



# The Role of Transportation in Addressing Social Isolation in Older Adults

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The National Center for Mobility Management

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## **About the National Center for Mobility Management (NCMM)**

The National Center for Mobility Management (NCMM; [www.nc4mm.org](http://www.nc4mm.org)) is a national technical assistance center created to facilitate communities in adopting mobility management strategies that advance good health, economic vitality, self-sufficiency, and community. The NCMM is funded through a cooperative agreement with the Federal Transit Administration, and is operated through a consortium of three national organizations – the American Public Transportation Association, the Community Transportation Association of America, and Easterseals. Content in this document is disseminated by NCMM in the interest of information exchange. Neither the NCMM nor the U.S. DOT, FTA assumes liability for its contents or use.

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# Executive Summary

NCMM contracted with the University of Minnesota to investigate the hypothesis that a lack of transportation can be shown to be associated with incidences of social isolation among older adults; specifically, that a lack of mobility directly affects patterns of social engagement by dictating people's access to resources, amenities, and socializing opportunities. A second part of that premise is that an improvement in older adults' access to transportation services that fit their needs—with regard to affordability, convenience, and safety—will meaningfully increase their access to life-sustaining activities. The University's research focused on this research question: How can public transportation be used as a preventive intervention tool to address the potentially harmful effects of social isolation?

## Background and Approach

Social isolation and loneliness are associated with poorer health and increased risk of mortality for older adults. Related to this, older adults who do access life-sustaining activities are likely to experience an improvement in their community connectedness as well as their overall health and well-being.

As the proportion of older adults in American society increases, it is imperative that we design solutions to increase the continued integration of older adults into their community. Public transportation is one critical component of those solutions, especially for older adults who do not have access to private transportation or who are unable to drive.

Recognizing the importance of this topic and the need to raise awareness on key related issues, the National Center for Mobility Management contracted with the University of Minnesota to prepare a research paper to inform future stakeholder engagement, programs, and policy. The University of Minnesota team used two data collection approaches: a literature review and key informant interviews. Based on these, we summarize key findings, showcase program examples, and offer recommendations for programmatic, policy, and research interventions to use public transportation to prevent and reduce social isolation and loneliness among older adults.

## Key Findings

- Public transportation has a role in addressing social isolation and loneliness
- Social isolation and loneliness are important to be addressed as health issues
- Differences exist in access to and use of public transportation across sociodemographic subpopulations of older adults (e.g., rurality, gender, age, income, disability status, ethnicity).
- Older adults identified issues that shaped their use of public transportation options, such as accessibility; affordability; awareness of their existence and how to use them; limited flexibility of service, especially in rural areas; and constraints on using public transportation for social purposes.
- There is a lack of data and software tools to inform how the use of public transportation might currently be addressing the social needs and preferences of older adults and how it could do so in the future.

- Fragmentation of services (both among transportation providers and between transportation and other sectors) creates a need for expanded collaboration between providers and across sectors to fully meet the needs of older adults.

## **Recommendations**

Several recommendations emerged from this study:

### **Additional research**

- Collect data on the intersection of public transportation and meeting the social needs of older adults
- Conduct additional research to further inform best practices in providing public transportation to older adults
- Gather and incorporate community input for transportation and public health planning

### **Expanded collaboration**

- Improve collaboration between transportation and public health at the community level
- Increase involvement and coordination between state agencies to align efforts between transportation, aging services, and health.

### **Operational improvements**

- Expand publicly funded options for transportation, including a variety of options that are affordable, convenient, attractive, safe, and accessible for all older adults.
- Broaden the focus of transportation purpose beyond medical transportation to include destinations for social purposes.
- Address public perception and awareness of public transportation among older adults to reduce stigma and increase knowledge.

## Background and Purpose

Social isolation and loneliness are persistent societal problems, and lead to poorer population health outcomes, greater mortality, and greater health care spending.<sup>1,2</sup> Older adults face unique risks related to social isolation and loneliness, largely because of the many major life transitions that they are likely to experience, including retirement, death of a spouse, death of other social contacts, and changing health and functional abilities.

