

National Center for Injury Prevention and Control



What is CDC doing to better understand and improve safe transportation for older adults?

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National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

ADRC Healthy Communities Summit
June 20, 2019

Session Overview

- CDC's role in transportation safety
- Ongoing data linkage project to better understand crash-related injuries among older adults
- Ongoing research project examining ride share services for older adults
- CDC's MyMobility Planning Tool



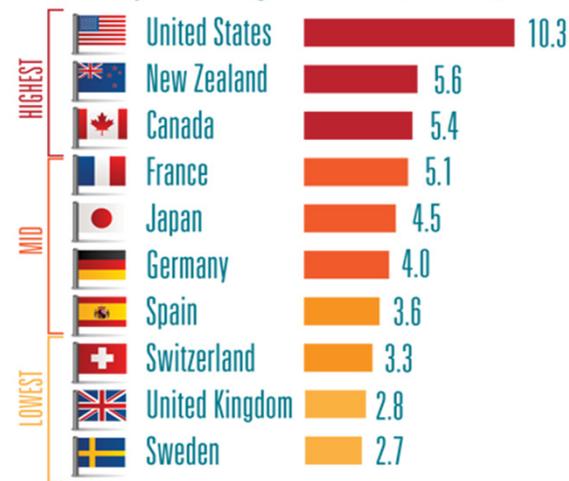
Part 1: CDC's Role in Transportation Safety

Why Motor Vehicle Injury is a Public Health Problem

In the United States:

- Crashes are a leading cause of death in the first three decades of life
 - 2nd leading cause of injury death among older adults (65+ years)
- Each year motor vehicle-related injuries send about 3 million people to an emergency department
- 37,800+ deaths on U.S. roads in 2017

Motor vehicle crash deaths in 10 comparison high-income countries, 2013



Deaths per 100,000 people

SOURCE: WHO Global Status Report on Road Safety, 2015.

<https://www.cdc.gov/vitalsigns/motor-vehicle-safety>



Vision

Keep people safe
on the road—every day.

Mission

To reduce injury and death due to motor
vehicle crashes and promote safe travel.





Motor Vehicle Injury Prevention Priority Areas



Restraints



Tribes

Impaired Driving



Older Adult
Mobility



Data Linkage





Motor Vehicle Injury Prevention Priority Areas



Restraints



Tribes

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Older Adult Mobility



Data Linkage





Motor Vehicle Injury Prevention Priority Areas



Restraints



Tribes

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Older Adult Mobility



Data Linkage



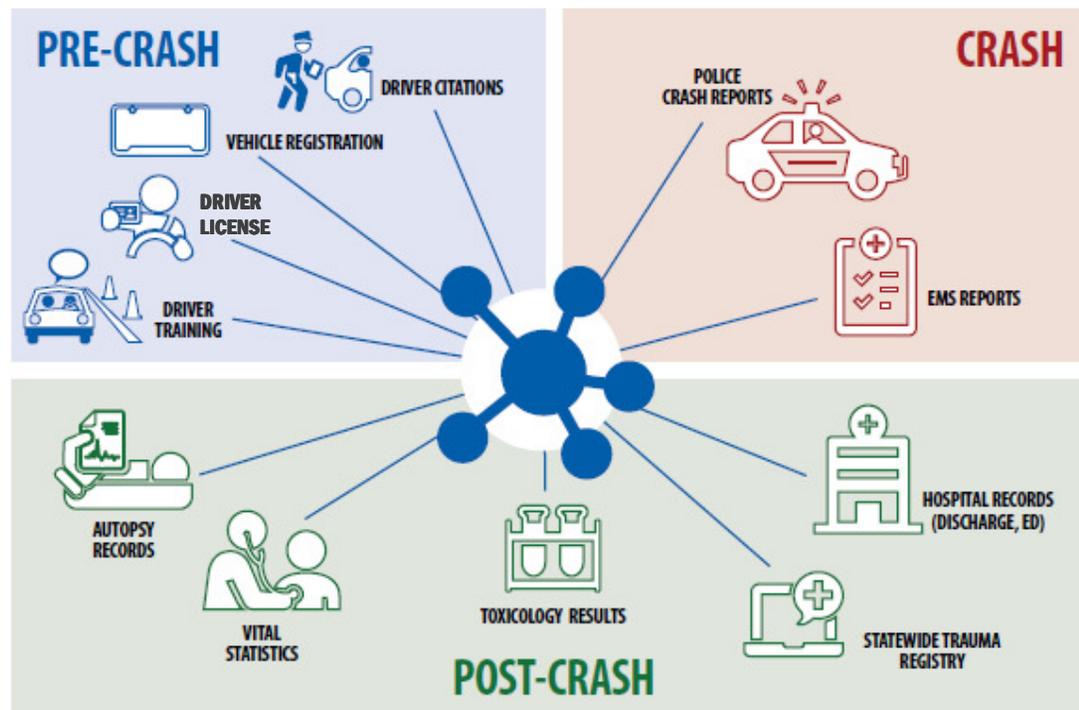
Part 2:
**Linking Data to Examine Older Adult
Crash-related Injuries**

Data Linkage Overview

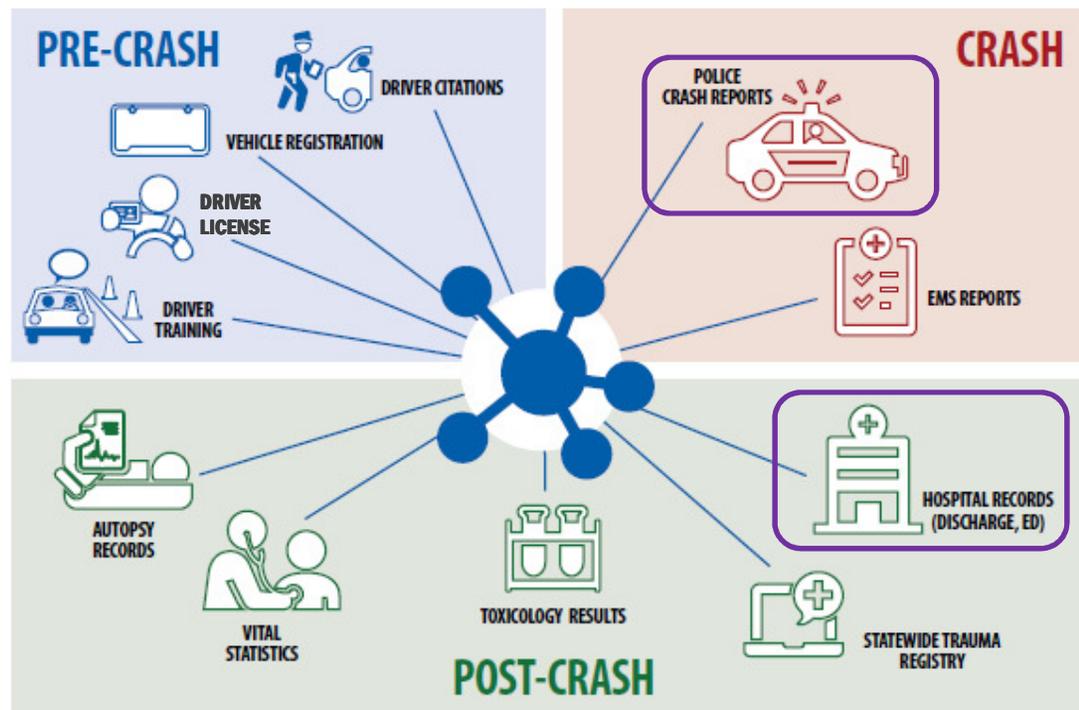
- Purpose: Determine utility of linking medical and traffic data for identifying risk and protective factors and outcomes of motor vehicle crashes among older adults
- Study locations: Kentucky, Maryland, Ohio, Utah



