ridership. Hourly buses in suburban areas will be used primarily as a "lifeline" service by those without alternatives. These lower-ridership services often accomplish legitimate goals; they can be justified as long as government is clear about their limitations.

The real problem comes when politicians and policymakers promise high ridership from transit that is designed in ways that won't produce it. This often happens when they prioritize making transit "sexy" but not useful, or concentrate transit improvements in car-oriented suburbs while neglecting walkable city neighborhoods. Transit draws riders when it is located in walkable neighborhoods and designed to be frequent and fast, with proper shelters. Service that doesn't meet this bar will fall short, regardless of whether the people it serves have personal cars and regardless of how attractively vehicles are designed. Conversely, service that meets this bar can draw ridership regardless of vehicle type.

Two years ago, when we published our 2014 *Mobility Attitudes Survey* (the first in our *Who's On Board* series), transit ridership in America had reached levels not seen in nearly six decades. That survey confirmed important demographic and attitudinal trends in transit's favor. We found that younger Americans and nonwhite Americans are more predisposed toward transit, as the country becomes more diverse and as Millennials take center stage in the workforce. We also found substantial unmet demand for living in mixed-use neighborhoods, which are better able to support transit and which make transit more useful.

In 2015, transit ridership dipped slightly, thanks in part to plunging gasoline prices. Even so, the demographic and attitudinal shifts we identified two years ago suggest that Americans are more open to transit than they have been in years past. But to take advantage of these shifts, transit decision makers must build *useful* transit. In this report, the second in our *Who's On Board* series, we identify the conditions that make transit useful by listening, carefully, to the people who use it today.

Recommendations

Transit agencies should:

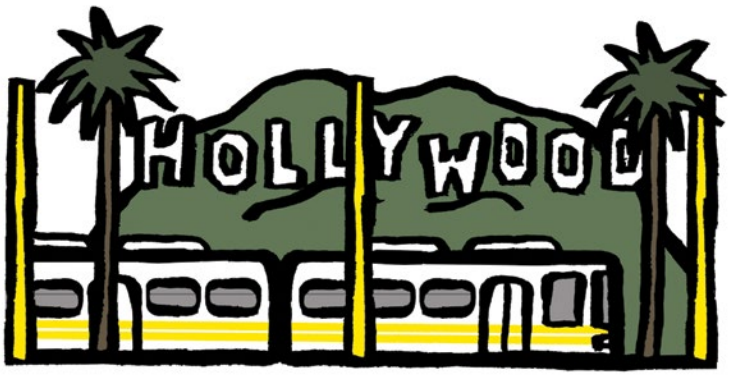
1. Focus on improving transit service in walkable neighborhoods. Walkable neighborhoods that have not been connected to frequent service are major opportunity areas where transit improvements can unlock substantial numbers of new riders.

2. Reduce transit travel times by:
   - Creating dedicated rights-of-way for transit.
   - Adopting prepaid fare collection, "tap-and-go" farecards, and other methods to speed up boarding.
   - Designing (and redesigning) routes to be straight and direct.
   - Consolidating stops on transit routes that currently have stops too close together.

3. Improve frequency of service on routes with high potential for ridership. Consider redesigning bus networks to provide more high-frequency service in walkable neighborhoods and fewer infrequent routes in car-dependent areas.

4. Ensure transit stops provide shelter and comfort (this often requires coordination with municipal government).

5. Make real-time information available to customers.



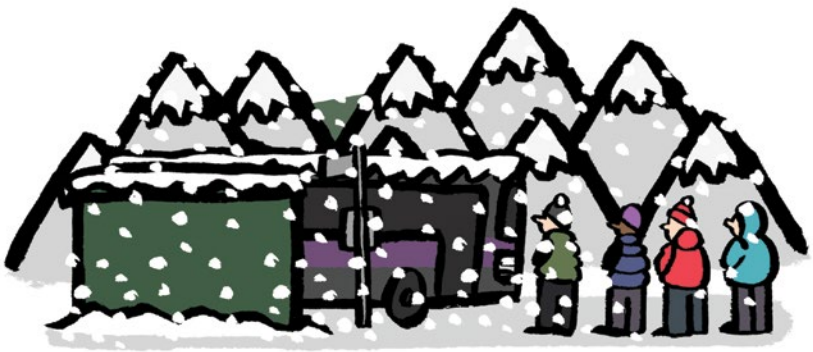
Local governments should:

1. Use zoning to concentrate development around transit corridors and encourage dense, walkable, mixed-use neighborhoods.

2. Improve street and sidewalk connectivity in poorly connected neighborhoods and use subdivision regulations to require well-connected street grids in new development. (Connectivity makes it easier to reach transit on foot.)

3. Reduce transit travel times through transit signal priority, dedicated bus lanes, boarding bulbs, and other street treatments.

4. Coordinate with transit agencies to install and improve transit shelters and create safe and pleasant walking conditions around transit.



Journalists and those who analyze transportation should:

1. Question claims that a transit service will draw high ridership because the transit vehicles are attractively painted, bear a catchy new "brand," or include upscale amenities. Instead, ask if the service itself is infrequent and slow compared to driving. Also ask how the frequency and travel time of proposed service compares to existing service.

2. Collect (and insist that the public sector collect) data that show the full picture of people's transportation behavior for a range of trip types. Transportation surveys should collect data on non-commute trips and the modes people use to access transit and should not categorize people as unimodal when they are multimodal.

About the Research

The goal of this study was to better understand the behavior, needs, and attitudes of transit riders across a range of U.S. cities. We began by talking with transit riders themselves, holding focus groups in Raleigh, Denver, and New York City. Next, we conducted an online survey of transit riders in 17 regions. Respondents were recruited through an online sample provider, Research Now. (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 final data set included 3,014 records.

The sample consists of transit riders from a diverse group of medium and large U.S. cities, in order to draw public policy lessons that are applicable in a broad range of contexts. (It was not designed to be representative of the national transit-riding population, which would require heavily weighting responses from New York and other large cities that represent the bulk of transit riders.)

The sample is generally reflective of the transit-riding population in terms of gender and age but does have a bias with respect to income, likely because the survey was conducted online and in English. Less than 7% of the sample comes from households making under $25,000 a year. (For reference, 23% of New York City transit riders fell into this income bracket, according to a 2008 survey.[3])

We address this by separately analyzing a segment of "discontented all-purpose" transit riders. This segment consists of people who regularly ride transit, but say they plan to buy a car within the next year. It also includes respondents who are unable to drive and report they are less than "very satisfied" with regional transit service. These discontented riders have much lower incomes than the other segments.

For more information on the survey methodology, the regions we surveyed in, and the sample characteristics, see "Methodology and Sample Characteristics" on page 65. A copy of the survey questionnaire is available at transitcenter.org.

3 NuStats, "2008 New York Customer Travel Survey: Final Report."

1

Who We Talk About When We Talk About Transit Riders

Planners, politicians, and journalists often discuss "drivers," "cyclists," and "transit riders" as if people exclusively drive, bike, or take transit. David Block-Schachter, the chief technology officer for the Massachusetts Bay Transportation Authority, has called this "the myth of the single mode man." [4]

Another common stereotype is that there are only two kinds of transit riders: "choice riders" who own cars but can be lured onto transit and "captive riders" who don't own cars and thus will use transit regardless of service quality.

These long-standing, common ways of thinking about transit riders influence how the media report on transit, how policymakers plan transit projects, and even how academic researchers frame their findings. But they are fundamentally flawed. In fact, we find wide diversity in how people use transit, and we find that the "captivity" of carless transit riders is greatly overstated.

4 Block-Schachter, "The Myth of the Single Mode Man: How the Mobility Pass Better Meets Actual Travel Demand."

The Multimodal Person

People cannot be divided into "people who rely on transit" and "people who don't ride transit." In fact, there are many people who occasionally use the transit system when it meets their needs, even in cities with relatively poor transit. For example, only one out of every 50 households in Tucson, Arizona, includes someone who regularly commutes on transit — but nearly one in five includes someone who has used transit for some purpose. In metropolitan Boston, 12% of households have a member who primarily commutes to work on transit, but 29% include someone who uses transit at least "sometimes" for work or school trips, and 56% include someone who occasionally uses transit.[5]

In our survey, 53% of respondents use transit between one day per month and one day a week. This highlights an interesting characteristic of transit users in our survey: While the majority of riders use the system occasionally, the majority of *trips* are taken by a core group of frequent riders. (As we show later, this pattern is more typical of cities with poor transit; as transit improves, frequent riders become a larger part of the riding population.)

This reality is often obscured by journalists and policymakers who rely on one set of federal surveys for transportation data. The U.S. Census and American Community Survey "journey to work" data are nearly ubiquitous in conversations about transportation. But these data sets include only commutes, which make up less than a third of transit trips[6]. Moreover, they measure only the respondent's primary commuting mode. A woman who takes the bus to work two days a week and drives three days a week is not counted as a transit rider. Neither is a college student who takes the train to school every day but drives to a part-time job.

This is an important concept for transit professionals and advocates to keep in mind, as most transit systems have a large pool of customers who have experienced transit but have not committed to frequent use. Policymakers often underestimate the number of people who have experienced transit. These people might readily increase their use of transit if it became more useful to them.

A full picture of trip-making behavior, which includes use of all modes and trip purposes, is necessary to understand the role that transit plays in people's lives and how to make it more relevant to riders. Researchers, the media, and policymakers must find, collect, and insist on data that show how people access transit, the purposes of trips besides commutes, and people's multimodal behavior.

5 These numbers come from comparing responses to the 2013 American Community Survey and the 2013 American Housing Survey from the U.S. Census. The 56% figure comes from those responding "yes" to the American Housing Survey question "Do you ever use public transportation?" See Hertz, "Undercounting the Transit Constituency."

6 Adella Santos et al., "Summary of Travel Trends: 2009 National Household Travel Survey."

The Mythology of "Choice Riders" and "Captive Riders"

For over 50 years, transportation professionals have used the terms "choice" and "captive" to describe two different populations of public transportation users. The generally accepted definition for a *choice rider* is someone who has a car but nonetheless chooses transit for many trips. A *captive rider* is someone who has no car and is therefore presumed to have no alternative to transit.

Research by the Canadian Urban Transportation Association shows that the terms "choice rider" and "captive rider" were popularized by engineers in the 1950s and 60s who were attempting to simulate the behavior of transit riders in some of the first computerized transportation models.[7] Over the past half-century, however, they have become common terms in the media, popular imagination, transportation research literature, and within the transit industry itself.

This simplified view of transit riders often becomes further simplified into demographic caricature. Writing in the popular economics blog *Freakonomics* in 2009, Clemson University assistant professor Eric Morris declared "there are two major constituencies for mass transit ... wealthier workers who commute to jobs in city centers where parking is expensive ... [and] the very poor."[8]

This binary way of categorizing transit riders has some unfortunate consequences. There is an implication that transit should focus on competing to win over people with cars, because everyone else will ride transit regardless of service quality. Last year, Chicago Transit Authority CEO Dorval Carter told the *Chicago Tribune* that "The people who have to ride CTA will ride CTA. The choice riders are the ones you really covet."[9]

7 Crowley and Hemily, "Profiling Transit Ridership."
8 Morris, "Fare's Fair?"
9 Hilkevitch, "New CTA Boss Dorval Carter Jr.'s View."

Choice vs. Captive Riders

A captive transit rider does not have a vehicle or cannot drive. A choice transit rider can drive and does have a vehicle, but chooses transit instead. Researchers found premium express buses have the greatest percentage of choice riders (96 percent) and local buses carry the greatest percentage of captive riders (52 percent).
— A typical definition of "choice" and "captive" riders from academic research (this example from a 2009 University of Minnesota Center for Transportation Studies brief)

"Sex Appeal" vs. Useful Transit
"Ferrari-like" Buses

Even New Yorkers can be guilty of prioritizing sizzle over substance when it comes to transit. In March 2016, New York Governor Andrew Cuomo announced the purchase of new buses for New York City Transit, with a new paint scheme and high-tech features like dozens of USB charging ports and Wi-Fi service. His comments at a press conference focused on bus design. "It has that European flair to it," he said of a bus rendering. "It has almost a Ferrari-like look."

