



ALL-AGES ACCESS

Making Transit Work For
Everyone in America's
Rapidly Aging Cities



INTRODUCTION

Public transportation helps cities and their residents thrive when it offers convenient and affordable access to many destinations, for many people, during most times of the day. Transit can be especially important for older residents who are “aging out” of driving as their mobility, vision, and hearing decline.

But public transit itself can be difficult for older people to navigate, and is unreliable or insufficient for many trips in most U.S. cities. Unreliable transit is a major contributor to missed health care appointments, which cost individual hospitals tens of millions of dollars a year in revenue and productivity loss; older patients are more likely to miss appointments.¹

Moreover, lack of access to transportation can make it difficult for older people to participate in civic life, see family and friends, and access services, volunteer opportunities, or jobs. As they age, many older people decrease the number of trips they take, leading to social isolation and declining health. An analysis of 2009 National Household Travel Survey data found that, among adults 65 and older who reported not having taken a trip outside the home in the past week, more than half reported that they would like to get out more often.² That same analysis found that 21% of people aged 65+ do not drive.

The United States population is aging rapidly. In 2015, more than 44.6 million Americans were 65 or older, representing 14.1% of the population.³ By the year 2030, one of every five Americans will be 65 or older.⁴ The rapid growth in the older population will cause the number of Americans with mobility restrictions to grow as well.⁵

Cities must respond to this demographic challenge by making urban transit and paratransit more accessible and useful for older residents. By providing frequent, fast, walkable transit; convenient paratransit; and a range of flexible services for riders with limited mobility, cities can convert older residents into “all-purpose” transit riders who can rely on transit for many different purposes. This will help people age in place, while providing the side benefit of making transit and paratransit more useful for residents of all ages. This research brief draws on a new analysis of data from TransitCenter’s Who’s On Board 2016 survey, as well as academic and government research, to outline strategies for achieving those goals.

ACKNOWLEDGEMENTS

This research brief was authored by TransitCenter’s Al Beatty, with contributions from Steven Higashide, Zak Accuardi, and Junior Duplessis. It contains analysis of the Who’s On Board 2016 dataset conducted by Resource Systems Group’s Ben Cummins and Alexander Levin. Photos are used under a Creative Commons license.

Thanks to Susan Dooha of Center for Independence of the Disabled, New York; Jana Lynott of AARP; and Stephanie Veras of Riders Alliance for reviewing versions of this brief.

DEFINITIONS

Fixed-route transit - a transportation service operating along a prescribed route according to a fixed schedule

On-demand transit – a transportation service operated without a fixed route or schedule, or with a route and/or schedule that is flexible according to customer request

ADA paratransit - a transportation service that is complementary to a fixed-route service, usually operating on a demand response model, available to customers within $\frac{3}{4}$ mile of a fixed route service who are unable to use it due to disability

Route deviation / flexible route service - a type of demand response service that operates on a fixed route and/or schedule by default, but can deviate from the fixed route and/or schedule to accommodate customer requests



Aging in the 25 Largest U.S. Metropolitan Areas, 2010-15

	2010		2015		
Metropoli- tan Area	Population 65 and Over	Share of Population 65+	Population 65 and older	Share of Population 65+	Change in Share of Population 65+
New York	2,473,464	13.09%	2,900,144	14.37%	9.78%
Los Angeles	1,415,376	11.03%	1,708,180	12.80%	16.06%
Chicago	1,079,893	11.41%	1,251,283	13.10%	14.79%
Dallas	560,486	8.80%	748,031	10.53%	19.74%
Houston	511,560	8.60%	671,951	10.09%	17.34%
Washing- ton	557,790	9.99%	714,395	11.71%	17.24%
Philadel- phia	792,484	13.28%	900,935	14.84%	11.73%
Miami	886,592	15.93%	1,044,565	17.37%	9.04%
Atlanta	471,753	8.95%	636,691	11.15%	24.54%
Boston	596,043	13.09%	698,038	14.62%	11.67%
San Fran- cisco	546,480	12.61%	667,337	14.33%	13.70%
Phoenix	514,712	12.28%	671,010	14.67%	19.49%
Riverside	439,934	10.41%	548,137	12.21%	17.26%
Detroit	567,101	13.20%	648,190	15.07%	14.14%
Seattle	372,008	10.81%	469,350	12.57%	16.24%
Minneapolis	349,669	10.66%	447,768	12.70%	19.16%
San Diego	351,425	11.35%	431,699	13.08%	15.24%
Tampa	480,104	17.25%	565,049	18.99%	10.10%
Denver	255,556	10.05%	336,410	11.95%	18.97%
St. Louis	375,107	13.34%	426,204	15.15%	13.65%
Baltimore	342,511	12.64%	400,689	14.32%	13.35%
Portland	252,218	11.33%	326,292	13.65%	20.48%
Orlando	263,077	12.33%	335,235	14.04%	13.94%
Pittsburgh	407,082	17.28%	439,441	18.68%	8.10%
Cleveland	315,712	15.20%	350,060	16.99%	11.76%

CAPTION: In each of the 25 largest U.S. metropolitan areas, the proportion of the population aged 65+ has grown. Data is from the 2010 Census and 2015 American Community Survey 1-year estimates

