NORC AT THE UNIVERSITY OF CHICAGO

Environmental Scan of Ride Share Services Available for Older Adults

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This study was conducted under contract to the CDC. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC.

EXECUTIVE SUMMARY

Purpose

This white paper describes the results of an environmental scan conducted for the Centers for Disease Control and Prevention. The purpose of the environmental scan was to describe U.S. ride share services that include older adults as part of the service population or that are specifically designed to serve older adults. This is the first phase of a three-year study to explore older adults' attitudes and beliefs toward using ride share services.

Methodology

The environmental scan is based on an analysis of ITN*America*'s Rides in Sight (RIS) senior transportation provider database, an analysis of ITN*Rides* (ITN*America*'s ride scheduling software and

research database), a targeted review of the literature, and key informant interviews with representatives from ride share services and other stakeholders.

Understanding the Issue

Older adults in the U.S. rely on private automobiles for transportation, either as drivers or as passengers.[i],[ii] They face the highest crash risk per mile driven of any group except teenagers, but if they stop driving, they face limited transportation options.[iii] When mass transit is available, the age-related changes that make driving a challenge for older adults[iv],[v],[vi] also make traditional transit systems difficult to navigate. The problem is neither small nor simple. By 2025, approximately 20 percent of drivers will be age 65 or older,[vii] and they outlive their decision to stop driving by about 10 years for women and 7 years for men.[viii] Older adults without transportation become isolated. More than half of older non-drivers stay home on any given day, in part because they lack transportation. Older non-drivers make 15 percent fewer trips to the doctor than older drivers and 65 percent fewer trips for social, family, and religious activities.[ix]

Ride Share Services: Addressing Unmet Transportation Needs for Older Adults

For the purposes of this paper, ride share is defined as transportation arranged through a third party where a person is a passenger in a private automobile. Friends in Service Helping (FISH), founded in England in 1961, and Faith in Action, funded by the Robert Wood Johnson Foundation from 1983 to 2008[x] and now known as the National Volunteer Caregiver Network (NVCN),[xi] are two national programs that provide transportation as a charitable service, addressing mobility and transportation challenges for people with low incomes, primarily older adults. The Independent Transportation Network (ITN), founded in 1995 and a

product of the Edmund S. Muskie School of Public Service, is grounded in social research, policy analysis, economics, and administrative law and focuses on the safety and mobility for all older adults, regardless of income.**[xii]** To better understand the characteristics and behaviors of the older adults who use the service and the volunteers who drive them, ITN built a 178-field research database into ITN*Rides*, the enterprise software developed specifically for the mobility needs of older adults. Using the ITN*Rides* research database and Rides in Sight, a searchable on-line database of all senior transportation providers in the U.S., findings from a literature review, and insights gleaned from telephone interviews with nine key informants representing ride share services, referral services, and other organizations, this environmental scan developed profiles of both older people who use ride share services and the ride share services available to them.

Profile of Older Adults (65 and Older) Who Used Non-Profit Ride Share Services

The mean age of ITN riders age 65 and older was 81, and the majority were female (74 percent); they were predominantly Caucasian (93 percent) with a relatively modest income (41 percent had an income less than $25,000) and 62 percent lived alone in the community. Despite their special mobility needs (29 percent of ITN riders used a cane, 27 percent used a walker, and 5 percent used a wheelchair), seven out of ten ITN riders reported their health status as excellent, very good, or good. Driver assistance was required by 18 percent of ITN riders. ITN riders used the service for an array of purposes, from intermodal connections (such as trips to airports), which accounted for less than 1 percent of rides, to medical needs (43 percent) and consumer needs (25 percent), such as trips to the grocery store or hairdresser.

Characteristics of Ride Share Services Available for Older Adults

Queries to ITN's RIS database as of August 2018 identified 917 individual non-profit ride share services (in 917 locations) and three for-profit ride share services (with 888 locations) available for older adults in the U.S.; the subsequent review of the literature identified an additional 8 for-profit services (then added to RIS). These ride share services vary by corporate structure (non-profit and for profit), location (urban, suburban, and rural), use of technology (high tech and low tech), and business model (local and national). Other considerations that affect all ride share services include public and private policy, the special needs of an aging population, and resources.

Non-Profit Ride Share Services. The characteristics of the 917 non-profit older adult ride share services paint a picture of community service. Almost 80 percent offered door-to-door service and provided transportation for older adults. Many non-profit services provide rides only for specified trip purposes. The most common eligible trip purposes were medical or health care (68 percent), necessary errands, such as a trip to the pharmacy or bank (37 percent), and grocery shopping (37 percent). More than one quarter of the services offered rides for any purpose. One third offered a steadying arm, 27 percent offered help in and out of the vehicle, and 17 percent offered assistance with mobility devices, such as walkers. All services scheduled rides in advance, though some also scheduled rides on demand. Two thirds offered their services for free.

One key informant interview with a non-profit ride share service provider who served the older adult population exclusively described their organization's mission as empowering older adults to remain in their homes and to be independent and engaged in the community. Another said their mission was to enhance health and quality of life by providing affordable, volunteer-based transportation. Both of these ride share providers described the importance of a rewarding personal experience for the drivers and the riders. Key informants

characterized their ride share services as “neighborly” and “trustworthy” and emphasized “building relationships with the people transported.”

For-Profit Ride Share Services. Of the three for-profit ride share services with 888 locations available to older adults in the 2018 RIS query, two offered ride share services to the general population, including older adults, and one specialized in serving older adults. All three of the for-profit ride share services offered rides for any trip purpose. During key informant interviews, representatives from for-profit ride share services described their organizations as technology companies, and their missions as providing reliable, affordable transportation for all and improving people’s lives with the best transportation. They emphasized their relationships with organizations that serve older adults, such as older adult living communities and healthcare providers, rather than the older adults themselves. One also noted the need for technology companies to focus on conducting greater outreach to older adults. They described the product lines and solutions they were developing for older adults, but at the time of the interviews did not have data to share on the services they were providing.

Based on the literature, the largest for-profit ride share companies in the U.S. are Uber and Lyft. They offer rides, on demand, in private automobiles, mostly requested through a smartphone application. Both Uber and Lyft conduct 70 percent of their trips in nine metropolitan areas**[xiii]** where people age 25 to 34 use transportation network companies (TNCs) approximately three times as often as people age 65 and older.**[xiv]** For-profit ride share organizations are working to create systems and technology to address some of the barriers that prevent older adults from using their services. For example, they have created dashboards for computers so organizations that serve older adults can schedule rides for older adults who prefer not to use a smartphone app. Interview respondents noted that a challenge to providing

assistance to older riders is their labor model, since drivers are independent contractors who cannot be required to offer the kind of assistance necessary for many older adults who need a steadying arm or help with a walker, packages or seat belt.

The Marketplace

The marketplace as it impacts for-profit and non-profit services and the policy environment can influence the availability of ride share services. Neither of the two largest for-profit services, Uber and Lyft, has demonstrated profitability.[xv],[xvi] Policy makers have begun to address some of the unintended consequences of ride share expansion, such as traffic congestion and the use of independent contractors, as evidenced by New York City's ordinance requiring TNCs to pay their drivers minimum wage and setting a one-year moratorium on new Uber and Lyft vehicles.[xvii] In the non-profit sector, insufficient supply of volunteer drivers causes some services to ration rides and others to require long lead times to accept ride requests. Insurance policies may also impede volunteer driver participation.

Barriers and Facilitators Impacting Older Adults' Use of Ride Share Services

This white paper presents a conceptual framework, informed by the socio-ecological model[xviii] used in public health research, to organize and describe the barriers and facilitators that affect older adults' use of ride share services. At the center of the conceptual framework is the older adult's personal needs and characteristics (individual level), followed by their social network (interpersonal level), the ride share services and business models available (organizational level), the access and geography in their location (community level) and the regulations, funding and available incentives (public policy level). Finally, information technology affects all levels of this conceptual framework.

Future Potential of Ride Share Services

This study found that in high density urban locations, ride share options tend to be for-profit services, with communications accommodations for older adults who cannot or do not use smartphones or computers. The urban business model may be primarily suitable for the "youngest-old" (people age 65 to 74) who can benefit from the curb-to-curb service offered by contract drivers who might or might not offer assistance. The non-profit services might help older adults at all levels of need and at any age, but according to the data gathered by ITN*America* over 20 years and in 27 locations, the non-profit ride share services largely serve the "middle-old" (people age 75 to 84) and "oldest-old" (people age 85 or older), and offer rides to those who are transitioning from the driver's seat to the passenger seat. All of the services use private automobiles, but there is a marked difference in how rides are scheduled. In the non-profit sector, almost 100 percent of rides are scheduled in advance, while in the for-profit sector, rides are predominantly provided on-demand.

There is a need for more understanding of ride share services and the impact on the aging population. Many older adults—in particular, people age 75 or older—require high touch personal service to travel safely, remain in their homes, and actively engage in their communities. Incentives for private solutions, such as innovative programs where older adults may trade the cars they no longer drive to pay for their own transportation, or where volunteers earn credits for driving older adults and save those credits for their own future needs, could potentially help to prepare for the mobility needs of the next generation and to scale with the aging of the population. This may indicate a need for greater stakeholder awareness and education about the value of ride share services to support the transportation needs of older adults.

[i] Rosenbloom S. Mobility of the elderly: good news and bad news. In: Transportation in an aging society: a decade of experience. Transportation Research Board Conference Proceedings 27; Washington, DC. 2004. Available from http://onlinepubs.trb.org/onlinepubs/conf/reports/cp_27.pdf <http://onlinepubs.trb.org/onlinepubs/conf/reports/cp_27.pdf>.

[ii] Shen S, Koech W, Feng J, Rice TM, Zhu M. A cross-sectional study of travel patterns of older adults in the USA during 2015: implications for mobility and traffic safety. BMJ Open. 2017;7(8):e015780.

[iii] Preserving the mobility and safety of older Americans. March 2018. TRIP. Available from: http://www.tripnet.org/docs/Older_Americans_Mobility_TRIP_Report_2018.pdf <http://www.tripnet.org/docs/older_americans_mobility_trip_report_2018.pdf>.

[iv] Dawson JD, Uc EY, Anderson SW, Johnson AM, Rizzo M. Neuropsychological predictors of driving errors in older adults. The American Geriatrics Society 2010;(58):1090-1096.

[v] Anstey KJ, Wood J, Lord S, Walker JG. Cognitive, sensory and physical factors enabling driving safety in older adults. Clinical Psychology Review. 2004;25:45-65.

[vi] Owsley C. Driver Capabilities in transportation in an aging society: a decade of experience. Technical papers and reports from a conference; 1999 Nov. 7–9; Bethesda, MD. Washington, DC: Transportation Research Board; 2004.

[vii] Lynott J, Figueiredo C. How the travel patterns of older adults are changing: highlights from the 2009 National Household Travel Survey. Fact Sheet 218, AARP Public Policy Institute; April 2011.

Available from: **https://assets.aarp.org/rgcenter/ppi/liv-com/fs218-transportation.pdf** <https://assets.aarp.org/rgcenter/ppi/liv-com/fs218-transportation.pdf>.

[viii] Foley DJ, Heimovitz HK, Guralnik JM, Brock DB. Driving life expectancy of persons aged 70 years and older in the United States. Am J Public Health. 2002;92(8): 1284-1289.

[ix] Bailey L. Aging Americans: stranded without options. Surface Transportation Policy Project. 2004. Available from: **https://www.apta.com/resources/reportsandpublications/Documents/aging_stranded.pdf** <https://www.apta.com/resources/reportsandpublications/documents/aging_stranded.pdf>.

[x] Parker SG, Pomphrey A. Robert Wood Johnson Foundation [Internet]. Faith in Action; c2001-2018 [cited 2018 Nov 8]. Available from: **https://www.rwjf.org/en/library/research/2009/05/faith-in-action.html** <https://www.rwjf.org/en/library/research/2009/05/faith-in-action.html>.

[xi] Family Caregiver Alliance [Internet]. National Volunteer Caregiving Network (Faith in Action).; c1996-2018 [cited 2018 Aug 28]. Available from: **https://www.caregiver.org/national-volunteer-caregiving-network-faith-action-1** <https://www.caregiver.org/national-volunteer-caregiving-network-faith-action-1>.

[xii] ITN*America* [Internet]. 2019 [cited 2019 July 31]. About ITN. Available from: https://www.itnamerica.org/about.

[xiii] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: **http://www.schallerconsult.com/rideservices/automobility.pdf** <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[xiv] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: http://www.schallerconsult.com/rideservices/automobility.pdf <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[xv] Lyft, Inc. United States Securities and Exchange Commission [Internet]. Form S-1 Registration Statement Under the Securities Act of 1933. March 1, 2019 [cited 2019 August 14]. Available from: https://www.sec.gov/Archives/edgar/data/1759509/000119312519059849/d633517ds1.htm <https://www.sec.gov/archives/edgar/data/1759509/000119312519059849/d633517ds1.htm>

[xvi] Uber Technologies. United States Securities and Exchange Commission [Internet]. Form S-1 Registration Statement Under the Securities Act of 1933. April 11, 2019 [cited 2019 August 14]. Available from: https://www.sec.gov/Archives/edgar/data/1543151/000119312519103850/d647752ds1.htm#toc647752 <https://www.sec.gov/archives/edgar/data/1543151/000119312519103850/d647752ds1.htm#toc647752>.

[xvii] Hawkins AJ. [Internet]. February 1, 2019. NYC's new driver wage law means the days of cheap Uber rides are over. Available from: https://www.theverge.com/2019/2/1/18206737/nyc-driver-wage-law-uber-lyft-via-juno <https://www.theverge.com/2019/2/1/18206737/nyc-driver-wage-law-uber-lyft-via-juno>.

[xviii] Centers for Disease Control and Prevention [Internet]. 2018 Feb 20 [cited 2018 Nov 16]. The social-ecological model: a framework for prevention. Available from: https://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html <https://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html>.

INTRODUCTION

The Centers for Disease Control and Prevention (CDC) contracted with NORC at the University of Chicago to conduct a three-year study (2017-2020) assessing the barriers and facilitators of older adults' (age 65 and older) use of ride share services. NORC is working with ITN*America*, the first national, non-profit transportation network for older adults, to conduct the study. The purposes of this study are three-fold: 1) describe currently available ride share services in the United States (U.S.), including services specifically for older adults; 2) understand older adults' attitudes and beliefs toward using these services; and 3) compare older adults' attitudes and beliefs to a group of younger adults. Results will help CDC to understand older adults' use of ride share services and identify strategies for meeting the transportation needs of older adults.

The first phase of this study, conducted during 2018, was an environmental scan to describe currently available U.S. ride share services, including services specifically for older adults and services that include older adults as part of the service population. We also identified the facilitators and barriers of older adults' use of ride share services from the perspective of ride share service providers and other older adult transportation experts. The environmental scan methods were four-fold. First, we conducted an analysis of the data in ITN*America*'s Rides in Sight™ (RIS) database, the largest national database of transportation services for older adults in the U.S., to quantify the number of ride share services available to older adults in the U.S. Second, we conducted an analysis of ITN*Rides*, ITN*America*'s proprietary database, to produce a demographic profile of older adults who used ITN's ride share services. Third, we conducted a targeted review of peer-reviewed literature, grey

literature, and information available from organizations that provide transportation services, support services, and ride share services. Finally, we conducted key informant interviews with representatives from ride share service organizations and older adult transportation organizations. The environmental scan is intended to be formative in nature and provides context and background that will inform future phases of this study.

This white paper describes the results of the environmental scan. We begin with an overview of the methodology and an introduction to ride share services for older adults. We also provide a brief history of ride share services. Then, we discuss the characteristics of ride share services available to older adults in the U.S., based on an analysis of ITN*America*'s RIS database. We also present a profile of older adults who used ITN's ride share service in the U.S., based on ITN*America*'s ITN*Rides* database. Then, we describe ride sharing and the transportation policy context. Finally, we present the barriers and facilitators of older adults' use of ride share services, as identified through the key informant interviews and a targeted review of the peer-reviewed and grey literature, and offer a conceptual framework to organize these results. We conclude with a discussion of the potential for ride share services to address unmet transportation needs of older adults.

METHODOLOGY

The environmental scan is based on four information gathering and analysis activities: an analysis of ITN*America*'s Rides in Sight database, an analysis of ITN*Rides*, a targeted review of the literature, and key informant interviews. NORC's Institutional Review Board (IRB) certified these research activities were exempt. Review

by the Office of Management and Budget (OMB) was not required since this effort involved secondary data analysis and the collection of information from nine or fewer individuals. We describe the study methodology below.

Analysis of ITN*America*'s Rides in Sight Database. To identify and describe the ride share services available to older adults throughout the U.S., ITN*America* conducted an analysis of the Rides in Sight (RIS) database. The RIS database is the largest national data source on transportation services available for older or visually impaired people.[i] ITN*America* created RIS by researching communities nationwide and aggregating the information into a free online searchable database, with a free RIS hotline and trained operators to assist those who request information by telephone about transportation services available in their community.[ii] ITN*America* continuously updates RIS by reviewing publicly available information and verifying information about the transportation services through telephone interviews with administrators of these services; it is the most accurate and complete data source on this topic. RIS includes transportation options for nearly all of the 3,114 counties/county equivalents in the U.S. The searchable database lists approximately 15,000 individual transportation options. These 15,000 options include ride share services as well as numerous other types of transportation, such as public transportation, non-emergency medical services, and others, that do not meet the definition of ride share services used for this study. From the 15,000 transportation options in the RIS database, we identified 920 ride share services (that operate in 1,805 service areas) and calculated descriptive statistics to summarize the characteristics of these services. Ride share services reported these categories of assistance were available to riders. Appendix A presents more information on the RIS database.

Analysis of ITN*Rides*. ITN*America* also conducted an analysis of the database for ITN*Rides*, ITN*America's* enterprise software which provides routing and rides coordination, volunteer management, finance, and reporting for rides provided by ITN in 29 locations across the U.S. In ITN*Rides*, location is defined as a service area with a population of 200,000 people or more within a 15-mile radius, primarily mid-sized urban areas. ITN*Rides* contains a research database with 178 fields designed to gather information on the characteristics and behaviors of older adults and visually impaired people who use ITN's ride share service and the volunteers who drive them. It tracks each rider's trip origin, destination, and ride frequency, as well as rider needs, driving status, and participation in other unique ITN programs. ITN*Rides* tracks every ride and older adult who has ever used the ITN service in any of the 29 ITN locations across the U.S. since 1996. The ITN*Rides* database tracked more than one million rides by 2018.