Engaging in social, wellness, and civic opportunities can be good antidotes to these life changes, and can ensure older adults maintain a sense of connectedness and stem off isolation and loneliness. Yet doing so often requires traveling outside of one's home, at a time when the aging process itself may lead to a decreased physical and mental capacity to drive oneself safely, resulting in a loss of mobility. Given these many life changes and the diminishing independence that can come with aging, public transportation plays a key role in solutions to address social isolation in older adults.

Robust public transportation, including human services transportation offerings, are an essential component of preventing and addressing social isolation and loneliness for older adults. Conversely, a lack of accessible, affordable, efficient, and reliable transportation is associated with more difficulties accessing community events, health care, essential services, and social opportunities.<sup>3-8</sup> A recent study found that 5.8 million Americans (including, but not limited to older adults) face transportation-related barriers to health care each year, which may result in poorer health outcomes and greater mortality.<sup>3,9</sup> Access to transportation for non-medical needs is even harder to come by in many places, creating barriers to participating in civic and social life for many older adults.<sup>10</sup>

The importance of public transportation to addressing social needs is best expressed by older adults themselves, who are both in need of services and often service providers themselves (e.g., in the role of volunteers). In a 2020 National Center for Mobility Management (NCMM) survey of older adults, respondents expressed both appreciation for and the struggles with the various transportation options available, as illustrated through the quotations below:



- "I would be 'lost' without community based transportation. They are my only source of transportation! I depend on them for any trips from home."
- "Sometimes you have to be creative with developing alternative methods to access destinations because public transportation can struggle with trips that include multiple destinations, appointment times, and getting you there on time."

- "The public transit system is too small and doesn't go where I need it to, I can't get to a bus stop without walking a mile or more and it won't deviate to me. There are no volunteer driver networks. Grant programs don't get enough funding to help everyone— they need more funding help. And taxis and private providers are too expensive for me."
- "I've been using public transportation since I was a child. I'm a volunteer in a service that teaches adults about alternative transportation and takes them on outings using public transit. Also, if I need to go somewhere where public transit doesn't go, I can still drive."

NCMM contracted with the University of Minnesota to investigate the hypothesis that a lack of transportation can be shown to be associated with incidences of social isolation among older adults; specifically, that a lack of mobility directly affects patterns of social engagement by dictating people's access to resources, amenities, and socializing opportunities. A second part of that premise is that an improvement in older adults' access to transportation services that fit their needs—with regard to affordability, convenience, and safety—will meaningfully increase their access to life-sustaining activities. The University's research focused on this research question: How can public transportation be used as a preventive intervention tool to address the potentially harmful effects of social isolation?

Following a brief discussion of our approach to answering this question, we synthesize key findings from our review of the literature and interviews with experts and program representatives, showcase three program examples, and make recommendations for programmatic, policy, and research interventions to use public transportation to prevent and reduce social isolation and loneliness among older adults.

## Findings

The following describes findings from the literature review and key informant interviews, followed by case studies of program examples. Key themes include the following:

- Public transportation has a role in addressing social isolation and loneliness
- Social isolation and loneliness are important to be addressed as health issues
- Differences exist in access to and use of public transportation across sociodemographic subpopulations of older adults (e.g., rurality, gender, age, income, disability status, ethnicity).
- Older adults identified issues that shaped their use of public transportation options, such as accessibility; affordability; awareness of their existence and how to use them; limited flexibility of service, especially in rural areas; and constraints on using public transportation for social purposes.
- There is a lack of data and software tools to inform how the use of public transportation might currently be addressing the social needs and preferences of older adults and how it could do so in the future.
- Fragmentation of services (both among transportation providers and between transportation and other sectors) creates a need for expanded collaboration between providers and across sectors to fully meet the needs of older adults.

## Literature Review

The body of academic literature on transportation as an intervention in mitigating social isolation among older adults is not extensive; therefore, we not only summarize key findings from the academic literature in this section, but also from additional resources published by government agencies, nonprofit organizations, think tanks, and advocacy groups.