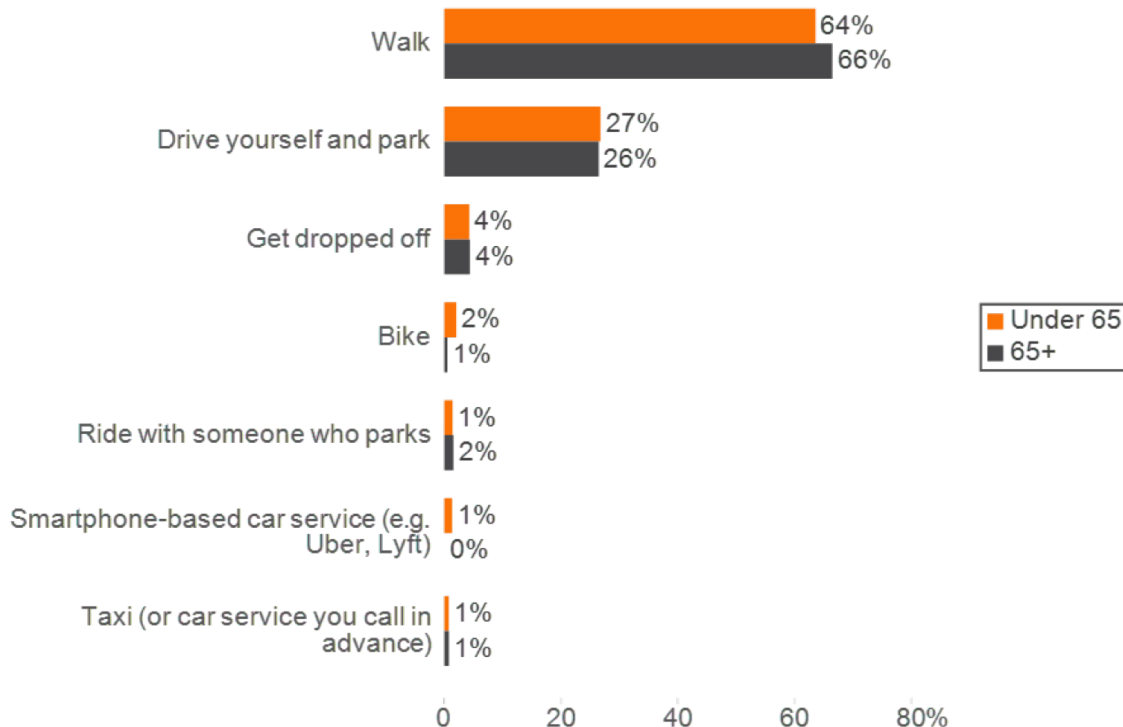


Older Americans want fast, frequent, reliable service, and value physical comfort.

In Who's on Board 2016, TransitCenter surveyed 3,014 transit riders in seventeen U.S. cities. Data from that survey suggest Americans 65 and older have much in common with their younger peers in terms of transit needs.⁶

Riders young and old were most likely to access transit on foot, emphasizing the synergistic relationship between transit service and the pedestrian environment. The more frequently a person takes

transit, the more likely he or she is to walk to the transit stop instead of accessing it via some other mode.



Caption: Typical Access Mode to Transit For Survey Respondents, By Age

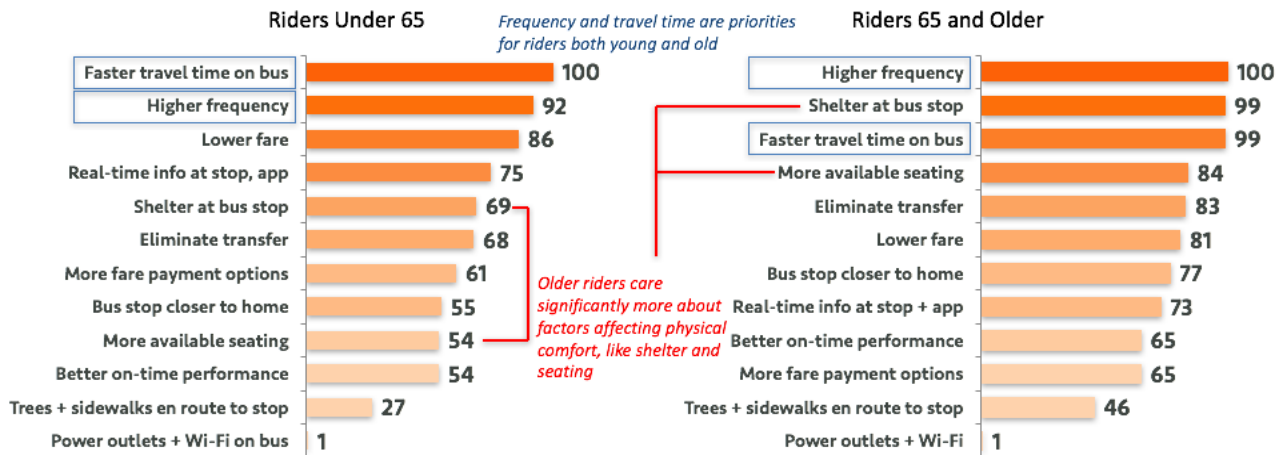
In the survey, respondents were also asked to prioritize improvements to a hypothetical bus route. Out of twelve possible service changes, riders under 65 value improvements to transit frequency and travel time the most. For riders aged 65+, both of these remain in the top tier of desired improvements, underscoring how critical it is for transit agencies to provide fast, frequent service.