ITN*Rides* is both an operational and a research database, the first of its kind to connect member characteristics to longitudinal rides data on transportation. There are several important considerations when interpreting the findings. First, data are presented for ITN members age 65 and older who used ITN's ride share service. Second, personal data are self-reported by ITN members in their application (for example, their living arrangements and whether they currently drive) or completed by caregivers, social workers or family members. Third, personal data reflect member characteristics for riders age 65 and older as they entered the service and at the time they completed their application for enrollment in ITN services. Age data are calculated as the rider's age on the day they joined the ITN service. Since riders' age changes over time, to best calculate the age of older adults who use the ITN ride share service, we selected a point in time—the day they joined the ITN service. However, the ride characteristics (ride purpose such as medical, consumer) are based on every ride taken by members age 65 and older over the entire time they used the service. Personal data may be updated by ITN

affiliates as new information becomes available (for example, if a member reports their living arrangement has changed). However, it is possible that data have not been updated by the member or member's family to the ITN affiliate (for example, if a member is deceased). Finally, data on annual household income and health status were gathered from ITN annual customer satisfaction surveys administered from 2010 to 2018 for household income and 2008 to 2018 for health status.

For this study, ITN*America* analyzed data from ITN*Rides* (1996 to October 2019) to create a demographic profile of older adults age 65 and older who used ride share services designed to meet the transportation needs of older adults. We used relevant data from 27 of 29 ITN locations. The analysis was conducted in October 2019. ITN*Rides* data are not publicly available.

Targeted Review of Literature. We conducted a targeted review of peer-reviewed literature, as well as grey literature available from organizations such as the Transportation Research Board; websites of ride share organizations such as Uber and Lyft, and transportation referral services, such as GoGoGrandparent; websites of federal agencies such as the Administration on Aging and the Centers for Medicare & Medicaid Services; and websites of other relevant organizations, such as the National Center for Mobility Management, National Rural Transit Assistance Program, and American Planning Association. The literature review focused on identifying information related to the barriers and facilitators of older adults' use of ride share services available for older adults or services that connect older adults to ride share services.

Key Informant Interviews. NORC conducted one-hour semi-structured telephone interviews with nine key informants, including representatives from organizations that provide ride share services and referral services, as well as other stakeholders who work on issues related to older adult transportation. NORC, ITN*America*, and

CDC determined the final list of key informant organizations; this list is presented in Appendix B. The purpose of the interviews was to learn about the types of ride share services available to older adults and the barriers to and facilitators of older adults' use of ride share services. We used a semi-structured interview protocol to conduct the discussions. Topics included an overview of the ride share service or organization, services available for older adults, and barriers and facilitators affecting older adults' use of ride share services. The interviews were led by a senior member of the study team; a second team member took detailed notes. NORC conducted the interviews in June and July 2018. NORC utilized NVivo qualitative analysis software (QSR International Pty Ptd., Version 12) to conduct a thematic analysis of the interviews. Using a combined inductive and deductive approach, the NORC research team created a list of codes based on a review of the interview transcripts to identify patterns and themes of interest related to this study.

[i] ITNAmerica. (n.d.). What we do. Retrieved from **https://www.itnamerica.org/what-we-do** <https://www.itnamerica.org/what-we-do>

[ii] Rides in Sight [Internet]. ITNAmerica; 2018 [cited 2018 Aug 28]. Available from: **https://www.ridesinsight.org/** <https://www.ridesinsight.org/>.

UNDERSTANDING THE ISSUE

It is well documented that older adults in the U.S. rely on private automobiles for transportation, taking 9 out of 10 personal trips in cars, either as drivers or as passengers.**[i]**,**[ii]** As the population ages,

this dependence poses safety and transportation problems for older drivers. If they remain in the driver's seat, they face the highest crash risk per mile driven of any group except teenagers; if they stop driving, they face limited transportation options.[iii] Their dilemma is made more challenging by where they choose to live, such as in suburban and rural communities that lack the density for traditional transit systems.[iv],[v] When mass transit is available in more urbanized areas, however, older adults may have difficulty using it. The age-related changes that make driving a challenge for older adults[vi],[vii],[viii]—vision changes, cognitive decline, flexibility limitations, and loss of muscular strength—also make traditional transit systems a challenge to navigate.

This safety and transportation problem is not small. By 2030, a little more than a decade away, more than 20 percent of Americans will be age 65 and older, compared with 13 percent in 2010 and 9.8 percent in 1970.[ix] As the older adult population continues to grow, so does the population of drivers age 65 or older. It is projected that by 2025, approximately 20 percent of drivers will be age 65 or older.[x] The problem is further complicated by the length of time people outlive their decision to stop driving. Research shows that driving life expectancy is shorter than life expectancy, so women who stop driving are dependent on alternative transportation for about 10 years and men for about 7 years.[xi]

Research has also identified declines in physical health and social functioning among older adults who stop driving. A meta-analysis of five studies on the effects of driving cessation identified an association between driving cessation and depression among drivers age 55 and older.[xii] Further, older adults who do not drive have fewer opportunities for social engagement.[xiii] When alternative transportation is not available or does not meet their needs, older adults become isolated. More than half of older non-drivers stay home on any given day, in part because they lack

transportation. Older non-drivers make 15 percent fewer trips to the doctor than older drivers and 65 percent fewer trips for social, family, and religious activities.[xiv]

This problem is also expensive. In 2017, the average American household spent 15.6 percent of income, before taxes, on transportation, including vehicle purchases, gasoline and fuel, other vehicle expenses, and public and other transportation. Transportation expenditures were exceeded only by housing expenditures.[xv] How will families, communities and society address this safety and mobility need; who will pay for it; and how will it be delivered? The answers to these questions involve public policy, the marketplace, the special needs of this aging population and emphatically, information technology.

Transportation is among the many industries affected by the information technology revolution. In 2018, according to data from the Pew Research Center, thirty-six percent of all U.S. adults said they had used a service to share rides in private automobiles, more than double since 2015. In addition, a total of 24 percent of U.S. adults over 50 years old reported having used a ride-hailing service. Forty-five percent of urban residents, 40 percent of suburban residents, and 19 percent of rural residents reported having used a ride-hailing app.[xvi] Ride share services offer a promising solution for promoting older adult health and well-being by improving mobility for the one out of every five older Americans who has limited or no access to a private vehicle, either as a driver or as a passenger.[xvii]

While ride sharing has been defined in different ways, for the purposes of this paper, ride sharing is defined as transportation arranged through a third party where a person is a passenger in a private automobile. This excludes public transportation or a ride provided by a van, bus, or taxi. A ride share service is an organization (for profit or not-for-profit) where the majority of the

services provided use a private automobile. Individuals who provide transportation but are not affiliated with an organization are also excluded from this definition. For example, in many older adult living facilities there are freelance drivers, the equivalent of “gypsy cabs,”**[xviii]** where a private citizen, not commercially licensed, will give rides to other residents for a fee. It could also be a neighbor, friend, or co-worker who regularly gives rides.

[i] Rosenbloom S. Mobility of the elderly: good news and bad news. In: Transportation in an aging society: a decade of experience. Transportation Research Board Conference Proceedings 27; Washington, DC. 2004. Available from **http://onlinepubs.trb.org/onlinepubs/conf/reports/cp_27.pdf** <http://onlinepubs.trb.org/onlinepubs/conf/reports/cp_27.pdf>.

[ii] Shen S, Koech W, Feng J, Rice TM & Zhu M. (2017). A cross-sectional study of travel patterns of older adults in the USA during 2015: implications for mobility and traffic safety. BMJ Open*;7*(8):e015780.

[iii] Preserving the mobility and safety of older Americans. March 2018. TRIP. Available from: **http://www.tripnet.org/docs/Older_Americans_Mobility_TRIP_Report_2018.pdf** <http://www.tripnet.org/docs/older_americans_mobility_trip_report_2018.pdf>.

[iv] Rosenbloom S. Mobility of the elderly: good news and bad news. In: Transportation in an aging society: a decade of experience. Transportation Research Board Conference Proceedings 27; Washington, DC. 2004. Available from **http://onlinepubs.trb.org/onlinepubs/conf/reports/cp_27.pdf** <http://onlinepubs.trb.org/onlinepubs/conf/reports/cp_27.pdf>.

[v] Neff J and Dickens M. 2016 Public transportation fact book. 67th ed. Washington, DC: American Public Transportation Association; February 2017. Available from https://www.apta.com/resources/statistics/Documents/FactBook/2016-APTA-Fact-Book.pdf#page=8 <https://www.apta.com/resources/statistics/documents/factbook/2016-apta-fact-book.pdf#page=8>.

[vi] Dawson JD, Uc EY, Anderson SW, Johnson AM, Rizzo M. Neuropsychological predictors of driving errors in older adults. The American Geriatrics Society. 2010(58):1090-1096.

[vii] Anstey KJ, Wood J, Lord S, Walker JG. Cognitive, sensory and physical factors enabling driving safety in older adults. Clinical Psychology Review. 2004;25:45-65.

[viii] Owsley C. Driver Capabilities in transportation in an aging society: a decade of experience. Technical papers and reports from a conference; 1999 Nov. 7–9; Bethesda, MD. Washington, DC: Transportation Research Board; 2004.

[ix] Ortman JM, Velkoff VA, Hogan H. An aging nation: the older population in the United States. Current Population Reports, P25-1140. Washington, DC: U.S. Census Bureau; 2014. Available from: https://www.census.gov/prod/2014pubs/p25-1140.pdf <https://www.census.gov/prod/2014pubs/p25-1140.pdf>.

[x] Lynott J, Figueiredo C. How the travel patterns of older adults are changing: highlights from the 2009 National Household Travel Survey. Fact Sheet 218, AARP Public Policy Institute; April 2011. Available from: https://assets.aarp.org/rgcenter/ppi/liv-com/fs218-transportation.pdf <https://assets.aarp.org/rgcenter/ppi/liv-com/fs218-transportation.pdf>.

[xi] Foley DJ, Heimovitz HK, Guralnik JM, Brock DB. Driving life expectancy of persons aged 70 years and older in the United States. Am J Public Health. 2002;92(8): 1284-1289.

[xii] Edwards JD, Lunsman M, Perkins M, Rebok GW, Roth DL. Driving cessation and health trajectories in older adults. J Gerentol. 2009;64A(12):1290-1295.

[xiii] Chichuri S, Mielenz TJ, DiMaggio CJ, Betz ME, DiGuiseppi, Jones VC et al. Driving cessation and health outcomes in older adults. J Am Geriatr Soc. 2016;64:332-341.

[xiv] Bailey L. Aging Americans: stranded without options. Surface Transportation Policy Project. 2004. Available from: https://www.apta.com/resources/reportsandpublications/Documents/aging_stranded.pdf <https://www.apta.com/resources/reportsandpublications/documents/aging_stranded.pdf>.

[xv] U.S. Department of Labor, Bureau of Labor Statistics. Consumer Expenditures in 2017. Report 1080. April 2019 [cited 2019 May 13]. Available from: https://www.bls.gov/opub/reports/consumer-expenditures/2017/pdf/home.pdf <https://www.bls.gov/opub/reports/consumer-expenditures/2017/pdf/home.pdf>.

[xvi] Jiang J. More Americans are using ride-hailing apps. Pew Research Center. 2019. Available from: http://www.pewresearch.org/fact-tank/2019/01/04/more-americans-are-using-ride-hailing-apps/ <http://www.pewresearch.org/fact-tank/2019/01/04/more-americans-are-using-ride-hailing-apps/>.

[xvii] Bailey L. Aging Americans: Stranded without options. Surface Transportation Policy Project. 2004. Available from: https://www.apta.com/resources/reportsandpublications/Documen

ts/aging_stranded.pdf
<https://www.apta.com/resources/reportsandpublications/documents/aging_stranded.pdf>.

[xviii] Cetin T and Deakin E. Regulation of taxis and the rise of ridesharing. Transport Policy. 2019;76:149-158.

RIDE SHARE SERVICES: ADDRESSING UNMET TRANSPORTATION NEEDS FOR OLDER ADULTS

People have been giving each other rides in automobiles for as long as there have been automobiles. Offering rides through a third party as a service to fill an unmet need, however, dates back to 1961 with the Friends In Service Helping (FISH) program, organized in England and represented by the Christian symbol for hospitality, the fish.[i] In the U.S., the first chapter of FISH was organized in 1964 in West Springfield, Massachusetts.[ii] FISH chapters offer many services, with free rides for medical transportation for the needy prominent among them and still offered today in communities across the U.S. Another faith-based service, Faith in Action, funded by the Robert Wood Johnson Foundation (RWJF) from 1983 to 2008, was established to engage and organize volunteers to provide services to people in need.[iii] RWJF awarded more than 1,000 grants through the Faith in Action program to fund volunteer caregiving organizations throughout the U.S. The most common services provided by the volunteer caregiving organizations, after phone calls and friendly visits, were shopping (which usually required transportation) and transportation. The majority of service recipients were frail, elderly, and homebound. Of the 1,000 programs originally funded, 667 were active in 2008. [iv] Faith in Action now

operates under the umbrella of the National Volunteer Caregiver Network (NVCN),[v] and NVCN tracks approximately 700 local programs that each deliver an estimated average of 2,700 trips a year. As of 2018, transportation was the most requested service, according to information gathered through our key informant interviews. FISH and Faith in Action are two national programs that provide transportation as a charitable service—addressing mobility and transportation challenges for people with low incomes, primarily older adults.

Another national effort to provide transportation services for older adults is the Independent Transportation Network (ITN), founded in Maine in 1995.[vi] ITN is focused on the safety and mobility for all older adults, regardless of income. Because ITN was a product of the Edmund S. Muskie School of Public Service, it was grounded in social research, policy analysis, economics, and administrative law. Funding for the research and development of ITN's door-through-door and arm-through-arm service came from the Federal Transit Administration (FTA), AARP (formerly American Association of Retired Persons), the Transportation Research Board (National Academies of Science), and numerous private philanthropies.

In 2004, ITN created a national organization, ITN*America*, with a mission to promote lifelong mobility for older adults. ITN*America* provides the information technology, research, policy analysis, and training in marketing and communications to help replicate ITN in other states and to connect the new ITN affiliates into a national network. To better understand the characteristics and behaviors of the older adults who use the service and the volunteers who drive them, ITN built a research database with 178 fields into ITN*Rides*, the enterprise software that provides routing and rides coordination, volunteer management, finance, and reporting. ITN*America* is a social enterprise, a charitable non-profit that operates like a business but with a social purpose bottom line, and is the first older adult transportation service to design and build software

specifically for the special needs of older adults. ITN charges for rides and uses both volunteer and paid drivers, with subsidies called scholarships for those who cannot afford to use the service, which is available 24 hours per day, 7 days per week, for any purpose. Using volunteers to lower labor costs is classic non-profit practice, but ITN has gone a step further, storing volunteer credits in Personal Transportation Accounts for future use, so volunteer drivers might help others now and plan for their own future transportation needs at the same time. ITN also developed the CarTrade program that helps older adults exchange the equity in their cars to fund their transportation needs.[vii],[viii]

In addition to ITN, many other volunteer and non-profit ride share services have developed from the bottom up, as well as from the top down. There are almost one thousand volunteer and non-profit ride share services scattered across the U.S., and most are local, grassroots, do-it-yourself projects. Like ITN, many of these services offer door-to-door and door-through-door services for older adults. The characteristics of these and other non-profit ride share services will be described in more detail later in this paper.

In 2015, CDC used the unique ITN*America* database to study older adult ride share and the transition from driving. Using three years of data from 14 locations across the U.S., the research showed that older adults are willing to use a ride share service that meets their needs and that the transition from the driver's seat to the passenger seat has recognizable stages.[ix] The findings are important because they point toward a solution to the large and growing unmet safety and mobility needs, both present and future.

Modern for-profit ride share services have also emerged, such as Uber and Lyft, founded in 2009 and 2012, respectively.[x],[xi] Like ITN, they rely on advances in information technology. These modern ride share services are called Transportation Network Companies (TNCs). There has been much discussion about the definition of

TNCs, and states define TNCs in different ways.[xii] The Shared-Use Mobility Center defines TNCs as "ride-sourcing providers…that use online platforms to connect passengers with drivers who use personal, non-commercial, vehicles."[xiii]

Based on our key informant interviews with for-profit and non-profit ride share services, we learned that the two largest for-profit ride share services in the U.S. are designed to meet the mobility needs of the general population, and they are developing technological solutions to reach millions of older adults who limit or stop driving in the last decades of their lives. For-profit ride share service organizations are pilot testing partnerships with health care providers, older adult care organizations, and assisted living facilities in this emerging market. With billions of dollars to spend on sales and marketing[xiv] and strong brand recognition, for-profit ride share services are fundamentally different than the small non-profit ride share services that have, until the last few years, offered most of the ride share services aimed at older adults and their needs. Beyond the two largest for-profit ride share services, there are other for-profit organizations and intermediaries working to connect older adults to transportation services;[xv] we discuss these for-profit ride share intermediaries and organizations later in the paper.

We also learned through the key informant interviews that none of these services exist in a vacuum. All reside in a social, policy, and business context, within markets for labor, capital, risk management (insurance), and technology—specifically the kind of information technology that creates efficiency and innovation. Before there was dynamic ride sharing with smart phones and geographic information system technology, policy makers designed livery ("vehicle for hire") insurance laws for an analog transportation world of taxicabs, public transit, and private automobile owners who did not charge people for rides.

As early as 1995, the same year ITN delivered its first ride, Maine passed a law to protect volunteer drivers from insurance practices that increased premiums or denied coverage to drivers who use their vehicles to volunteer.[xvi] Other states followed, including Florida, Illinois, Kentucky, Maryland and Vermont, as well as cities such as Kansas City, Memphis, Sarasota, Cincinnati and South Portland, Maine, which also passed laws to distinguish non-profit ride share services from traditional livery and public transportation. When Uber entered the marketplace, cities and states introduced new laws and regulations for ride sharing across the country.[xvii] By July 2017, 48 states and Washington, DC had at least one piece of legislation regulating TNCs related to licensing, insurance, driver vetting, and accessibility.[xviii] According to ITN*America*, the insurance industry responded by either charging a premium or denying coverage to drivers who use their cars for ride sharing whenever a fare is charged, with no distinction between charitable community efforts and paid for-profit services. One study exploring the issues facing volunteer driver programs in Minnesota recommended that state laws and regulations distinguish between volunteer drivers and ride share service contractors.[xix]

According to ITN*America*, the recommendations did not save ITN*TwinCities* in Minnesota which closed its doors because of policy issues affecting transportation services that charge fares, whether or not they are charitable non-profits that rely on volunteer drivers, despite several years of community effort and ample philanthropic support. One ITN*TwinCities* member wrote ITN*America* to say that rides to the eye doctor that ITN*TwinCities* provided for free now cost her $75 when she traveled with a for-profit service. Other ITN affiliates that have reported problems to ITN*America* include ITN*Lanier* in Georgia, which may not reimburse volunteer drivers for mileage expenses if riders pay any fare at all, and ITN*LehighValley* in Pennsylvania, where the executive director reported losing several new volunteer drivers whose insurance companies told them their rates would increase if they used their

cars to volunteer. Some volunteer drivers for ITN*Suncoast* in Sarasota, Florida have stopped driving because their insurance companies told them they would not have coverage if they drove as volunteers.