### Older Adult Transportation and Social Isolation

Our research on the intersection of transportation and social isolation led to the following findings:

- Insufficient access to alternative transportation once one is no longer able to independently drive might lead to loneliness.<sup>5,7</sup>
- Driver status is a significant indicator of connectedness, with non-driving older adults scoring higher on predictors of social isolation than their driving counterparts.<sup>4</sup>
- Older adults may continue driving longer than is safe, as individuals report that they do not have a plan in place to remain mobile after they stop driving.<sup>19–21</sup> In rural areas, residents are more likely than urban residents to continue driving, and less likely to limit their travel to daytime hours, even when they develop a health condition that makes travel difficult.<sup>15</sup>
- Many of the options currently available to older adults, especially in rural settings, are not meeting all of the necessary criteria to be appealing and useful for older adults. Public perception of public transportation varies widely depending on population density and community type, and many older adults prefer shuttles or demand-response services delivered by public transit agencies over fixed-route bus services.<sup>11,12,14,16–20</sup>
- Public transportation options work better for more mobile older adults than for those with mobility challenges.<sup>11,20–23</sup>

In the literature, the following conclusions and strategies to improve the alignment between older adult activities and transportation to those activities were described:

- Access to safe, inexpensive, and convenient transportation options are associated with lesser feelings of loneliness, and may ease the transition into driving cessation, improve older adults' ability to socialize, and improve overall perceived quality of life.<sup>6,7,12,13,24</sup>
- Increased transportation options may also help to reduce social isolation by making it easier for people to volunteer and work, engage in recreational and physical activities, and attend cultural and social events.<sup>11</sup>
- Organizations and communities that want to facilitate engagement opportunities for older adults should consider their public transportation accessibility.<sup>20,21,25,26</sup>
- Technology and tech-based transportation solutions can play a role in reducing social isolation, by connecting older adults with more transportation options as well as locations in the community to interact with others. However, issues like internet access, confusion with technology, and limited service area for tech-based transit options may get in the way of leveraging technology to improve social isolation.<sup>22,27–29</sup>

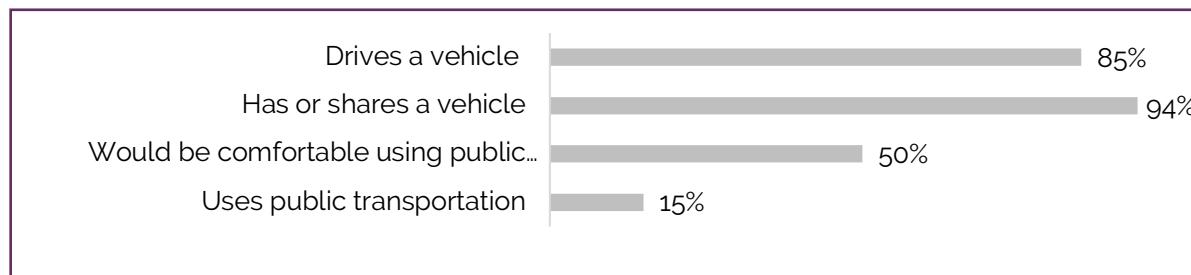
## **Older Adult Social Isolation and Health Impacts**

In addition to studies connecting social isolation and transportation for older adults, we also identified research on the health impacts of social isolation and loneliness in older adults.<sup>30,31</sup> Some studies found that loneliness can lead to poor health outcomes in both the short and long term, and older adults who were lonelier were less satisfied with their life.<sup>31-34</sup> Specific health outcomes associated with social isolation and loneliness for older adults include compromised immune system, higher blood pressure, heart disease, obesity, cognitive decline and higher risk for Alzheimer's disease and dementia, depression, and anxiety.<sup>32</sup> Overall, social isolation and loneliness are also associated with a higher risk of death.<sup>1,35</sup>