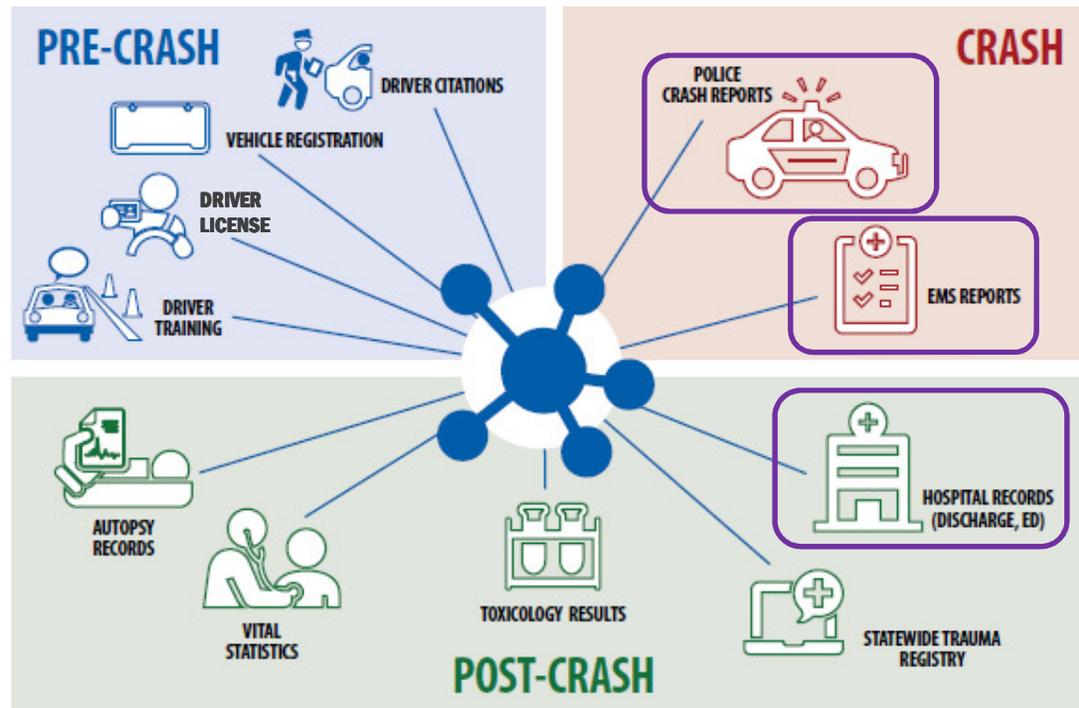
Data Sources



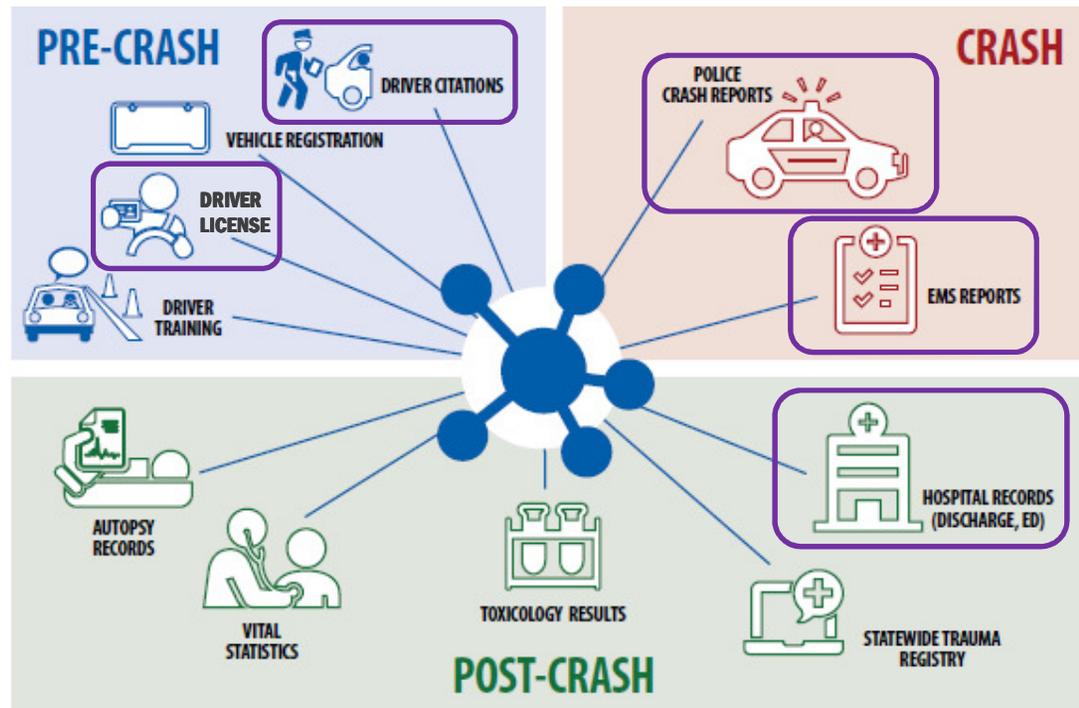
Data Sources



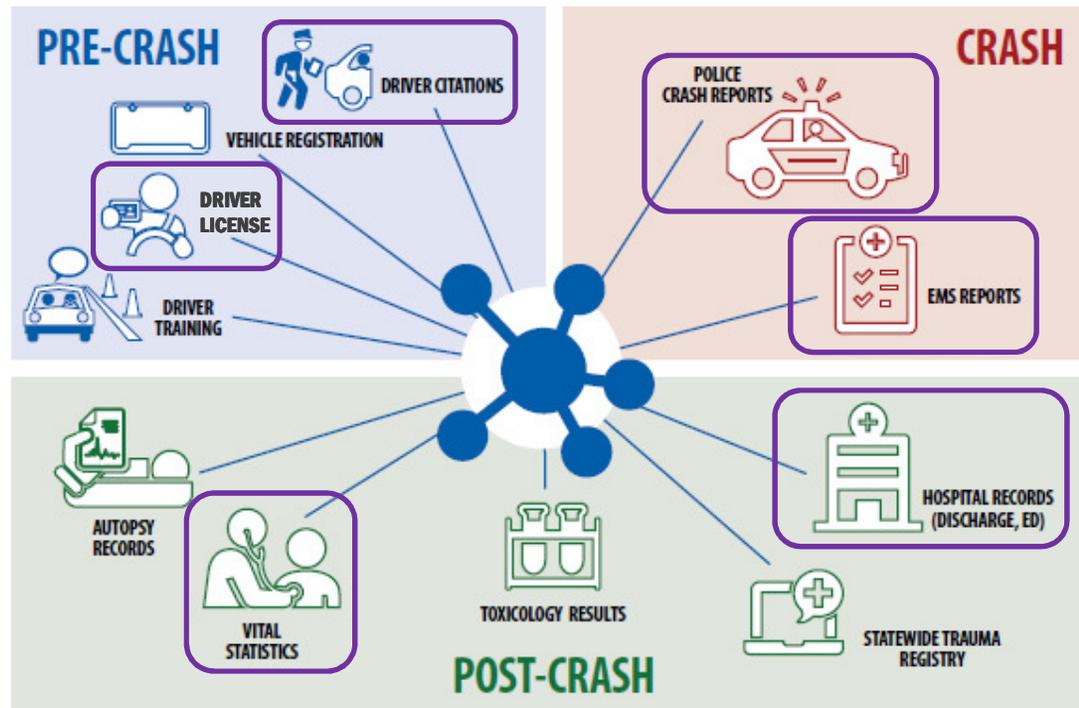
Data Sources



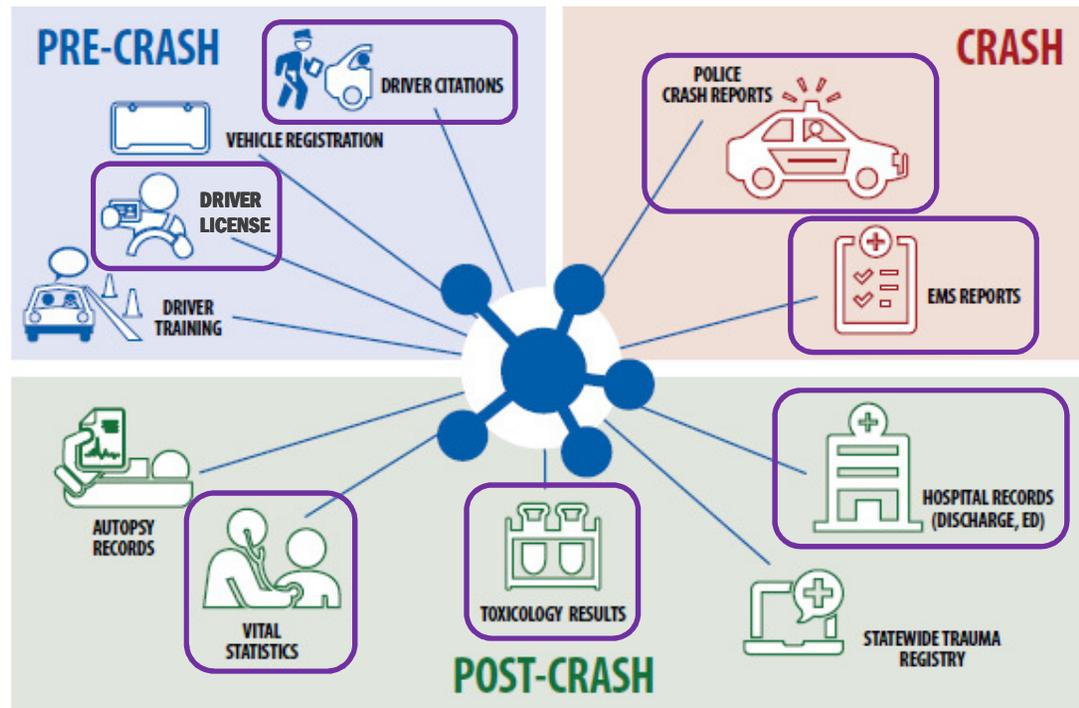
Data Sources



Data Sources



Data Sources



What Can We Learn From Linked Data?

Selected Research Questions:

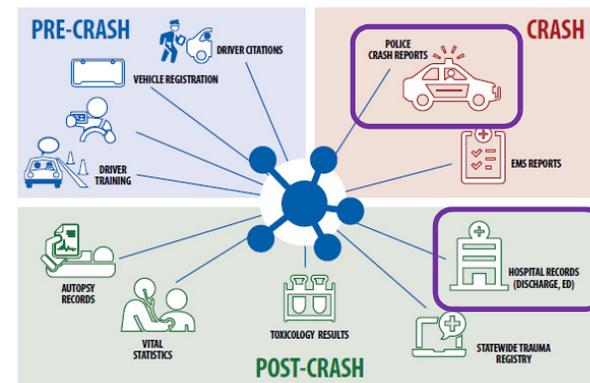
- What **risk factors** for a motor vehicle crash are related to an **older adult in one of the vehicles (driver or occupant)** being injured? How do these factors compare with those for younger vehicle drivers or occupants?
- What is the **severity of injury as it relates to mortality risk or to disability risk** from motor vehicle crashes among older adults? How does this compare with other age groups?
- Are certain **comorbidities (e.g., chronic diseases) associated with crash risk or with identified risk factors for crashes** among older adults? In the event of a crash, are certain **comorbidities associated with likelihood of crash injuries** among older adults, and how does this vary as a function of whether an injury requires medical treatment?



Data Linkage Study Example