But older riders also place greater emphasis on measures of accessibility and comfort. Riders aged 65+ said they wanted a shelter at the bus stop nearly as much as they wanted more frequent service. The data suggest that as riders age, fast, frequent, reliable service remains important, but the prospect of traveling without shelter or a seat becomes a greater deterrent to transit use. Similarly, a report from the Transit Cooperative Research Program found that physical limitations make certain features more attractive to some older riders, including shorter walks to the bus stop, padded seats, fewer stairs, and smoother rides.⁷

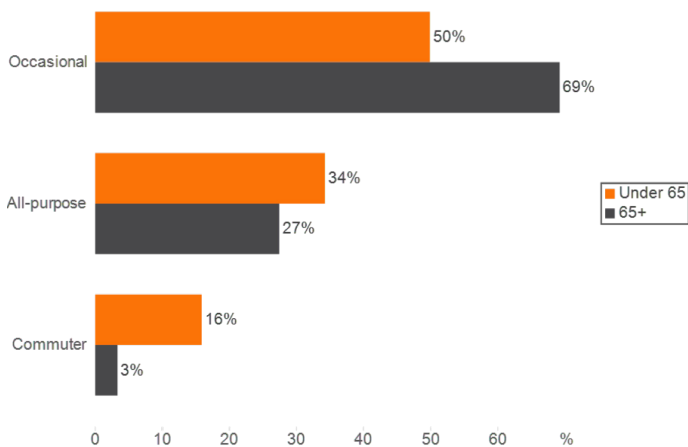


Desired Improvements to Hypothetical Bus Route



Caption: Survey respondents were asked to make trade-offs between potential improvements to a hypothetical bus route, using a market research technique known as maximum difference scaling, or MaxDiff. For more information on the methodology, see page 56 of TransitCenter’s Who’s On Board 2016 report at transitcenter.org.

One way to judge a transit system’s utility is to examine how riders use it. In Who’s On Board 2016, we identify three types of rider: Occasional transit users (who ride transit less than one day a week), commuters (who ride frequently, but only to commute to work or school), and all-purpose riders who use transit often and for multiple purposes (such as shopping, entertainment, and errands). For transit agencies, it is financially beneficial to serve all-purpose riders because their travel demand is spread more evenly throughout the day, instead of having sharp “peaks and valleys.” For a city, growth in all-purpose transit ridership is a sign that citizens can rely on transit to meet more of their needs.



Caption: Older Survey Respondents Were More Likely to be Occasional Riders

Riders aged 65 and older were more likely to be occasional users of transit and less likely to be commuters; this likely reflects the impact of retirement. However, they were also less likely to be all-purpose riders. This could reflect the fact that they tend to live in less walkable areas with less useful transit service. Researchers who interviewed residents of a California senior community found that limited off-peak and weekend service was a key barrier to transit use.⁸

Paratransit is expensive to provide and often fails to meet the needs of older Americans

Some older riders are unable to navigate conventional fixed-route transit even with accessibility improvements. The 1990 Americans with Disabilities Act (ADA) requires transit agencies that provide fixed-route transit to provide paratransit to those unable to use fixed-route service due to disability. Generally, paratransit refers to vehicles (typically cars or vans) that provide door-to-door or flexible-route service.



ADA paratransit service must be provided to people who live within $\frac{3}{4}$ mile of a transit route, and who cannot access the vehicles, stops, or facilities, or cannot navigate the system independently. Paratransit service must be "equivalent" to fixed route service with respect to geographic coverage, reach, fare, and hours (or span) of service.⁹ Transit agencies are responsible for the cost of fulfilling the ADA paratransit mandate.

In many cities, paratransit operates on a fairly simple model: Riders call—and often must do so a day or more in advance—to schedule a ride. They are given a pickup time which could be up to an hour before or after their requested time. A car, van, or small bus is then dispatched to arrive within a designated window (typically 20-30 minutes) for pickup.

The need for advance scheduling makes it impossible for paratransit riders to use the service for spontaneous travel, contributing to social isolation. Vehicles

are often arranged and dispatched manually, and drivers have little ability to modify routes. Riders have a short window of time to meet the vehicle, and failure to meet on time can lead to trip termination. Despite this generally poor level of service, transit agencies are often concerned that improving paratransit will increase demand, leading to higher costs.¹⁰

Demand for paratransit continues to rise as the population ages, but each ride requires large subsidies relative to other forms of transit. According to the Government Accountability Office, the average operating cost of a paratransit trip is \$29.30 compared to the average cost of fixed-route trip of \$8.15. The ADA requires that paratransit fares cost no more than twice the fare of a similar trip on fixed-route transit. The GAO estimates that, on average, the ten largest transit agencies spent 14% of their budgets on paratransit service in 2010, while smaller transit agencies spent 18% of their budgets.

How can we improve transit to better serve older Americans?

As people age, their mobility declines at different rates and in different ways. Older Americans' mobility needs exist along a continuum: Some have no difficulty climbing stairs to reach an elevated rail station, or walking on an unpaved path to reach a bus stop. Others use a wheelchair but are comfortable on fixed-route transit if there are accessible vehicles, elevators, and pedestrian infrastructure (e.g. sidewalks, curb cuts, and signals). Others may be unable to walk even a few blocks, and still others require assistance for most daily activities.