New York City's buses are among the slowest in the country; a vehicle that looks "Ferrari-like" but moves at an average speed of 8 miles per hour is not very attractive. The governor's focus on flash over function irked members of the Riders Alliance, a grassroots organization of transit riders. As one of their organizers told Gothamist, "At the end of the day, we're worried about issues that are really important to riders like speed and frequency." Another quipped, "It's like putting USB ports on the Titanic."[11]

Carter cited improving bus speeds as the most important way to compete for riders, a worthy endeavor. Our previous research (and this report — see Section 4) highlights the importance of frequency, competitive travel time, and affordability in attracting transit riders. But policymakers and journalists who are less familiar with transit often assume that transit must compete with cars on the basis of amenities.

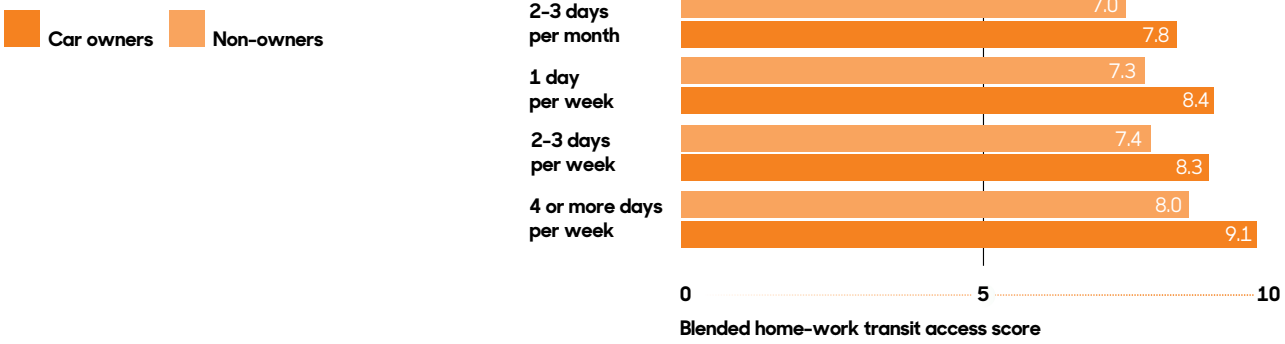
For example, a 2012 *San Antonio Express-News* article speculated that "fancy new electric-hybrid buses with comfortable seats and free WiFi service ... may have drawn more of the elusive 'choice riders' to the San Antonio bus system."[10] This assertion was not backed by any evidence; in fact, the only bus rider quoted in the article criticized the new seats (because they retained dirt) and said he wished there were priority lanes on area highways so the bus could move faster.

Are non-car owners actually "captive" to transit? We measure this through an analysis using the Center for Neighborhood Technology's

10 Davila, "VIA: New Image Luring Riders."
11 Whitford, "Introducing New USB/Wi-Fi Buses 2"

AllTransit "transit access score," a 0–10 score that accounts for frequency of service, access to jobs, and system coverage. There is a clear relationship between transit service quality and frequency of transit use, for both car owners and people who do not own cars: People who live and work in places with better transit service ride transit more frequently.

Average AllTransit Score by Car Ownership & Transit Trip Frequency for Full-time employed Respondents



About AllTransit

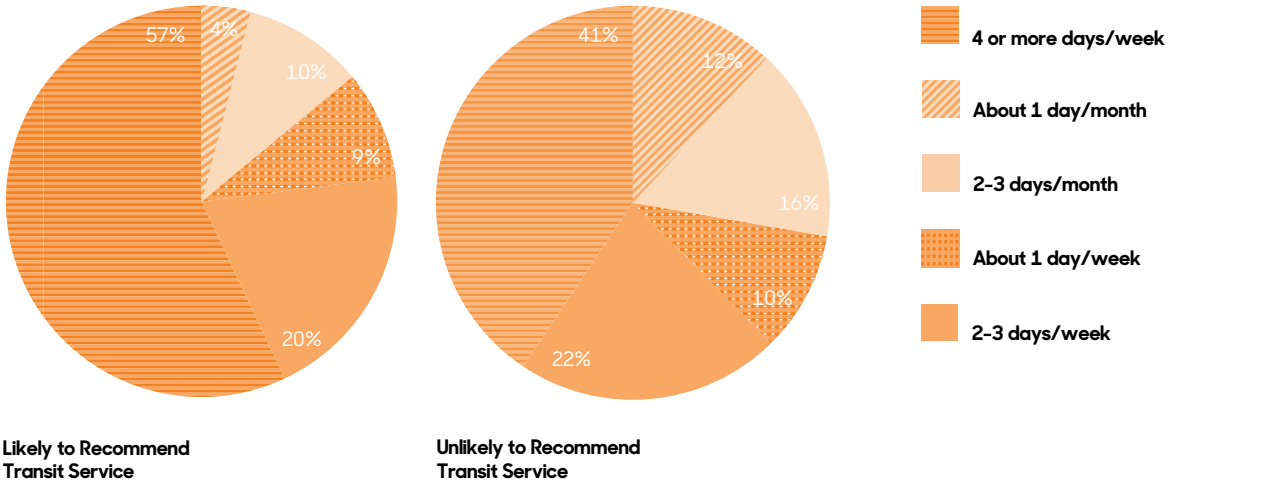
The AllTransit tool (http://alltransit.cnt.org/), developed by the Center for Neighborhood Technology (CNT) and TransitCenter, combines transit schedule data from more than 800 transit agencies across the U.S. Released in April 2016, AllTransit sheds light on the nuances of transit provision at the census-block level in all metropolitan areas with more than 100,000 residents. Users of the site can see where transit is at its best and worse in their own communities. CNT, founded in 1978 and based in Chicago, is an award-winning nonprofit "innovations laboratory" for urban sustainability.

For our analysis here, we use CNT's "transit access score" at the census-block level as a measure of overall transit quality near respondents' homes and workplaces. The transit access score is an index ranging from 0 to 10 that takes into account transit trip frequency, the number of nearby transit routes available, and access to both jobs and total land area within 30 minutes by transit. On this scale, Manhattan averages a score of 9.9; Chicago a 9.1; Miami an 8.4; Denver a 6.8; New Orleans a 6.0; Phoenix a 3.8; Detroit a 2.5; and Johnson City, Tennessee, averages a score of 0.9.

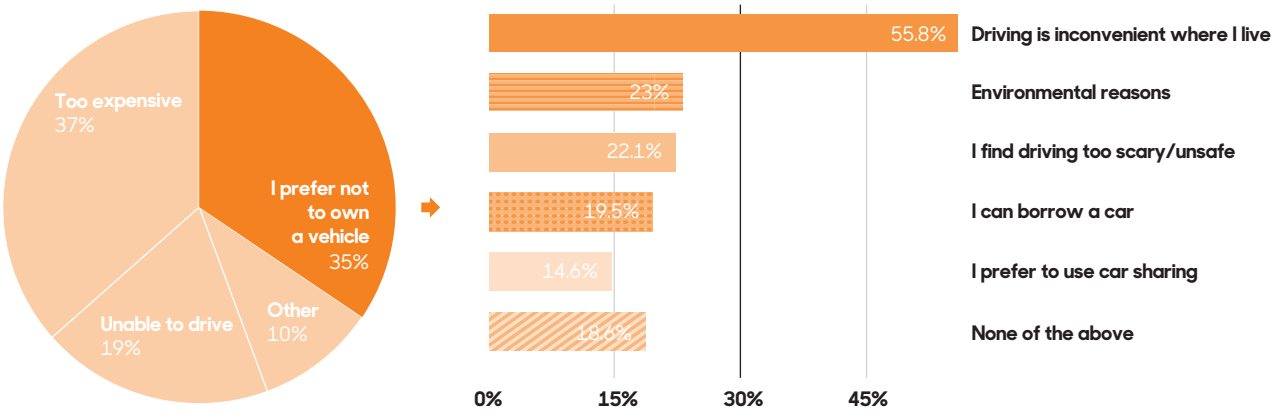
To check whether these scores might be meaningful in the context of our survey, we compared survey respondents' reported quality of transit service (rated from "Awful" to "Excellent") and compared those ratings with the AllTransit transit access scores for respondents' addresses. The fact that the transit access scores correlate to respondents' ratings helps validate the AllTransit data.

A similar relationship appears when we look at subjective measures of transit quality. Non-car owners use transit less frequently when they view transit service as poor, as measured by their willingness to recommend transit to others. Taken together, these analyses suggest that, rather than being "captive" to transit, transit riders without access to cars are quite sensitive to transit quality.

Among Carless Transit Riders, Satisfied Customers Take Transit More Often



Reasons for Not Owning a Car



This is in part because many people have choices beyond transit and privately owned cars. Two-thirds of the supposedly "captive" transit riders (non–car owners) in our sample used modes other than transit in the past month, including bicycles, cars owned by family members, taxis, smartphone-based car services, and carshare and bikeshare services.

These data support the findings of numerous researchers and practitioners who have investigated the behavior of non-car-owning transit riders. A 2003 Transportation Research Board paper found that some transportation models "underestimate the variation in travel mode choice" for transit riders without cars.[12] And a Mineta Transportation Institute study of bus riders in Broward County, Florida, found that, "rather than being a fixed amount regardless of service quality," transit ridership by people who do not own cars "increases tremendously if the transit travel time between origin and destination is reduced."[13]

Even people who are currently "captive" to transit may not be a year from now. Temple University professor Nicholas Klein finds that many poor families move in and out of car ownership, a dynamic that is not captured by "snapshot" data sets like the census and our survey.[14] For these reasons, transit planner Jarrett Walker has called *captive rider* an "unhelpful" term and warns it "can breed a false complacency on the part of the transit agency. There are very few riders that you absolutely cannot lose no matter how terrible your service is."[15]

This doesn't mean car-owning and carless transit riders behave identically; car owners in our sample generally ride transit less frequently than non–car owners. Furthermore, economic and personal circumstances do combine to make some people truly dependent on public transit, just as others are "automobile captives" who have few practical alternatives to the car. However, the common notion that transit riders without cars are by definition "captive" to transit is seriously flawed, even in cities with relatively poor transit service.

Researchers Dea van Lierop and Ahmed El-Geneidy of McGill University have argued that, particularly as center-city populations grow, there is an important constituency of "captive by choice" riders who are financially able to own a car but forgo one because transit effectively meets their needs.[16] In our survey, over a third of respondents without a car said they preferred not to own one, primarily because driving was inconvenient where they lived.

We need new ways of thinking about transit riders.

12 Beimborn, Greenwald, and Jin, "Transit Accessibility and Connectivity Impacts on Transit Choice and Captivity."

13 Thompson et al., "Understanding Transit Ridership Demand for a Multi-Destination, Multimodal Transit Network in an American Metropolitan Area."

14 Klein and Smart, "Car Today, Gone Tomorrow: The Ephemeral Car in Low-Income, Immigrant and Minority Families."

15 Walker, "Unhelpful Word Watch: *Captive Rider*."

16 van Lierop and El-Geneidy, "Getting Committed: A New Perspective on Public Transit Market Segmentation from Two Canadian Cities."

2

How People use Transit

Categories of transit riders have typically been based on household characteristics, like car ownership. In contrast, we have taken a more user-centered approach: examining how survey respondents use transit. Three broad patterns of use have emerged from the data.

As previously noted, many people use transit occasionally, a demographic that is all but ignored in policy debates around transit (except when it comes to airport riders and stadium attendees, who are sometimes given more weight than their actual numbers warrant). These occasional riders don't use transit much, but there are many of them — they make up 53% of our sample.

The Occasional transit rider

53% of respondents
13% of trips (estimated)

Uses transit occasionally, in specific situations where he or she views it as the best option (like going downtown or to another transit-accessible location, going to sporting events, etc.) or as a backup when his or her routine is disrupted (e.g., this person typically gets driven to church by a friend but takes the bus when that friend is away).