In addition to ride share services, there are a variety of national entities and organizations that provide information and referral services designed to help older adults identify and schedule rides with transportation services. While they are not transportation providers, they offer resources and support to older adults who seek transportation services.

The oldest national information resource that includes older adult transportation is the Eldercare Locator, administered by the National Association of Area Agencies on Aging, with funding from the federal government through the Administration for Community Living.**[xx]** Although it was established in 1991 as a national referral resource for the entire spectrum of issues facing older Americans, one in every five calls (21 percent) to the Eldercare Locator is a request for transportation, and 77 percent of those calls are for medical transportation. This is perhaps because **www.Medicare.gov** <http://www.medicare.gov> and 1-800-Medicare refer people to the Eldercare Locator for assistance. Consumers who call the Eldercare Locator are most often directed to the 622 federally designated **Area Agencies on Aging** <https://eldercare.acl.gov/public/about/aging_network/aaa.aspx>, where local staff members help connect callers to local transportation programs and services. The top transportation requests to the Eldercare Locator are for routine medical appointments (74 percent), general transportation (8 percent), wheelchair or scooter assistance (5 percent), dialysis treatment (3 percent), and long-distance transportation (2 percent).**[xxi]** There is also a direct link to the Eldercare Locator from the National Aging and Disability

Transportation Center, funded by the Federal Transit Administration (FTA) and formerly known as the National Center for Senior Transportation.

Rides in Sight <http://www.ridesinsight.org> (RIS) is the most recent national information resource for older adult transportation and, unlike the Eldercare Locator, the RIS database and referral service focuses solely on transportation, specializing in service for older adults and visually impaired people. The RIS data were analyzed for this report. Developed and administered by ITN*America*, with support from Regeneron Pharmaceuticals, it lists approximately 15,000 transportation services for older and visually impaired people. The database is free to the public and searchable online, with a toll-free hotline and trained operators to assist those who prefer asking for information by telephone.

In addition, there are services available that leverage both smartphone technology and web-based dashboards to facilitate scheduling and coordination of rides for older adults. GoGoGrandparent was established in 2016 to connect older adults without smartphones to ride share services available through Lyft and Uber.[xxii] GoGoGrandparent operates as a call center, through which callers can schedule rides with Lyft or Uber. GoGoGrandparent considers itself a virtual caregiver, or professional representative of the rider, rather than a transportation provider, and acknowledges transportation as the activity of daily living that is most critical to independence. Older adults register for the service by phone or online and pay by credit, debit, or prepaid cash card. The mean age of GoGoGrandparent customers is 82. Uber and Lyft services are curb-to-curb, not door-to-door or door-through-door. In 2018, GoGoGrandparent added a premium service to supplement Lyft's and Uber's services with an extra level of help for riders. For an additional fee, the premium service allows for custom requests, such as asking the driver to ring the rider's doorbell, providing assistance from the door to the car, and making additional stops

along the rider's requested route.[xxiii],[xxiv] In addition to GoGoGrandparent, there are other intermediary services, such as Arrive[xxv] and Ridewith24,[xxvi] which connect riders who do not use a smart phone or app with ride share services.

[i] FISH ("Friends in Service Helping") [Internet]. Town of Mattapoisset, MA; [cited 2018 Nov 1] Medical Transportation Services. Available from: https://www.mattapoisett.net/council-aging/pages/fish-friends-service-helping-medical-transportation-services <https://www.mattapoisett.net/council-aging/pages/fish-friends-service-helping-medical-transportation-services>.

[ii] MA Mobility Management Center. Profiles of Successful Volunteer Driver Programs in Massachusetts. 2016 August [cited 2019 May 5]. Available from: https://www.mass.gov/files/documents/2017/10/10/Profiles%20of%20successful%20volunteer%20driver%20programs.pdf <https://www.mass.gov/files/documents/2017/10/10/profiles%20of%20successful%20volunteer%20driver%20programs.pdf>.

[iii] Parker SG, Pomphrey A. Robert Wood Johnson Foundation [Internet]. Faith in Action; c2001-2018 [cited 2018 Nov 8]. Available from: https://www.rwjf.org/en/library/research/2009/05/faith-in-action.html <https://www.rwjf.org/en/library/research/2009/05/faith-in-action.html>.

[iv] Faith in Action: an RWJF national program. Program results report. 2005. Available from: https://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf69788 <https://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf69788>.

[v] Family Caregiver Alliance [Internet]. National Volunteer Caregiving Network (Faith in Action).; c1996-2018 [cited 2018 Aug 28]. Available from: https://www.caregiver.org/national-volunteer-caregiving-network-faith-action-1 <https://www.caregiver.org/national-volunteer-caregiving-network-faith-action-1>.

[vi] ITN*America* [Internet]. 2019 [cited 2019 July 31]. About ITN. Available from: https://www.itnamerica.org/about.

[vii] Freund, K. Dignified transportation for seniors. CCQ Capital Commons Quarterly. 2008. 2(2): 13-16.

[viii] Freund, K. Pilot testing innovative payment operations for independent transportation for the elderly. Final Report for Transit-Innovations Deserving Exploratory Analysis (IDEA) Project 18. 2002.

Transportation Research Board, Washington, DC. Retrieved from http://onlinepubs.trb.org/onlinepubs/archive/studies/idea/finalreports/transit/Transit18_Final_Report.pdf
<http://onlinepubs.trb.org/onlinepubs/archive/studies/idea/finalreports/transit/transit18_final_report.pdf>

[ix] Bergen G, West BA, Luo F, et al. How do older adult drivers self-regulate? Characteristics of self-regulation classes defined by latent class analysis. J Safety Res. 2017;61:205-210.

[x] Uber [Internet]. 2019 [cited 2019 July 31]. About us. Available from: https://www.uber.com/us/en/about/
<https://www.uber.com/us/en/about/>.

[xi] Lyft [Internet]. 2019 [cited 2019 July 31]. Why Lyft. Available from: https://www.lyft.com/driver/why-drive-with-lyft
<https://www.lyft.com/driver/why-drive-with-lyft>.

[xii] Texas Senate Committee on Business and Commerce. Transportation Network Companies. March 14, 2017. Texas Senate Committee on Business and Commerce (testimony of Ginger Goodin, Transportation Policy Research Center, and Maarit Moran, Texas A&M Transportation Institute). Available from: https://policy.tti.tamu.edu/wp-content/uploads/2017/03/TTI-PRC-TNCs-SBC-031417.pdf <https://policy.tti.tamu.edu/wp-content/uploads/2017/03/tti-prc-tncs-sbc-031417.pdf>.

[xiii] Shared-Use Mobility Center. Shared-Use Mobility Reference Guide. 2015. Available from: http://sharedusemobilitycenter.org/wp-content/uploads/2015/09/SharedUseMobility_ReferenceGuide_09.25.2015.pdf <http://sharedusemobilitycenter.org/wp-content/uploads/2015/09/sharedusemobility_referenceguide_09.25.2015.pdf>.

[xiv] Uber Technologies. United States Securities and Exchange Commission [Internet]. Form S-1 Registration Statement Under the Securities Act of 1933. April 11, 2019 [cited 2019 August 14]. Available from: https://www.sec.gov/Archives/edgar/data/1543151/000119312519103850/d647752ds1.htm#toc647752 <https://www.sec.gov/archives/edgar/data/1543151/000119312519103850/d647752ds1.htm#toc647752>.

[xv] GoGoGrandparent [Internet]. 2018 [cited 2018 Aug 28]. Available from: https://gogograndparent.com/ <https://gogograndparent.com/>.

[xvi] Maine Insurance Code, §2092-F. Title 24-A. Chapter 39. Subchapter 1. Available from: https://www.mainelegislature.org/legis/statutes/24-A/title24-Asec2902-F.html <https://www.mainelegislature.org/legis/statutes/24-a/title24-asec2902-f.html>.

[xvii] Crespo Y. Uber v. regulation: “ride sharing” creates a legal gray area. U. Miami Bus. L. Rev. 2016;79. Available from: http://repository.law.miami.edu/umblr/vol25/iss1/4 <http://repository.law.miami.edu/umblr/vol25/iss1/4>.

[xviii] Daus MW. Regulating transportation network companies (TNCs). American Association of Motor Vehicle Administrators Annual Conference; San Francisco, CA. 2017. Available from: https://www.aamva.org/uploadedFiles/MainSite/Content/EventsEducation/Event_Materials/2017/2017_AIC/TNC_DAUS.pdf

[xix] Douma F. Volunteer driver programs in Minnesota: benefits and barriers. Minnesota Council on Transportation Access. February 2017. St. Paul, Minnesota. Available from: http://www.cts.umn.edu/publications/catalyst/2017/april/volunteerdrivers <http://www.cts.umn.edu/publications/catalyst/2017/april/volunteerdrivers>.

[xx] Eldercare locator [Internet]. National Association of Area Agencies on Aging (n4a); 2016 [cited 2018 Aug 28]. Available from: https://www.n4a.org/eldercarelocator <https://www.n4a.org/eldercarelocator>.

[xxi] Earnest P, Markwood S, Super N, et al. Making connections: consumer needs in aging America. Eldercare Locator and the National Association of Area Agencies on Aging. Available from: https://eldercare.acl.gov/Public/About/docs/n4a-data-report.pdf <https://eldercare.acl.gov/public/about/docs/n4a-data-report.pdf>.

[xxii] GoGoGrandparent [Internet]. 2018 [cited 2018 Aug 28]. Available from: https://gogograndparent.com/ <https://gogograndparent.com/>.

[xxiii] Walmsley J. Your blind grandma alone in a Lyft actually solves a social problem [Internet]. Forbes, Inc.; 2018, Oct 26 [cited 2019 Jan 22]. Available from: https://www.forbes.com/sites/juliewalmsley/2018/10/26/a-call-center-talking-your-blind-grandma-into-a-lyft-actually-solves-a-huge-social-problem/#2abeb1d467f3
<https://www.forbes.com/sites/juliewalmsley/2018/10/26/a-call-center-talking-your-blind-grandma-into-a-lyft-actually-solves-a-huge-social-problem/#2abeb1d467f3>

[xxiv] GoGoGrandparent [Internet]. 2018 [cited 2019 Jan 22]. Interested in Upgrades? Available from: https://gogograndparent.com/goldclient
<https://gogograndparent.com/goldclient>.

[xxv] Arrive Rides, LLC [Internet]. 2016 [cited 2018 Sep 14]. How Arrive Works. Available from: http://arriverides.com/how-it-works/
<http://arriverides.com/how-it-works/>.

[xxvi] RideWith24 [Internet]. 2016 [cited 2018 Sep 14]. RideWith24 – A 24Hr HomeCare Service. Available from: https://ridewith24.com/
<https://ridewith24.com/>.

PROFILE OF OLDER ADULTS (AGE 65 AND OLDER) WHO USED NON-PROFIT RIDE SHARE SERVICES

Understanding how the existing ride share services in the U.S. could meet older adults' needs also requires an understanding of the characteristics of older adults who might use these services. To provide a picture of the characteristics and behaviors of older adults

who might access ride share services, we present an analysis of data on older adults who use ITN*America's* ride share services. The analysis is derived from ITN*Rides*. ITN*Rides* data provide a window into the characteristics of older adults who use a ride share service in the U.S. The ITN*Rides* data in this study are from 27 locations across the country and represent 793,313 trips and 10,010 riders from 1996 to October 2019. In two categories (household income and health status), data were gathered from annual customer satisfaction surveys administered from 2010 to 2018 for household income and 2008 to 2018 for health status. Data from this analysis are available in Appendix C and key findings are presented below.

Age. Four out of ten ITN riders in our sample were in the "middle-old" cohort (between 75 and 84 years of age) (41.1 percent), and approximately one third (36.8 percent) were in the "oldest-old" cohort (age 85 and older). Taken together, these "middle-old" and "oldest-old" cohorts comprised more than 3 out of 4 ITN riders (77.9 percent), while the "youngest-old" cohort, those age 65 to 74, accounted for only 22.1 percent of the riders. Overall, the mean age of ITN riders age 65 and older**[1]** was 81, while the median was 82, and the most common age (the mode), was 85.

Gender. The majority of ITN riders in our sample were female (73.6 percent), compared to male (26.4 percent).

Race and Ethnicity. The older adults using the ITN ride share service were predominantly Caucasian (92.9 percent). Other races and ethnicities included African American (3.1 percent), Hispanic/Latino (1.3 percent), Asian (0.9 percent), Native American/Alaska Native (0.9 percent), Hawaiian/Pacific Islander (0.1 percent), and Other (0.9 percent).

Household Income. ITN riders in our sample reported a relatively modest annual household income (41.2 percent had an income less than $25,000 and 72.7 percent had an annual income less than

$50,000).

Living Arrangements. Most of the older adults who used the ITN's ride share service lived alone in the community (62.4 percent).

Driving Status and Vehicle Ownership. ITN's data on driving, vehicle ownership, and licensure are especially helpful in selecting a population to study the transition from the driver's seat to the passenger seat, since when they became ITN members, about three quarters of older adults had a current driver's license (71.7 percent) and more than half owned a vehicle (60.2 percent), but only a third were still driving (34.3 percent).

Health Status and Mobility Needs. Despite their special mobility needs (28.7 percent of ITN riders used a cane, 26.5 percent used a walker, and 5.2 percent used a wheelchair), seven out of ten ITN riders (69.8 percent) reported their physical health as excellent, very good, or good. Driver assistance—which represents a range of services from door-to-door or door-through-door service to lending an arm for balance, pushing a wheelchair, or buckling a seatbelt—was required by 17.8 percent of ITN riders.

Trip Purpose. ITN riders used the service for an array of purposes, from intermodal connections (such as trips to airports, bus stations, and ferry terminals), which accounted for less than 1 percent of rides, to medical needs, which accounted for 4 out of 10 rides (42.7 percent) and consumer needs (25.3 percent), such as trips to the grocery store or hairdresser.

[1] ITN is a membership organization. People who wish to use the service become dues-paying members and open a Personal Transportation Account, which is managed through the ITN*Rides* software and tracks both cash payments and transportation credits from volunteer driving and automobiles traded to pay for rides.

CHARACTERISTICS OF RIDE SHARE SERVICES AVAILABLE FOR OLDER ADULTS

This is a time of great experimentation and frenzied change in transportation, fueled by the efficiencies and market opportunities made possible by advances in information technology. It is not the first time technological innovation has catapulted transportation forward. The steam engine—the mechanical and energy technology that propelled the industrial revolution—was adapted to power railroads by 1829,**[i]** while the Wright brothers launched the airline industry in 1903 with innovations in aerodynamics. The modern automobile, powered by the internal combustion engine, was invented in Europe in the 1880s, but it was Henry Ford, whose moving assembly line increased manufacturing efficiency eight-fold, who disrupted the transportation world with his affordable Model T for the masses.**[ii]** So lucrative were the market opportunities that between 1904 and 1908, 241 automobile manufacturers entered the U.S. market.**[iii]** It follows that just as there are no longer 241 automobile manufacturers in the marketplace today, many ride share programs and TNCs available in 2018 either might not survive, or they might look entirely different in the future.

Queries to ITN's RIS database (described earlier) identified 917 individual non-profit ride share services (in 917 locations) and three for-profit ride share services (with 888 locations) available for older adults in the U.S. as of August 2018. These ride share services vary by corporate structure (non-profit and for profit), location (urban, suburban, and rural), use of technology (high tech and low tech), and business model (local and national). Other significant considerations for all ride share services include public and private policy, the special needs of an aging population, and resources.

However diverse, they are all “transportation arranged through a third party where a person is a passenger in a private automobile,” and they all seek to meet the mobility needs of older adults in some way.

The characteristics of ride share services available in the U.S., as of August 2018, are presented in Appendix D. It is important to remember that the number and characteristics of these services is dynamic. Next, we describe the characteristics of ride share organizations with non-profit and for-profit structures.

Non-Profit Ride Share Services

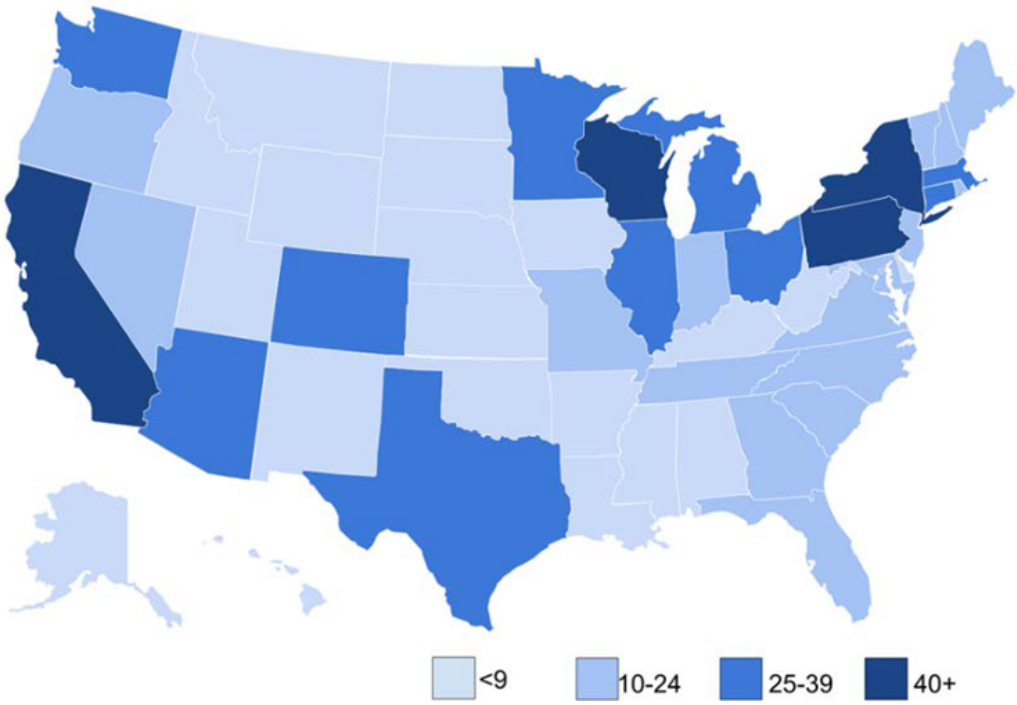
Non-profit and government solutions to human needs emerge when markets have not generated a profitable solution, so it makes sense that the first ride share solutions for older adults were non-profit efforts. From the RIS analysis, we identified 917 non-profit organizations that provided ride share services to older adults in the U.S., as of August 2018, when the analysis was conducted. Exhibit 1, below, presents a map that shows the distribution of the 917 non-profit ride share services. This map does not include all transportation programs for older people operating in communities across the U.S. Documenting all transportation services available to older adults in each state was beyond the scope of this study, which specifically looks at one type of transportation service—ride share.