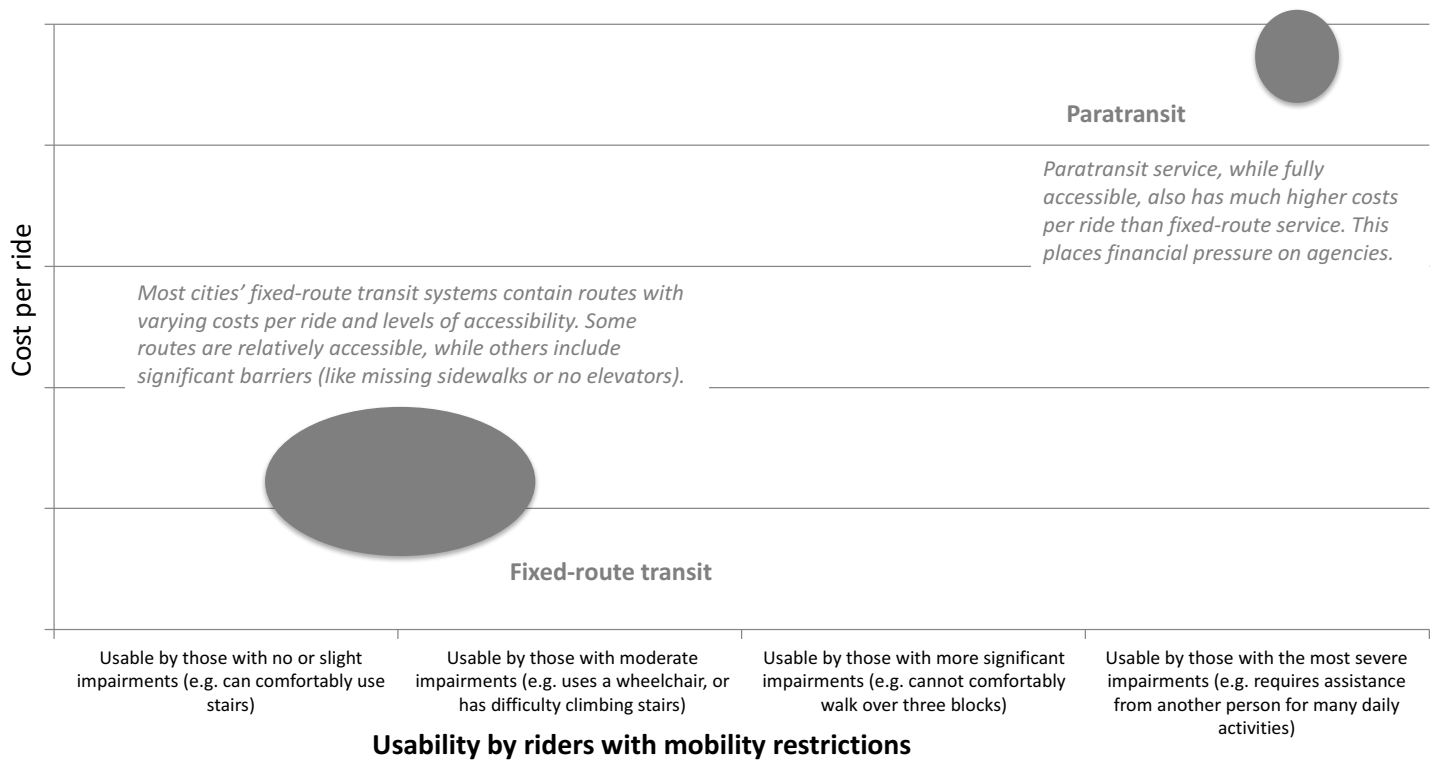
By contrast, in many places transit service is provided as a binary: Fixed-route bus and train service that is inaccessible to people with even moderate mobility restrictions, and paratransit which is fully accessible but expensive and often inconvenient due to advance schedule requirements and long pick-up windows.

To better serve customers across the continuum of mobility needs, agencies can:

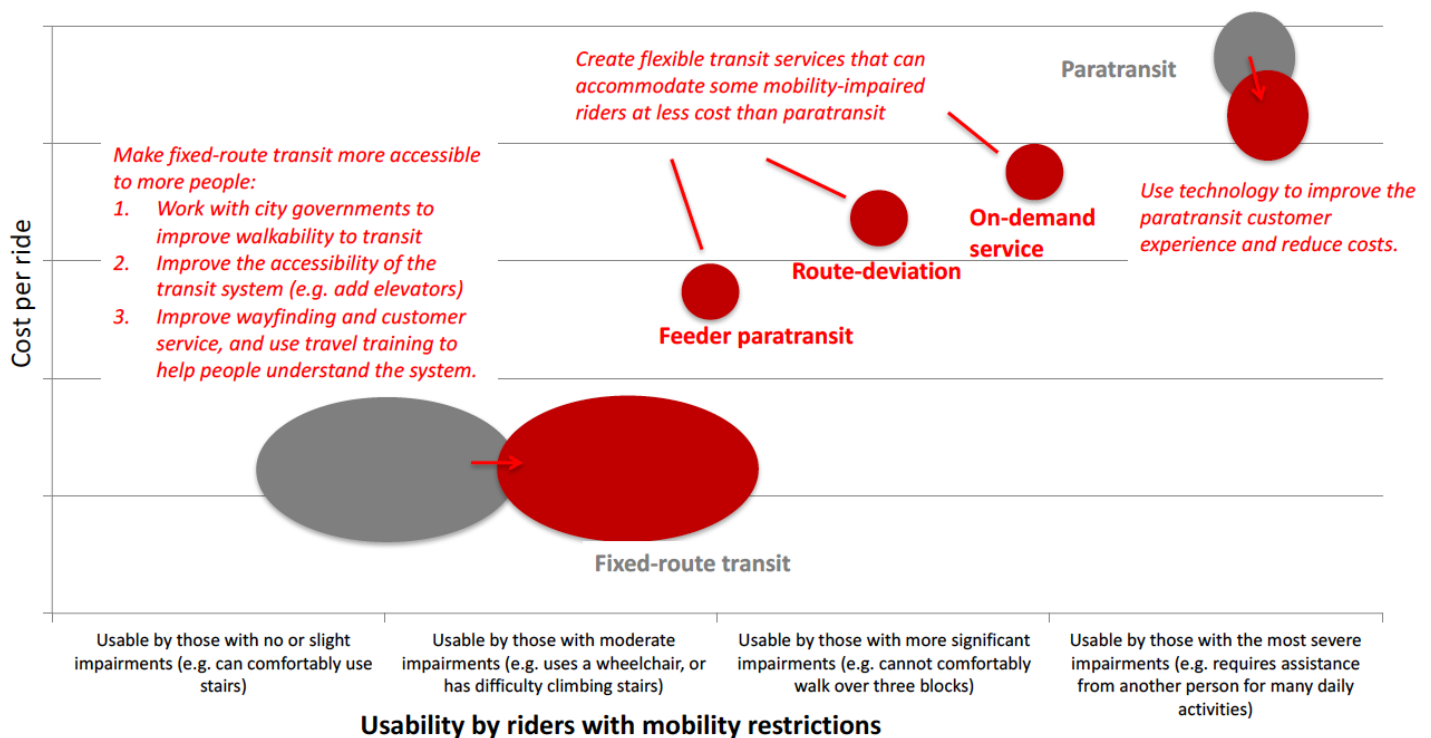
- 1. Improve the accessibility and performance of fixed-route transit itself.**