How we defined the segment: Any survey respondent who takes transit at least one day per month but not more than one day a week.

The occasional riders in our sample are diverse when it comes to the reasons they use transit. The segment comprises three subgroups: people who live in a household with fewer than one car per adult, people who travel rarely but use transit when they do, and people who use transit for a fairly specialized trip purpose (e.g., to go shopping).

The Commuter transit rider

14% of respondents
32% of trips (estimated)

Takes transit regularly but almost exclusively for work trips.

How we defined the segment: Says he or she "usually/always" takes transit for work trips but "never" or "occasionally" takes it for other types of trips. Rides transit at least two days a week.

Commuters take transit regularly but almost exclusively for work trips. In focus groups, interviewees gave us varied reasons. Some preferred not to drive in downtown traffic, others preferred not to pay for parking, and still others were capitalizing on subsidies for commuting by transit. In many cities, the transit system provides adequate access for 9-to-5 jobs in core neighborhoods, but poor service to other places and at other times.

The All-Purpose transit rider

32 % of respondents
55% of trips (estimated)

Transit is a regular part of this rider's routine.

How we defined the segment: Rides transit at least two days a week and "often" or "usually/always" takes transit for shopping, entertainment, and/or personal errand trips.

Within the "all-purpose" pattern of transit use we distinguish between two attitudinal segments:

- **The Contented all-purpose rider** [28% of total respondents]- Uses transit regularly and either owns a car or has no plans to buy one soon.
- **The Discontented all-purpose rider** [4% of total respondents [17]]: Uses transit regularly but plans to buy a car as soon as possible, or can't drive and is unsatisfied with transit.

All-purpose riders take transit regularly, for multiple purposes: not just to get to work or school, but to go shopping, access entertainment, and run personal errands. Some all-purpose riders forgo car ownership, walking and taking transit for most trips. Others use a car occasionally, or even regularly, while also using transit for many of their trips.

17 Our survey undercounts the low-income transit riders who are most likely to be discontented all-purpose riders; for more, see "About the Research." Low-income transit riders, however, are not necessarily dissatisfied with transit. While 4% of our sample is classified as discontented all-purpose riders, 13% of the sample comes from households making under $35,000 annually.

While we find little validity to the assumption that all people without cars are "captive" to transit, we did come across people (in both the survey and in the focus groups) who use transit often but are unhappy with their experience on the system and want to leave transit as soon as possible. We find value in analyzing these riders separately from those all-purpose riders who either own cars or don't feel the need to buy a car.

And so, for some of our analyses in this report, we make a distinction between "contented" and "discontented" all-purpose riders. "Contented" all-purpose riders either own cars or report no near-term plans to buy a car, demonstrating that they feel transit is suitable for their needs. "Discontented" all-purpose riders say they plan to buy a car within the next year, showing that they are actively looking to leave transit. In this category, we also include respondents who are unable to drive and report being dissatisfied or only "somewhat satisfied" with regional transit service.

There are some demographic differences between the segments. While most transit riders in each segment are female, this is less true of occasional riders. Occasional riders are more likely to be over 55 years old, while all-purpose riders are younger on average. The discontented subset of all-purpose riders is significantly younger, more diverse, and lower-income than others. But within each segment we see substantial diversity in terms of income, age, sex, race, and other characteristics. (See Appendix A for a fuller table of segment demographics.)

Selected Demographics by Segment

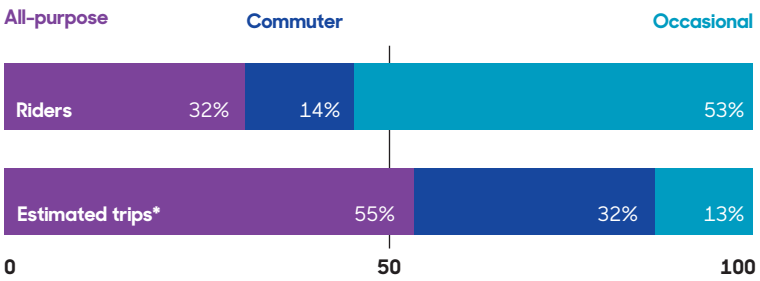
	Occasional	Commuter	All-purpose (contented)	All-purpose (discontented)
Sex				
Female	53%	61%	58%	59%
Male	47%	39%	42%	41%
Age				
Under 30	18%	16%	21%	35%
30-54	48%	59%	53%	45%
55+	35%	25%	25%	20%
Household Income				
Less than $35,000	12%	6%	14%	33%
$35,000-$74,999	32%	31%	32%	44%
$75,000-$124,999	32%	33%	31%	19%
$125,000 or more	24%	29%	23%	4%
Race and Ethnicity				
Non-Hispanic White	70%	66%	66%	45%
Hispanic/Latino	10%	6%	9%	14%
African-American/ African/ Black	9%	9%	11%	24%
Asian	9%	16%	10%	13%
Other	2%	3%	2%	4%
Car ownership	**72%**	**70%**	**32%**	**0%**

Occasional Riders:
A Majority of Riders, a Minority of Trips

As previously mentioned, the majority of transit trips are made by a core group of riders, while most riders take relatively few trips. We can illustrate this by estimating the number of trips taken by respondents, based on the reported frequency of their transit use. Occasional riders make up just over half the sample, but we estimate that they take roughly an eighth of total trips.

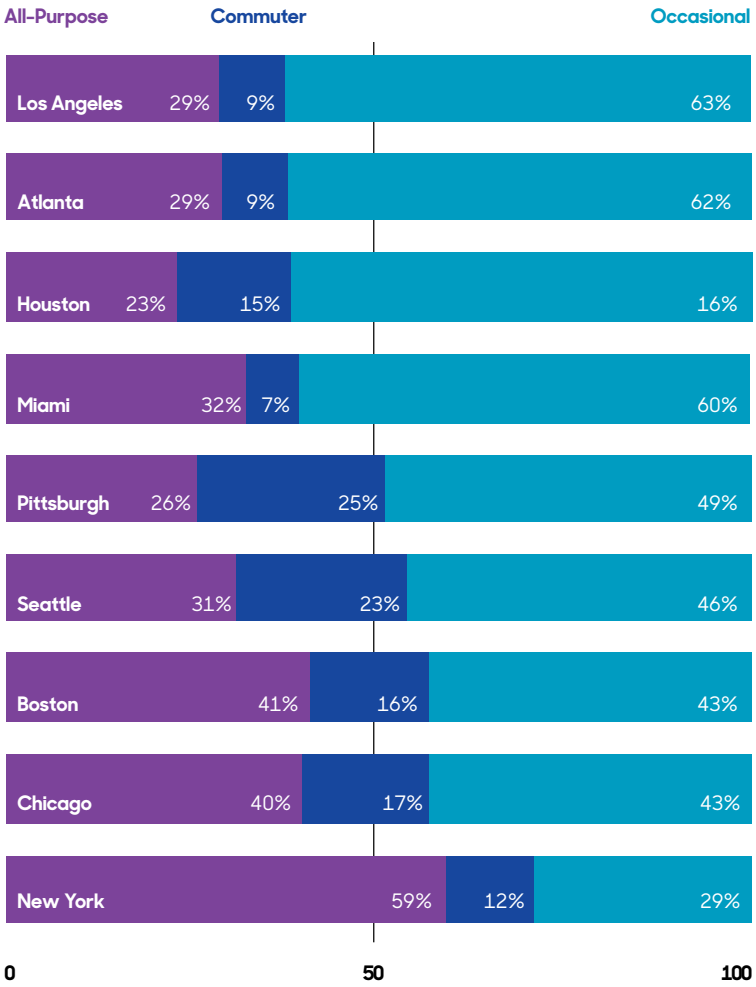
Using this method, we estimate that commuters account for 32% of trips and all-purpose riders account for 55% of the trips taken by respondents. This almost certainly undercounts the trips taken by all-purpose riders. However, it does underscore that occasional riders make up the majority of transit users but a small minority of trips.

Riders and Estimated Trips by Segment



The distribution of these segments varies according to how strong the transit service is in a given region. Even in cities where access to transit is scarce, roughly a quarter of riders are all-purpose riders who use the system often and for multiple purposes, but most transit riders in these cities use the system occasionally. As transit access grows, more people ride transit frequently. This growth initially appears to be concentrated among commuters, with more people converting to an all-purpose pattern as transit service becomes truly abundant.

Segments by Metro Area



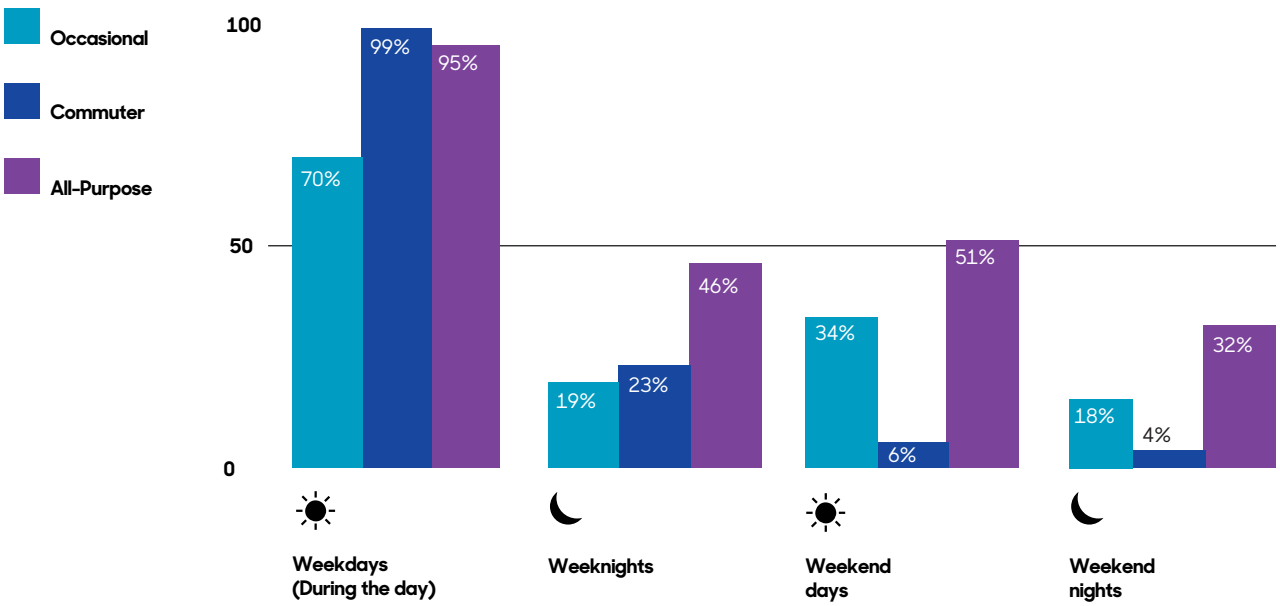
The Importance of All-Purpose Riders

Transit that works for many people and many purposes helps cities meet the "triple bottom line" of economic growth, environmental sustainability, and social equity. Growth in all-purpose riders, who ride transit often and for multiple purposes, is an important indicator of whether transit is serving that function.

For transit agencies, all-purpose riders are also of particular value. As Figure X shows, all-purpose riders are the most likely to use transit at off-peak times, such as in the evenings and on the weekend. Moving single-purpose riders like commuters to the all-purpose rider category provides the demand needed to run more all-day service, which allows transit agencies to maximize the use of their capital assets (e.g., buses, tracks, shelters) and make more efficient use of labor, the largest element of their operating costs.[18]

18 As Jarrett Walker points out in *Human Transit* (pp. 80–83), peak-only service sharply increases costs for transit agencies because the size of an agency's bus or train fleet is determined by peak service. Furthermore, drivers on peak-only routes often work split shifts (e.g., a 4-hour shift in the morning, a midday break, and a 4-hour afternoon shift) that require higher pay. Transit union agreements often preclude part-time shifts.