[i] Britannica [Internet]. 2018 [cited 2018 Nov 13]. Steam engine. Available from: **https://www.britannica.com/technology/steam-engine** <https://www.britannica.com/technology/steam-engine>.

[ii] Hinshaw JH, Stearns PN. Industrialization in the Modern World: From the Industrial Revolution to the Internet [2 Volumes]: From the Industrial Revolution to the Internet. Santa Barbara, CA: ABC-CLIO, LLC, 2014.

[iii] Britannica [Internet]. 2018 [cited 2018 Nov 13]. History of the Automobile. Available from: **https://www.britannica.com/technology/automobile/History-of-the-automobile** <https://www.britannica.com/technology/automobile/history-of-the-automobile>.

Exhibit 1: Distribution of Non-Profit Ride Share Services, by State (N=917), August 2018



Note: This map does not display the ride share organization's service area within the state. Sources: ITN Rides in Sight, ITNAmerica; U.S. Census Bureau QuickFacts, 2018. http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_11_5YR_DP04.

Key findings include:

- Four states had 40 or more non-profit ride share services programs (California, New York, Pennsylvania, and Wisconsin);

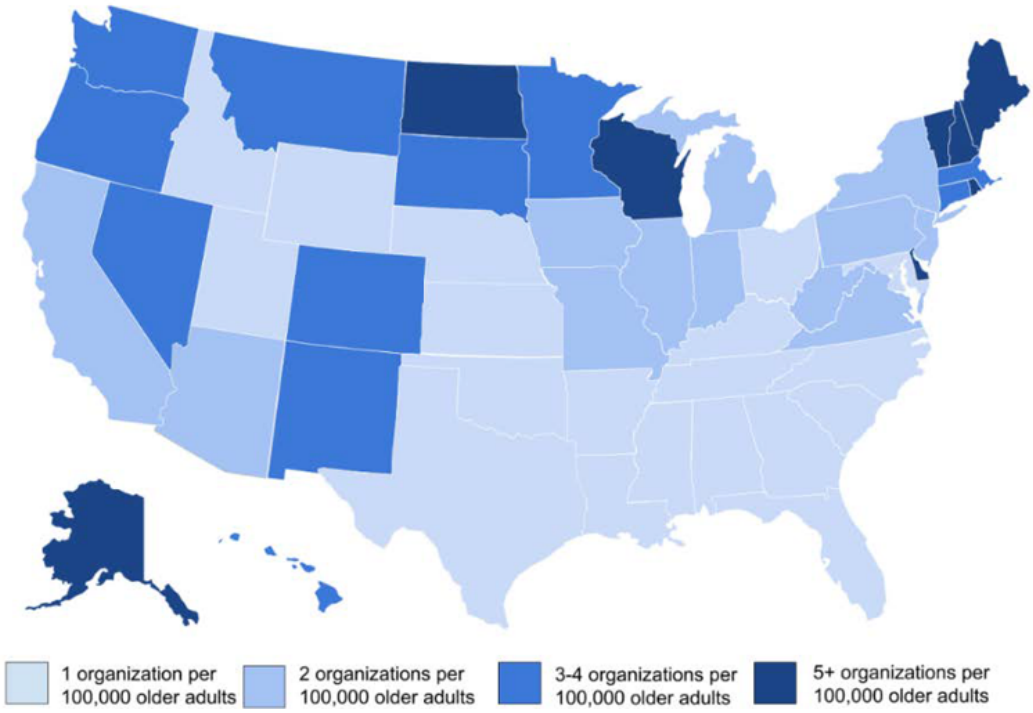
- Ten states had 25 to 39 non-profit ride share services programs (Arizona, Colorado, Connecticut, Illinois, Massachusetts, Michigan, Minnesota, Ohio, Texas, and Washington);

- Sixteen states had 10 to 24 non-profit ride share services programs (Florida, Georgia, Indiana, Maine, Maryland, Missouri, Nevada, New Hampshire, New Jersey, North Carolina, Oregon, Rhode Island, South Carolina, Tennessee, Vermont, and Virginia);

- Twenty states, plus Washington, D.C., had 9 or fewer non-profit ride share services programs (Alabama, Alaska, Arkansas, Delaware, Hawaii, Idaho, Iowa, Louisiana, Kansas, Kentucky, Mississippi, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, West Virginia, and Wyoming).

Exhibit 2, below, shows the number of volunteer and non-profit ride share services available per 100,000 older adults across the country. Of note, this map does not display the service area of each ride share organization within a state.

Exhibit 2: Distribution of Non-Profit Ride Share Services, per 100,000 Older Adults (Age 65+) (N=917), August 2018



Note: This map does not display the ride share organization's service area within the state. Sources: ITN Rides in Sight, ITNAmerica; U.S. Census Bureau QuickFacts, 2018.

Key findings include:

- Eight states (Alaska, Delaware, Maine, New Hampshire, North Dakota, Rhode Island, Vermont, and Wisconsin) had an average of 5 or more non-profit services per 100,000 older adults;

- Eleven states (Colorado, Connecticut, Hawaii, Massachusetts, Minnesota, Montana, Nevada, New Mexico, Oregon, South Dakota, and Washington) had an average of 3 or 4 non-profit services per 100,000 older adults;

- Twelve states (Arizona, California, Illinois, Indiana, Iowa, Michigan, Missouri, New Jersey, New York, Pennsylvania, West Virginia, and Virginia) had an average of 2 non-profit services per 100,000 older adults; and

- Nineteen states (Alabama, Arkansas, Florida, Georgia, Idaho, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Nebraska, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Texas, Utah, and Wyoming) and Washington, D.C. had an average of 1 non-profit service per 100,000 older adults.

It is also important to note that since service tends to be scarce in lower density areas, states with large rural areas might appear to have more service available than is the reality. For example, in Exhibit 2, Maine falls into the top category of “5+ organizations per 100,000 older adults,” but only 14 percent of services are located in rural areas while the rest are located in metropolitan areas (43 percent), micropolitan areas (21 percent), or small towns (21 percent). Likewise in Oregon, which falls into the second highest category (“3-4 organizations per 100,000 older adults”), 69 percent of services are located in metropolitan areas, 19 percent in micropolitan areas, 12 percent in small towns, and 0 percent in rural

areas.[1] Therefore, many communities across these states—particularly those with lower population densities—might not be served by ride share services.

Exhibit 3, below, summarizes the available non-profit ride share services for older adults by the 10 Federal Transit Administration (FTA) regions.[i] FTA Region 5, which encompasses states in the Great Lakes region, had the largest number of non-profit ride share services (198), while FTA Region 7, just to the southwest of Region 5, had the smallest number at 35.

Understanding the distribution of ride share services across the nation is beyond the scope of this study and calls for a study of its own. Factors accounting for this variation across states likely include population density and distribution. For example, Rhode Island (1,214 square miles) had 12 non-profit transportation services, while the entire state of Nebraska (77,220 square miles) had three. Other influences are likely to include: public demand for alternative transportation; availability of philanthropic support; culture of volunteerism; availability of health care services; and public policies that impact insurance, volunteer drivers, livery laws, and non-profit management.

[1] Information regarding urban/rural designation was gathered using the 2010 Rural-Urban Community Area (RUCA) codes geographic taxonomy from the University of North Dakota Center for Rural Health (https://ruralhealth.und.edu/ruca).

[i] Federal Transit Administration [Internet]. [cited 2018 Nov 13]. Regional Offices. U.S. Department of Transportation. Available from: https://www.transit.dot.gov/about/regional-offices/regional-offices <https://www.transit.dot.gov/about/regional-offices/regional-offices>.

Exhibit 3: Distribution of Non-Profit Ride Share Services, by FTA Region and State (N=917), August 2018

FTA region 1		FTA region 2		FTA region 3		FTA region 4		FTA region 5	
Maine	20	New York	55	Delaware	9	Alabama	8	Illinois	29
New Hampshire	20	New Jersey	23	Maryland	12	Florida	19	Ohio	27
Vermont	10			Pennsylvania	47	Georgia	12	Minnesota	38
Massachusetts	30			Virginia	20	Kentucky	7	Wisconsin	54
Rhode Island	12			West Virginia	7	Mississippi	3	Indiana	19
Connecticut	25			Wash., D.C.	1	North Carolina	16	Michigan	31
						South Carolina	10		
						Tennessee	12		
REGION TOTAL	**117**		**78**		**96**		**87**		**198**
FTA region 6		**FTA region 7**		**FTA region 8**		**FTA region 9**		**FTA region 10**	
Texas	26	Missouri	18	Colorado	26	Arizona	30	Alaska	4
Oklahoma	8	Iowa	9	Montana	7	California	90	Idaho	3
Arkansas	6	Nebraska	3	North Dakota	7	Hawaii	8	Oregon	20
Louisiana	3	Kansas	5	South Dakota	6	Nevada	14	Washington	34
New Mexico	9			Utah	4				
				Wyoming	1				
REGION TOTAL	**52**		**35**		**51**		**142**		**61**
U.S. TOTAL									**917**

The characteristics of the 917 non-profit older adult ride share services available in the U.S. paint a picture of community service:

- Almost 80 percent (79.0 percent) offered door-to-door service (assistance from the door to the vehicle).

- One third (33.3 percent) listed a residency requirement on their websites, meaning people seeking rides must live within a well-defined service area.

- The most common eligible trip purposes were medical or health care (67.9 percent), necessary errands (primarily, a trip to the pharmacy or bank) (37.3 percent), and grocery shopping (37.2 percent).

- For more than one quarter of the services (27.0 percent), rides were offered for any purpose.

- One third of services reported that their drivers offered a steadying arm (sometimes referred to as arm-through-arm service) (33.7 percent), a form of human assistance to the rider. About one quarter of services reported their drivers offered help in and out of the vehicle (27.3 percent), 17 percent (17.3 percent) would assist with mobility devices, such as walkers, and one in 10 (9.1 percent) would wait with the older adult during their appointment or errand.

- A small percentage of services (5.6 percent) reported the driver would help by folding and transporting a wheelchair. Perhaps this is because 100 percent of the ride share services use automobiles.

- All services (100 percent) scheduled rides in advance, though some also scheduled rides on demand.

- Two thirds (65.9 percent) offered their services for free. Of those that accepted payment, roughly 3 in 4 accepted cash (73.8 percent), and 24.0 percent accepted checks or credit cards.

Appendix E provides data tables describing the characteristics of the 917 non-profit ride share services in the U.S. available to older adults.

Key informant interviews with two non-profit ride share service providers who serve the older adult population exclusively offered some insight into their motivation for this work. One described their organization's mission as empowering older adults to remain in their homes and to be independent and engaged in the community. The other said their mission was to enhance health and quality of life by providing affordable, volunteer-based transportation. Both ride share providers described the importance of a rewarding personal experience for the drivers and the riders. Key informants characterized their ride share services as "neighborly" and "trustworthy" and emphasized "building relationships with the people transported." In one service, ride coordinators are called "match makers." Rides are arranged by telephone, and one of the ride share service providers asks the volunteer to make a personal phone call the night before the ride to confirm the details of the trip. One service rations rides to one trip per person per week, although the volunteer will stay with the older adult for an entire afternoon of errands, while the other requires a three day advance notice to schedule a ride, since volunteers are not always available. One service is a membership program through which volunteers can donate their time in exchange for transportation, and the other service charges a fee for rides based on mileage.

One example of a non-profit TNC ride share service is Ride Austin in Austin, Texas. Ride Austin provides ride share services to the general population, including older adults. Like ITN, Ride Austin is an example of a social enterprise in the non-profit sector. Ride Austin chose a non-profit corporate structure to enable drivers to earn more and riders to pay less while improving mobility for underserved communities. Its mission is to provide non-profit ride share services to the Austin community.[i] It was founded in 2016 when the city of Austin passed an ordinance requiring fingerprint and background checks as part of driver screening, and Uber and Lyft left the city. Uber and Lyft then successfully lobbied to change Texas State law and returned to the Austin market in 2017.[ii],[iii] Ride Austin's focus is community engagement, using mobility services to build community with the understanding that insufficient mobility is a barrier to well-being. Ride Austin drivers are not required to provide assistance to older adults, such as curb-to-curb or door-through-door service, but there are drivers that have provided this level of service, according to information gathered through our key informant interviews. To meet the special mobility needs of older adults, Ride Austin partners with other organizations, such as Drive a Senior,[iv] a local non-profit that schedules rides through the Ride Austin smartphone app and supplements volunteer drivers with paid drivers, and the Community Care Collaborative, a partnership between Central Health and Seton Healthcare Family, to provide older adults with low incomes with transportation to and from medical appointments.[v]

For-Profit Ride Share Services

Our RIS analysis identified three for-profit ride share services (with 888 locations) currently available to older adults. Two offer ride share services to the general population, including older adults; one exclusively serves older adults. The characteristics of these for-profit ride share services can be found in Appendix F. During key informant interviews, representatives from two for-profit ride share

services described their organizations as technology companies, and their missions as providing reliable, affordable transportation for all and improving people's lives with the best transportation. Key informants from for-profit ride share services emphasized their relationships with organizations that serve older adults, such as older adult living communities, rather than the older adults themselves. One also noted the need for technology companies to focus on conducting greater outreach to older adults. They described the product lines and solutions they are developing for older adults, but at the time of the interviews did not have data to share on the services they were providing.

Based on our literature review, the largest for-profit ride share companies in the U.S. are Uber and Lyft. They offer rides, on demand, in private automobiles, requested through a smartphone application. Both Uber and Lyft conduct the largest part of their business in the most densely populated cities in the country. Nine metropolitan areas (Boston, Chicago, Los Angeles, Miami, New York, Philadelphia, San Francisco, Seattle, and Washington, DC) accounted for 70 percent of their trips.[vi] According to one study, in these nine metropolitan areas, people age 25 to 34 used TNCs approximately three times as often as people age 65 and older.[vii] Additionally, in these nine metropolitan areas, people with a household income over $50,000 used TNCs approximately six times as often as people with a lower income.[viii] Another study found that 4 percent of those who had used a ride share service were 65 and older, compared with 36 percent who were between 18 and 29. [ix] The same study found that only 7 percent of people living in suburban neighborhoods of major cities used ride-hailing services compared with 29 percent of people living in urban neighborhoods of major cities. Since three out of four older Americans live in rural or suburban communities, this points to a large area of unmet need for older adults.

For-profit ride share organizations are working to create systems to address some of the barriers that prevent older adults from using their services. Through our literature review, we learned that Uber and Lyft have created programs that allow adults and service providers to schedule rides for older adults. Specifically, they have formed partnerships with health care providers, assisted living facilities, and professional care-giving franchises to schedule and/or pay for rides on behalf of older adults.[x],[xi] Both Uber and Lyft have created dashboards for computers so organizations that serve older adults can schedule rides for older adults who prefer not to use a smartphone app. Through these dashboards, Concierge for Lyft[xii] and Uber Central for Uber,[xiii] other organizations can utilize the transportation resources available through ride share services, acting as intermediaries between older adults and TNCs. Lyft also works with numerous third-party partners to help older adults schedule rides with Lyft, such as GreatCall Rides, GrandPad, GoGoGrandparent, and CareRides, among others.

Older adults can also schedule their rides in advance, a preference for older adults who want the security of knowing in advance that they will be guaranteed a ride. Through our interviews, we learned that the for-profit ride share services are aware that many older adults need more than curb-to-curb service and are seeking ways to address this need. Interview respondents noted that a challenge is their labor model, since drivers are independent contractors who cannot be required[xiv] to offer the kind of assistance necessary for many older adults who need a steadying arm or help with a walker, packages or seat belt. Nevertheless, interview data also showed that the for-profit services are particularly interested in rides for health care, where a third party, such as a health care provider, assisted living facility, or professional caregiving franchise can schedule and pay for trips.

For-profit ride share services are also offering greater accessibility through technology—for example, Uber's app includes voice-over IOS, wireless braille display compatibility for those who are blind or low vision, and visible and vibrating alerts that aid riders who are deaf or hard of hearing.[xv] UberASSIST training for interested drivers offers additional assistance to older adults or individuals with mobility challenges.[xvi] "Request for a Guest" enables Uber users to request a ride on behalf of someone else.[xvii]

While Uber and Lyft are, at the current time, the largest for-profit ride share services in the U.S., the ride share landscape is changing rapidly. This environmental scan identified other for-profit ride share service organizations that provide local and regional services to the general population (see Appendix G); examples of these for-profit ride share service organizations include SilverRide, Zemcar, Wingz, Carol Drives, Safr, Papa, HopSkipDrive, Envoy America, and Via Transportation Inc.[1] Via, for example, provides on-demand transportation services to the general population, but offers discounted fares for older adults and individuals with mobility limitations. In 2015, a total of 27 percent of Via's riders were over 55 years of age, and 10 percent of riders were 65 years and older.[xviii]

One for-profit transportation service of note is SilverRide, which was specifically developed for older adults. Based in San Francisco and founded in 2006, SilverRide describes itself as a door-through-door assisted ride service that will "pick you up from inside any location and transport you safely and securely all the way into your final destination."[xix] Rides are charged at a rate of $20 to $40 each way, and, for an additional charge, driver companions will stay with the customer, a service that consumes 70 percent of drivers' time, at a cost to the customer of $45 to $85 an hour.[xx] This lends weight to the value of services provided by volunteers in non-profit services and helps to explain why other for-profit ride share services are not offering this level of service at current prices. SilverRide customers schedule rides by phone or email and pay by credit card or bank

debit. The organization offers its older adult customers a smartphone app, but founder Jeff Maltz says “zero people use it.”[xxi]

Envoy America is another for-profit organization, founded in 2015, designed specifically for older adults. As of January 2019, Envoy America operates within 12 major cities across five states. Clients are able to schedule a ride for themselves or someone else via telephone, smartphone app, and web reservation portal. Driver Companions are required to have work experience with older adults, as well as experience assisting older adults who are no longer able to drive, prior to applying for a job with the organization. Prospective drivers must complete online and hands-on training. Training topics include “working with seniors who have memory issues, wheelchair transfers, communication with seniors, and defensive driving.”[xxii] New Driver Companions are required to pass an online test. Envoy America reports that “at the end of the process, just one in eight applicants are selected to become a Driver Companion.”[xxiii] Services vary based on the plan a client chooses, with prices ranging from $35 to $39 an hour. All Driver Companions offer door-to-door service and additional assistance throughout the trip. Drivers will wait or return for passengers, make multiple stops, and accept reservations in advance.

The Marketplace

Of the three sectors in the economy—for profit, non-profit and government—the for-profit sector is by far the largest.[xxiv] It is also often the genesis of innovation because that is where the money is to be made. The more opportunity there is to generate a profit, the more capital there is available for investment in innovation, whether it is in technology, public policy, marketing or communications. With global ride share projected to grow to $285 billion annually by 2030, [xxv] General Motors, Ford, Volkswagen, Apple, Google, Intel, Toyota, BMW, and Daimler, among other corporations, are investing billions

of dollars in capital into this market, working to be the leader who takes the biggest prize in the ride share market and its closely related technology-generated, transportation business opportunity: autonomous vehicles.