Factors Influencing Identification of Serious Injuries on Motor Vehicle Crash Reports

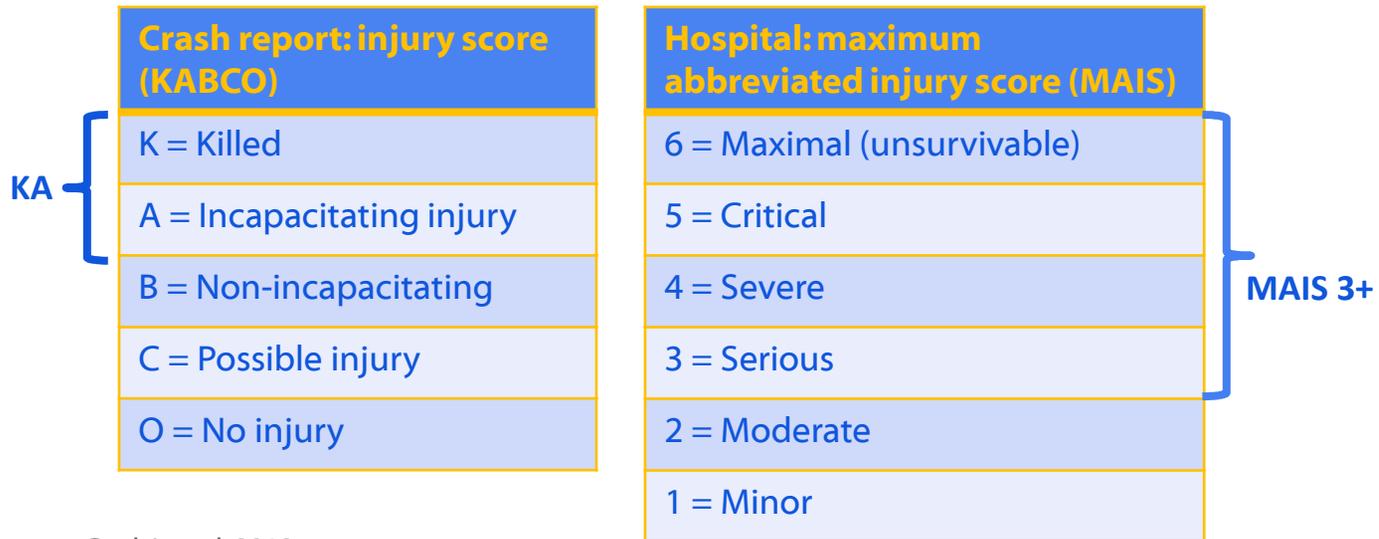
- Objectives
 - Determine accuracy of crash-reported serious injuries compared to hospital-reported serious injuries
 - Identify factors associated with under-identification



Source: Cook L et al. 2018.

Methods

- Database: Probabilistically linked Utah motor vehicle crash, emergency department, and hospital discharge data from 2010 – 2016
- Measures of serious injury:



Source: Cook L et al. 2018.

Methods

- Other variables examined:
 - Person
 - Age
 - Sex
 - Person type (driver, passenger, etc.)
 - Restraint usage
 - Crash
 - Time
 - Urban/rural location
 - Crash type
 - Suspected alcohol/drug use

Source: Cook L et al. 2018.



Results

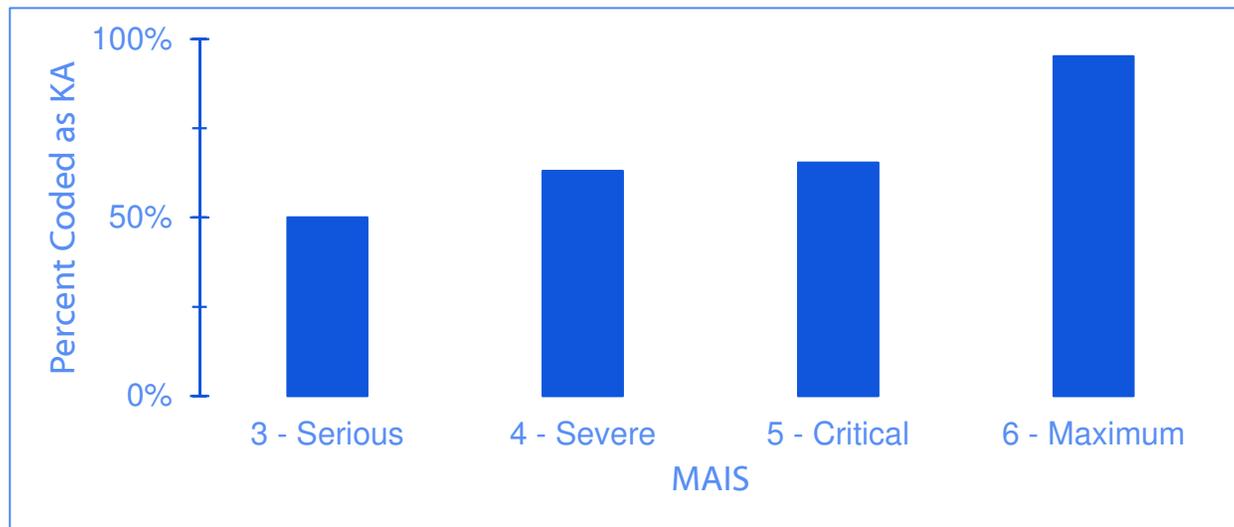
- Of 931,485 persons in crashes from 2010 – 2016:
95,532 (10.3%) cases linked to hospital record
- Of those that linked to hospital record:
5,685 (6%) cases were coded as serious injury (MAIS 3+) on hospital record
- Of those with serious injury on hospital record:
2,959 (52%) cases were coded as serious injury (K or A) on crash report

Source: Cook L et al. APHA November 2018, oral presentation.