Typical Transit Use Time Period By Segment



Rider Stories
Patterns of Transit Use

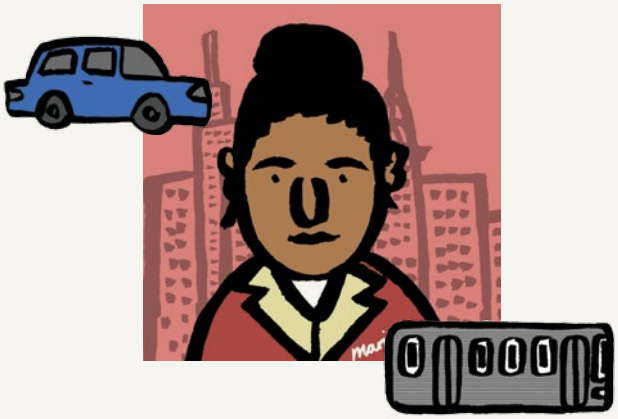
In the summer and fall of 2015, we held focus groups with transit riders in three cities with very different transit contexts: Raleigh, Denver, and New York City. Throughout this report, we cite these stories to illustrate real-world examples of our findings. (All names of focus group participants, and some details of their stories, have been changed to protect privacy.)

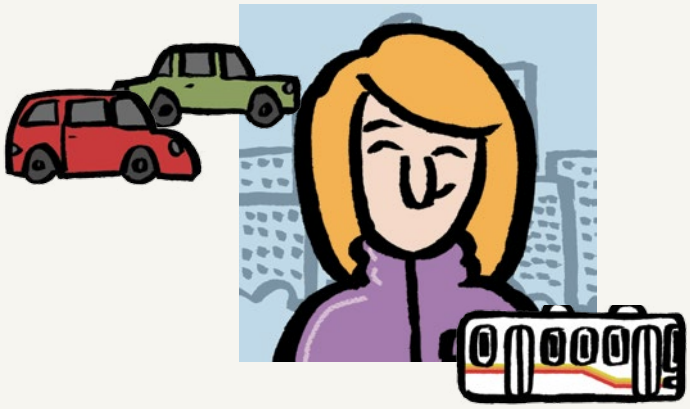
In each of the focus groups we held, there was great diversity in how people used transit. Raleigh has objectively poor transit service, but many of the transit riders we spoke with there did not fit the stereotype of "captive" riders who were only tolerating transit because they had to. In New York, the transit capital of America, we found many people who used transit for all their needs but also came across riders who used the system only occasionally.

Occasional riders

Mari lives in the Queens borough of New York City and works part-time. She drives to work but takes commuter rail once or twice a week to go into Manhattan for entertainment.

Carrie, a Denverite, carpools to work with her partner (they both work downtown). Often, one of them will stay downtown to meet friends after work and take the light rail home. Her partner has advocated that they sell one of the two cars they own, but so far Carrie has resisted.





Commuter riders

Imelda lives in Arvada, a suburb of Denver, and works downtown. She receives a free transit pass from her employer and uses park-and-ride but does not use transit for non-commute trips. She says her main reason for using transit is that she feels unsafe driving in Denver traffic.

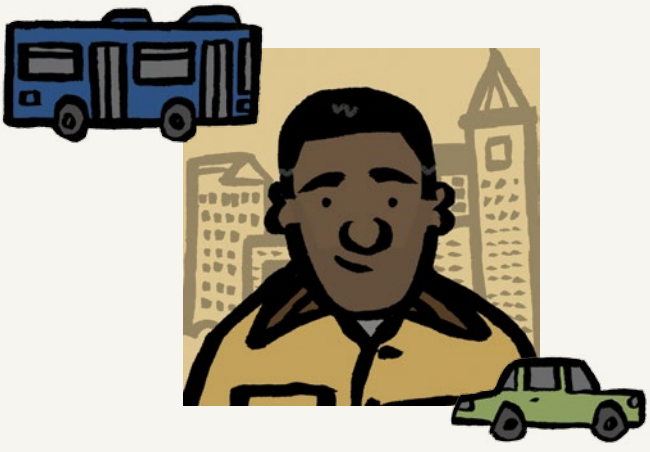
Sabrina drives and takes the bus to her part-time job in Chapel Hill (a college town near Raleigh). She parks in a private lot and rides the rest of the way, because she prefers not to have to hunt for parking in Chapel Hill. When she was a student, she took transit for many purposes but no longer finds that possible now that she lives in a less transit-accessible area.

All-Purpose riders (contented)

Cindy, a Denver resident, takes transit (both bus and light rail) "for everything." She uses the bus for work and takes light rail to shop at a big-box store. She also walks for many of her errands, illustrating the geographic correlation of walkability and transit usage.

Alex has lived in Raleigh for many years. He drives to work, but takes transit multiple times per week. He finds that it's easy to take transit to visit his daughter in college. He also prefers taking the bus to go out (for example, to bars) and to attend sporting events.

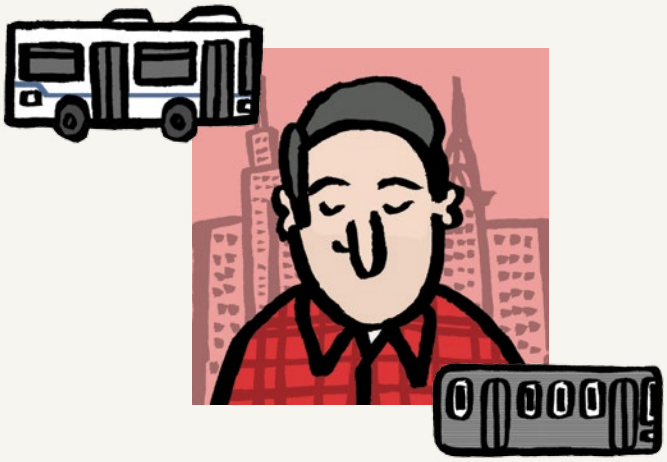
Eloise, a Denver retiree, has gone back to school late in life. She takes the bus and light rail to school every day. She recently acquired a car after a year of not owning one but finds it difficult to park on campus. She reads and does her homework on the light rail but doesn't find the bus conducive to this.



All-Purpose riders (discontented)

Paul lives and works in Yonkers (north of New York City) and takes the bus to work every day. A couple times a week, he takes a chain of several modes (commuter rail, subway, more commuter rail) to visit his girlfriend on Long Island (east of New York City). He would prefer to drive, but his car is in need of repairs.

Michelle lives near downtown Raleigh and doesn't own a car. She does not have a full-time job, but rides four to five times per week for other reasons. She finds transit very stressful, especially when travelling with her young child. It is difficult to carry all the things she needs to take care of the child. She is hoping to acquire a car soon.



3

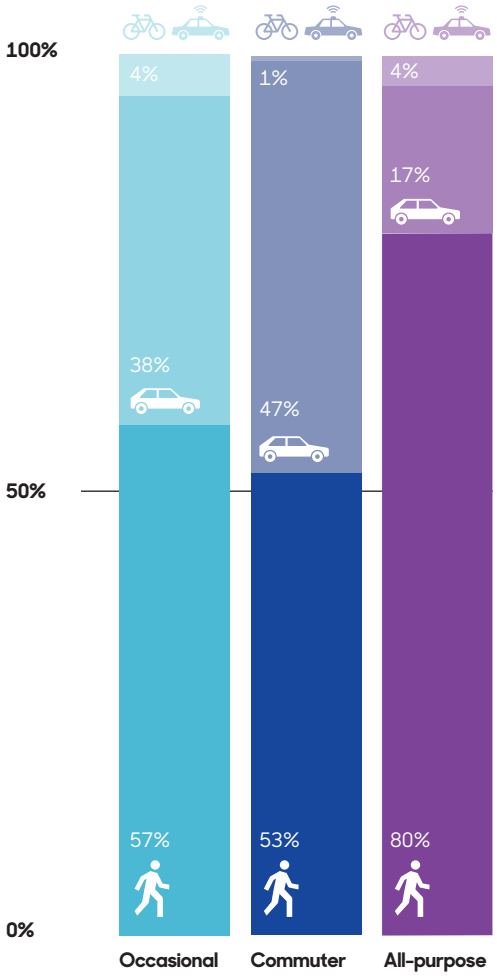
Building Transit Ridership

If all-purpose transit riders are so critical to transit's success, where do you find them? We find all-purpose ridership where it's easy to walk to transit, and where transit itself is frequent and provides access to many destinations.

Walkability is Critical, Particularly For All-Purpose Ridership

In our survey, most transit riders walk to transit, and this is the case for each of the transit-use patterns we identify. But all-purpose riders are particularly distinctive in their predilection for walking: 80% typically access transit on foot, compared to 53% of commuters and 57% of occasional riders.

Typical Access Mode to Transit, by Segment



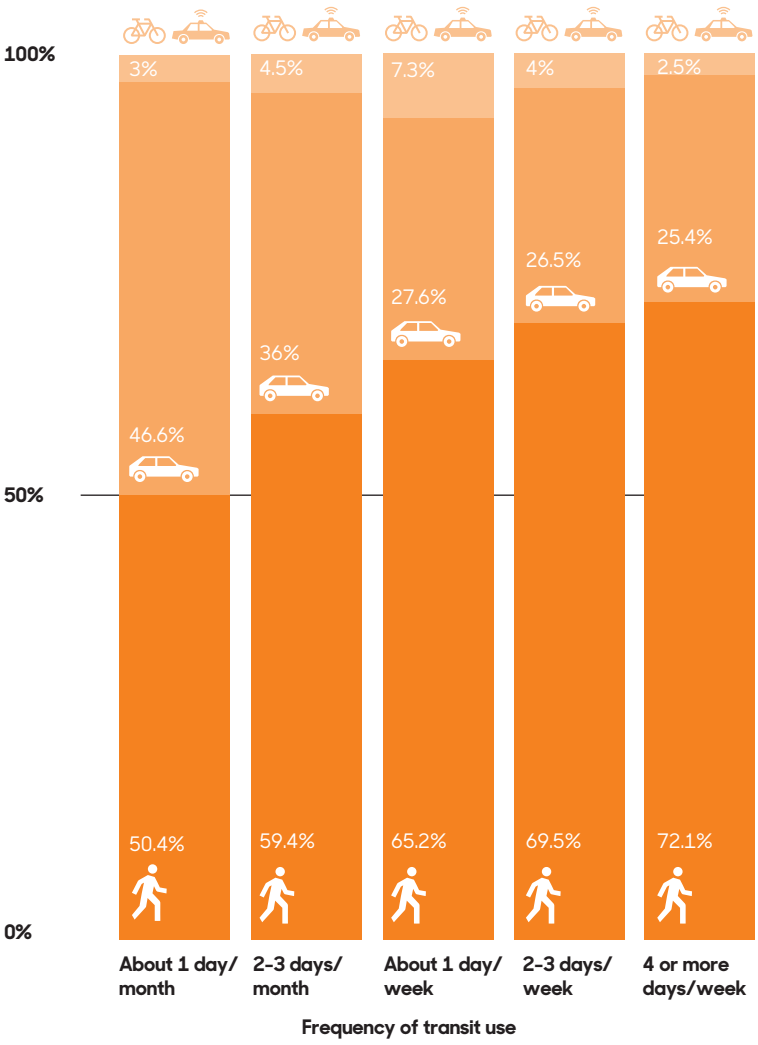
Other (bike, taxi, smartphone, car service)

Drive & park, ride with someone who parks, or get dropped off

Walk

A more granular analysis of survey respondents shows a similar relationship: If someone can walk to transit, he or she is more likely to be a frequent transit rider.

Typical Access Mode to Transit



The importance of walkability has many implications. Transit agencies often face critical decisions about where to expand transit and how to develop around it. For example, should a new rail line run near the heart of commercial districts, so it can be close to many destinations? Or is it OK to pick an alignment that is "easier" from an engineering standpoint (for example, next to a highway) that reduces construction complexity but makes actual destinations harder to access? Our data suggest that the "easy" highway-adjacent alignment is a poor choice for attracting ridership.