The largest for-profit ride share companies in the U.S. are Uber and Lyft. Thus far, neither Uber nor Lyft is profitable.[xxvi],[xxvii] Lyft launched its initial public offering (IPO) in March 2019, and Uber launched its IPO in May 2019. To reach this goal of profitability, both need to achieve significant additional growth. Both also conduct the largest part of their business in the most densely populated cities in the country.[xxviii] Recent policy changes in New York City could impact growth for the for-profit TNCs in that market, and perhaps others, depending on the outcome. In 2019, New York City passed an ordinance requiring the TNCs to pay their drivers minimum wage, taking into account their utilization rate (the amount of time drivers have a customer in the car in comparison to idling or waiting for a rider), as well as an extra fee for return trips from outside of the five boroughs.[xxix] Ride share organizations increased the price of trips, citing the minimum wage law.[xxx] The impact remains uncertain but Lyft has stated that increased fares may lead to fewer rides. [xxxi]

A fundamental part of the business model for many for-profit ride share companies, including Uber and Lyft, is the use of independent contractors as drivers.[xxxii],[xxxiii] Independent contractors might be offered training for special needs riders, but they are not required to participate. Nor are they required to offer special assistance to those older adults who need to be escorted into their homes or helped with a walker or packages. While healthy, ambulatory, urban older adults who are comfortable with smartphone apps might begin using Uber and Lyft with increasing frequency, older adults who need assistance will not be able to rely on these services without special support such as that provided by non-profit ride share services or an intermediary such as GoGoGrandparent.

When smartphone-enabled ride sharing was introduced, some experts predicted traffic congestion in cities would decrease. The data are now in, and so far, that is not what is happening. A 2018 study shows that ride share services have increased urban traffic by 160 percent, adding 2.6 new TNC miles for every mile of personal driving removed.[xxxiv] New York City policy makers declared a one-year moratorium on new Uber and Lyft vehicles while the city studies the traffic congestion problem. An analysis of the current TNC congestion problem and historical comparison to the taxi industry by Sherman (2017) provides insight into the business principles underlying this outcome:

"The pre-regulated taxi industry was characterized by bounded demand, abundant supply, relatively undifferentiated service quality, extremely low barriers to entry, low customer switching costs, high variable costs and virtually no economies of scale. Many of these same conditions exist today for Uber and its competitors in the shared-ride market. While both then and now, consumers benefitted from low fares and short wait times, structural industry characteristics precluded profitable operations in both unregulated eras."[xxxv]

With little or no regulation on the for-profit TNCs, drivers as independent contractors rush to the higher density urban markets, [xxxvi] where fares are faster to achieve and distances between rides are shorter. This increases the supply of drivers while lowering their earnings, shortening wait times for consumers and increasing profits for the TNCs. Riders who require less assistance are more profitable, and there is less incentive for drivers to select fares in the lower density suburban and rural communities. If other high-density metropolitan communities follow New York City's policy lead, the push to profitability for Uber and Lyft will be delayed. A 2016 Transportation Research Board study predicted these road bumps:

"TNCs are the most controversial new services, disrupting the regulated for-hire taxi industry and posing a series of challenges to transportation policy makers and regulators. The main challenge is to encourage and facilitate innovations that meet the public's mobility needs yet maintain a public policy that is consistent for the new services and the traditional taxi and livery services. At issue is protecting the public interest in matters of safety, driver pay and working conditions, and accessibility for people with disabilities."**[xxxvii]**

The road is likely to remain bumpy for some time to come, with potentially billions of dollars in national and global markets at stake, and multi-national corporations possibly vying for any advantage technology and innovation can offer. Sometimes policy might lead the market and sometimes policy might chase it. In the ride share marketplace, the only thing certain is change, and more change.

[1] The RIS database is dynamic and the market for ride share services is rapidly changing. These for-profit services identified in this scan were not listed in the RIS database at the time of the RIS analysis (August 2018).

[i] Ride Austin [Internet]. 2016 [cited 2018 Aug 28]. Frequently Asked Questions. Available from: **http://www.rideaustin.com/faq/** <http://www.rideaustin.com/faq/>.

[ii] Morris DZ. Uber and Lyft will be back in Austin on Monday [Internet]. Time, Inc.; 2018 [cited 2018 Aug 28]. Available from: **http://fortune.com/2017/05/28/uber-lyft-austin-texas-2/** <http://fortune.com/2017/05/28/uber-lyft-austin-texas-2/>.

[iii] Hampshire R, Simek C, Fabusuyi T, Di X and Chen X. Measuring the impact of an unanticipated disruption of Uber/Lyft in Austin, TX (May 31, 2017). Available from:

http://dx.doi.org/10.2139/ssrn.2977969
<http://dx.doi.org/10.2139/ssrn.2977969>

[iv] The Drive A Senior Network [Internet]. 2014-2018 [cited 2018 Nov 13]. Free rides for seniors. Available from: https://driveasenior.org/need-a-ride/ <https://driveasenior.org/need-a-ride/>.

[v] Central Health. Austin Rideshare Company Partners with Central Health, Community Care Collaborative, to get patients to medical appointments. April 4, 2018. Available from: https://www.centralhealth.net/austin-rideshare-company-partners-with-central-health-community-care-collaborative-to-get-patients-to-medical-appointments/ <https://www.centralhealth.net/austin-rideshare-company-partners-with-central-health-community-care-collaborative-to-get-patients-to-medical-appointments/>.

[vi] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: http://www.schallerconsult.com/rideservices/automobility.pdf <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[vii] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: http://www.schallerconsult.com/rideservices/automobility.pdf <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[viii] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: http://www.schallerconsult.com/rideservices/automobility.pdf <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[ix] Clewlow RR, Mishra GS. Disruptive transportation: the adoption, utilization, and impacts of ride-hailing in the United States. 2017. Available from: https://itspubs.ucdavis.edu/wp-

content/themes/ucdavis/pubs/download_pdf.php?id=2752 <https://itspubs.ucdavis.edu/wp-content/themes/ucdavis/pubs/download_pdf.php?id=2752>.

[x] Lyft Blog [Internet]. Lyft, Inc.; 2017 [cited 2018 Nov 16]. Request rides for anyone with Lyft Concierge . Available from: https://blog.lyft.com/posts/2018/1/16/remotely-request-rides-for-anyone-with-lyft-concierge <https://blog.lyft.com/posts/2018/1/16/remotely-request-rides-for-anyone-with-lyft-concierge>.

[xi] Uber for Business [Internet]. Uber Technologies, Inc.; 2018 [cited 2018 Nov 16]. Available from: https://www.uber.com/business/central <https://www.uber.com/business/central>.

[xii] Lyft Blog [Internet]. Lyft, Inc. 2018 [cited 2018 Nov 16]. Lyft Concierge now offers more ease and control for your organization's passengers . Available from: https://blog.lyft.com/posts/lyft-concierge-now-offers-more-ease-and-control-for-your-organizations-passengers <https://blog.lyft.com/posts/lyft-concierge-now-offers-more-ease-and-control-for-your-organizations-passengers>.

[xiii] Uber Central [Internet]. Uber Technologies, Inc.; 2018 [cited 2018 Nov 16]. Available from: https://help.uber.com/riders/article/uber-central?nodeId=502388e3-df83-4c4b-964d-625a1d161e12 <https://help.uber.com/riders/article/uber-central?nodeid=502388e3-df83-4c4b-964d-625a1d161e12>.

[xiv] Internal Revenue Service. (2019). Independent contractor defined. Retrieved from https://www.irs.gov/businesses/small-businesses-self-employed/independent-contractor-defined <https://www.irs.gov/businesses/small-businesses-self-employed/independent-contractor-defined>.

[xv] Turek M. Accessibility at Uber [Internet]. 2017 Apr 25 [cited 2018 Nov 16]. Available from: https://www.closingthegap.com/accessibility-at-uber/ <https://www.closingthegap.com/accessibility-at-uber/>.

[xvi] Uber Technologies, Inc. Uber Blog: Introducing uberASSIST [Internet]. 2015 Jul 14 [cited 2018 Nov 16]. Available from: https://www.uber.com/en-SG/drive/resources/uberassist/ <https://www.uber.com/en-sg/drive/resources/uberassist/>.

[xvii] Rider app: request for a guest [Internet]. Uber Technologies, Inc.; 2018 [cited 2018 Nov 16]. Available from: https://www.uber.com/ride/how-uber-works/request-for-a-guest/ <https://www.uber.com/ride/how-uber-works/request-for-a-guest/>.

[xviii] Schwartzburg, L. [Internet]. Early-adopter seniors have totally taken over the ride-sharing app Via. The New York Magazine. 2015 Dec 16 [cited 2019 Feb 13]. Available from: http://nymag.com/intelligencer/2015/12/via-ride-sharing-app-seniors.html?gtm=top&gtm=bottom <http://nymag.com/intelligencer/2015/12/via-ride-sharing-app-seniors.html?gtm=top&gtm=bottom>.

[xix] SilverRide [Internet]. 2018 [cited 2018 Nov 16]. Available from: https://www.silverride.com/ <https://www.silverride.com/>.

[xx] Read K. Forbes [Internet]. A ride service geared to older adults. 2018 [cited 2018 Nov 16]. Available from: https://www.forbes.com/sites/nextavenue/2017/05/15/a-ride-service-geared-to-older-adults/#7e68460b4114 <https://www.forbes.com/sites/nextavenue/2017/05/15/a-ride-service-geared-to-older-adults/#7e68460b4114>.

[xxi] Read K. Forbes [Internet]. A ride service geared to older adults. 2018 [cited 2018 Nov 16]. Available from: https://www.forbes.com/sites/nextavenue/2017/05/15/a-ride-service-geared-to-older-adults/#7e68460b4114 <https://www.forbes.com/sites/nextavenue/2017/05/15/a-ride-service-geared-to-older-adults/#7e68460b4114>.

[xxii] Envoy America. [Internet]. Trust & Safety. Available from: https://envoyamerica.com/trust-and-safety/ <https://envoyamerica.com/trust-and-safety/>.

[xxiii] Envoy America. [Internet]. Trust & Safety. Available from: https://envoyamerica.com/trust-and-safety/ <https://envoyamerica.com/trust-and-safety/>.

[xxiv] The small business economy for data year 2006: A report to the President. United States Government Printing Office. Washington, D.C., December 2007. Available from: https://www.sba.gov/sites/default/files/files/sb_econ2007.pdf.

[xxv] Burgstaller S, Flowers D, Tamberrino D, P.Terry H, Yang Y. Rethinking mobility. The Goldman Sachs Group, Inc. Equity Research. 2017. Available from: https://orfe.princeton.edu/~alaink/SmartDrivingCars/PDFs/Rethinking%20Mobility_GoldmanSachsMay2017.pdf <https://orfe.princeton.edu/~alaink/smartdrivingcars/pdfs/rethinking%20mobility_goldmansachsmay2017.pdf>.

[xxvi] Lyft, Inc. United States Securities and Exchange Commission [Internet]. Form S-1 Registration Statement Under the Securities Act of 1933. March 1, 2019 [cited 2019 August 14]. Available from: https://www.sec.gov/Archives/edgar/data/1759509/000119312519

059849/d633517ds1.htm
<https://www.sec.gov/archives/edgar/data/1759509/000119312519059849/d633517ds1.htm>.

[xxvii] Uber Technologies. United States Securities and Exchange Commission [Internet]. Form S-1 Registration Statement Under the Securities Act of 1933. April 11, 2019 [cited 2019 August 14]. Available from: https://www.sec.gov/Archives/edgar/data/1543151/000119312519103850/d647752ds1.htm#toc647752
<https://www.sec.gov/archives/edgar/data/1543151/000119312519103850/d647752ds1.htm#toc647752>.

[xxviii] Clewlow, RR, Mishra GS. Disruptive transportation: the adoption, utilization, and impacts of ride-hailing in the United States. Institute of Transportation Studies. University of California, Davis, Research Report UCD-ITS-RR-17-07. October 2017. Available from: https://itspubs.ucdavis.edu/wp-content/themes/ucdavis/pubs/download_pdf.php?id=2752
<https://itspubs.ucdavis.edu/wp-content/themes/ucdavis/pubs/download_pdf.php?id=2752>.

[xxix] Hawkins AJ. [Internet]. February 1, 2019. NYC's new driver wage law means the days of cheap Uber rides are over. Available from: https://www.theverge.com/2019/2/1/18206737/nyc-driver-wage-law-uber-lyft-via-juno <https://www.theverge.com/2019/2/1/18206737/nyc-driver-wage-law-uber-lyft-via-juno>.

[xxx] Eidelson J. [Internet]. February 1, 2019. Uber and Lyft raise prices in NYC, citing wage law. Available from: https://www.bloomberg.com/news/articles/2019-02-01/uber-raises-prices-in-new-york-city-citing-new-minimum-wage-law.

[xxxi] Eidelson J. [Internet]. February 1, 2019. Uber and Lyft raise prices in NYC, citing wage law. Available from: https://www.bloomberg.com/news/articles/2019-02-01/uber-raises-prices-in-new-york-city-citing-new-minimum-wage-law.

[xxxii] Lyft, Inc. United States Securities and Exchange Commission [Internet]. Form S-1 Registration Statement Under the Securities Act of 1933. March 1, 2019 [cited 2019 August 14]. Available from: https://www.sec.gov/Archives/edgar/data/1759509/000119312519059849/d633517ds1.htm <https://www.sec.gov/archives/edgar/data/1759509/000119312519059849/d633517ds1.htm>.

[xxxiii] Uber Technologies. United States Securities and Exchange Commission [Internet]. Form S-1 Registration Statement Under the Securities Act of 1933. April 11, 2019 [cited 2019 August 14]. Available from: https://www.sec.gov/Archives/edgar/data/1543151/000119312519103850/d647752ds1.htm#toc647752 <https://www.sec.gov/archives/edgar/data/1543151/000119312519103850/d647752ds1.htm#toc647752>.

[xxxiv] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: http://www.schallerconsult.com/rideservices/automobility.pdf <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[xxxv] Sherman L. Forbes [Internet]. Why can't Uber make money? December 14, 2017 [cited 2018 Nov 16]. Available from: https://www.forbes.com/sites/lensherman/2017/12/14/why-cant-uber-make-money/#19249d8310ec

[xxxvi] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: http://www.schallerconsult.com/rideservices/automobility.pdf <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[xxxvii] Special Report 319: Between public and private mobility: examining the rise of technology-enabled transportation services. Transportation Research Board. Washington, D.C., 2016. Available from: http://www.trb.org/Main/Blurbs/173511.aspx <http://www.trb.org/main/blurbs/173511.aspx>.

BARRIERS AND FACILITATORS IMPACTING OLDER ADULTS' USE OF RIDE SHARE SERVICES

A multitude of factors affect older adults' use of ride share services—including both individual needs and preferences; social conditions, environments, and settings; and broader business and policy factors that affect availability of services. These factors were common themes in our qualitative analysis of key informant interviews conducted for this environmental scan; findings are also supplemented by the literature. The factors identified could contribute to or enable older adults' use of ride share services (act as facilitators) or deter or prevent older adults' use of ride share services (act as barriers). In a future phase of this study, we will explore the barriers and facilitators to older adults' use of ride share services from a consumer perspective.

Conceptual Framework

Based on our literature review and key informant interviews, we developed a conceptual framework to organize the factors that affect older adults' use of ride share services (see Exhibit 4). The framework is informed by the socio-ecological model (SEM), which is widely used in public health research.**[i]** The framework describes the barriers and facilitators to older adults' use of ride share services; the overlapping rings depict how these factors across all levels relate to and influence one another. Because there is a dynamic relationship among these factors—a change in one results in a corresponding change in others.

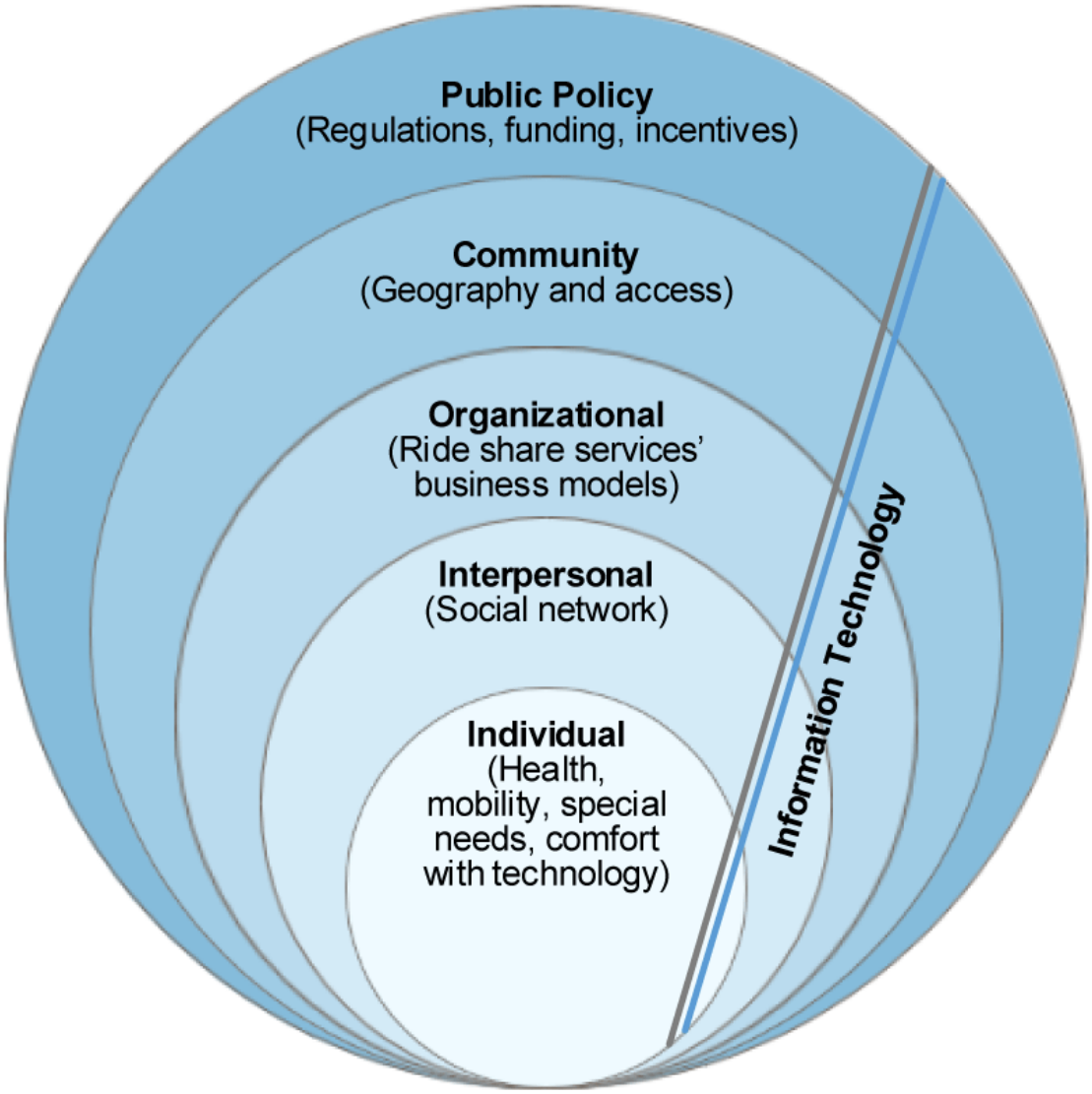
At the center of the conceptual framework is the individual—the older adult. Individual level factors that affect older adults' use of ride share services include age, gender, physical and mental health, mobility and special needs, and knowledge and attitudes, among others. Next is the interpersonal level, which refers to the social networks and social support systems that influence older adults' use of ride share services. Organizational factors pertain to ride share organizations specifically, and their business models and services affect older adults' utilization of ride share services. Community factors include older adults' geographic location and access to ride share services. Public policy factors include regulations, funding, and incentives for organizations that provide ride share services. Finally, information technology affects all layers of this conceptual framework.