## **Older Adult Access to and Use of Transportation**

Not all older adults have the access or means to transport themselves, and specific subpopulations are less likely than others to be able to walk or drive, based on health and socioeconomic status. A 2018 study from the National Aging and Disability Transportation Center and KRC Research<sup>37</sup> showed of adults age 60 and older, 15% of adults do not drive a vehicle, and 6% also do not have access to a vehicle. In addition, while 50% of adults age 60 and older reported that they would be comfortable using public transportation, only 15% reported actively doing so (see Figure 1). Some older adults' perceptions of public transportation—including a fear of pushing, shoving, and rowdiness on buses and trains—prevented them from using these services.<sup>36</sup>

**Figure 1: Driving and Public Transportation Use, Access, and Comfort Level Among Adults Age 60 and Older**



Source: National Aging and Disability Transportation Center (NADTC) and KRC Research (2018)<sup>37</sup>

## **Differences by Subpopulation and Mode of Transportation**

There are important differences in access to transportation by subpopulation. For example, an AARP Public Policy Institute analysis of the 2017 National Household Travel Survey (NHTS) found that more than 33% of Asian and Hispanic older adults (age 65+) and nearly 33% of non-Hispanic Black older adults do not drive.<sup>38</sup> In contrast, only 12% of non-Hispanic White older adults do not drive.<sup>38</sup> Differences in driver status are related not only to race and ethnicity, but also to income, as driving requires affording a vehicle, insurance, fuel, license and registration, and other related costs and fees. Table 1 shows the median income of older adults by race

and ethnicity and driver/non-driver status, from the same AARP Public Policy Institute analysis.

**Table 1: Median Household Income of Drivers and Non-Drivers Age 65+ by Race and Ethnicity**

Race and Ethnicity	Median Income – Drivers	Median Income – Non-Drivers
Asian	\$63,607	\$56,658
Hispanic	\$40,737	\$22,449
Non-Hispanic Black	\$31,871	\$14,513
Non-Hispanic White	\$52,685	\$31,586

Source: AARP Public Policy Institute Analysis of the 2017 National Household Travel Survey (NHTS)<sup>38</sup>

The availability and mode of public transportation vary dramatically by specific contexts. A major barrier identified in the literature was limited transportation access in rural and suburban communities and the inability to travel outside of county boundaries on public transit routes.<sup>20,22,29</sup> In particular, rural areas have more restricted access to public transportation and face unique constraints in developing public transportation infrastructure, including smaller populations, greater distances, and more constrained resources.<sup>39</sup> Rural areas also have limited to no availability of ridehailing companies (e.g., Uber, Lyft), and not all older adults are familiar and comfortable with such options even when they do exist.<sup>40</sup> Further, due to limited resources, additional transportation services provided to aging communities such as the federal Medicaid Home and Community Based Services (HCBS) waiver program often have strict eligibility criteria, are limited to very specific purposes (e.g., non-emergency medical trips), and do not extend to the purposes of community access and integration.<sup>41</sup> Recent policy changes from the Centers for Medicare & Medicaid Services (CMS) allow for expanded non-medical transportation under Medicare Advantage plans, although this will be limited to enrollees who not only can afford Medicare Advantage premiums, but also have a qualifying chronic condition. Given how recent this change was made,<sup>42</sup> it is too early to know the full impact on health and well-being of older adults.

As a result of the inequities related to access to transportation (both private and public), strategies to address social isolation and loneliness need to take both geographic and societal contexts into account. Factors such as access to public transportation, community infrastructure, population density, broadband Internet, and cellular connectivity are all essential to promoting social connectedness, and yet can be challenging in both urban and rural areas.<sup>43</sup> One report found that younger older adults (ages 65-74) living in high-density urban locations who can manage curb-to-curb mobility have a better likelihood of accessing public transportation.<sup>44</sup> Adults ages 75 and older, including the “frail elderly” who need more mobility support, rely more often on nonprofit transportation services that require advanced reservations, and are less likely to use on-demand services (e.g., Uber, Lyft).<sup>44</sup>

### **Themes from Key Informant Interviews**

Our interviews with content experts and representatives of select programs led to six distinct themes: lack of flexibility in transportation options, data access and technology issues, desirability and awareness, diversity and preferences, fragmentation, and cross sector collaboration, each of which is described in detail below.