A similar question arises around individual stations. Should they be surrounded by park-and-ride lots or by housing, retail, and offices that are accessible on foot? Our results suggest that stations placed with multiple destinations in walking distance are likely to promote all-purpose ridership. Meanwhile, park-and-ride stations will serve mostly commuters and occasional riders.

There are also implications for station and street design. Larger stations should be designed to facilitate walking, with multiple pedestrian access points and with wide sidewalks and highly visible crosswalks leading to the station. No one should have to dash across the street, unprotected by a crosswalk, to get to a transit stop.

Quincy Adams, a station on the Massachusetts Bay Transportation Authority's Red Line (in Quincy, south of Boston) is a particularly stark example of a station with barriers to walkability. Both planners and politics can be blamed.

The station, built in 1983, was planned in a location which prioritized automobile access from nearby state and interstate highways. But those same highways act as a formidable barrier to anyone who might want to walk from the west.

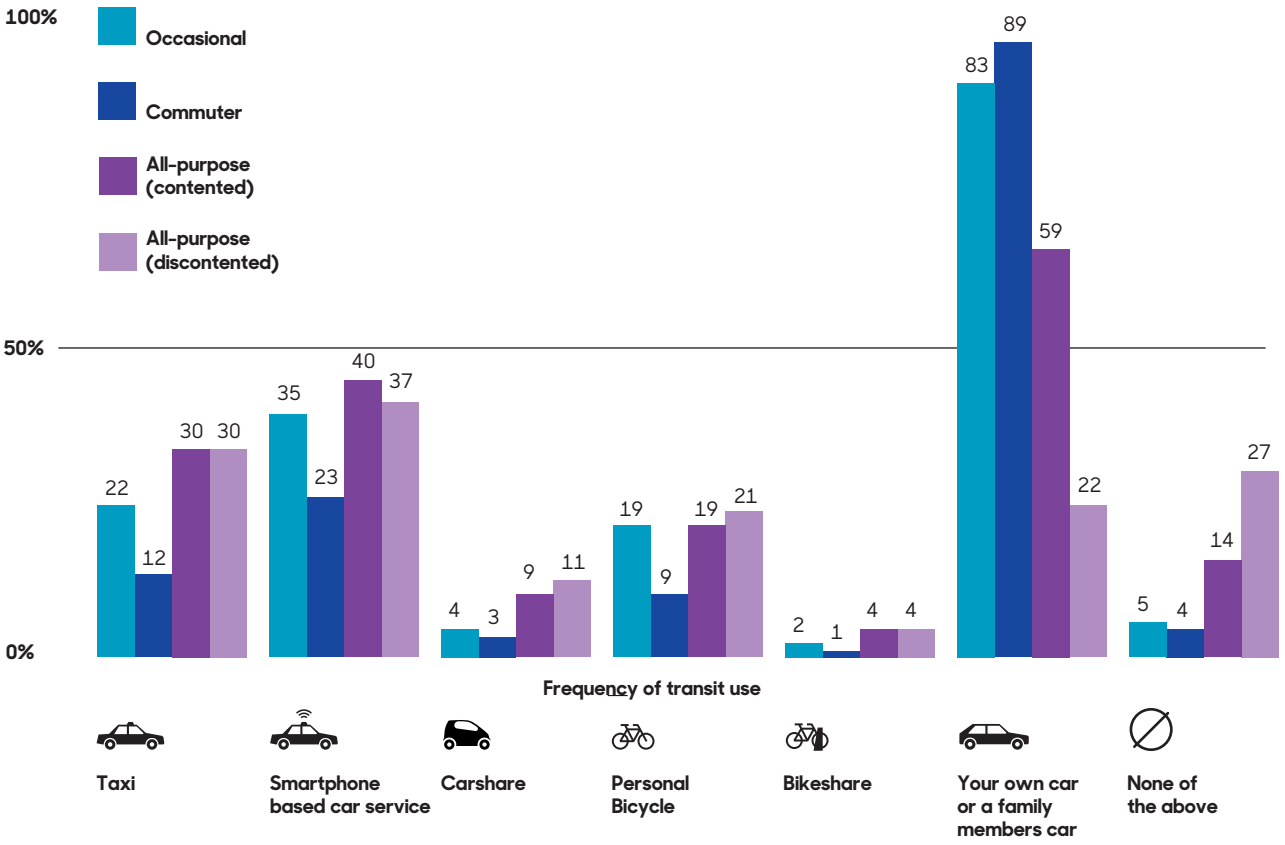
The station is also cut off entirely from a residential neighborhood to its east. When the station was built, it included one pedestrian entrance on its east side. But this entrance was closed a few years after the station opened, after residents complained that commuters were parking on their streets. The entrance has been gated off for over three decades. Although the station is less than 350 feet from a bus stop at Independence Avenue and Verchild Street, a walk between these two points now requires a 1.2-mile detour.

All-Purpose Riders Are More Multimodal

We also looked at other modes transit riders use. Most commuters and occasional transit riders use cars when not using transit, but significant numbers of occasional riders use bicycles, taxis, and smartphone-based car services. All-purpose riders are more likely to use non-car alternatives and are the most likely to use carsharing and bikesharing systems.

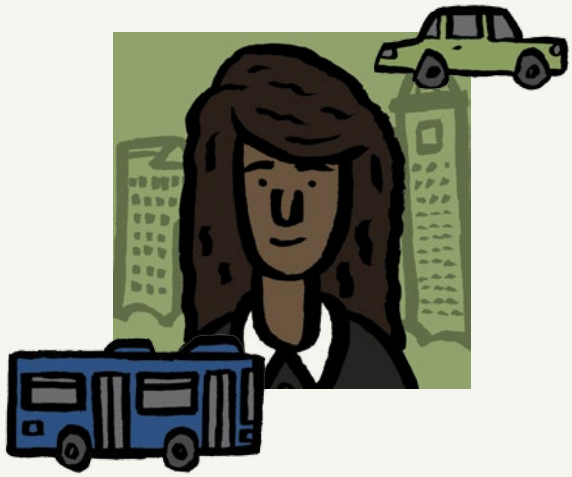
All-purpose transit riders were the most likely to be heavy users of multimodal options; a third of them reported weekly use of a taxi, smartphone-based car service, carshare, bikeshare, or personal bicycle.

Use of Other Modes by Segment

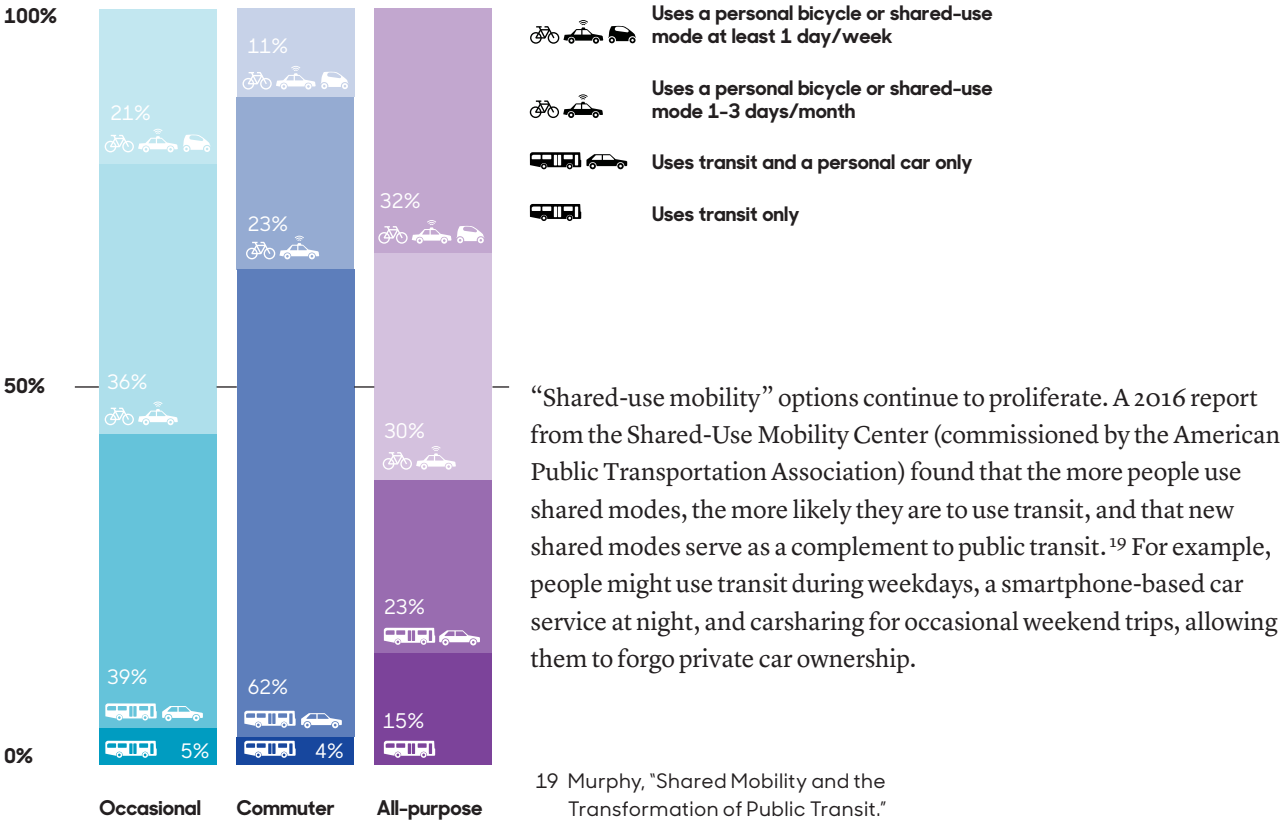


Rider Stories
Multiple Modes

Lizbeth, a Raleigh resident, commutes several days a week by bus and drives by herself the other days. It is a social experience for her — on her "bus days," she carpools with two friends, Tina and Wendy, to Wendy's office. She and Tina then catch the bus to their workplaces. The group plans which days to take the bus when they see each other on morning walks. The group began doing this because they found traffic frustrating.



Frequent Use of Other Modes by Segment



"Shared-use mobility" options continue to proliferate. A 2016 report from the Shared-Use Mobility Center (commissioned by the American Public Transportation Association) found that the more people use shared modes, the more likely they are to use transit, and that new shared modes serve as a complement to public transit.[19] For example, people might use transit during weekdays, a smartphone-based car service at night, and carsharing for occasional weekend trips, allowing them to forgo private car ownership.

19 Murphy, "Shared Mobility and the Transformation of Public Transit."

Where You Find the All-Purpose Rider

All-purpose transit riders tend to live in neighborhoods where transit is useful — in other words, where transit is frequent and provides access to multiple jobs and destinations. We again use the AllTransit database to measure this by analyzing the "transit access score" of respondents' home and work addresses. (As a reminder, the transit access score is a 0–10 score that accounts for frequency of service, access to jobs, and system coverage; for more information, see "About AllTransit" on page 21.)