Assessing barriers and facilitators of older adults' use of ride share services is complex because many of the factors can be both barriers and facilitators, depending upon the circumstances. We describe these nuances in the sections that follow.

[i] Centers for Disease Control and Prevention [Internet]. 2018 Feb 20 [cited 2018 Nov 16]. The social-ecological model: a framework for prevention. Available from:

https://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html <https://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html>.

Exhibit 4: Conceptual Framework



Individual Level

Individual factors include biological and social traits, such as age and gender; physical traits such as physical and mental health, mobility, and special needs; and personal behaviors and preferences such as knowledge, attitudes, and beliefs. Interview respondents described how age, health, and mobility are interacting factors that affect older adults' use of ride share services. For example, individuals with mobility limitations or disabilities might require special assistance when traveling. In terms of mobility, one national ride share organization discussed that older adults using their services require door-to-door or door-through-door services, as opposed to curb-to-curb only services. Our analysis of the ITN*Rides* data showed that age-related mobility needs cross all socio-economic boundaries. Specifically, 41.2 percent of ITN riders reported an annual household income of less than $25,000; 31.5 percent reported $25,000 to $49,999; 13.8 percent reported $50,000 to $74,999; and 13.6 percent reported an annual household income of $75,000 or more.

Driving status is influenced by factors such as age, physical health, and special needs.**[i]** Driving status may also affect utilization of ride share services. Ride sharing can contribute to independence among older adults who are no longer driving or who have begun the gradual transition from the driver's seat to the passenger seat.**[ii]** A 2014 study of 729 older adults who joined a ride share program between 2010 and 2013 showed that driving self-regulation can be divided into three classes, low, medium and high, based on avoidance of seven driving situations.**[iii]** The study concluded that avoidance of certain driving situations and weekly driving frequency are valid indicators for describing self-regulation classes in older adults.

One key informant also noted that personal comfort with ride sharing is a potential barrier to older adults' use of ride share services. There were also generational differences in personal comfort and trust of ride share services. Personal comfort seemed

to extend to the passenger's gender. For example, one key informant noted that some women passengers are only comfortable accepting rides from women drivers. Older adults might also prefer to use ride share services because they provide transportation in a personal vehicle as opposed to a van or a shuttle. One respondent noted that some older adults feel stigmatized or embarrassed when using vans or shuttles with an image of an older adult or the logo of an assisted living facility.

Interpersonal Level

Research shows that older adults are more likely to rely on family members and friends for rides, compared with organizations and agencies that provide transportation services.[iv] Family and friends can provide door-to-door and door-through-door assistance for older adults with mobility limitations. However, research also shows that older adults who do not have access to a personal vehicle feel dependent on family members and friends for rides, and report difficulty asking them for rides.[v] Older adults who have unmet transportation needs might choose to use ride share services.

Another interpersonal factor affecting older adults' use of ride share services is social interaction. Particularly among ride share services that use volunteers, there is an opportunity for increased social interaction and reduced social isolation among both riders and volunteer drivers. Interviewees noted social interaction as an important aspect of their services, as both volunteer drivers and riders enjoy having conversations during their rides. Further, key informants from some ride share services reported that they make an effort to match their volunteer drivers with the same riders over time so they build a relationship. Conversely, ride share services that do not match drivers to passengers might lack this personal relationship, which could be a barrier to use among some older adults.

Organizational Level

Organizational level factors refer to the ride share organization's business model. As previously noted, non-profit ride share services generally provide services specifically to older adult populations, whereas most of the for-profit ride share services serve the general population, including older adults. The characteristics of the ride share organization—capital, labor model, services, scheduling procedures, and cost of services—can affect older adults' use of ride share services.

Capital. Ride share services' source and level of capital has an impact on the types of services provided by the organization. Non-profit ride share organizations report frequently relying on social capital, or volunteerism, to provide rides. The demand for volunteer services almost universally outstrips supply, and many non-profit ride share services turn away riders and rides, or ration service. One non-profit ride share service noted that there are more opportunities for local transportation commissions to support transportation for older adults—and more needs could be met if funding were to become available. Other sources of capital for non-profit ride share services include philanthropic and charitable support; however, charitable giving for aging comprises only two percent of institutional philanthropy.**[vi]** Insufficient capital for growth is a significant barrier for non-profit organizations and means less funding for general operating costs, including skilled staff, research, marketing, communications, and training. Comparatively, for-profit ride share services have substantial financial investment. Uber raised $22 billion in investment capital between 2009 and 2018,**[vii]** while Lyft raised $5.1 billion.**[viii]** In addition to subsidizing operating losses while overcoming barriers to growth, capital buys skilled staff, research, marketing, communications, and training.

Business Model. A fundamental part of the business model among for-profit ride share services is the use of independent contractors as drivers—meaning individual drivers decide when, where, and who they will serve. Independent contractors might be offered training for special needs riders; for example, Lyft provides tips and videos to their drivers on how to provide additional assistance to passengers who use wheelchairs.[ix] Drivers, however, are not required to participate in trainings or offer special assistance to older adults who need to be escorted into their home, or helped with a walker or packages. Older adults who need assistance are unable to rely on these types of for-profit services until special care or services are offered, like those offered by non-profit ride share services, or developed by an intermediary.

Non-profit ride share services frequently use volunteers as drivers, but this labor model is dependent on volunteers' schedules, affecting the availability of non-profit ride share services. The availability of ride share service organizations that have drivers who will provide door-through-door service and a steadying arm (sometimes referred to as arm-through-arm service), if needed, is a key factor that affects whether older adults who require mobility assistance are able to use the service. ITN affiliates provide training for their drivers, whether they are volunteers or paid hourly to supplement volunteer efforts, so they are able to provide this level of service.

The use of volunteers as drivers can also facilitate older adults' use of ride share services. One non-profit ride share organization that participated in an interview suggested that older adults might have a better experience with unpaid, volunteer drivers than paid drivers because volunteers have an altruistic motivation for driving.

Service Restrictions. Through our interviews, we learned that some non-profit ride share organizations offer free or low-cost services to older adults, but ration these services by offering limited rides. Such

service restrictions are often a result of insufficient volunteer drivers or insufficient financial capital to support additional rides. The outcome is that older adults who depend on the organization for rides might, for example, need to choose between a trip to the grocery store or a doctor's appointment. Service restrictions impact the extent to which older adults can use ride share services to meet their needs.

Scheduling Rides in Advance. Through the RIS data analysis and the interviews, we found that many non-profit ride share services require rides to be scheduled in advance—sometimes up to one week in advance—facilitating use among older adults who maintain set schedules or who require advance scheduling. However, for older adults who need to make a last-minute trip, it might be challenging to secure a ride with a ride share service that requires advance scheduling. The ability to schedule rides on-demand, a capability rarely offered by non-profit ride share services but actively promoted by for-profit ride share services, might facilitate use by older adults who live in higher density areas where on-demand ride share services are offered. One non-profit service manages on-demand ride requests by charging a higher rate. As a result, riders voluntarily schedule rides in advance 97 percent of the time.

Cost of Services. Transportation is expensive, whether purchased as goods, such as an automobile, or as services. The American Automobile Association (AAA) calculates the average 2018 cost of owning and operating an automobile as $8,849, assuming a 15,000 mile travel year, accounting for fuel, maintenance and repairs, insurance, taxes, depreciation, and finance charges.**[x]** Although older drivers travel many fewer miles per year—an estimated 7,646 for those over 65 years old**[xi]**—that is still an estimated annual cost of $7,078, or $590 per month.**[1]** Public transportation, a service, is highly subsidized by the government as a common good. Using U.S. Department of Transportation figures from 2013, a 2015 study by The Hamilton Project found that only two percent of more than

1,800 U.S. mass transit systems reported fare revenue above operating expenses.[xii] Non-profit older adult ride share services are subsidized with volunteer labor and charitable contributions, and for-profit rideshare services such as the TNCs are currently subsidized by their investors, who will look for profits, sooner or later. The point is, nearly every ride share service is subsidized in some way. For older adults who live on a limited or fixed income, even the subsidized cost of transportation services can be a barrier. While lower fares and free services are helpful for older adults with low incomes, these services are not without limitations.

Community Level

Community-level factors affecting use of ride share services among older adults relate to geography, the availability of ride share services and other transportation alternatives, and community support for ride sharing. Geographic location—and specifically, the community in which an older adult resides—impacts the availability of ride share services. Through the literature review, we found that older adults in rural communities have more limited options for alternative sources of transportation[xiii],[xiv],[xv] in comparison to their non-rural counterparts, and ride share services are less prevalent in rural areas.[xvi] Unlike older adults who live in rural areas, the youngest-old (people age 65 to 74) who reside in urban areas have greater access to ride share services. However, traffic congestion in urban areas presents barriers for older adults who need door-to-door and arm-through-arm services. In communities with heavy traffic, it is difficult for drivers to leave their vehicles to help older adults with packages, walkers, or lend a steadying arm into a doctor's office, presenting a barrier for older adults who need assistance.

For the growing population of older adults who reside in rural communities, a lack of ride share services, and other types of transportation services, in general, is a barrier.[xvii] Non-profit ride

share services in rural communities—which largely rely on social capital—may be so stretched, they ration their services. However, the ride share services that do operate in rural areas have volunteers who often come to the door, carry packages, fold walkers and wheelchairs, and rarely charge for a ride.

One interview respondent noted that community desire to support non-profit ride share services affects availability. For example, when local and state entities are aware of unmet transportation needs, they can decide whether to dedicate resources to support ride sharing and resources for older adults and others who need transportation support.

Information Technology

Information technology affects all levels of the conceptual framework. Technological advances, including the smartphone, facilitate access to ride share services but also present barriers to its use. Among non-profit ride share services, the telephone is the predominant means for older adults to request and schedule rides. The telephone offers human contact and allows older adults to provide the granularity of detail necessary to schedule a ride appropriate for their needs. During interviews, ride share services expressed that they want it to be “easy” and “convenient” for older adults to call for rides themselves and also use their smartphone apps. Smartphones are the primary technology used by for-profit ride share services to schedule and pay for rides, allowing drivers and passengers to connect without speaking and without a central dispatch office. This reduces labor costs and creates efficiencies by eliminating the need for cash payments and billing.

While smartphone technology is a major facilitator of ride share use among certain populations, it does present barriers for many older adults. Older adults’ access to and comfort with technology, such as smartphone apps, were identified as potential barriers through our

interviews with ride share organizations. First, nearly 60 percent of adults over age 65 reportedly do not own a smartphone.[xviii] Second, there is a learning curve for new technology. Because modern ride sharing relies primarily on smartphone apps for scheduling, the extent to which older adults are technologically savvy affects their use of ride share services. A pilot test of subsidized Uber rides with 40 older adults in Gainesville, Florida, supports the assumption that smartphone enabled ride share is more acceptable to older adults between the ages of 61 and 75.[xix] In this study, even though ride sharing trips proved to be three times as fast as transit trips, 67 percent of those age 80 and older stopped using the service, compared to the super users, with a mean age of 67, who used the service an average of 33 times a month. More research is needed to better understand the experiences of people in different age cohorts who use technology to schedule rides.

With transportation referral services like GoGoGrandparent, Lyft's Concierge, and Uber's Uber Central, efforts are underway to overcome this technology barrier. These services leverage both smartphone technology and web-based dashboards to facilitate scheduling and coordination of rides for older adults.

Non-profit ride share services, such as ITN, are also seeking to integrate smartphones and web technology into their scheduling procedures, though primarily for the convenience and efficiency of the volunteer drivers and adult children, rather than the older adults themselves. Information technology has already helped to provide some efficiency for the non-profit sector and the older adults it serves. For example, the ITN*Rides* software and database, built to meet the needs of older adults, has dozens of fields for the level of detail necessary to serve the older population, so every driver knows in advance such information as whether the rider has dementia, a visual impairment, uses a mobility device, or requires special assistance; which pick up door should be used; the load time required; and whether the rider is visiting a doctor's office.

Public Policy Level

Public policy and legislative frameworks may continue to influence the extent to which ride share services are available for older adults and others. Ride sharing regulation in state legislatures has, in the short-term, expanded its availability,[xx] but the longer-term effects and unintended consequences, which might take time to emerge, remain unclear. For example, as noted earlier, traffic congestion in major American cities is one outcome of ride share expansion.[xxi] Also, within non-profit ride share organizations, the loss of personal insurance coverage among volunteers is another outcome. Personal auto insurance policies may contain exclusions when people use their personal vehicle for business to provide ride share services.[xxii] While new insurance products are becoming available for ride share drivers, they may be cost prohibitive for volunteer drivers who use their vehicles to provide ride share services to older adults.

There remains a vast opportunity to increase financial investment and incentives for ride share services. For-profit ride share services have received considerable financial investment. Many states have policies that remove barriers, such as livery laws, or offer protection for volunteer drivers. Some communities offer property tax relief for volunteers, or special state license plates for non-profits as fundraising incentives.[xxiii] Many states, through their policies, encourage people to volunteer to drive older adults. Public transportation services depend on public funding, but both Uber and Lyft are contracting with large cities like Boston and Washington, DC, to provide supplemental paratransit services.[xxiv] A 2019 analysis of transit ridership data in 22 large U.S. cities concluded that TNCs reduce public transit ridership. Specifically, the authors reported that "for each year after TNCs enter a market, heavy rail ridership can be expected to decrease by 1.3 percent and bus ridership can be expected to decrease by 1.7 percent."[xxv] Public policy may continue to impact ride share services, and the people who use them.

[1] This estimate was calculated using the 2018 AAA *Your Driving Costs* estimates. The actual annual cost for driving 7,646 miles per year may be lower or higher depending on the depreciation of the vehicle among other factors.

[i] Hajeka A, Brettschneidera C, Eiseleb M, Busscheb HVD, Wiesec B, Mamonec S, Weyererd S, Werled J, Levee V, Pentzeke M, Röhrf S, Steinf J, Bickelg H, Möschg E, Heserh K, Wagnerh M, Schererb M, Maierh W, Riedel-Hellerf SG, Königa HH. Prevalence and determinants of driving habits in the oldest old: Results of the multicenter prospective AgeCoDe-AgeQualiDe study. Arch Gerontol Geriatr 82 (2019) 245–250.

[ii] Bergen G, West BA, Luo F, et al. How do older adult drivers self-regulate? Characteristics of self-regulation classes defined by latent class analysis. J Safety Res. 2017;61:205-210.

[iii] Bergen G, West BA, Luo F, et al. How do older adult drivers self-regulate? Characteristics of self-regulation classes defined by latent class analysis. J Safety Res. 2017;61:205-210.

[iv] Choi M, Adams KB, Kahana E. The impact of transportation support on driving cessation among community-dwelling older adults. J Gerontol B Psychol Sci Soc Sci. 2012;67B(3):392-400.

[v] Strout EH, Fox L, Castro A, Haroun P, Leavitt B, Ross C, et al. Access to transportation for Chittenden County Vermont older adults. Aging Clin Exp Res. 2016;28(4):769–774.

[vi] Feather J. Engaging private philanthropy in aging: it's time for a new approach [Internet]. American Society on Aging; 2018 [cited 2018 Nov 16]. Available from:

http://www.asaging.org/blog/engaging-private-philanthropy-aging-its-time-new-approach <http://www.asaging.org/blog/engaging-private-philanthropy-aging-its-time-new-approach>.

[vii] Crunchbase. [Internet]. Crunchbase, Inc.; 2018 [cited 2018 Nov 16]. Uber Funding Rounds. Available from: https://www.crunchbase.com/organization/uber/funding_rounds/funding_rounds_list#section-funding-rounds <https://www.crunchbase.com/organization/uber/funding_rounds/funding_rounds_list#section-funding-rounds>.

[viii] Korosec K. Lyft valuation hits $15.1 billion after fresh $600 million in funding [Internet]. Techcrunch.com; 2018 [cited 2018 Nov 25]. Available from: https://techcrunch.com/2018/06/27/lyft-15-billion-600-million-funding-round/ <https://techcrunch.com/2018/06/27/lyft-15-billion-600-million-funding-round/>.

[ix] Lyft Inc. [Internet]. 2018 [cited 2018 Nov 16]. Wheelchair policy. Available from: https://help.lyft.com/hc/en-us/articles/115012926827-Wheelchair-Policy <https://help.lyft.com/hc/en-us/articles/115012926827-wheelchair-policy>.

[x] Your driving costs: how much are you really paying to drive? [Internet]. AAA; 2018 [cited 2018 Nov 27]. Available from: https://exchange.aaa.com/wp-content/uploads/2018/09/18-0090_2018-Your-Driving-Costs-Brochure_FNL-Lo-5-2.pdf <https://exchange.aaa.com/wp-content/uploads/2018/09/18-0090_2018-your-driving-costs-brochure_fnl-lo-5-2.pdf>

[xi] Average annual miles per driver by age group. Office of Highway Policy Information. Federal Highway Administration. U.S. Department of Transportation. March 2018. Available from: https://www.fhwa.dot.gov/ohim/onh00/bar8.htm <https://www.fhwa.dot.gov/ohim/onh00/bar8.htm>.

[xii] Kearney MS, Hershbein B, Nantz G. Racing ahead or falling behind? Six economic facts about transportation infrastructure in the United States. The Hamilton Project. 2015 May 7. Available from: http://www.hamiltonproject.org/papers/facts_about_transportation_infrastructure/?_ga=2.107328642.1614275482.1543365710-1667608263.1543267314 <http://www.hamiltonproject.org/papers/facts_about_transportation_infrastructure/?_ga=2.107328642.1614275482.1543365710-1667608263.1543267314>.