Results

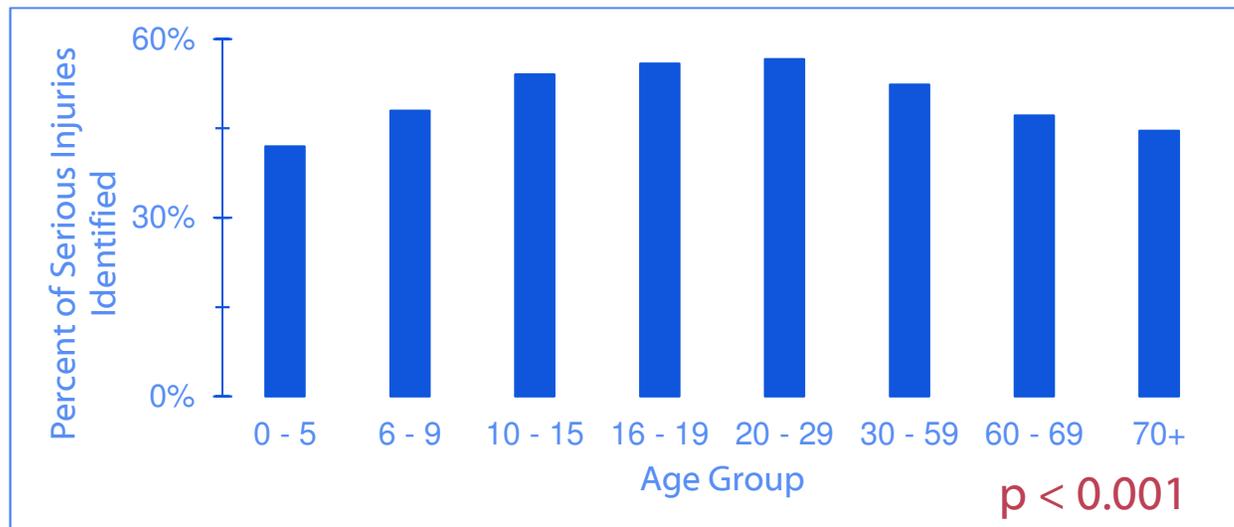
Crash-reported Serious Injuries (KA) by
Hospital-coded Serious Injuries (MAIS 3+),
Utah, 2010-2016



Source: Cook L et al. APHA November 2018, oral presentation.

Results

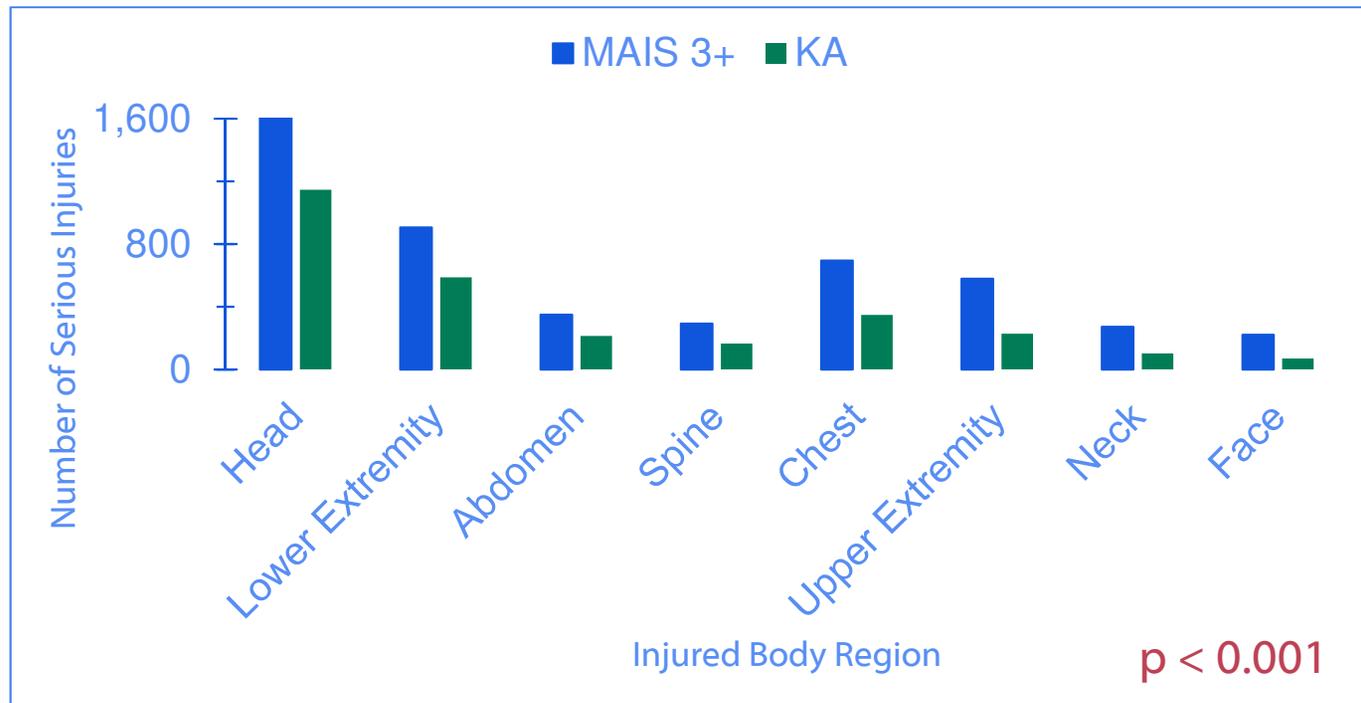
Hospital-coded Serious Injuries Identified as Such on Crash Reports, by Age Group, Utah, 2010-2016



Source: Cook L et al. APHA November 2018, oral presentation.

Results

Serious Injuries by Injured Body Region, Utah, 2010-2016



Source: Cook L et al. APHA November 2018, oral presentation.

Implications

- Potential for under-reporting
 - Children and older adults (compared with adults 30-59 years)
 - Injuries to body regions other than the head
- Crash scenarios considered to be more risky are more likely to be accurately coded as serious injuries.
- Underreporting of serious injuries (on crash report) can result in the diversion of resources from areas and populations where they could be of benefit.

Source: Cook L et al. APHA November 2018, oral presentation.



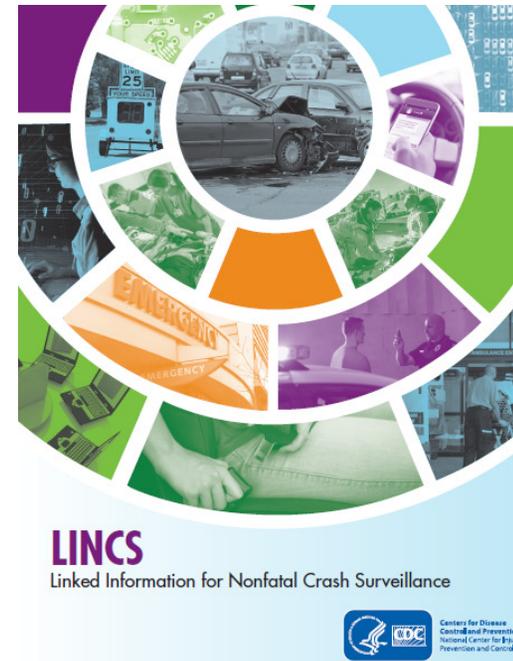
Next Steps for Older Adult Data Linkage Project