Transit Quality at Home and Work

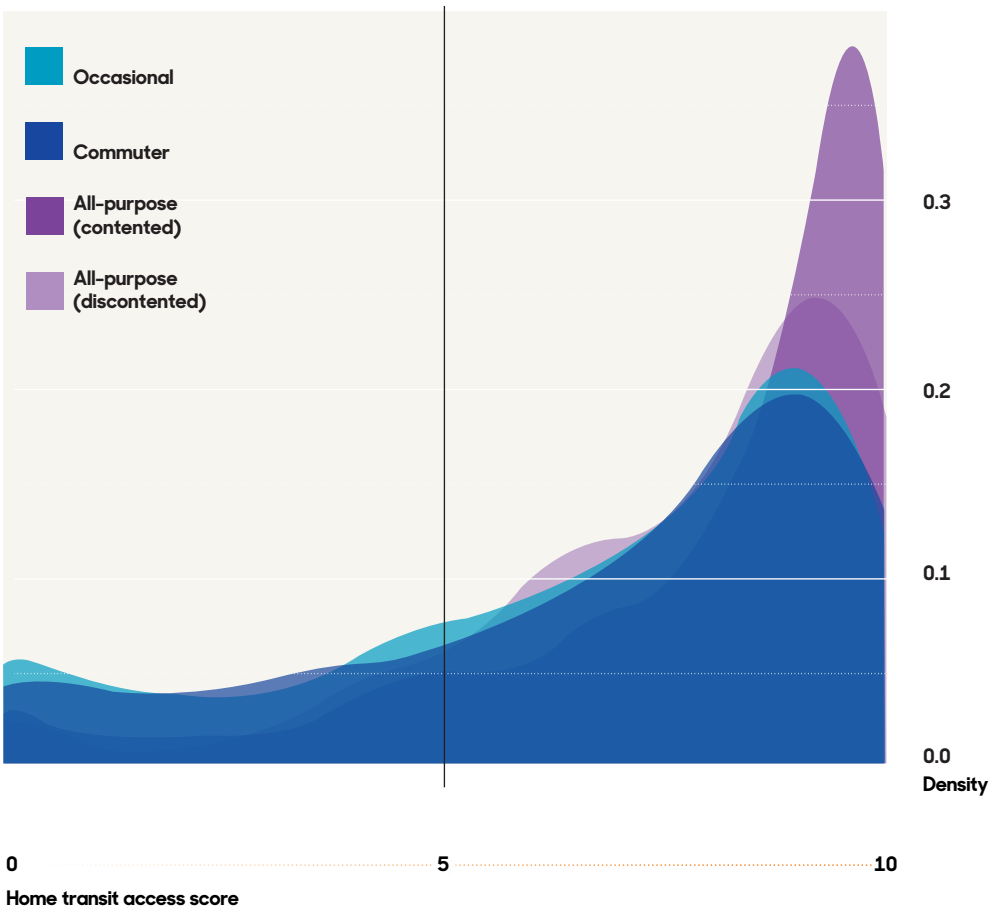
	Occasional	Commuter	All-purpose (contented)	All-purpose (discontented)
Transit access score for home census block	6.56	6.72	7.98	7.61
Transit access score for work census block	7.23	9.15	8.54	7.96

Occasional riders have mediocre transit near where they live and work; commuters work in neighborhoods with excellent transit but tend to live in neighborhoods with middling transit. All-purpose riders, especially contented riders, have good transit access at both home and work. Among employed survey respondents, work transit access appears to be an even more important determinant of transit use than their home transit access scores. (Researchers from the University of Denver[20] and City Observatory[21] have also found that proximity to transit at work is a stronger predictor of transit commuting than proximity to transit at home.)

20 Kwoka, Boschmann, and Goetz, "The Impact of Transit Station Areas on the Travel Behaviors of Workers in Denver, Colorado."

21 Hertz, "When It Comes to Transit Use, Destination Density Matters More Than Where You Live."

Distribution of Home Transit Access Scores By Segment



A look at how home transit access scores are distributed for each segment shows that some people choose to ride transit despite living in relatively transit-inaccessible neighborhoods, but as the transit access score increases, ridership spikes, especially for contented all-purpose riders.

Taken together with the data on walkability, this suggests a formula for growing all-purpose transit ridership: **Create conditions that increase the number of people who can walk to useful transit.**

This is the formula used by some of America's most successful transit-oriented suburbs, prosperous places like Evanston, Illinois, and Arlington, Virginia. These suburbs anchored themselves around frequent rail connections to major job centers (Chicago and Washington, DC). They changed their zoning to allow more intense development around transit, stepping down to small apartment buildings and single-family homes as distances from transit increased.

This also suggests that some of the richest growth opportunities for transit are in improving frequency and transit speeds in places that are already pedestrian-friendly and where there are multiple destinations within walking distance. The University Link extension of Sound Transit light rail in Seattle is a prime example. This project extended fast, frequent light rail service into walkable places with a density of destinations: Seattle's Capitol Hill neighborhood and the University of Washington campus. The result — as we noted in this report's executive summary — was an instant explosion in ridership.

Conversely, some places have access to frequent, useful transit but compromised walkability. Tysons Corner (in Fairfax County, Virginia) is one example. In August 2014, the Washington Metropolitan Area Transit Authority (WMATA) opened the Silver Line, connecting Tysons Corner to the DC Metro rail system. But a year after opening, Silver Line ridership was 30% below projections. In fact, an internal analysis by WMATA blamed a lack of sidewalks and other pedestrian infrastructure.[22] County officials are gradually improving walkability around stations by creating a finer-grained street grid and adding new sidewalks, trails, and crosswalks. As pedestrian access improves, ridership should rise as well.

In other places, the issue is not a lack of sidewalks, but a lack of walkable destinations. One reason the Atlanta Streetcar has underperformed is because the route fails to efficiently connect many ridership-generating destinations. While half of the route is in job-rich downtown Atlanta, the other half is in a heavily disinvested neighborhood with little development.[23] The census tract encompassing the eastern half of the line has fewer than 3,000 jobs and 1,000 employed residents; at the moment, there are few reasons to travel from one end of the line to the other. City officials hope the streetcar will spur development in this corridor, but for now the route presents major challenges for ridership.

Downtown Evanston—a sturdy, tree-lined Victorian city wedged neatly between Lake Michigan and Chicago's northern border — is missing cars. Or, more accurately, it's missing a lot of cars. Thanks to concerted planning … new developments are rising within a 10-minute walk of two rail lines and half-a-dozen bus routes. The local automobile ownership rate is nearly half that of the surrounding area.

"In our region, all kinds of suburbs want to be Evanston," says Kyle Smith, a [transit-oriented development] specialist at Chicago's nonprofit Center for Neighborhood Technology. "All of Evanston's neighbors look jealously and say 'I want a Trader Joe's, I want jobs, I want that walkable downtown.'"
– *POLITICO* Magazine, Oct. 22, 2015

22 Di Caro, "Silver Line Ridership In Tysons Well Below Metro Estimates."
23 Givens, "Empty Spaces and Empty Streetcars in Atlanta."

Residential Choices

An important difference between all-purpose riders and others is the degree to which transportation influences their residential choices.

Survey respondents were asked why they chose their current homes. When asked about non-transportation factors like safety and neighborhood schools, the different segments of transit riders did not greatly differ in their values. But contented all-purpose riders were more likely to say they picked their home for its proximity to work or another frequent destination and because it is well-served by public transportation. In fact, these riders cited good transit access more often than home affordability or home size/quality as a factor in choosing their homes.

Reasons for Choosing Home

	Agree or strongly agree				
Reason for choosing home	Occasional	Commuter	All-purpose (contented)	All-purpose (discontented)	Overall
It's affordable	65%	67%	69%	70%	67%
It's close to shops, restaurants, etc.	70%	71%	76%	77%	72%
It's in a safe neighborhood	78%	80%	80%	71%	78%
It's in an area with good schools	54%	56%	51%	49%	53%
I like the size or quality of the home itself	77%	75%	77%	68%	76%
It's close to my workplace or another frequent destination[24]	55%	43%	59%	55%	54%
It is well served by public transportation	54%	62%	78%	70%	62%

The importance of residential choice reinforces the findings of our 2014 *Who's On Board* survey of American attitudes towards transportation and neighborhoods. There, we found that much of young Americans' propensity to use transit could be attributed to their preference for mixed-use and urban neighborhoods, which tend to support better transit service. We also found that substantial numbers of Americans of all ages would prefer to live in a mixed-use neighborhood but don't live in one now. In other words, there are too few mixed-use neighborhoods in the U.S. compared to the market demand for them.

24 At first glance, it may seem paradoxical that "commuters" are the least likely to value proximity to work. In fact, this attitude helps explain why they use transit for commuting but not other purposes. Commute-only transit riders tend to work in very transit-accessible areas but tend to live in neighborhoods with poor-to-fair transit overall.

Rider Stories
Moving To Transit

Ed, a Denver resident, is retired and owns multiple cars. He uses an airport bus to travel downtown (he currently lives near the airport) and occasionally uses light rail via a park-and-ride lot. He now plans to move to a neighborhood that is closer to light rail.

Corinne, a Raleigh resident in her fifties, has never owned a car and has a very good understanding of the transit system. She says she's never been able to afford a car but has also never needed one. When she has moved, she has made sure to move to places with good transit access.

4

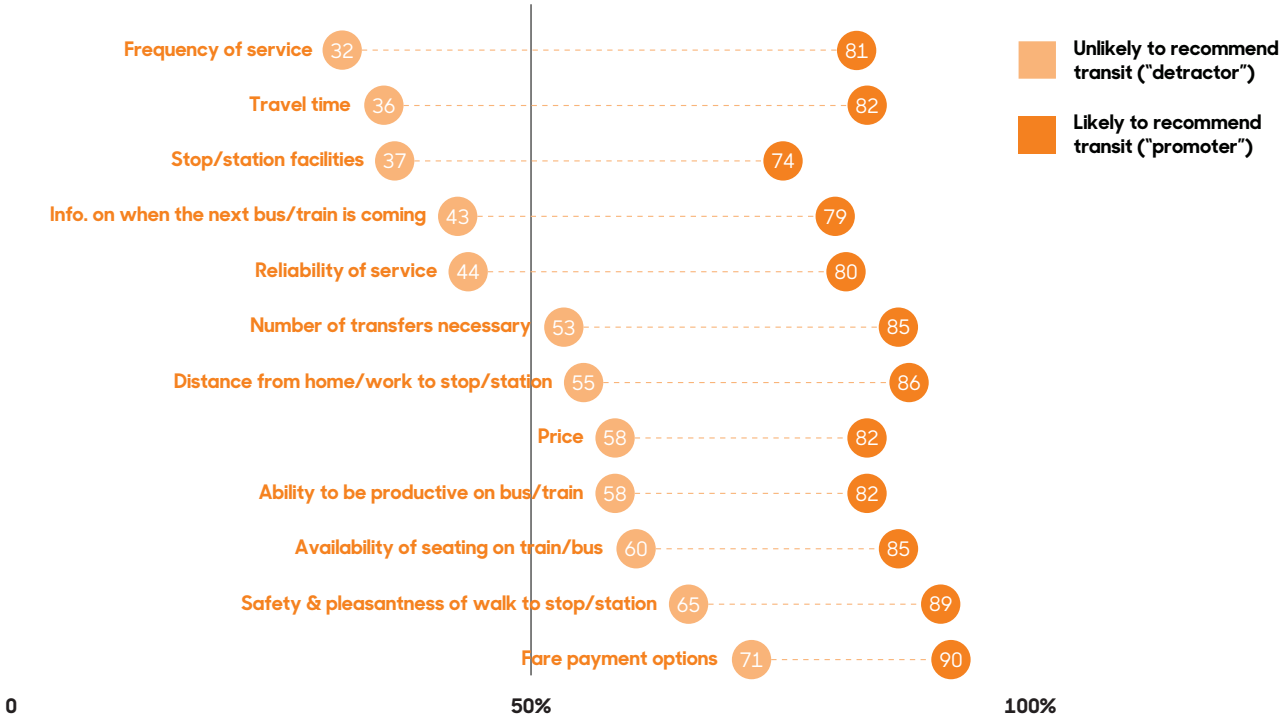
What People Value in Transit

Our analysis using AllTransit data suggests that useful transit is that which provides access to a frequent network that connects riders to many destinations. Policymakers often cite other service characteristics and amenities like Wi-Fi, improved shelters, real-time information, and contactless farecards. But what do transit riders care about?

We explore this question through two analyses. Both show that, to riders, service frequency and travel time are of paramount importance.

One suggestive piece of evidence comes from comparing satisfaction levels between survey respondents who said they would recommend their regional transit service ("transit promoters"), and those who are unwilling to recommend transit ("transit detractors"). For example, 81% of transit promoters are satisfied with frequency, compared to just 32% of transit detractors. This huge gap suggests that frequency is a major driver of satisfaction. We analyze twelve transit service factors below.

Satisfaction With Transit Service Attributes



Frequency of service and travel time display the largest gaps in satisfaction between transit promoters and detractors, and transit detractors give them the lowest rating out of all service attributes. They are closely followed in importance by stop/station conditions, "next bus" information, and reliability.