- 2. Implement services catering to riders with varying mobility needs, such as paratransit feeder service, route-deviation transit, and on-demand service.**

- 3. Improve the performance of paratransit through contract incentives and technology.**



Caption: Riders With Mobility Restrictions Often Have Few Transit Options



Caption: To Better Serve Riders With Mobility Restrictions, Improve Existing Options and Create New Ones



1. IMPROVE THE ACCESSIBILITY AND PERFORMANCE OF FIXED-ROUTE TRANSIT

Design and build transit with accessibility features

Transit agencies have a legal obligation to ensure that new vehicles and stations are fully accessible. Features like elevators, wheelchair lifts, low-boarding buses, ramps, and priority seating make transit more accessible and comfortable for riders with limited mobility. Bus shelters with seating make transit more comfortable and usable for all riders, but especially for older riders that have difficulty standing for long periods.

Many transit systems, especially those built before the passage of the 1990 Americans with Disabilities Act, are not fully accessible to wheelchair users and other riders with limited mobility. For example, 362 of 472 subway stations in New York City are not accessible.¹¹ After passage of the ADA, older transit agencies negotiated agreements with the federal government to make “key stations” accessible. Most agencies have fulfilled those agreements, but some—including New York City Transit and the Greater Cleveland Regional Transit Authority—have not. Some systems that have fulfilled their obligations under these “Key Station Plans” still include rail stations that are inaccessible. And even systems with full elevator coverage may lack audible announcements, tactile platform strips, level platform boarding, and other features that make the system accessible to more people.

In addition to providing accessibility features, transit agencies need to make sure they function reliably. As of 2016, New York City subway elevators were available only 95.7% of the time, meaning that a typical rider reliant on elevators could expect to encounter an outage 90 times a year.¹² In cases like these, riders who depend on elevators for station access face long and unpredictable travel times. In some cases, these riders even risk being stranded inside a station without a feasible exit, adding fear and uncertainty to the trip. This unpredictability may discourage older riders from using transit at all. When elevators do malfunction, there must be clear processes to minimize disruption for riders with limited mobility.

Improve transit legibility and customer service

Many older Americans may be apprehensive about relying on an unfamiliar transit system. Others have more experience with transit, but face new challenges they’re not sure how to overcome—for example, how to board a bus with a mobility device, or navigate a subway system after their vision has declined. For these groups, system legibility and customer service can make all-purpose transit use more feasible. Agencies can accomplish this by improving wayfinding, preparing staff to better assist older riders and riders with impaired mobility, and providing travel training for new riders.



stop #
1217

2

E MAIN/
N HIGH

33

HENDERSON

2L

N HIGH/
POLARIS PKWY

 FREQUENT

 STANDARD

 RUSH-HOUR

COTA.com

 **Next Bus**

TEXT Stop # to 95292 ■ CALL 614.228.1776

Transit operators and staff must receive adequate training to provide assistance to riders as needed. Staff should be familiar with accessibility procedures and how to respond to service disruptions. Additional staffing can be useful and may be feasible through partnerships with outside organizations. For example, Lane Transit District's (Eugene, Oregon) Transit Host program, run by a nonprofit, sends employees to large stations to assist older riders and riders with disabilities in making bus transfers.¹³

Travel training programs, often run by nonprofit organizations, teach potential riders how to use public transportation. These build potential riders' confidence in using the system. For more information about travel training, visit the National Center for Mobility Management (<http://nationalcenterformobilitymanagement.org/>).

Design routes, streets, and stations with walkability in mind

As we show in this brief, most older transit riders walk to transit stops. Poor sidewalk connectivity and unsafe walking environments can make it difficult for riders of any age to access transit. Conversely, improvements to walkability can attract new riders.

Agencies should work with local governments to create quality walking environments. Streets with transit routes should be pedestrian-oriented, featuring crosswalks, sidewalks, and accessible signals that provide sufficient time for people to cross. Cities must maintain sidewalks and curb cuts in good condition, including during inclement weather, such as snow.

To encourage ridership, local governments can improve street and sidewalk connectivity in poorly connected areas, require well-connected street grids in new developments, and use zoning to concentrate development around transit corridors to encourage the dense, walkable, mixed-use neighborhoods that sustain strong transit systems. Transit agencies can make systems more walkable through appropriate route and station design. New routes should be planned within an easy walk to key destinations; these can include senior centers or other areas with a large senior population.¹⁴



In 2016, the Washington Metropolitan Area Transit Authority sought to quantify the benefits of projects related to walkability. The agency found a direct relationship between walkability and ridership: for every ten additional households within a half-mile walk of a transit station, it saw an increase of seven weekday transit trips.¹⁵ Further, it found a positive return on investment of \$11 million over the thirty-year lifespan of sixty-two walkability projects. Improving the pedestrian environment around stations attracted new riders, including some who shifted from relatively expensive paratransit to the fixed-route system.