- Continue answering research questions to better understand risk and protective factors associated with older adults and crash injuries. Selected research in progress includes:
 - Influence of age on relationship between crash factors and likelihood of hospital treatment or death
 - Influence of age on costs of crash injuries
 - Investigate influence of different drug classes on crash-related fatal and hospital outcomes
- Extend single-state analyses to multiple states (KY, MD, OH, UT) using uniform, standardized data sets and programming



Other CDC Data Linkage Activities

- Evaluation of data linkage systems
- National Governors Association Learning Labs (12 states to date)
- Core State Violence and Injury Prevention Program supplemental funding for 4 states
- **LINCS Guide coming soon!**



**Part 3:
Examining Ride Share Service Availability
and Use among Older Adults**

Background: Driving Cessation By Older Adults

- Driving cessation associated with poor outcomes, including:
 - Poor psychological outlook
 - Lower community engagement
 - Lower quality of life
 - Depression
 - Isolation
 - Declines in physical activity and health
 - And more



Background: Transportation Alternatives

- Transportation alternatives may include
 - Public transportation
 - Walking
 - Van services
 - Rides from friends or family members
 - Taxis
 - Ride share services

- Factors making it difficult to use many transportation alternatives include
 - Poor health and/or mobility of the older adult
 - Cost
 - Availability



Background: More People Are Using Ride Share Services

- In 2018, according to the Pew Research Center, 36% of **all U.S. adults** have used a service to share rides in private automobiles, more than double since 2015.
- Ride share use varies by geographical residence:
 - 45% of urban residents have used a ride sharing app.
 - 40% of suburban residents have used a ride sharing app.
 - 19% of rural residents have used a ride sharing app.

Source: Jiang J. Pew Research Center. 2019.



Older Adult (65+ Years) Ride Share Study Purposes

- Describe currently available U.S. ride share services, including
 - Services specifically for older adults and
 - Services that include older adults as part of their service population.
- Understand older adult attitudes and beliefs about using these services.
- Compare older adult attitudes and beliefs to those of younger (age <65 years) adults.



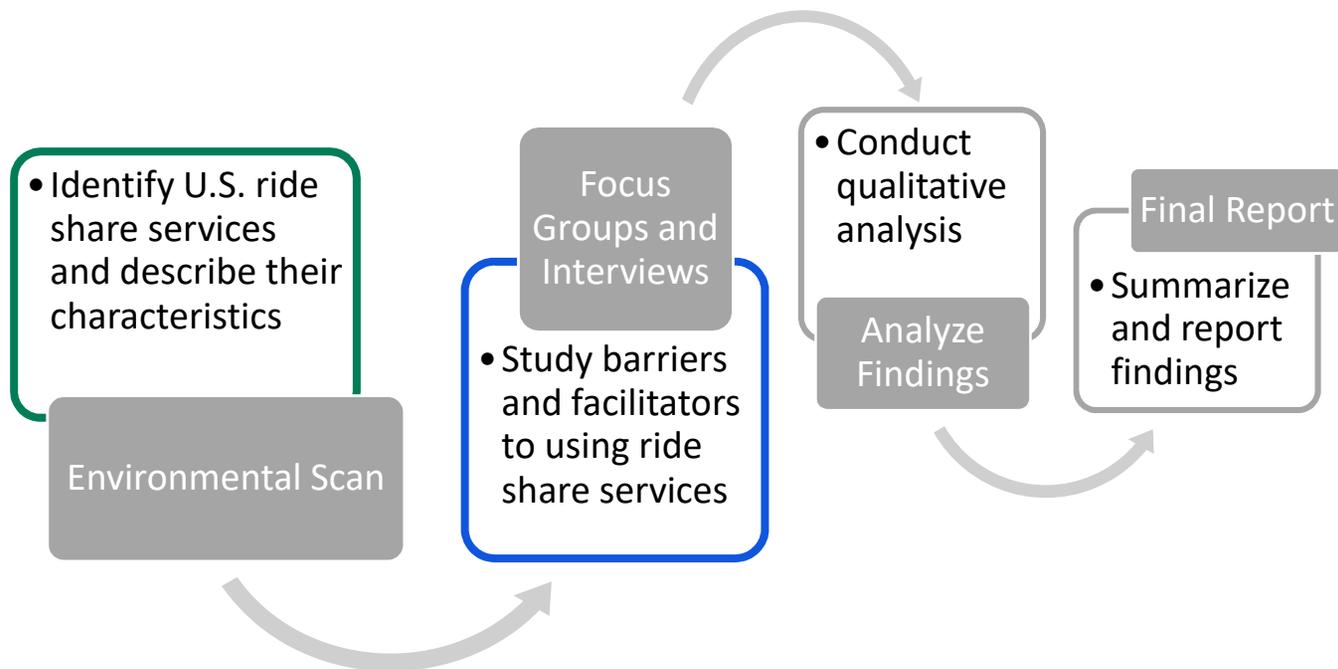
Study Methods: Big Picture

Timeline

Phase 1: 2018

Phase 2: 2019

Phase 3: 2020



Study Definitions

- **Ride sharing** is transportation **arranged through a third party** where a person is a **passenger in a private automobile** (e.g., privately owned car, van, truck, or sport utility vehicle).
 - Ride share services **exclude** public transportation, rides provided by commercial vans, buses, or taxis, and rides provided by friends or family members.
- **Ride share service** is an organization (for profit or not-for-profit) where the **majority of services provided use private automobiles**. Excludes individuals who provide transportation but are not affiliated with an organization.



Phase 1: Environmental Scan – Methods

- Analysis of *ITNRides**, research database on older adult riders who use *ITNAmerica*, a non-profit ride share service for older adults
- Analysis of Rides In Sight database, national data source on ride share services for older adults
- Targeted review of peer-reviewed and grey literature
- Key informant interviews with ride share services, aging services and referral organizations

*From Independent Transportation Network of America (*ITNAmerica*)



**A Profile of Older Adults Who Use
ITN's Non-Profit Ride Share Services
(Preliminary Findings)**



Data Overview

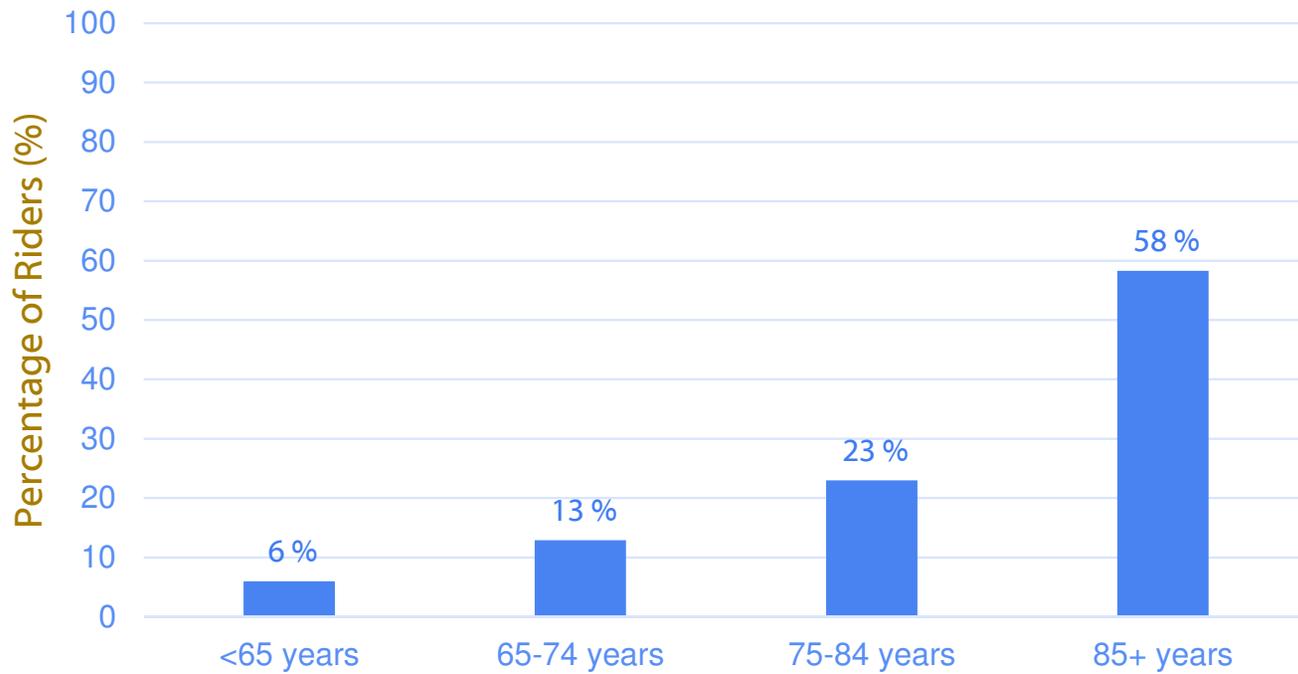
- Created a profile of older adults using ITN's non-profit ride share service from 1996 to 2018
 - **16,528 riders**
 - Riders took **969,179 trips**
 - Trips taken in **25 service locations*** across the U.S.
- Data
 - Self-reported by riders at time of enrollment into ITN, or
 - Self-reported when rides are taken (e.g., trip purpose)