[xiii] National Center on Senior Transportation. 2010. Transportation: The silent need – results of a national survey of Area Agencies on Aging [PDF file]. Retrieved from https://www.n4a.org/files/Transportation_TheSilentNeed.pdf <https://www.n4a.org/files/transportation_thesilentneed.pdf>.

[xiv] Strogatz D, Mielenz TJ, Johnson AK, Baker IR, Robinson M, Mebust SP; Andrews HF, Betz ME, Eby DW, Johnson RM, Jones VC, Leu CS, Molnar LJ, Rebok GW, Li G. Brief report: Importance of driving and potential impact of driving cessation. J Rural Health. 2019;1-6.

[xv] Payyanadan RP, Lee JD, Grepo LC. Challenges for older drivers in urban, suburban and rural settings. Geriatrics. 2018;3:14.

[xvi] Jiang J. More Americans are using ride-hailing apps. Pew Research Center. 2019. Available from: http://www.pewresearch.org/fact-tank/2019/01/04/more-americans-are-using-ride-hailing-apps/ <http://www.pewresearch.org/fact-tank/2019/01/04/more-americans-are-using-ride-hailing-apps/>.

[xvii] Bayne A, Siegfried A, Stauffer P, Knudson A. Promising practices for increasing access to transportation in rural communities. Rural Evaluation Brief. NORC Walsh Center for Rural

Health Analysis. April 2018. Available from: http://www.norc.org/PDFs/Walsh%20Center/Rural%20Evaluation%20Briefs/Rural%20Evaluation%20Brief_April2018.pdf <http://www.norc.org/pdfs/walsh%20center/rural%20evaluation%20briefs/rural%20evaluation%20brief_april2018.pdf>.

[xviii] Anderson M, Perrin A. Tech adoption climbs among older adults. Pew Research Center. 2017 May 17. Available from: http://www.pewinternet.org/2017/05/17/technology-use-among-seniors/ <http://www.pewinternet.org/2017/05/17/technology-use-among-seniors/>.

[xix] Leistner DL, Steiner RL. Uber for seniors? Exploring transportation options for the future. Transportation Research Record: Journal of the Transportation Research Board. 2017;2660(1):22-29.

[xx] Borkholder J, Montgomery M, Chen MS, Smith R. Uber state interference: how transportation network companies buy, bully, and bamboozle their way to deregulation. The National Employment Law Project and The Partnership for Working Families. January 2018. Available from: https://www.nelp.org/publication/uber-state-interference/ <https://www.nelp.org/publication/uber-state-interference/>.

[xxi] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: http://www.schallerconsult.com/rideservices/automobility.pdf <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[xxii] Commercial Ride Sharing. 2019 Jan 8 [cited 2019 July 25]. National Association of Insurance Commissioners. https://www.naic.org/cipr_topics/topic_commercial_ride_sharing.htm <https://www.naic.org/cipr_topics/topic_commercial_ride_sharing.htm>.

[xxiii] Staplin L, Freund K. Policy prescriptions to preserve mobility for seniors—A dose of realism. Accid Anal Prev. 2013;61:212–221.

[xxiv] Boston.com [Internet]. 2018 [cited 2018 Nov 16]. MBTA to expand use of Uber, Lyft for disabled riders. Available from: https://www.boston.com/news/local-news/2017/02/28/mbta-to-expand-use-of-uber-lyft-for-disabled-riders <https://www.boston.com/news/local-news/2017/02/28/mbta-to-expand-use-of-uber-lyft-for-disabled-riders>.

[xxv] Graehler M, Mucci RA, Erhardt GD.Understanding the recent transit ridership decline in major US cities: service cuts or emerging modes? August 1, 2018. 98th Annual Meeting of the Transportation Research Board. Available from: http://usa.streetsblog.org/wp-content/uploads/sites/5/2019/01/19-04931-Transit-Trends.pdf <http://usa.streetsblog.org/wp-content/uploads/sites/5/2019/01/19-04931-transit-trends.pdf>.

FUTURE POTENTIAL OF RIDE SHARE SERVICES

The information technology revolution has forever changed shared mobility strategies that allow users to access transportation services on an as-needed basis, and older adult ride share services are an early and fortunate part of that change. As the current ride share services that serve older adults continue to evolve and as new services are introduced, the continuum of service levels that is emerging will likely become even more clearly defined, much as the continuum of care for older adult housing has emerged. Where once there were only homes or nursing homes, now there is traditional

community housing, retirement or senior housing communities, independent living settings, and assisted living settings.**[i]** Ride share services for older adults might similarly evolve.

Global ride sharing is projected to grow to $285 billion annually by 2030.**[ii]** For now, it is clear there are nearly 1,000 ride share services available for older adults: 917 non-profit services and three for-profit ride share services (with 888 locations) identified in the August 2018 analysis of RIS, as well as an additional eight for-profit services identified in the subsequent literature review and then added to RIS. It is likely there are several hundred more grassroots non-profit services, especially in rural America, that lack an easily identifiable internet presence. This study found that in high density urban locations, ride share options tend to be for-profit services, with communications accommodations for older adults who cannot or do not use smartphones or computers. The urban business model may be primarily suitable for the youngest-old who can benefit from the curb-to-curb service offered by contract drivers who might or might not offer assistance.

In rural and suburban communities, which account for a smaller proportion of the general population but the majority of older adults in the U.S., as well as a far larger land area, non-profit transportation services are also available. Unlike the for-profit ride share services that serve the general population, data from the RIS database showed that many non-profit services focus on special needs populations, especially older adults, providing door-to-door and door-through-door service. The non-profit services might help older adults at all levels of need and at any age, but according to the data gathered by ITN*America* over 20 years and in 27 locations, the non-profit ride share services for adults age 65 and older largely serve the middle-old, age 75 to 84 (41.1 percent) and the oldest-old, age 85 and older (36.8 percent), and offer rides to those who are transitioning from the driver's seat to the passenger seat.

Two thirds of non-profit services do not charge for rides, and when they do, few use credit cards or electronic payment. For-profit services do use credits cards and electronic payment. All of the services use private automobiles, but there is a marked difference in how rides are scheduled. In the non-profit sector, almost 100 percent of rides are scheduled in advance, while in the for-profit sector, rides are predominantly provided on-demand, unless an individual specifically requests advance planning, or if the service is scheduled through a third-party or online platform. On-demand ride sharing may only be feasible in higher density areas, and even there, congestion and other potential concerns of policy makers and transportation planners might lead to changes. One possible outcome is that advance planning might become more prevalent, because it does not require excess capacity to be circling the city waiting for the next fare. Such a change could increase the availability of for-profit services in the suburbs.

There is a need for more understanding of ride share services and the impact on the aging population. Many older adults—in particular, those age 75 and older—require high touch personal service to travel safely, to remain in their homes, and actively engage in their communities. Incentives for private solutions, such as innovative programs where older adults may trade the cars they no longer drive to pay for their own transportation, or where volunteers earn credits for driving older adults and save those credits for their own future needs, could potentially help to prepare for the mobility needs of the next generation and to scale with the aging of the population. This may indicate a need for greater stakeholder awareness and education about the value of ride share services.

Further, innovations in autonomous vehicles present new opportunities, and challenges, for older adults. There is little empirical research on older adults' perceptions of autonomous vehicles, but data suggest that older adults are fearful of them;**[iii]** and most older adults do not use the automated technology

features, such as navigation systems, in the vehicles they currently own and drive.[iv] Accompanying older adults in autonomous vehicles might become a whole new role for volunteers as the autonomous vehicle industry takes shape.

Given the rapid nature of a marketplace influenced by technology, all of the ride share services available today might look quite different next year, and many new iterations of services might also be available that meet varying consumer needs. There will most likely be a mix of available services, for-profit and non-profit, just as there are book stores and libraries, because the public needs and wants both. These services will help fulfill the entire range of mobility needs. Most of all, to help scale older adult ride sharing solutions with the aging of the population, there will be a critical role for policy makers, practitioners, and other stakeholders to understand the impact of these services in order to offer solutions that prioritize public health and safety.

[i] Freedman VA and Spillman BC. The residential continuum from home to nursing home: size, characteristics and unmet needs of older adults. 2014. J. Gerontol, Series B: Psychological Sciences and Social Sciences, 69(7), S42–S50, doi:10.1093/geronb/gbu120.

[ii] Burgstaller S, Flowers D, Tamberrino D, P.Terry H, Yang Y. Rethinking mobility. The Goldman Sachs Group, Inc. Equity Research. 2017. Available from: https://orfe.princeton.edu/~alaink/SmartDrivingCars/PDFs/Rethinking%20Mobility_GoldmanSachsMay2017.pdf <https://orfe.princeton.edu/~alaink/smartdrivingcars/pdfs/rethinking%20mobility_goldmansachsmay2017.pdf>.

[iii] American Automobile Association, Inc. 2018 May. Vehicle Technology Survey – Phase IIIB. Fact Sheet. Available from: https://publicaffairsresources.aaa.biz/download/10980/ <https://publicaffairsresources.aaa.biz/download/10980/>.

[iv] Jenness JW, Lerner N, Mazor S, Osberg JS, Tefft BC. Use of advanced in-vehicle technology by young and older early adopters: selected results from five technology surveys. NHTSA; 2008 September. Available from: https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/811_004.pdf <https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/811_004.pdf>.

KEY FINDINGS

1. **Profile of older adults (65 and older) who use non-profit ride share services:** An analysis of more than 20 years of data from the ITNRides database gathered from 27 U.S. locations revealed that ride share users age 65 and older were primarily women (73.6 percent), living alone (62.4 percent), and had a modest income (41.2 percent had an income less than $25,000). While two thirds (65.7 percent) no longer drove, most still had a license (71.7 percent) or owned a car (60.2 percent). Adults age 65 and older using the ITN ride share service were predominantly Caucasian (92.9 percent), with a mean age of 81. Despite their special mobility needs (28.7 percent used a cane, 26.5 percent used a walker, and 5.2 percent used a wheelchair), seven out of ten riders reported their physical health as excellent, very good, or good. Driver assistance, such as lending an arm for balance, pushing a wheelchair, or buckling a seatbelt—was required by 17.8 percent of riders.

2. **How older people use non-profit ride share services:** Based on an analysis of 793,313 ITN rides from 1996 to 2019,**[1]** adults age 65 and older used the ride share service for access to health care (42.7 percent), for consumer needs, such as grocery shopping or visiting the hairdresser (25.3 percent), for recreation (10.1 percent), for religious purposes (7.8 percent), for social purposes (6.6 percent), for work or volunteer activities (2.7 percent), for general needs (2.5 percent), for education (1.3 percent), to connect to other forms of transportation (0.7 percent), and for professional services (0.3 percent). This means that although the most common ride share purpose is for access to health care, the majority of rides are for such other purposes as shopping, having fun, meeting people, going to religious services, volunteering or going to work. Few rides connect older people to other forms of transportation.

3. **Background and distribution of non-profit ride share services:** Ride sharing to meet the mobility needs of older people is not new. Defined in this paper as transportation arranged through a third party where a person is a passenger in a private automobile, it can be traced back to the Friends in Service Helping (FISH) program founded in England in in 1961.**[i]** The Robert Wood Johnson Foundation awarded more than 1,000 grants to the Faith in Action program from 1983 to 2008**[ii]** (now known as the National Volunteer Caregiver Network**),[iii]** and in 1995, the Independent Transportation Network of America gave its first ride.**[iv]**

The Rides in Sight database of all senior transportation services in the United States contained 917 individual non-profit ride share services that provide rides for older people. Almost 80 percent offered door-to-door service, two thirds offered rides for free, most relied heavily on volunteer drivers, and all scheduled rides in advance. The largest concentration of non-profit volunteer services was in more densely populated states, and rural areas had the fewest available services.

4. **Profile of older adults (65 and older) who use for-profit ride share services:** At the time of the interviews, data about older adults who use for-profit ride share services were not available for this white paper.

5. **Background and distribution of for-profit ride share services:** Based on the literature review, the largest for-profit ride share companies in the U.S. were Uber and Lyft. Both companies conducted the largest part of their business in nine of the most densely populated cities in the country.**[v]** Only four percent of those who have used a ride share service are 65 and older, compared with 36 percent who are between 18 and 29.**[vi]**

6. **Role of the marketplace and public policy in the availability of ride share for older adults:** To be available for older people, ride share must be economically sustainable in the marketplace. Public transit is subsidized by the taxpayers; non-profit ride share is subsidized by donors, foundations and volunteers; for-profit ride share is subsidized by investors. This study found that non-profit services have many of the qualities that older adults desire, but their business model limits their availability. There is much

for policy makers, practitioners, and other stakeholders to consider as both the for-profit and non-profit models work to meet the needs of many older people.

7. **Barriers and facilitators to older adults' use of ride share services:** This paper used the socio-ecological model from public health research as a framework to describe the barriers and facilitators to older adults' use of ride share services. Many of the factors can be both barriers and facilitators, depending upon the circumstances.

- Individual—age, health and mobility cross all socio-economic boundaries and impact an older person's need for and ability to use ride share. Driving self-regulation**[vii]** and personal comfort are also important.

- Interpersonal—older people with unmet mobility needs may consider ride share services. Ride share provides an opportunity for social interaction with the driver or other riders, especially with volunteer services, but services that lack personal interaction or assistance can be a barrier to ride share use.

- Organizational—ride share is expensive. That cost is absorbed in part in the non-profit sector by volunteers (social capital), but demand outstrips supply and there are insufficient volunteers to meet demand for service. Independent contractors who work as drivers in the for-profit sector cannot be required to provide the kind of assistance many older people need. In the non-profit sector, the need for advance notice may be a barrier for some people who need rides.

- Community—a major factor impacting the availability of ride share services is geography. There is more ride share service available in higher population density communities than in rural and suburban areas.**[viii]**

- Public Policy—many states have policies that make for-profit ride share services more available, but those same policies have negatively impacted insurance availability for some

volunteer drivers. Traffic congestion in urban areas has motivated jurisdictions to limit the supply of drivers and vehicles for some transportation network companies and labor disputes have led some jurisdictions to pass policies that regulate wages for paid ride share drivers.[ix] Public policy may continue to impact ride share services and the people who use them.

- Technology—information technology impacts the accessibility and availability of services at every level.

8. **Role of technology in the future of ride share:** Among non-profit ride share services, the telephone is the predominant means for older adults to request and schedule rides. The telephone offers human contact and allows older adults to provide the granularity of detail necessary to schedule a ride appropriate for their needs. Smartphones are the primary technology used by for-profit ride share services to schedule and pay for rides, allowing drivers and passengers to connect without speaking and without a central dispatch office. Because modern ride sharing relies primarily on smartphone apps for scheduling, the extent to which older adults are technologically savvy affects their use of ride share services. Through transportation referral services like GoGoGrandparent,[x] Lyft's Concierge,[xi] and Uber's Uber Central,[xii] efforts are underway to overcome this technology barrier. Non-profit ride share services, such as ITN, have built software to meet the needs of older adults, with fields for the level of detail necessary to serve the older population, so every driver knows in advance

such information as whether the rider has dementia or a visual impairment, uses a mobility device, or requires special assistance; which pick up door should be used; the load time required; and whether the rider is visiting a doctor's office.

9. **Future potential of ride share services:** Given the rapid nature of a marketplace influenced by technology, all of the ride share services available today might look quite different next year, and many new iterations of services might also be available that meet varying consumer needs. There will most likely be a mix of available services, for-profit and non-profit, just as there are book stores and libraries, because the public needs and wants both; these services will help fulfill the entire range of mobility needs. Most of all, to help scale older adult ride sharing solutions with the aging of the population, there will be a critical role for policy makers, practitioners, and other stakeholders to understand the impact of these services in order to offer solutions that prioritize public health and safety.

[1] Ride purpose is based 793,313 rides for which there were 830,046 ride segments. There are fewer rides than ride segments because a ride may include stops at separate destinations, each with a different purpose. The ride purpose calculation excludes 388,327 return home ride segments.

[i] FISH ("Friends in Service Helping") [Internet]. Town of Mattapoisset, MA; [cited 2018 Nov 1] Medical Transportation Services. Available from: **https://www.mattapoisett.net/council-**

aging/pages/fish-friends-service-helping-medical-transportation-services <https://www.mattapoisett.net/council-aging/pages/fish-friends-service-helping-medical-transportation-services>.

[ii] Parker SG, Pomphrey A. Robert Wood Johnson Foundation [Internet]. Faith in Action; c2001-2018 [cited 2018 Nov 8]. Available from: https://www.rwjf.org/en/library/research/2009/05/faith-in-action.html <https://www.rwjf.org/en/library/research/2009/05/faith-in-action.html>.

[iii] Family Caregiver Alliance [Internet]. National Volunteer Caregiving Network (Faith in Action).; c1996-2018 [cited 2018 Aug 28]. Available from: https://www.caregiver.org/national-volunteer-caregiving-network-faith-action-1 <https://www.caregiver.org/national-volunteer-caregiving-network-faith-action-1>.

[iv] ITN*America* [Internet]. 2019 [cited 2019 July 31]. About ITN. Available from: https://www.itnamerica.org/about <https://www.itnamerica.org/about>.

[v] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: http://www.schallerconsult.com/rideservices/automobility.pdf <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[vi] Schaller B. The new automobility: Lyft, Uber and the future of American cities. 2018. Available from: http://www.schallerconsult.com/rideservices/automobility.pdf <http://www.schallerconsult.com/rideservices/automobility.pdf>.

[vii] Bergen G, West BA, Luo F, et al. How do older adult drivers self-regulate? Characteristics of self-regulation classes defined by latent class analysis. J Safety Res. 2017;61:205-210.

[viii] Jiang J. More Americans are using ride-hailing apps. Pew Research Center. 2019. Available from: http://www.pewresearch.org/fact-tank/2019/01/04/more-americans-are-using-ride-hailing-apps/ <http://www.pewresearch.org/fact-tank/2019/01/04/more-americans-are-using-ride-hailing-apps/>.

[ix] Hawkins AJ. [Internet]. February 1, 2019. NYC's new driver wage law means the days of cheap Uber rides are over. Available from: https://www.theverge.com/2019/2/1/18206737/nyc-driver-wage-law-uber-lyft-via-juno <https://www.theverge.com/2019/2/1/18206737/nyc-driver-wage-law-uber-lyft-via-juno>.

[x] GoGoGrandparent [Internet]. 2018 [cited 2018 Aug 28]. Available from: https://gogograndparent.com/ <https://gogograndparent.com/>.

[xi] Lyft Blog [Internet]. Lyft, Inc. 2018 [cited 2018 Nov 16]. Lyft Concierge now offers more ease and control for your organization's passengers . Available from: https://blog.lyft.com/posts/lyft-concierge-now-offers-more-ease-and-control-for-your-organizations-passengers <https://blog.lyft.com/posts/lyft-concierge-now-offers-more-ease-and-control-for-your-organizations-passengers>.