- **Lack of flexibility.** Public transportation is designed for and evolves with the masses, mostly working individuals on a Monday-Friday schedule for peak commuting times. While this is necessary, it excludes people not participating in the workforce or people working different shifts, including many older adults. Likewise, mass transportation tends to follow routes leading to central business districts, which may not be where older adult activities are located. Furthermore, limitations in public transportation service coverage may make it difficult for older adults to use public transportation to get where they would like to go. To address their mobility limitations, some older adults require wheelchair accessible options or door-to-door (or door-through-door) demand-response services, rather than curb-to-curb transportation or fixed-route service, which requires getting to a bus or train stop. These types of services are not always available, especially in rural areas and smaller cities.

Public transportation—supplemented by community services (human services agencies, nonprofit and other private organizations) and mobility management efforts—provides some targeted options for older adults, people with disabilities, and generally those who need a higher level of support when using transportation. Still, the combination of these current transportation offerings in communities does not offer the flexibility needed to meet expected demand and preferred travel patterns. For example, safe and affordable options are almost nonexistent in the evenings or on the weekends. This makes it hard for older adults who want to socialize in the evenings; attend local school events, concerts, movies; or dine at a restaurant. Several respondents to the surveys cited earlier that being older does not mean that people want to limit their social activities to daytimes and weekdays. In addition, transportation programs for older adults often require scheduling trips in advance, which rules out the possibility of last-minute or unanticipated social activities.

- **Data collection.** Although there are national surveys tracking use of public transportation in communities across the U.S., there are limited data on how public transportation is being used to meet social isolation needs and, indeed, what the social needs of riders (and non-riders) are. In addition, more data are needed to identify the connection between transportation access and public health.
- **Technology.** At the program level, key informants discussed efforts to implement new software tools to streamline transportation service offerings across providers as well as to improve monitoring of rides and riders. Many recent mobility innovation awards through the Federal Transit Administration (FTA) are focused on technological solutions to navigate the variety of available transit options within a region that encompasses multiple jurisdictions.<sup>45</sup> However, one informant noted that technological innovation must be coupled with training, so that technology is not a burden but a mechanism for staying connected.
- **Desirability and awareness.** Many people see public transportation as not being for them, based on their perception of how it operates and who else uses it. For some older adults, this relates to a fear of getting lost, concerns about safety, and a lack of trust in the system, especially as they are usually unfamiliar with the drivers and know that they are likely to change over time, especially in urban areas. Others don't know what services are available to them or how the transportation options work. One

respondent noted that there is a stigma against using buses ("Those buses are for other people!").

- **Diversity and preferences.** Older adults make up a larger segment of the population, spanning multiple generations (65–100+ years old). They do not have uniform preferences about where they would like to socialize, nor do they have uniform habits around transportation use. When asked what locations are most important for older adults to access for social purposes, respondents gave answers as diverse as older adults themselves: grocery stores, medical appointments, evening concerts, restaurants, theaters, others' houses, community events and spaces, stores, salons, etc. Key informants explained that transportation needs also vary between the "older old" or frail elderly (e.g., 75+) and the "younger old" (e.g., 65–74) as well as along income lines. For example, respondents noted that the younger old may be more receptive to technological innovation and the older old may have more extensive mobility needs.
- **Fragmentation.** While the federal government and some communities have done work to coordinate transportation programs and infrastructure, more work is needed at state and local levels to coordinate between municipalities within a region where older adults might travel. Further, education and engagement with various transportation providers is crucial so they understand the interrelated roles they play in addressing social isolation among older adults and combine efforts rather than compete for scarce resources. In addition, human services transportation providers may have more leeway to take risks with programming and less restrictive contracting requirements than public transit agencies that allow them to better customize the rider experience. For example, in one community, a private on-demand provider chose to contract with a human services agency rather than public transit because of restrictions on accepting the insurance policy for the government-based program.
- **Cross-sector collaboration.** In addition to the need for more coordination within the transportation sector, respondents discussed benefits from meaningful collaboration at the community level beyond the transportation sector, such as with aging, urban planning, housing, public health, and health care. As one key informant described it, the "universality of transportation" facilitates cross-sector collaboration. Another key informant suggested that the regional public transit agency cannot connect with older adults as easily as the local human service programs or older adult services agencies as the latter are better able to build the trust with the community that is needed to engage potential riders. Two informants noted that land use and transportation are linked and that places that make it easier to travel without a car (e.g., by public transit, walking) foster more community connectedness.