*Includes one service in Georgia (ITNLanier)



Age*: Most Riders are Older than 85

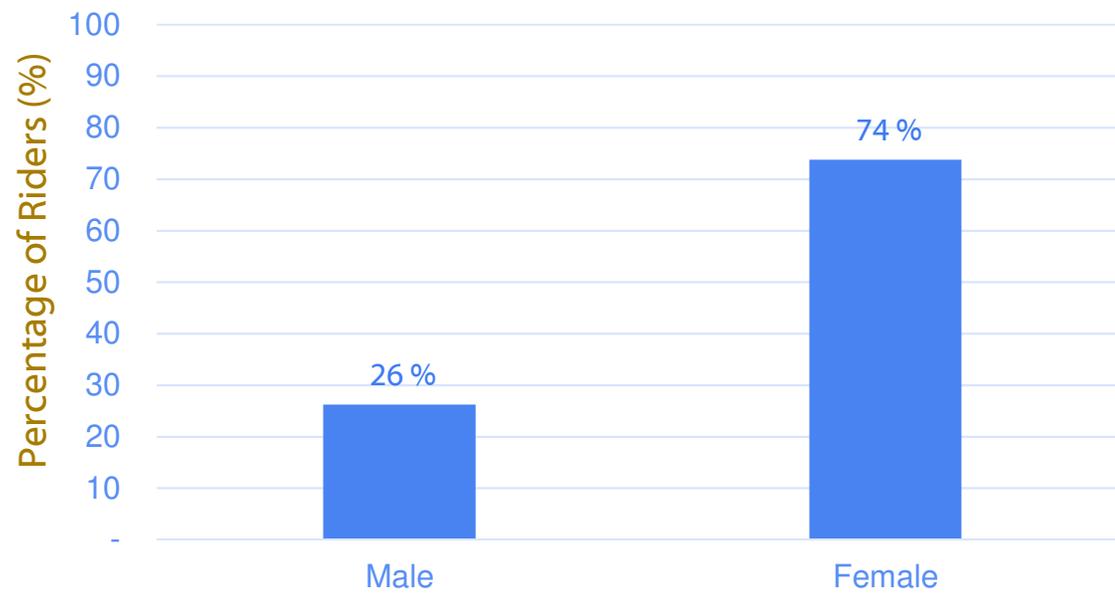
Mean Age = 84 Median Age = 87 Mode = 90



*n=13,433; current age based on age given at time of enrollment
Data source: ITNRides, ITNAmerica. July 2018.



Gender*: Most Riders Are Female

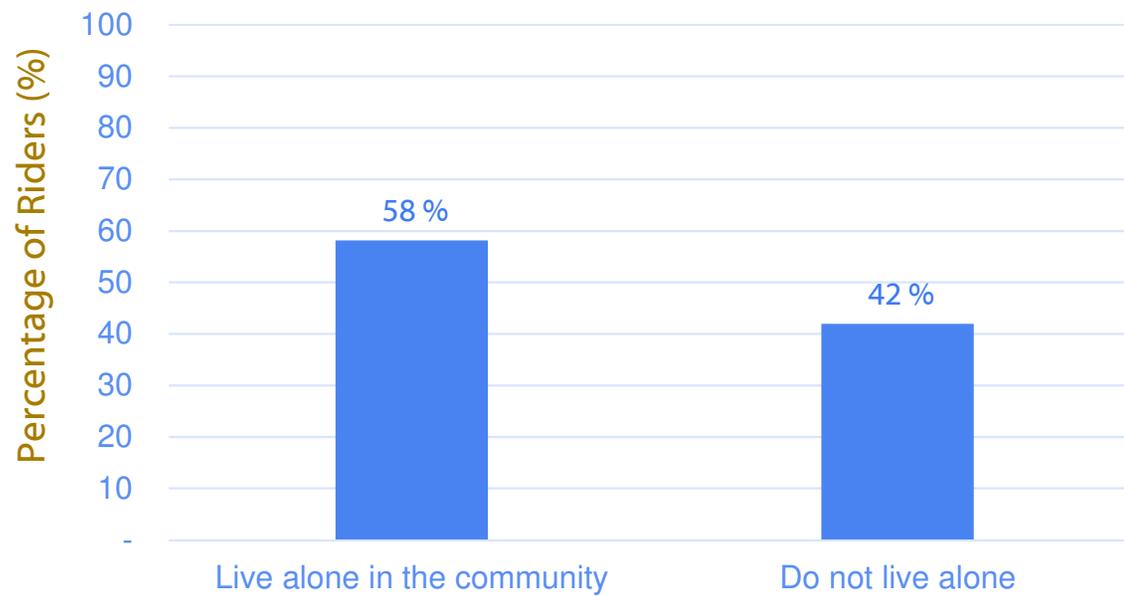


*n=16,314

Data source: ITNRides, ITNAmerica. July 2018.



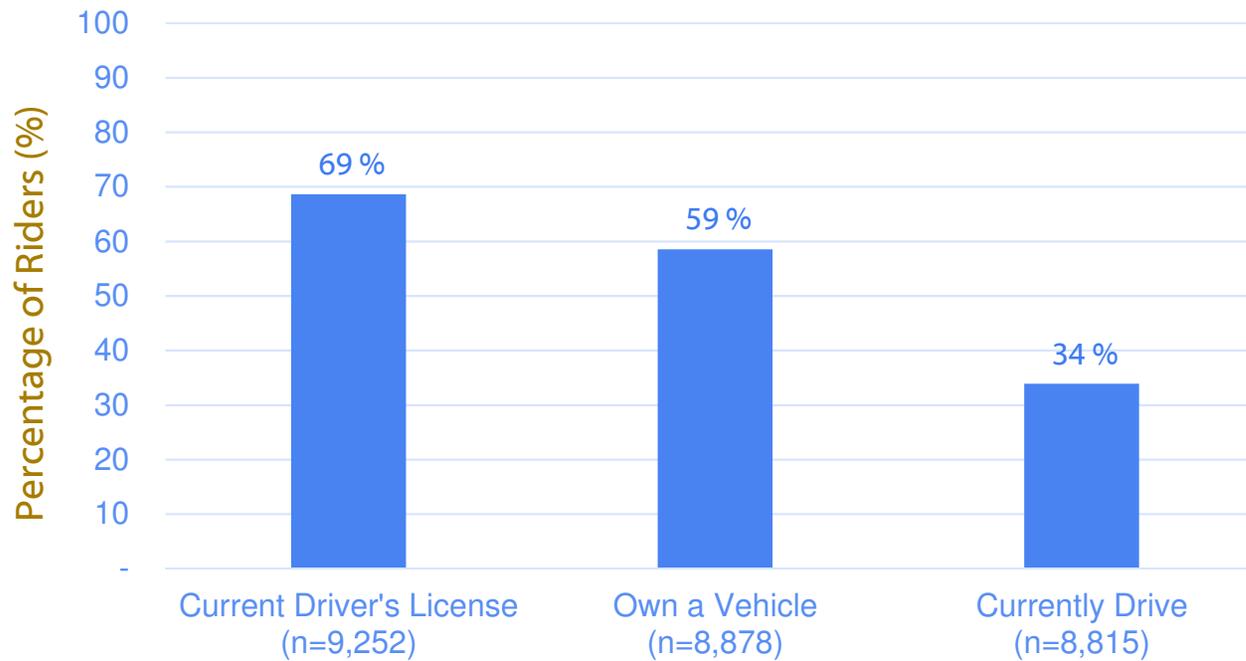
Living Arrangements*: Most Riders Live Alone



*n=12,424; status provided at time of enrollment and updated as new information becomes available.
Data source: ITNRides, ITNAmerica. July 2018.