To put it simply: What makes an unhappy transit rider? Transit service that is infrequent, slow, and unreliable, and transit stops that lack shelter and information. Addressing these deficiencies should be at the top of agencies' to-do lists.

"Sex Appeal" vs. Useful Transit
Mixed-Traffic Streetcars

In recent years, several cities have built "modern streetcars," which put sleek rail vehicles on tracks in the street, where they must contend with mixed automobile and truck traffic. (This is different from light-rail lines, which use vehicles similar to modern streetcars but run on traffic-free, separated routes.)

Running in mixed traffic means that streetcars are actually slower and less reliable than buses, because streetcars cannot maneuver around obstacles. But boosters often claim streetcars will attract higher ridership because of their "sex appeal" and "modern image." The pitch below is characteristic (Austin ultimately declined to build a streetcar):

> *Getting people out of their cars requires enticing "choice riders" — people who own a car but choose to use transit instead. Everyone knows it, so let's say it: Buses lack sex appeal and yuppie appeal. [...] Both affluent and working-class folks are attracted to the streetcar's image of comfort, convenience, and charm. The ride is smoother, quieter, more comfortable — and somehow more upscale.*
>
> —Austin Chronicle, July 20, 2007

Last year, streetcar lines opened in several other cities, including Atlanta, Dallas, and Charlotte. Projects in those three cities have performed poorly for several fundamental reasons. They are very short lines, ranging from 1.6 to 2.7 miles in length, that fail to connect many destinations (see our discussion of the Atlanta Streetcar on page 49).

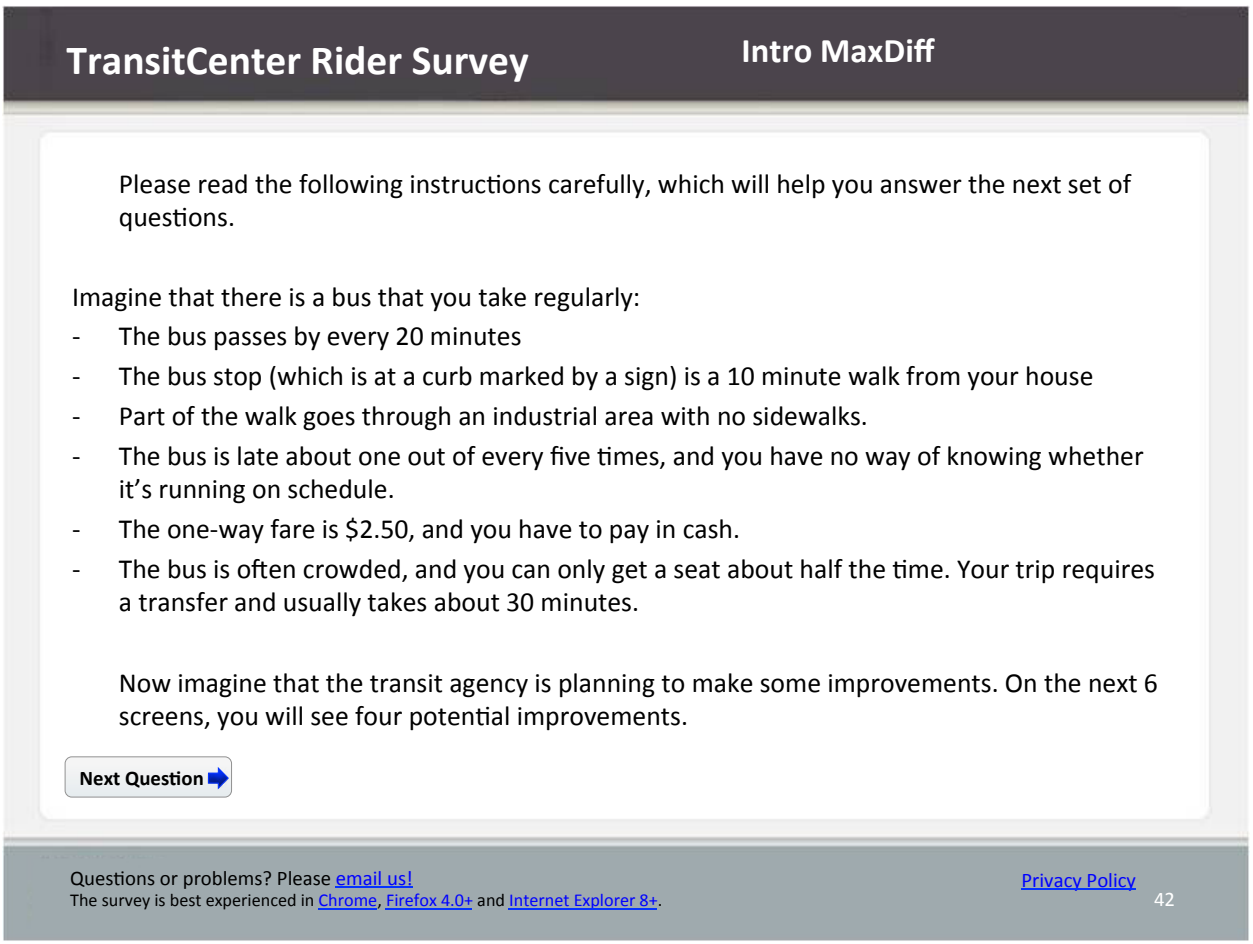
They run infrequently — typically every 15–20 minutes, which is not very often for lines that short in length. And as previously noted, they face reliability and speed challenges when they run in mixed traffic.

> *The streetcar was stopped in downtown traffic, and before long Keisha Schwarzel figured that was enough of a first experience with the year-old addition to Atlanta's transit system.*
>
> *"I'd rather walk," Ms. Schwarzel, 35, said on a rain-drenched Wednesday morning.*
>
> —New York Times, January 1, 2016

Many of the new streetcar projects offer a cautionary tale: Modern vehicles and an "image of comfort and charm" are not enough to overcome poor project design. More successful streetcars, like Sun Link in Tucson, Arizona, have at least some dedicated right-of-way, which allows the streetcar to beat traffic at key spots, and longer routes that take the streetcar past large ridership generators, like universities.

We also explore this question by asking survey respondents to make trade-offs between potential improvements to a hypothetical bus route, using a market research technique known as maximum difference scaling, or MaxDiff. Respondents were shown four potential improvements at a time; from these, they chose the improvement that was most important to them and the improvement that was least important. This experiment was repeated, with different sets of options, six times in total.

With that data in hand, we ran a statistical model that calculated the relative importance of each transit improvement, scaling each from 1 to 100 (with 1 being the least important to respondents). The results are shown in Figure X.



TransitCenter Rider Survey

Future Service attributes

On the LEFT, please indicate which ONE of the four improvements shown below you MOST PREFER to receive with your fare.

Then on the RIGHT, please indicate which ONE of the improvements you LEAST PREFER.

MOST PREFER (Select one)		LEAST PREFER (Select one)
○	The bus comes every ten minutes instead of every twenty minutes.	○
○	Once on the bus, the trip takes 15 minutes instead of 30 minutes.	○
○	There is always a seat available, instead of only being available half the time.	○
○	The buses add outlets and free wi-fi.	○

Continue to imagine that you take this bus regularly.

Next Question

Questions or problems? Please email us!
The survey is best experienced in Chrome, Firefox 4.0+ and Internet Explorer 8+.

Privacy Policy

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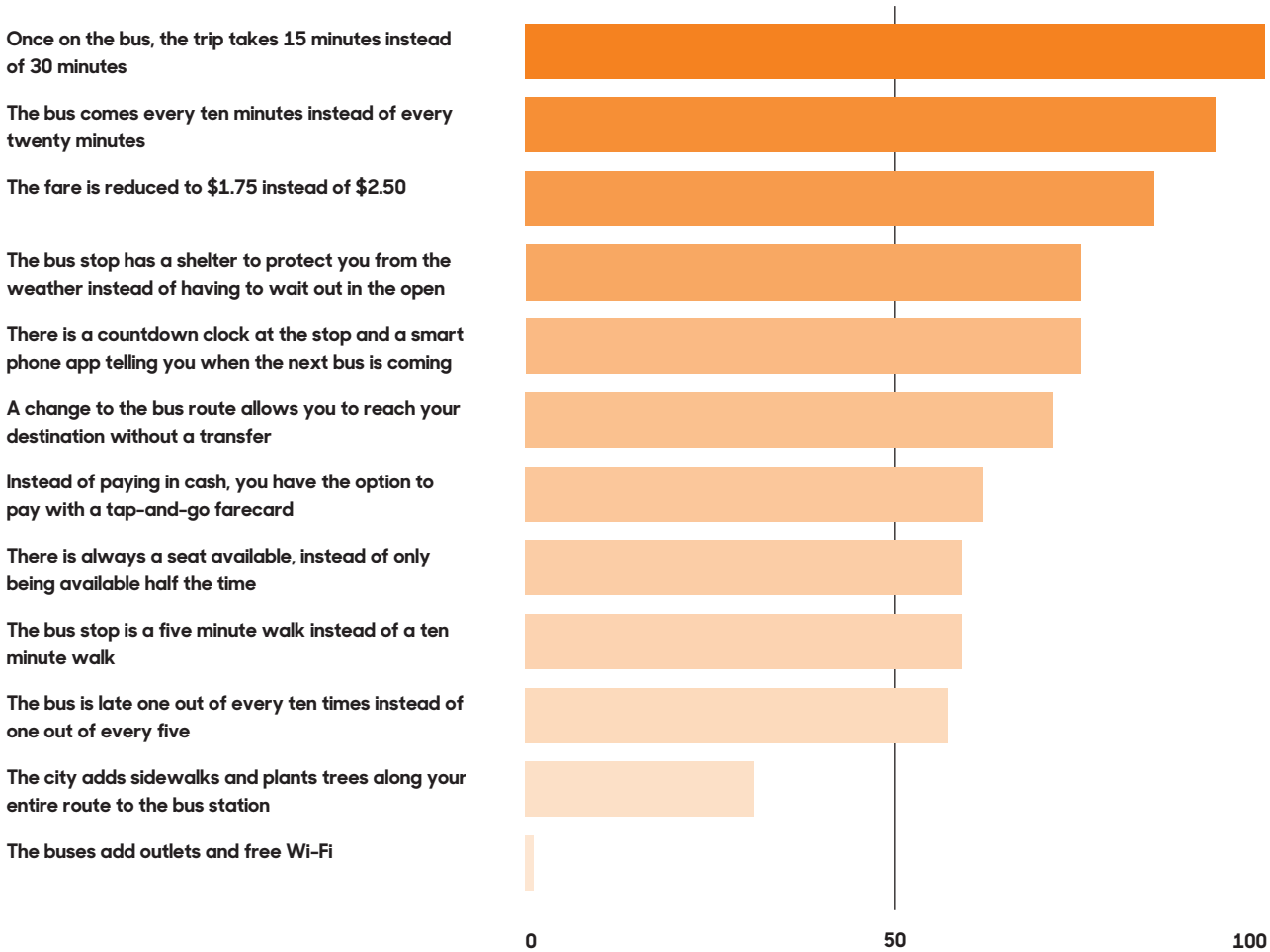
In the top three positions are improvements relating to travel time, frequency, and cost. The next two are bus shelters and real-time information. These scored above on-time performance, crowding, and reducing transfers, and well above the least important improvement in the analysis, adding outlets and Wi-Fi to buses. Our findings call into question the fad for free Wi-Fi among transit agencies; transit riders aren't clamoring for it.[25]

25 While we didn't test this in our survey, Wi-Fi might be more highly valued and justifiable in underground subways without cell phone service.

Relative Importance of Service Improvements



Frequent Service, Reasonable Travel Times

Both the MaxDiff model and our analysis of transit rider satisfaction highlight two critical transit service attributes. Transit riders highly value improvements in frequency and travel time. Moreover, satisfaction with these elements seems to drive overall satisfaction with transit.

Increasing frequency of service is one of the most important things a transit agency can do to make transit useful and customer-friendly. When a bus or train runs at least every 10 to 15 minutes, potential riders can "show up and go" instead of needing to plan around a schedule.