Improve transit speed and reliability

TransitCenter's Who's on Board 2016 and Turnaround: Fixing New York City's Buses reports provide several recommendations for improving transit speed and reliability. These include adopting prepaid fare collection, "tap-and-go" fare cards, and other methods to speed up boarding; designing and redesigning routes to be straight and direct; and consolidating stops on transit routes that currently have stops that are very close together.¹⁶ Additionally, transit agencies should work with local governments to implement transit signal priority, boarding bulbs, and street designs that create dedicated rights-of-way for transit.

Increase off-peak and weekend service

Especially after retirement, older riders often shift their transit use from peak commuting hours to midday and weekend trips. Many transit agencies offer reduced service during these off-peak hours, limiting travel options for older riders. Increased all-day and weekend service can improve service for older riders while also attracting more riders of all ages.

Municipality	People living within a half-mile of transit	People living near high-frequency rush-hour (7-9am, 4-6pm) transit	People living near high-frequency full-day (7am-10pm) transit
Boston, MA	638,842	624,738	569,425
Charlotte, NC	530,700	159,177	96,143
Cleveland, OH	386,749	158,554	71,486
Dallas, TX	1,150,046	216,583	9,098
Sacramento, CA	446,292	129,350	0

CAPTION: Analysis was conducted using the Center for Neighborhood Technology's AllTransit tool (alltransit.cnt.org). A person is counted as living near transit if they live within a half-mile of fixed-route service. "High-frequency" means service running, on average, at least every fifteen minutes during the specified timeframe.

2. CREATE FEEDER, ROUTE-DEVIATION, AND ON-DEMAND SERVICES

Integrate fixed-route transit and paratransit

Even with improvements, some older Americans will find it difficult to rely solely on fixed-route transit. Some riders can navigate their transit system, but are unable to walk to a nearby route. For these riders, integrating paratransit services with fixed-route transit can provide a high-quality experience that is more cost-effective than a door-to-door paratransit trip.

This model has been successful in several cities. Vancouver's TransLink service provides paratransit "feeder trips": customers are picked up at their location and driven to the nearest transit stop. On average, feeder trips in Vancouver are less than half the cost of door-to-door paratransit trips, and the introduction of feeder service has saved TransLink \$139,000 in a year.¹⁷

The best way to encourage conditionally eligible paratransit users to integrate fixed-route services into their trips is to improve the quality of fixed-route service. In dense areas with heavy traffic, reducing travel times on fixed-route transit can make some integrated paratransit trips faster and more attractive than door-to-door service. In a focus group of Vancouver paratransit users, participants rated feeder trips better than door-to-door paratransit in terms of travel time, schedule convenience, and service availability, and also said feeder service gave them a greater sense of independence.¹⁸

But if fixed-route transit is slow, feeder service can provide an inferior customer experience. In Tacoma, Washington, for example, a feeder-to-fixed-route trip can take over twice as long as a door-to-door paratransit trip. Feeder trips can also be more challenging for older riders due to transfers and less personal assistance.

Most transit agencies that use feeder service have implemented mandatory and voluntary strategies to expand its role. As a result, most paratransit providers now evaluate applicants based on their level of mobility. Applicants deemed able to use fixed-route transit or feeder service for at least some of their trips are "conditionally eligible" paratransit users. Applicants with mobility restrictions that require door-to-door service are "fully eligible" and cannot be required to use feeder service under the ADA.

Some agencies have implemented voluntary incentives for the use of feeder service. In Pittsburgh, riders found to be conditionally eligible can take feeder service for a normal fixed-route fare, or door-to-door service for a double fare.¹⁹ In Houston, feeder trips are fare-free on both the paratransit and fixed-route portions of the service. Additionally, riders in Houston can schedule a feeder service trip up to two hours in advance, compared to twenty-four hours for a door-to-door request.²⁰

Explore opportunities for on-demand transit services

Despite positive examples of paratransit feeder service, as in Vancouver, evidence suggests that riders tend to prefer flexible, on-demand, door-to-door services.²¹ By exploring alternative service modes that fall somewhere between conventional fixed-route and paratransit service, agencies can develop new ways to serve riders.

In areas that lack the demand for fixed-route transit service, some transit agencies have long provided "dial-a-ride" demand response services dispatched in response to rider calls, typically with required advance notice of at least an hour. Transit agencies are increasingly experimenting with using new technology to create services that are closer to on-demand. In suburban Minneapolis, Southwest Transit provides on-demand service (branded as "Prime") using twelve-passenger vans, with similar farebox recovery to its fixed-route lines.²²

Some agencies have experimented with route deviation services that follow a fixed route but can deviate from that route according to customer requests. For example, in Tacoma, Washington, Pierce Transit operates a demand-responsive bus that runs a fixed route between transit nodes, but can leave its route temporarily to pick up or drop off riders by request. This bus is open to the public and is used by commuters and young people as well as older riders. Lane Transit



District in Eugene, Oregon, operates a flexible system called the Diamond Express, which provides fixed-route service during peak commuting hours and demand response service during off-peak hours. The off-peak service gives priority to the elderly and disabled and provides them with a free day pass for fixed-route transit, providing an option similar to paratransit feeder trips.

Route deviation and flexible services are usually open to the general public and do not typically fulfill ADA obligations on their own. However, they are often more cost-effective than ADA paratransit, and can be more convenient because they require less, or no, advance scheduling. The cost per trip on Pierce Transit's "Bus Plus" route deviation service is \$18.71, less than the cost per trip on Pierce Transit's paratransit service (\$34.00) but more than its fixed-route service (\$4.50). Shifting capable riders to these services can achieve considerable cost savings while still providing an accessible, demand-responsive service.