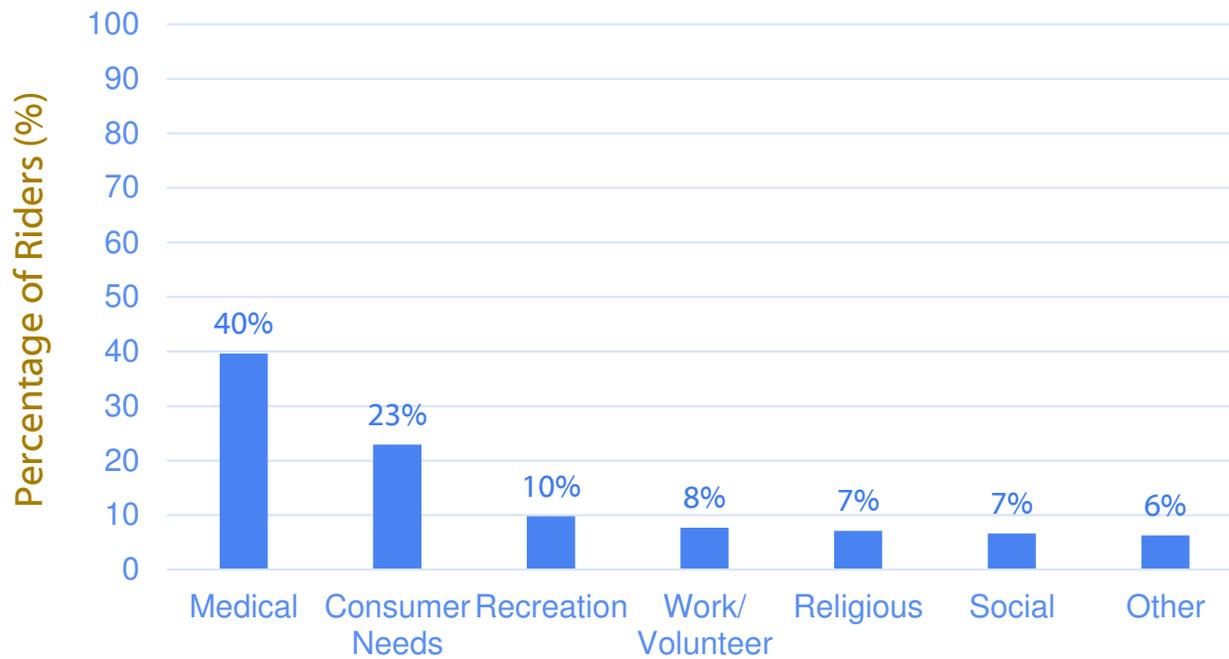
Driving Status and Vehicle Ownership At Time of Enrollment



Data source: ITNRides, ITNAmerica. July 2018.



Trip Purpose*

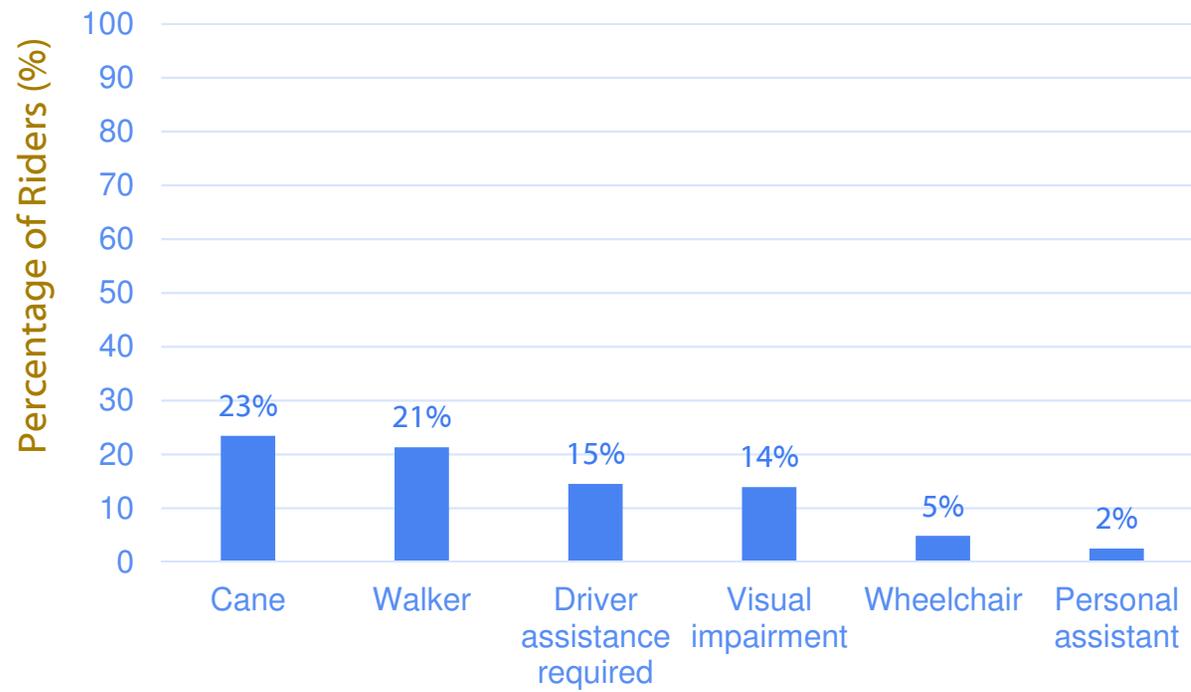


*n=969,179 rides

Data source: ITNRides, ITNAmerica. July 2018.



Mobility Needs*



*n=16,528; rider could choose >1 need
Data source: ITNRides, ITNAmerica. July 2018.



Profile of Older Adults Using ITN's Ride Share Service

- Over age 85 (58%)
- Mostly female (74%)
- Mostly living alone in the community (58%)
- Have special mobility needs (e.g., 23% use a cane & 21% use walker)
- Most common trip purposes are medical (40%) and consumer needs (23%)
- Many still own a vehicle at time of enrollment (59%), but few currently drive (34%)



History and Current Availability of Ride Share Services (Preliminary Findings)



History of Ride Sharing: Not-for-Profit Services

- Friends in Service Helping (FISH) program, organized in England in 1961, offered free rides for medical transportation.
- Faith in Action, funded by the Robert Wood Johnson Foundation from 1983 to 2008, engaged and organized volunteers to provide services to people in need.
- Independent Transportation Network (ITN), founded in Maine in 1995, for the safety and mobility for all older adults.
- **Today, there are nearly 1,000 volunteer and non-profit ride share services across the U.S.**



(Modern) History of Ride Sharing: For-Profit Services

- Modern ride share services are called Transportation Network Companies (TNCs)
- 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.” (Shared-Use Mobility Center, 2015)
- Uber and Lyft, founded in 2009 and 2012, respectively, are the largest and most well-known for-profit ride share services
(but not the only ones)
 - Rides on demand, in private automobiles, requested through a smartphone application