## Program Examples

While the specifics varied, the transit programs profiled in this section all recognize the value of public transportation for addressing social isolation and loneliness among older adults. One transit provider remarked, "Seniors are not the highest percentage of rides we give, but are some of the most necessary rides we give." Across the three case examples described below, there were several common ingredients for success: cross sector collaboration and patience

in generating it; diverse funding streams (see box for examples of program funding sources); the importance of keeping transportation services affordable; the ability to be nimble in terms of repurposing staff and resources when interventions are not in high demand or piloting program tweaks; and knowing who the client is and what the client needs.

### Examples of Program Funding Sources

**Transit.** Since 1982, FTA has provided formula funding to states under the Section 5311 Non-Urbanized Transit Program, to establish and maintain transit systems specifically for rural communities with populations under 50,000. The 5310 grant program also began in 1982, which assists private nonprofit groups in meeting the transportation needs of older adults and people with disabilities when the public transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs.<sup>47</sup> Both urban and rural organizations can qualify for 5310 formula grants. With a larger applicant pool, 5310 grants tend to be significantly more competitive than their 5311 counterparts.<sup>47</sup>

**Aging.** Title III of the federal Older Americans Act, under the Administration for Community Living, allows for some transportation funding to states, usually distributed through Area Agencies on Aging under the Administration on Aging. These funds can be used to match programs administrated by the FTA.

**Health Care.** State Medicaid programs are required to provide the non-emergency medical transportation (NEMT) benefit for enrolled beneficiaries.<sup>49</sup> While this benefit is available in all states, the delivery model for NEMT services varies widely. The most common models include in house management, managed care organization management, regional brokers, or statewide broker. Payment can be in the form of a capitated rate (per-member fee), or on a case-by-case basis (fee-for-service). States can use one or multiple of the delivery models above. Contract revenue from state Medicaid contracts can be used to match programs administrated by the FTA.

### Lesson: Transit Buddy Intervention Common, But Success is Variable

Several transportation agencies and human services organizations were identified that offer "buddy services to potential riders to increase older adult comfort and attempt to overcome stigma with public transit. In many cases, the service involves identifying "buddies" or volunteers, who are "passionate transit users" (meaning they are knowledgeable about routes, schedules, fare, etc.) who are willing and able to train and accompany others to ride; then, matching buddies with individuals interested in becoming more "comfortable and confident" with riding the local transit. Often, potential riders are directed to call a call center to set up a ride. Bus buddy volunteers are available to riders (volunteer fares are covered by programs) as many times as needed until riders feel comfortable with riding the bus. n4a's Aging Network Volunteer Resource Center profiled one such successful program operated by the office for the Aging in Schuyler County, New York [here](#).

We are aware of another program that tried to stand up this service in an urban public transit setting and it did not see the number of riders it expected. Program leadership suspected that there are still fears among older adults about getting lost or feeling unsafe on a public

bus. Program staff recommended recruiting interested riders first, and then recruiting volunteers to meet the demand. However, volunteers were repurposed on weekly shopping shuttles (shopping shuttles have been operating for several years, financed in part with 5311 funding) and reportedly increased ridership on their shuttles since the addition of a buddy to interact with regularly (complimenting what a shuttle driver would do).

In addition to the program example series, we created an accompanying list of additional transportation program model examples that address social isolation among older adults.



## Recommendations

Key findings highlighted the importance and often unrealized potential of public transportation to address social isolation and loneliness among older adults, and a lack of understanding how it is doing so currently. Given the urgency of loneliness and isolation as public health concerns, and the fundamental role that transportation plays in helping individuals to connect with one another, we list several recommendations below.