Find new ways to partner with private firms and nonprofit organizations

In a recent report, New York University's Rudin Center for Transportation Policy and Management identified several opportunities for collaboration between paratransit providers and private for-hire-vehicle and software companies.²³ The report suggests that transportation network companies (TNCs) such as Uber, Lyft, and Via may be able to provide "first-mile / last-mile" feeder services at lower cost than transit agencies. The Pinellas Suncoast Transit Authority's experimental Direct Connect program offers a free all-day bus pass for riders who take Uber or local for-hire companies United Taxi and Wheelchair Transport to their bus stop.²⁴

While these types of partnerships have the potential to reduce agencies' operating costs and improve service for some riders, agencies must hold private companies to high standards and make sure that all riders are receiving equivalent service. Transportation network companies, which currently offer artificially low fares subsidized by private investors, should be relied upon with caution. Many disability advocacy groups oppose reliance on TNCs because they do not provide, or provide only a very small number, of accessible vehicles.

Some agencies have partnered with local nonprofit organizations to provide services that complement or supplement paratransit. In Pittsburgh, the Port Authority of Allegheny County provides a route deviation service, the Elder Express, that is sponsored by a coalition of local community groups. Additionally, the agency operates a demand-responsive shuttle funded by local employers, a "just-in-time" service that shuttles riders between designated stops and any location within three miles, and community buses featuring small vehicles and free fares. TriMet in Portland, Oregon partners with Ride Connection, a nonprofit that coordinates multiple services for riders in need including travel training, community shuttles, volunteer drivers, demand-responsive feeders, and information and referrals.²⁵



3. IMPROVE PARATRANSIT SERVICE AND USE TECHNOLOGY TO REDUCE COST

As we describe earlier in this brief, paratransit service is often inconvenient for its users. Paratransit users typically must schedule trips 24-48 hours in advance; the pickup times they are given may be an hour earlier or later than their requested time; and users are typically given a 30-minute window rather than a specific pickup time.

Agencies should take a user-focused approach to paratransit, seeking to minimize travel time for customers, the time customers must wait for a driver to arrive, "no-shows" by drivers, and the amount of advance reservation time customers need to book a ride.

Most paratransit service is contracted out to private firms. This means agencies' ability to achieve these goals depends on the quality of their paratransit contracts, which should include incentives, penalties, and performance metrics linked to the goals above. It also depends on the strength of their contract oversight. A 2016 report from the New York City Comptroller found that paratransit contractors were not meeting on-time performance goals included in their contract with the Metropolitan Transportation Authority, but that the MTA had not effectively monitored contractor performance and had not penalized the contractors as allowed in its contracts.²⁶

New technology can also be incorporated into paratransit systems to provide more dynamic, user-friendly and cost-effective service.

Digitization can improve the reservation process. Many paratransit providers take reservations only by phone; agencies should provide additional ways for customers to make reservations, including websites, apps, and wearable devices. When making reservations, agencies should use databases to facilitate ridesharing and arrange right-size vehicles (reserving wheelchair-equipped vehicles for only those customers who need them).²⁷

Furthermore, digital systems can help potential riders understand what paratransit and other specialized transportation services are available, and then connect them with service providers. A 2016 report conducted for the National Cooperative Highway Research Program described a "continuum of services" that transportation agencies can provide to link riders with specialized transportation:²⁸

Level	Name	Functionality	Description
1	Central Repository	Creation of, or linkage with, existing centralized repository of transportation resources	Static, hard-copy listing of services and programs distributed or accessed via phone or website
1A	Provider Portal	+ provider portal	Service providers can update their information at any time
2	Matching Assistance	+ ways to narrow down service and program options	Customers supply search criteria or answer "triage questions" asked by a mobility specialist (call-taker) or prompted by an online system to reduce providers to viable options
3	Trip Planning Assistance	+ trip planning assistance	Customers use online system or call a mobility specialist to get detailed ways to make a particular trip
4	Trip Booking Assistance	+ trip booking by mobility specialists	Mobility specialist calls provider to book trip on behalf of customer
5	Direct Trip Booking	+ trip booking by customer	Trip booking via links to paratransit systems (one system allows a scheduler from one partnering organization to schedule trips onto another partner's vehicle runs)

During onboarding, new riders should be registered digitally and entered into a customer database. Digital registration can reduce costs by allowing more efficient communication with physicians and insurance companies. It can also reduce barriers to entry for prospective users. Many agencies require in-person assessments to determine paratransit eligibility; digital registration can replace some of these with video-conferenced appointments. Customer databases should include information that streamlines operations, including eligibility status, common destinations, and assistance required.

Technology can also improve dispatch and routing. Currently, many paratransit providers determine routes manually or based on static maps. Routing software should include traffic data and real-time updates on transit delays and elevator outages. For agencies with multiple service options (door-to-door, feeder, route deviation, etc.), paratransit dispatchers should have access to application programming interfaces (APIs) that present all available services at the time requested.

Finally, technology can improve the user experience for paratransit customers. Real-time updates by text, app, or other means can reduce missed connections. Digital translation services for drivers can facilitate better customer service, and replacing cash payments and paper vouchers with digital payment can reduce misunderstandings, save costs and protect drivers from theft. A digital mechanism for customer feedback can generate useful data to improve paratransit service and hold agencies and operators accountable for ADA compliance.

RECOMMENDATIONS

To better serve older transit riders, agencies should:

- **Improve the accessibility and performance of fixed-route transit**
 - Design and build transit with accessibility features
 - Improve transit legibility and customer service
 - Design routes, streets, and stations with walkability in mind
 - Improve transit speed and reliability
 - Increase off-peak and weekend service
- **Create feeder, route-deviation, and on-demand service**
 - Integrate fixed-route transit and paratransit
- **Explore opportunities for on-demand transit services**
 - Find new ways to partner with private firms and nonprofit organizations
 - Improve paratransit service and use technology to reduce cost

About Who's On Board 2016

Portions of this research brief are based on an analysis of data from TransitCenter's Who's On Board 2016 survey. That dataset contains responses from 3,014 transit riders from seventeen U.S. cities. The data analyzed here consists of 388 responses from respondents aged 65+. For more information about the survey and methodology, see transitcenter.org.