[xii] Uber Central [Internet]. Uber Technologies, Inc.; 2018 [cited 2018 Nov 16]. Available from: https://help.uber.com/riders/article/uber-central?nodeId=502388e3-df83-4c4b-964d-625a1d161e12 <https://help.uber.com/riders/article/uber-central?nodeid=502388e3-df83-4c4b-964d-625a1d161e12>.

APPENDICES

APPENDIX A. RIDES IN SIGHT (RIS) DATABASE CATEGORIES AND CODES

ITN*America*'s Rides in Sight (RIS) database contains information on transportation services for nearly all of the 3,114 counties/county equivalents in the U.S. and lists approximately 15,000 transportation services that offer rides to older and/or visually impaired people.

RIS categories	Codes	
Transportation type	Curb-to-curb Emergency transportation Door-to-door	Fixed route Shared rides Paratransit
Eligibility requirements	Available to the public Age 50+ Age 55+ Age 60+ Age 62+ Age 65+ Disabled Veteran	Income requirement Residency requirement Membership requirement Illness Home evaluation Seniors
Trip purpose	Medical or health care Grocery shopping Necessary errands Social	Recreation Work/volunteer Any
Assistance available	Steadying arm to escort passenger Wheelchair lift Transport folding wheelchair Help with wheelchair Help with seatbelts Help with mobility devices Help with packages Driver will wait with passenger during errand/appointment Personal assistant available	Service animals allowed Driver will come inside Driver will not come inside Personal assistant/caregiver rides for free Special needs assistance Wheelchair accessible Help in and out of vehicle Full service
Price structure	Free Paid	
Accepted payments	Cash Check Medicaid Credit cards Pre-payment	Exact change Taxi voucher Insurance Free
Scheduling in advance	Yes No	
Types of vehicles used	Car Car & van	

APPENDIX B. ORGANIZATIONS PARTICIPATING IN KEY INFORMANT DISCUSSIONS

NORC conducted key informant interviews representing the following organizations:

Organization Name	Type of Organization	Website
Uber	For-profit ride share service	https://www.uber.com/
The Eldercare Locator	National public support service	https://eldercare.acl.gov/Public/Index.aspx
The National Aging and Disability Transportation Center	National public support service	https://www.nadtc.org/
Partners in Care	Local volunteer/non-profit organization	http://www.partnersincare.org/
GoGoGrandparent	National public support service	https://gogograndparent.com/
Neighbor Ride	Local volunteer/non-profit ride share service	http://neighborride.org/wordpress/
Ride Austin	Local non-profit ride share service	http://www.rideaustin.com/
National Volunteer Caregiver Network	National volunteer/non-profit service	https://nvcnetwork.org/wp/

APPENDIX C. CHARACTERISTICS OF OLDER ADULTS (AGE 65 AND OLDER) WHO HAVE USED ITN'S RIDE SHARE SERVICES

Characteristics of Older Adults Who Have Used ITN's Ride Share Services

Characteristics of Older Adults Who Have Used ITN's Ride Share Services

Data Source: ITNRides, 1996 – October 2019[1]

Characteristics of Older Adults Who Have Used ITN	N (%)
Age on the Day Riders Age 65 and Older Joined the ITN Service (N=10,010)[2]	

65-74 years	2,212 (22.1)
75-84 years	4,116 (41.1)
85+ years	3,682 (36.8)
Mean	81
Median	82
Mode	85
Gender (N=9,881)	
Male	2,612 (26.4)
Female	7,269 (73.6)
Health Status (N=7,284)[3]	
Excellent	551 (7.6)
Very good	1,727 (23.7)
Good	2,806 (38.5)
Fair	1,826 (25.1)
Poor	374 (5.1)
Living Arrangements (N=9,124)	
Live alone	5,695 (62.4)
Live with others (family or friends)	3,429 (37.6)
Race/Ethnicity (N=8,333)	
Caucasian	7,737 (92.9)
African American	255 (3.1)
Hispanic/Latino	104 (1.3)
Asian	78 (0.9)
Native American/Alaska Native	77 (0.9)
Other	73 (0.9)
Hawaiian/Pacific Islander	9 (0.1)
Household Income (N=4,796)[4]	
Less than $25,000	1,975 (41.2)
$25,000-$49,999	1,510 (31.5)
$50,000-$74,999	660 (13.8)
$75,000-$99,999	349 (7.3)
$100,000 or more	302 (6.3)
Current Driver's License (N=6,664)[5]	
No	1,887 (28.3)
Yes	4,777 (71.7)
Currently Own a Vehicle (N=6,454)[6]	
No	2,568 (39.8)
Yes	3,886 (60.2)
Currently Drive (N=6,400)[7]	
No	4,202 (65.7)
Yes	2,198 (34.3)
Special Needs (N=10,010)[8]	
Cane	2,872 (28.7)
Walker	2,651 (26.5)
Driver assistance required	1,784 (17.8)
Visual impairment	1,485 (14.8)
No high vehicle	1,422 (14.2)
Alzheimer's/dementia	635 (6.3)
Trunk required	590 (5.9)
Wheelchair	521 (5.2)
Deaf	366 (3.7)
Full size vehicle required	346 (3.5)
Bladder control problem	319 (3.2)
Personal assistant	290 (2.9)
Anxiety disorder	279 (2.8)
Blind	107 (1.1)
Service animal	7 (0.1)
Ride Purpose by Segment (N=830,046 total ride segments; ride purpose calculation excludes 388,327 return home ride segments)	
Medical	188,792 (42.7)
Consumer	111,627 (25.3)
Recreation	44,598 (10.1)
Religious	34,294 (7.8)
Social	29,227 (6.6)
Employment/volunteer	11,735 (2.7)

Employment/volunteer	11,735 (2.7)
General	11,002 (2.5)
Education	5,891 (1.3)
Intermodal[9]	3,021 (0.7)
Professional services	1,532 (0.3)

1 The data source is ITNRides, ITNAmerica's proprietary database. The data are self-reported by ITN members in their application. ITN affiliates update member information in ITNRides as new information becomes available. 2 Age is calculated as age on the day that riders age 65 and older joined the ITN service. 3 Members were asked to self-report their health status (How would you describe your current physical health?) in anonymous ITN customer satisfaction surveys administered from 2008 to 2018. 4 Members were asked to self-report their annual household income (What was your total household income last year before taxes?) in anonymous ITN customer satisfaction surveys administered from 2010 to 2018. 5 Members were asked: Do you have a current driver's license? (Yes or No) 6 Members were asked: Do you currently own a vehicle? (Yes or No) 7 Members were asked: Do you currently drive? (Yes or No) 8 The categories are not mutually exclusive; categories may not add to 100%. 9 Intermodal indicates that the rider used ITN to connect to another mode of transportation (for example, a ride from an ITN driver to or from a bus stop, airport, train station or ferry terminal).

APPENDIX D. CHARACTERISTICS OF U.S. RIDE SHARE SERVICES THAT SERVE OLDER AND/OR VISUALLY IMPAIRED PEOPLE

Characteristics of Available Ride Share Services in the U.S., August 2018

Characteristics of Available Ride Share Services in the U.S., August 2018

Data Source: ITN Rides in Sight (RIS)[1]

Total number of ride share services (N=920) and service locations (N=1,805)[2]	N=1,805
Type of transportation provided	**N (%)**
Curb-to-curb[3]	1082 (59.9)
Door-to-door[4]	725 (40.2)
Shared rides	111 (6.2)
Paratransit	8 (0.4)
Fixed route	2 (0.1)
Emergency transportation	0 (0.0)
Eligibility requirements	**N (%)**
Available to the public	920 (51.0)
Seniors[5]	480 (26.6)
Residency requirement	305 (16.9)
Age 60+	286 (15.8)
Disabled	234 (13.0)
Illness	45 (2.5)
Age 55+	43 (2.4)

Age 65+	42 (2.3)
Membership requirement	30 (1.7)
Income requirement	27 (1.5)
Age 50+	11 (0.6)
Home evaluation	10 (0.6)
Veteran	9 (0.5)
Age 62+	5 (0.3)
Eligible trip purpose	**N (%)**
Any	1136 (62.9)
Medical or health care	623 (34.5)
Necessary errands	342 (19.0)
Grocery shopping	341 (18.9)
Social	58 (3.2)
Recreation	42 (2.3)
Work/volunteer	25 (1.4)
Assistance available[6]	**N (%)**
Steadying arm to escort passenger	309 (17.1)
Help in and out of vehicle	251 (13.9)
Help with mobility devices	159 (8.8)
Help with seatbelts	111 (6.2)
Wheelchair accessible	97 (5.4)
Driver will wait with passenger during errand/appointment	84 (4.7)
Driver will come inside	67 (3.7)
Transport folding wheelchair	51 (2.8)
Help with packages	49 (2.7)
Personal assistant/caregiver rides for free	31 (1.7)
Full service	22 (1.2)
Help with wheelchair	20 (1.1)
Wheelchair lift	19 (1.1)
Service animals allowed	17 (0.9)
Personal assistant available	15 (0.8)
Driver will not come inside	6 (0.3)
Special needs assistance	6 (0.3)
Pricing structure	**N (%)**
Paid	1201 (66.5)
Free	604 (33.5)
Payment methods among services that charge for rides	**N (%)**
Credit cards	918 (76.4)
Cash	231 (19.2)
Check	45 (3.8)
Pre-payment	30 (2.5)
Exact change	10 (0.8)
Medicaid	8 (0.7)
Taxi voucher	3 (0.3)
Insurance	2 (0.2)
Advance scheduling[7]	**N (%)**
Yes	918 (50.9)
No	887 (49.1)
Vehicles used	**N (%)**
Car	1,805 (100.0)
Car & van	245 (13.6)

1 Data source: ITNAmerica's Rides in Sight (RIS) database, the largest national database on transportation services for older adults in the U.S. The analysis was conducted in August 2018. ITNAmerica continuously updates RIS by reviewing publicly available information and verifying information about the ride share services through telephone interviews, making it the most accurate and complete data source on this topic. It is important to note that the number and characteristics of these services is dynamic. 2 Includes 917 non-profit ride share services in 917 service locations and 3 for-profit ride share services in 888 service locations. 3 Curb-to-curb means the driver picks up the passenger at the curb of the road and delivers them to the curb of the

road at their destination. 4 Door-to-door means the driver assists the rider from the door of the pick-up location to the vehicle, and from the vehicle to the door of the destination. 5 Some organizations that serve older adults do not provide an age range. 6 Ride share services reported these categories of assistance were available to riders. This information was either present on the ride share services' website or confirmed by ITNAmerica through personal communication with services. 7 Most, but not all, non-profit ride share services offer advance scheduling exclusively. Note: The categories in the table are not mutually exclusive; categories will not always add to 100 percent.

APPENDIX E. CHARACTERISTICS OF U.S. NON-PROFIT RIDE SHARE SERVICES THAT SERVE OLDER AND/OR VISUALLY IMPAIRED PEOPLE

Characteristics of Available Non-Profit Ride Share Services in the U.S., August 2018

Characteristics of Available Non-Profit Ride Share Services in the U.S., August 2018

Data Source: ITN Rides in Sight (RIS)[1]

Total number of non-profit ride share services (N=917) and service locations (N=917)	N=917
Type of transportation provided	**N (%)**
Door-to-door[2]	724 (79.0)
Curb-to-curb[3]	195 (21.3)
Shared rides	111 (12.1)
Paratransit	8 (0.9)
Fixed route	2 (0.2)
Emergency transportation	0 (0.0)
Eligibility requirements	**N (%)**
Seniors[4]	479 (52.2)
Residency requirement	305 (33.3)
Age 60+	286 (31.2)
Disabled	234 (25.5)
Illness	45 (4.9)
Age 55+	43 (4.7)
Age 65+	42 (4.6)
Available to the public	33 (3.6)
Membership requirement	30 (3.3)
Income requirement	27 (2.9)
Age 50+	11 (1.2)
Home evaluation	10 (1.1)
Veteran	9 (1.0)
Age 62+	5 (0.6)
Eligible trip purpose	**N (%)**
Medical or health care	623 (67.9)
Necessary errands	342 (37.3)
Grocery shopping	341 (37.2)
Any	248 (27.0)

Any	246 (27.0)
Social	58 (6.3)
Recreation	42 (4.6)
Work/volunteer	25 (2.7)
Assistance available[5]	**N (%)**
Steadying arm to escort passenger	309 (33.7)
Help in and out of vehicle	250 (27.3)
Help with mobility devices	159 (17.3)
Help with seatbelts	111 (12.1)
Wheelchair accessible	97 (10.6)
Driver will wait with passenger during errand/appointment	83 (9.1)
Driver will come inside	66 (7.2)
Transport folding wheelchair	51 (5.6)
Help with packages	49 (5.3)
Personal assistant/caregiver rides for free	31 (3.4)
Full service	22 (2.4)
Help with wheelchair	20 (2.2)
Wheelchair lift	19 (2.1)
Service animals allowed	17 (1.9)
Personal assistant available	15 (1.6)
Driver will not come inside	6 (0.7)
Special needs assistance	6 (0.7)
Pricing structure	**N (%)**
Paid	313 (34.1)
Free	604 (65.9)
Payment methods among services that charge for rides	**N (%)**
Cash	231 (73.8)
Check	45 (14.4)
Credit cards	30 (9.6)
Pre-payment	30 (9.6)
Exact change	10 (3.2)
Medicaid	8 (2.6)
Taxi voucher	3 (1.0)
Insurance	2 (0.6)
Advance scheduling[6]	**N (%)**
Yes	917 (100.0)
No	0 (0.0)
Vehicles used	**N (%)**
Car	917 (100.0)
Car & van	245 (26.7)

1 Data source: ITNAmerica's Rides in Sight (RIS) database, the largest national database on transportation services for older adults in the U.S. The analysis was conducted in August 2018. ITNAmerica continuously updates RIS by reviewing publicly available information and verifying information about the ride share services through telephone interviews, making it the most accurate and complete data source on this topic. 2 Door-to-door means the driver assists the rider from the door of the pick-up location to the vehicle, and from the vehicle to the door of the destination. 3 Curb-to-curb means the driver picks up the passenger at the curb of the road and delivers them to the curb of the road at their destination. 4 Some organizations that serve older adults do not provide an age range. 5 Ride share services reported these categories of assistance were available to riders. This information was either present on the ride share services' website or confirmed by ITNAmerica through personal communication with services. 6 Most, but not all, non-profit ride share services offer advance scheduling exclusively. Note: The categories in the table are not mutually exclusive; categories will not always add to 100 percent.

APPENDIX F. CHARACTERISTICS OF THREE U.S. FOR-PROFIT RIDE SHARE SERVICES THAT SERVE OLDER AND/OR VISUALLY IMPAIRED PEOPLE

Characteristics of Three For-Profit Ride Share Services in the U.S. (with 888 locations), August 2018

Characteristics of Three For-Profit Ride Share Services in the U.S. (with 888 locations), August 2018

Data Source: ITN Rides in Sight (RIS)[1]

Total number of for-profit ride share services (N=3) and service locations (N=888):	N=888
Service area	**N/A**
Type of transportation provided	**N**
Curb-to-curb	887
Door-to-door	1
Fixed route	0
Shared rides	0
Emergency transportation	0
Paratransit	0
Eligibility requirements	**N**
Available to the public	887
Seniors	1
Age 50+	0
Age 55+	0
Age 60+	0
Age 62+	0
Age 65+	0
Disabled	0
Veteran	0
Income requirement	0
Residency requirement	0
Membership requirement	0
Illness	0
Home evaluation	0
Eligible trip purpose	**N**
Any	888
Medical or health care	0
Grocery shopping	0
Necessary errands	0
Social	0
Recreation	0
Work/volunteer	0
Assistance available	**N**
Driver will wait with passenger during errand/appointment	1
Driver will come inside	1
Help in and out of vehicle	1
Steadying arm to escort passenger	*
Wheelchair lift	*

Transport folding wheelchair	*
Help with wheelchair	*
Help with seatbelts	*
Help with mobility devices	*
Help with packages	*
Personal assistant available	*
Personal assistant/caregiver rides for free	*
Service animals allowed	*
Driver will not come inside	*
Special needs assistance	*
Wheelchair accessible	*
Full service	*
Pricing structure	**N**
Paid	888
Free	0
Accepted payments	**N**
Credit cards	888
Cash	0
Check	0
Medicaid	0
Pre-payment	0
Exact change	0
Taxi voucher	0
Insurance	0
Free	0
Advance scheduling	**N**
No	887
Yes	1
Vehicles used	**N**
Car	888
Car & van	0

** Personal assistance is not guaranteed and is provided at the driver's discretion. 1 Data source: ITNAmerica's Rides in Sight (RIS) database, the largest national database on transportation services for older adults in the U.S. We conducted the analysis in August 2018. ITNAmerica continuously updates RIS by reviewing publicly available information and verifying information about the ride share services through telephone interviews, making it the most accurate and complete data source on this topic. Note: The categories in the table are not mutually exclusive; categories will not always add to 100 percent.*

APPENDIX G. EXAMPLES OF U.S. FOR-PROFIT RIDE SHARE SERVICES THAT SERVE OLDER PEOPLE

Name	Description	Service area	Communication
Zemcar	Ride share service for children and older adults	Boston	Smartphone app
Wingz	Ride share service providing airport rides and general transportation services	San Francisco, Seattle, Austin, Miami, San Diego, Dallas, Orlando, Houston, Phoenix, Portland (OR), Los Angeles, Tampa, Sacramento, San Antonio	Smartphone app
SilverRide	Door-through-door, arm-through-arm older adult ride share service	San Francisco	Telephone, email, smartphone app
Carol Drives	Ride share service for women	South Florida region	Smartphone app
Safr	Ride share service for women	Boston	Smartphone app
Papa	Ride share and companionship service for older adults; matches college student "grandkids on demand" with older adults	Cities in Florida, Grand Rapids, Kansas City, Pittsburgh, St. Louis	Telephone, smartphone app, website
Hop Skip Drive	Ride share service for children and older adults	Southern California, San Francisco Bay Area, Colorado-Front Range Area	Smartphone app, website
Via	Ride share service for all	New York, Chicago, Washington DC	Smartphone app
Envoy America	Ride share service for older adults	Cities in Arizona, Texas, Washington, Illinois, and New Mexico	Telephone, website

Note: These services were identified through a review of grey literature and websites. ITNAmerica's Rides in Sight (RIS) database did not include these services, except for SilverRide, at the time of the RIS analysis.

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ITN*America* is the first national, non-profit organization with a mission to promote lifelong mobility for seniors. It supports sustainable, community based transportation by leading a national transportation network grounded in research, policy analysis and education. ITN*America*'s national, non-profit transportation network includes ITN affiliates, ITN*Country* communities and Trusted Transportation Partners in 47 states. It also maintains **Rides in Sight** <http://www.ridesinsight.org/>, the largest, searchable on-line database of approximately 15,000 transportation services in the US for seniors or visually impaired people. Learn more at **www.ITNAmerica.org** <http://www.itnamerica.org>