### Additional Research

Collect data on the intersection of public transportation and meeting the social needs of older adults. Currently trip purpose for many older adults is not collected; even harder to find are data on social trips older adults would have made if they had access to appropriate transportation options. There is a particular need for data to understand how rurality/geographic location and transportation impacts older adult social isolation and health outcomes.

For example, transportation programs could collect metrics from riders related to social needs so that they can more directly connect transportation efforts to health outcomes among older adults. This would be particularly helpful with transportation programs that target older adults and provide service to destinations that promote community connectedness. On a more national scale, it could be useful to identify national transportation data collection efforts to which relevant questions on public transportation use and social isolation could be added. Related to this, a synthesis of findings from federal evaluations of related programs for older adults could inform next steps in data collection and availability. The goal in this recommendation is to provide a basis for analyzing the impact more frequent access to personally identified social destinations can have on older adult health outcomes and how transportation options can best support that increased access. The analysis of the recommended data could inform community transportation practices and related policies.

Conduct additional research to further inform best practices in providing public transportation to older adults. More research is needed to understand the perceptions of older adults related to transportation. For example, what needs do they have? What would make transportation desirable? What social needs are going unmet because of a lack of transportation? Can an unmet need be quantified in terms of health or economic outcomes? How do needs and preferences vary by subpopulation (e.g., younger/middle/older adults; gender; income; rural/urban/suburban location; race and ethnicity; disability status). Such information will help to inform successful public transportation programs to address social isolation and loneliness for older adults.

Gather and incorporate community input for transportation and public health planning. Each community's transit infrastructure varies; therefore, it is critical to individually assess its assets and deficits as it relates to transporting older adults to where they want to go to stay connected. This recommendation includes more community assessments of transportation needs so that communities can work together on who and how best to address barriers for older adults. Needs and gaps need to be identified regularly as they change over time, similar to a public health community needs assessment process. Any such processes should include the voices of older adults living in the community. As one respondent from the public transit sector remarked, "To make things work better, involve partners early on, get seniors and folks [with a disability] involved. They are making recommendations [about] what they think would work for them, and . . . having other players see that it matters is part of the success."

### **Expanded collaboration**

Improve collaboration between transportation and public health at the community level. To date, the full potential for collaboration between these sectors is unrealized. These sectors have similar goals in terms of improving equity of access to destinations that can support health and well-being. Transportation should be an active partner in public health efforts to address social isolation, and vice versa. These efforts should be combined with increased data collection described above, so as to make the benefits of cross-sector collaboration on the health and well-being of older adults clear.

Increase involvement and coordination between state agencies to align efforts between transportation, aging services, and health. More forums for coordination and collaboration across various state agencies (e.g., departments of motor vehicles, departments of

transportation, offices of aging, departments of health and human services) at the state level are needed to support community efforts to address the health and well-being of older adults using public transportation initiatives. Better coordination and collaboration would help to streamline funding, efficiently use limited resources, and align the goals and mechanics of programs serving older adults.

## **Operational improvements**

Expand publicly funded options for transportation, including a variety of options that are affordable, convenient, attractive, safe, and accessible for all older adults. Better aligning publicly available transportation services with the needs of older adults would need to take into account all levels of geography as well as the qualities of those transportation services, such as affordability, convenience, attractiveness, safety, and accessibility. This might include using policy levers to support volunteer drivers in situations where public transportation is otherwise not accessible or available, including mileage reimbursement above the currently allowable charitable rate and requirements for insurance coverage. Currently, liability laws and insurance requirements vary by state.<sup>46</sup>

Broaden the focus of transportation purpose beyond medical transportation to include destinations for social purposes. The focus for transportation for older adults is more commonly on health and health care access and less on social isolation/community connectedness. This leads to an issue of equity, in which some older adults with resources to travel outside these more basic destinations are able to connect socially and others are not. As a result, there is a need to broaden the focus of transportation programs, especially from the vantage point of agencies and sectors viewing transit as a potential collaborative partner.