For a transit system of a given size — i.e., given a finite amount of operating funds, vehicles, and drivers — there is an inherent trade-off between running more frequent service on a smaller overall number of routes, and running less frequent service on a larger number of routes, to cover more geographic area. (There's also the option of increasing the temporal span of routes.) As our findings suggest, running frequent service in walkable corridors builds ridership and makes transit more financially productive. The "coverage" model extends transit service to more places but makes that service significantly less useful for most riders.

Houston is the poster child for a frequency- and ridership-oriented bus system redesign. After a 39 percent drop in bus ridership from 1999 to 2013, the Houston transit agency decided to pursue a dramatic replanning of its entire bus network. The agency approached the process with two main goals: to refocus bus service on the city's multiple job centers — many of which had developed as rivals to the traditional downtown in the last decade or two — and to provide service at least every 15 minutes throughout the week on the majority of routes. Dozens of routes were designed from scratch, others redesigned for greater efficiency, others eliminated, and still others split into two or more segments. In total, the agency increased the number of people within walking distance of frequent transit by almost 50 percent, at minimal cost to Houston taxpayers. Though system planners caution it will take years for the full effect of the reorganization to be felt, ridership on the local bus network has increased by 3 to 4 percent overall, with double-digit percentage increases on weekends.[26]

There are many ways to improve transit travel time. For example, transit can be given a congestion-free right-of-way. Buses can run in bus-only lanes in the street or in high-occupancy vehicle lanes on the highway. Trains can run on dedicated tracks, separated from traffic (this is typically the case, but not when it comes to mixed-traffic

26 Houston METRO, "Ridership Reports."

streetcars or trams). Prepaid fares (allowing passengers to pay at a faregate, at a machine at the bus stop, or by tapping their cards at the back of the bus) makes the process of boarding much faster than the traditional "pay the driver" method used on most U.S. buses. Traffic signals can also be retimed to prioritize transit. Bus routes can be redesigned to be more straight and direct, eliminating time-consuming deviations. On bus and rail routes where stops are very close together, it may be appropriate to eliminate stops. The Portland Streetcar closed five downtown stops in early 2016; each was within two blocks of another stop.

TriMet, the public transit agency in the Portland, Oregon region, coordinates with local governments and property owners to add shelters and pedestrian improvements at key bus stops.

While stop and shelter conditions aren't valued quite as highly as frequency and travel time, they are also seen as highly important and deserve special mention. In many neighborhoods, it is sadly routine for bus riders to wait on the shoulder of a road or even an unpaved ditch, with only a sign to denote the presence of a bus route. A bus shelter is not a luxury; it provides a basic level of comfort and dignity to people waiting for transit. Some transit shelters in the Twin Cities, Buffalo, and other northern cities have button-activated heaters for use in cold weather; these and other design elements send a message that people who use transit are valued.

Transit agencies and cities need to work together to accomplish many of these goals. In many cities, bus shelters are considered "street furniture," and their design and placement must be approved by local agencies. Municipal governments also typically control streets and traffic signals, so it's up to them to stripe bus lanes and provide transit signal priority. This year, the National Association of City Transportation Officials (NACTO) released a Transit Street Design Guide offering practical guidance on street treatments that improve transit speeds and the transit experience.

Conclusion

Cities need transit that works for many people and many purposes. An effective transit system helps lower the cost of living for urban residents and enables continued development without massive increases in traffic. It enables the urban lifestyles that attract talented workers and the companies that want them. In other words, a good transit system is essential for cities to grow sustainably and equitably. Places as diverse as Denver and Nashville, Indianapolis and Seattle, Houston and Sacramento all recognize this, which is why they and many other cities are looking to expand and improve public transit.

As they do so, they can't take any of the transit market for granted. Riders who are discontented with transit shouldn't be seen as passive, "captive" riders; many are actively preparing to leave transit, and eventually will if service does not improve. As we show, it is not sound to assume that people without cars will be regular transit riders simply out of necessity. Transit agencies need to treat all of their customers as people with choices.

All-purpose transit ridership is an important goal for cities — a sign that transit is becoming useful for many purposes. The data suggest a clear policy framework: Policymakers can grow all-purpose transit ridership by enabling more people to walk to useful transit. Transit ridership will grow if policymakers:

1. **Concentrate development around transit corridors, and make the walk to transit safe, easy, and pleasant.**

2. **Concentrate transit improvements in walkable places with large numbers of residents and destinations.**

3. **Pay special attention to increasing frequency and reducing transit travel time.**

This doesn't always happen, for several reasons.

Sometimes, decision makers simply don't understand what makes people ride transit. Better amenities are often hailed as a way to attract new riders: plush seats, Wi-Fi service, hip branding. None of these are bad per se. They essentially add up to marketing, and marketing is a necessary activity. But amenities and branding are unlikely to change people's behavior absent fundamentally useful service — service that is frequent and fast.

More often, perhaps, is that transit decision makers are unable or unwilling to overcome the political challenges that stand in the way of useful transit. Regional politics can force transit agencies to extend service to places where the market for transit is small. Park-and-ride stations are built far out into unwalkable suburbs, despite their unlikelihood of developing meaningful ridership. Meanwhile, walkable urban neighborhoods make do with slow, infrequent service that won't appeal to many potential riders.

Local politics play a role as well. Striping bus lanes on the street makes transit faster but can stoke political pushback from people who drive. Reorganizing a bus network can lead to better and more frequent service for many but will cause turmoil for some. Placing a new transit station in a dense and walkable neighborhood will lead to more ridership than placing it in a highway median but can also lead to opposition from residents.

It's not always easy to meet these challenges, but leaders in the public and civic sectors need to work to overcome them. The reward — transit that is useful to many people and useful for many purposes — is well worth it.

Methodology and Sample Characteristics

The goal of this study was to better understand the behavior, needs, and attitudes of transit riders in U.S. cities. To that end, we wanted to ensure that the research would include respondents from all regions of the country and from many different types of built environments.

We began by talking to transit riders themselves. Resource Systems Group (RSG) conducted six focus groups with transit riders in Raleigh, Denver, and New York City (two groups in each city). These are three cities with very different development patterns, transit systems, and transit-using populations.

Second, we conducted an online survey of transit riders in 17 regions. To ensure enough data to compare transit riders across cities, we aimed to collect a sample of 300 in nine regions. In smaller, less transit-friendly cities, this would not have been feasible, so the goal was to collect 50 respondents. (When we make regional comparisons, we compare only the regions with the larger sample size.) We also established basic minimums for age groups and employment status.

Respondents were recruited through an online sample provider, Research Now. 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. Respondents completed the questionnaire on their own computers or devices using a survey instrument prepared by TransitCenter and RSG. Only respondents who reside in one of the metro areas of interest and who use public transportation at least once per month were invited to complete the survey.

Because the survey aims to understand urban transit riders, we restricted sampling to counties that included the region's principal city, plus neighboring counties with a transit commute mode share of at least 2% (according to 2009–2013 American Community Survey data).

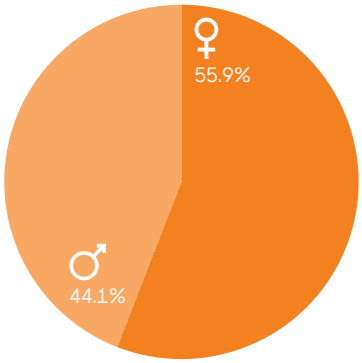
The survey was fielded between December 16, 2015, and February 6, 2016. After removing records with inconsistent responses, a total of 3,014 records were included in the final data set. (Inconsistent responses were those in which survey takers said they took transit multiple times per week but did not report using transit more than "occasionally" for any trip purpose.)

Regional definition and completed surveys

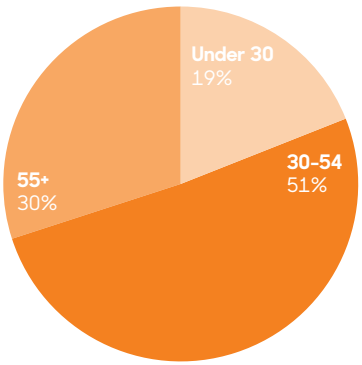
City/Region	Completed Surveys	Sampled Countries
Seattle	300	King
Boston	299	Suffolk, Norfolk, Middlesex
Chicago	298	Cook
Atlanta	295	Fulton, DeKalb
Pittsburgh	294	Allegheny
Los Angeles	289	Los Angeles, Orange
Miami	284	Miami-Dade, Broward
New York	279	New York, Kings, Queens, Bronx, Richmond, Hudson (NJ), Bergen (NJ), Westchester, Nassau
Houston	276	Harris
Minneapolis	53	Hennepin, Ramsey
Phoenix	52	Maricopa
Denver	51	Denver
Memphis	51	Shelby
Omaha	50	Douglas
Indianapolis	49	Marion
Sacramento	48	Sacramento
Nashville	46	Davidson

Sample Characteristics

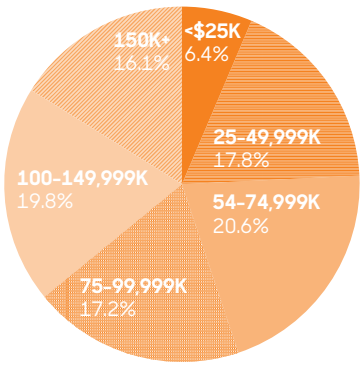
Sex of Survey Respondents



Age of Survey Respondents



Household Income of Survey Respondents



The sample is generally representative in terms of gender and age,[27] but it does have a bias with respect to income. Fewer than 7% of the sample comes from households making under $25,000 a year.

This is partly due to the survey design. The counties in our sample are more likely to include high-income transit riders than the country as a whole. (For example, 31% of riders of Seattle's King County Metro come from households making over $100,000 annually.[28]) The survey excludes rural and exurban areas where transit is most often a mode of last resort.

Even so, the sample significantly undercounts low-income transit users. The recruitment method is likely the main source of bias. The survey was administered online, in English. This means that people with limited English proficiency and those without Internet access were far less likely to take the survey; both of these populations tend to have lower household incomes.

One way we address this is by separately analyzing a segment of "discontented all-purpose riders," which is disproportionately low-income. This segment, the definition of which is included in Section 2, includes those who use transit regularly but say they plan to buy a car as soon as possible. This segment also includes respondents who are unable to drive and report they are less than "very satisfied" with regional transit service.

It is important to read the survey results with the income skew in mind. We do not believe, however, that the sample makeup invalidates our conclusions with respect to the behavior and opinions of transit riders or the conclusions derived from them. In fact, for transit agencies seeking to compete for new riders, the high incidence in our survey of high-income transit riders provides useful insights.

27 The survey did not include those under 18.
28 King County Metro, "King County Metro Transit 2014 Rider Survey Final Report."

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Appendix A: Segment Demographics

	Occasional	Commuter	All-purpose (contented)	All-purpose (discontented)
Sex				
Female	53%	61%	58%	59%
Male	47%	39%	42%	41%
Age				
Under 30	18%	16%	21%	35%
30–54	48%	59%	53%	45%
55+	35%	25%	25%	20%
Household Income				
Less than $35,000	12%	6%	14%	33%
$35,000–$74,999	32%	31%	32%	44%
$75,000–$124,999	32%	33%	31%	19%
$125,000 or more	24%	29%	23%	4%
Children in Household				
None	71%	65%	65%	64%
1 child	16%	17%	18%	22%
2+ children	14%	18%	16%	14%
Race and Ethnicity				
Non-Hispanic White	70%	66%	66%	45%
Hispanic/Latino	10%	6%	9%	14%
African-American/ African/Black	9%	9%	11%	24%
Asian	9%	16%	10%	13%
Other	2%	3%	2%	4%
Car ownership	70%	72%	32%	0%
Employment Status				
Employed full-time	72%	99%	80%	65%
Retired	19%	0%	12%	10%
Other (full-time student, employed part-time, stay-at-home parent or caregiver, unemployed)	9%	1%	8%	25%

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