ENDNOTES

- [1] Kheirkhah, Parviz. "Prevalence, predictors and economic consequences of no-shows." BMC Health Services Research, 2015. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4714455/>
- [2] Jana Lynott and Carlos Figueiredo. "How the Travel Patterns of Older Adults Are Changing: Highlights from the 2009 National Household Travel Survey." AARP Public Policy Institute, 2011. <https://assets.aarp.org/rgcenter/ppi/liv-com/fs218-transportation.pdf>
- [3] 2011-2015 American Community Survey 5-Year Estimates, U.S. Census Bureau.
- [4] Administration on Aging, U.S. Department of Health and Human Services. "A Profile of Older Americans: 2015." Accessed July 24, 2017. <https://www.acl.gov/sites/default/files/Aging%20and%20Disability%20in%20America/2015-Profile.pdf>
- [5] Neal, Margaret B. et al. "Age-related shifts in housing and transportation demand." Portland, OR: Portland State University College of Urban and Public Affairs, 2006. https://www.pdx.edu/sites/www.pdx.edu.ioa/files/media_assets/cupa_age_related_shifts.pdf
- [6] Of course, older Americans are a diverse group in terms of demographics, health, and life phase. A 67-year-old, healthy woman who works a high-income job will have different transit needs than a 78-year-old man who has difficulty walking and is retired on a fixed income.
- [7] Burkhardt, Jon et al. "Improving Public Transit Options for Older Persons." Washington, D.C.: Transit Cooperative Research Program, 2002.
- [8] Shaheen, Susan A and Caroline J. Rodier. "Video transit training for older travelers: a case study of the Rossmore senior adult community, California." San José, CA: Mineta Transportation Institute, 2007. <http://transweb.sjsu.edu/MTIportal/research/publications/documents/06-04/html/MTI-06-04.htm>
- [9] National Rural Transit Assistance Program. "ADA Toolkit." Accessed March 27, 2017. <http://nationalrtap.org/ada-toolkit>
- [10] Government Accountability Office. ADA Paratransit Services: Demand Has Increased, But Little is Known About Compliance. Washington, DC: United States Government Accountability Office Report to the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, 2012. <http://www.gao.gov/assets/660/650079.pdf>
- [11] This was calculated by combining the Metropolitan Transportation Authority's real-time data feeds (<http://data.mta.info/>) with its Guide to Accessible Transit (<http://web.mta.info/accessibility/transit.htm>). A few stations are accessible in only one direction (for example, with an elevator connecting the street level with the northbound platform but not the south); these were each counted as one-half of an accessible station.
- [12] Plaut, Mel et al. Access Denied: Making the MTA Subway System Accessible to All New Yorkers. New York, NY: TransitCenter, 2017. <http://transitcenter.org/publications/access-denied/>
- [13] Weiner, Richard. "Integration of Paratransit and Fixed-Route Transit Services: A Synthesis of Transit Practice." Washington, D.C.: Transit Cooperative Research Program, 2008. <https://www.nap.edu/catalog/13993/integration-of-paratransit-and-fixed-route-transit-services>
- [14] Higashide, Steven et al. Who's on Board 2016: What Today's Riders Teach Us About Transit That Works. New York, NY: TransitCenter, 2016. <http://transitcenter.org/wp-content/uploads/2016/07/TransitCenter-WOB-2016.pdf>
- [15] Washington Metropolitan Area Transit Authority Office of Planning. Metrorail Station Investment Strategy Summary Report. August 2016. https://planitmetro.com/uploads/MISIS_Report_August_2016.pdf
- [16] Consolidating stops is often helpful in reducing travel times on bus routes, benefitting all riders. However, placing stops further apart will make walking to the bus more difficult for some older riders. Balancing these impacts requires careful contextual planning.
- [17] Weiner, "Integration of Paratransit and Fixed-Route Transit Services: A Synthesis of Transit Practice."
- [18] Ibid.
- [19] Ibid.
- [20] Todd Hansen (associate transportation researcher at Texas A&M University), e-mail discussion with the author, January 2017.
- [21] Frei, Charlotte et al. "Flexing service schedules: Assessing the potential for demand-adaptive hybrid transit via a stated preference approach." Transportation Research Part C, 2016.
- [22] Harlow, Tim. "A public Uber service? In southwest metro, officials say it works." Star Tribune, Jan. 14 2017. <http://www.startribune.com/a-public-uber-service-in-southwest-metro-officials-say-it-works/410688675/>
- [23] Kaufman, Sarah M. et al. Intelligent Paratransit. New York, NY: NYU Rudin Center for Transportation Policy & Management, 2016.
- [24] Pinellas Suncoast Transit Authority, "Direct Connect." <https://www.psta.net/riding-psta/direct-connect/> (Accessed July 24, 2017).
- [25] Weiner, "Integration of Paratransit and Fixed-Route Transit Services: A Synthesis of Transit Practice."
- [26] Landa, Marjorie. "Audit Report of the Metropolitan Transportation Authority's Oversight of the Access-A-Ride Program." New York, NY: Office of the Comptroller of the City of New York, May 17, 2017.
- [27] Kaufman et al., Intelligent Paratransit.
- [28] Rodman, Will et al. "State DOTs Connecting Specialized Transportation Users and Rides Volume 1: Research Report." National Cooperative Highway Research Program, 2016. <http://nap.edu/23506>