Address public perception and awareness of public transportation among older adults to reduce stigma and increase knowledge. Another consistent theme from this work was the importance of addressing the perception of older adults related to public transportation. Transportation programs attempting to use buses to serve older adults need to consider how to make them more inviting to them. Some key informants interviewed in this study reported finding more success with smaller vehicles, such as small buses, minivans, and passenger vehicles seating 13–14 people, or through connections to sedan-based on-demand services, even though they may be more expensive. More work is needed to address public awareness of available options and additional information is needed from older adults themselves about what would make public transportation helpful and appealing. One powerful way to do so is to use stories of individual riders. In a few of our key informant interviews, human services and transit personnel told stories to share program successes with legislators. One key informant encouraged human service organizations/public transit to develop public service announcements for television. "We get stats on programs, [but that] doesn't get the environment stirring. Stories of successes are better to use politically and in outreach. . . . So many seniors get information on television, PSAs and such." In addition to reducing the stigma associated with using public transportation and increasing the attractiveness of transportation options, it is also important to be sure that information is disseminated to older adults in a clear, consistent format.

## Conclusion

The widespread prevalence of social isolation, including among older adults, necessitates urgent action to mitigate this key social determinant of health. Connecting people to resources, community amenities and events, and to one another using public transportation is one promising avenue. However, more research is needed to understand how best to do so in different geographic contexts across the U.S. in order to reduce rates of social isolation among older adults. The high prevalence of social isolation and loneliness among older adults, which leads to unnecessary costs, poor health outcomes, and even mortality, requires urgent and coordinated action to ensure that all older adults have equitable access to destinations that support their well-being.

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## Appendix: Approach

### Defining Public Transportation

In our research for this paper, we used an expansive definition of public transportation, including transportation funded by local, state, or federal entities. We consider public transportation broadly as any means of transport that is available for use by the general public or by specific populations for specific trips. Non-vehicle transportation, such as bicycling or walking, is not the focus of this paper. By this definition, these transportation modes include not only the traditional ones such as buses (including fixed-route and paratransit services, demand-response general public transportation, bus rapid transit, commuter buses, etc.), trains (light rail, commuter rail, heavy rail, monorail, streetcar, high-speed rail, etc.), and ferries, but also contemporary on-demand services (taxis, ridehailing), carpooling, vanpooling, volunteer transportation, car sharing, and micromobility options (scooters and mopeds).

### Data Collection Methods

Our approach to information gathering for this paper was twofold: literature review and key informant interviews. We conducted a thorough review of the literature on public transportation, health, well-being, and social isolation, with a particular emphasis on older adults. We began with a reverse search of an article detailing a scoping review of literature on the relationship between public transit and social isolation in older adults.<sup>11</sup> We then identified additional relevant research using PubMed, Google Scholar, and Ovid MEDLINE search engines. Our review of the literature identified only 20 studies specifically addressing public transportation and social isolation in older adults. We also incorporated information from gray literature, shared by various contacts in public health, public policy, gerontology, and transportation domains and found online and through expert interviews.

Key informants included both content experts and representatives of select transportation programs that viewed social connectedness as an aim. We conducted a series of semi-structured interviews with nine content experts in order to vet themes from our literature review and identify promising practices, exemplar programs, including monitoring and evaluation, as well as policy recommendations. We identified experts based on existing contacts from the National Center for Mobility Management (NCMM), the University of Minnesota (UMN), and those identified in the peer-reviewed and gray literature. We also used a snowball sampling technique, asking respondents to recommend additional key informants to include. Using the information from the literature review and expert interviews, we selected program examples for further study and interviewed an additional six key informants about the selected programs. Discussion topics included: program goals, description of the transportation intervention and any changes over time, impact of transportation programs on health and well-being, staffing and outreach, eligible populations, funding and partners, results, and learnings for the future. All but three of the invited key informants agreed to participate in interviews.

All interviews were conducted in April and May of 2020 over Zoom, with one member of the research team conducting the interview and another taking detailed notes. With the respondents' permission, we also audio-recorded all interviews in order to check for accuracy.

during analysis. We identified common themes across interviewees and prepared "case studies," or profiles of success stories and lessons learned from selected programs.

Our data collection approach was approved by the University of Minnesota Institutional Review Board.