Intermediaries to Connect Older Adults to Rides

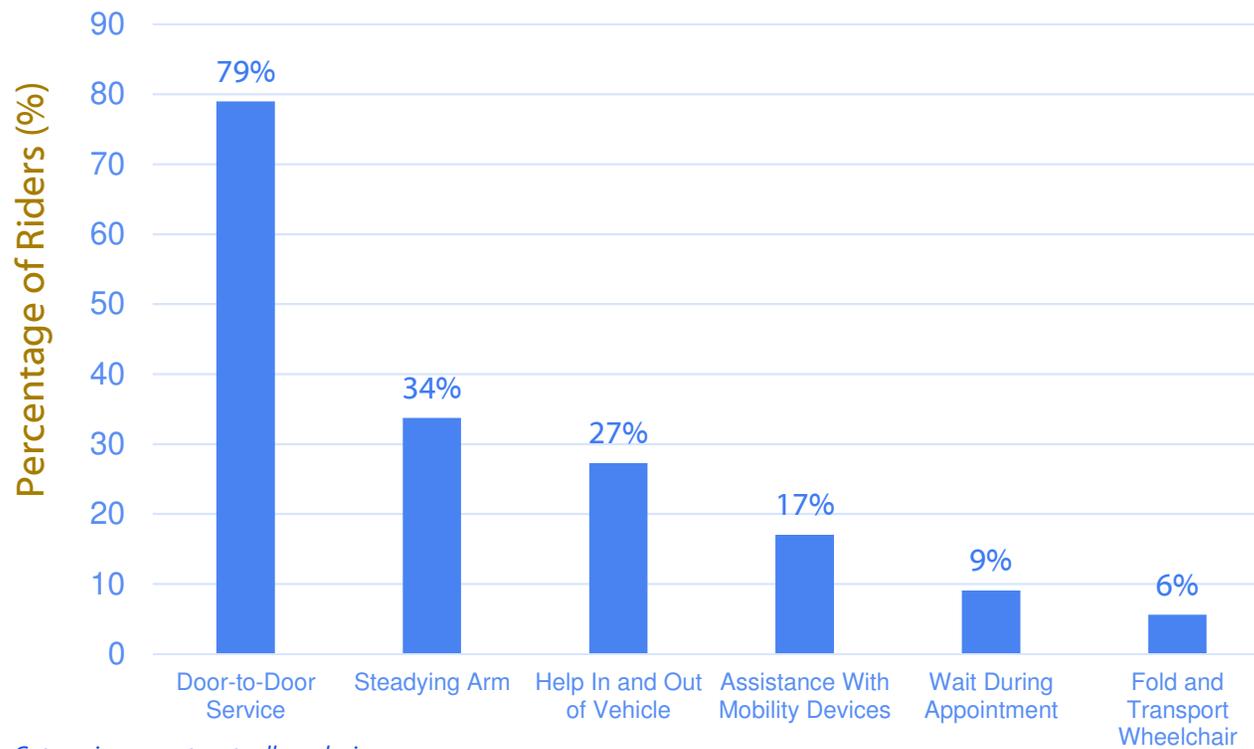
- Intermediaries facilitate scheduling and coordination of rides for older adults. Some examples are GoGoGrandparent, Arrive, and Ridewith24.
- GoGoGrandparent, established in 2016, connects older adults without smartphones to ride share services available through Lyft and Uber.
 - User mean age is 82
 - For an extra fee, a premium service supplements Lyft and Uber's service with an extra level of help for riders:
 - Driver rings doorbell
 - Assistance to car
 - Additional stops on the route



**Characteristics of Non-Profit Ride Share Services
for Older Adults
(Preliminary Findings)**



Non-Profit Ride Share Services and Assistance Available for Older Adults (n=917)



Note: Categories are not mutually exclusive.

Data source: ITN's Rides In Sight, ITNAmerica. August 2018.

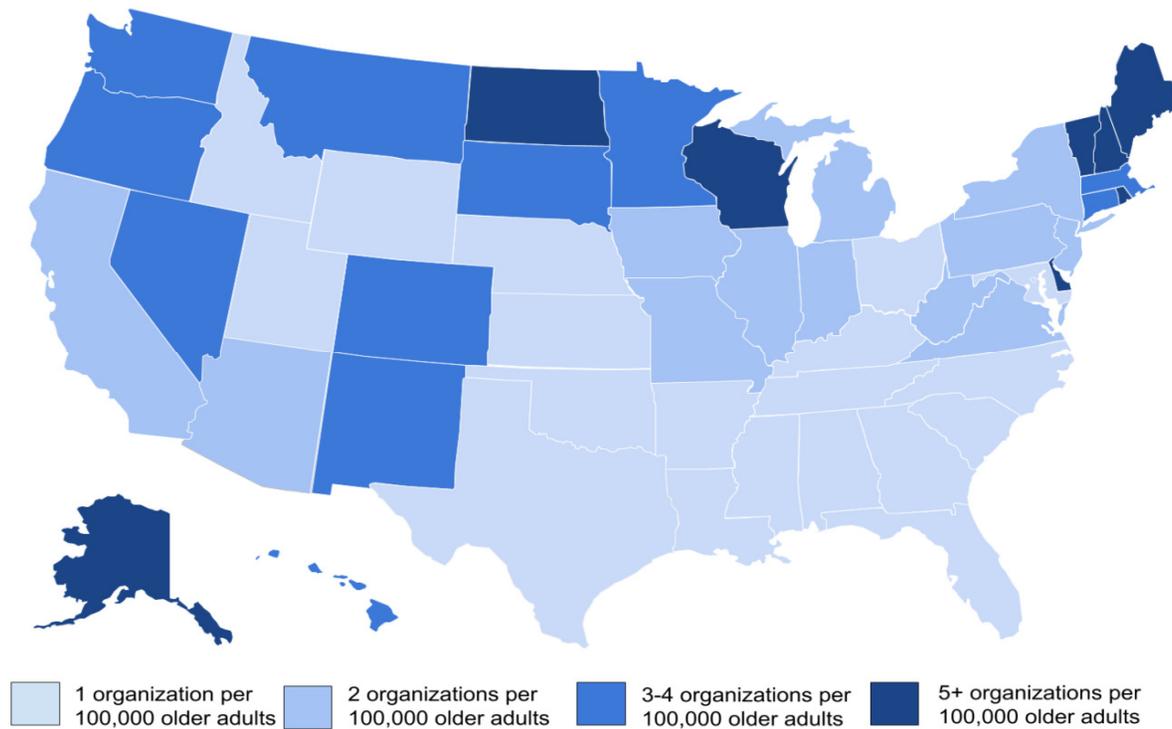


Non-Profit Ride Share Services and Assistance Available for Older Adults (n=917)

- One third have a residency requirement on their website, meaning that people seeking rides must live within a specific service area.
- The most common eligible trip purposes are medical or health care (68 percent) and grocery shopping (37 percent).
- All services schedule rides in advance, though some also schedule rides on demand.
- Two thirds (66 percent) offer their services for free. Of those that accept payment, roughly 3 in 4 take cash (74 percent), and 24 percent take checks or credit cards.



Distribution of Non-Profit Ride Share Services (n=917), per 100,000 Older Adults (Aged 65+)



Note: This map does not display the ride share organizations' service area; the ride share services may not cover the entire state.
Data source: ITN's Rides In Sight, ITNAmerica. August 2018.

Availability of Non-Profit Ride Share Services, Georgia



- Eligible trip purposes
 - Medical or health care (n=5)
 - Necessary errands (n=1)
 - Recreation (n=1)
 - Any purpose (n=3)

- Eligibility requirements (other than age)
 - Residency (n=3)
 - Disability (n=1)
 - Illness (n=1)

*Note: Ride share service may not cover the entire state.
Data source: ITN's Rides In Sight, ITNAmerica. May 2019.



Availability of Non-Profit Ride Share Services, Georgia



- Type of transportation provided**
 - Curb-to-curb (n=2)
 - Door-to-door (n=8)
 - Shared rides (n=2)

- Type of assistance provided**
 - Steadying arm (n=2)
 - Help with mobility devices (n=2)
 - Wheelchair accessible (n=1)
 - Help in and out of vehicle (n=3)
 - Help with packages (n=1)
 - Driver will wait with rider during errand/ appointment (n=1)
 - Driver will come inside (n=2)

*Note: Ride share service may not cover the entire state.

**Categories are not mutually exclusive.

Data source: ITN's Rides In Sight, ITNAmerica. May 2019.



Availability of Non-Profit Ride Share Services, Georgia



- Schedule rides in advance?
 - Yes (n=10)
- Pricing structure
 - Free (n=5)
 - Paid (n=5)

*Note: Ride share service may not cover the entire state.

**Categories are not mutually exclusive.

Data source: ITN's Rides In Sight, ITNAmerica. May 2019.



Finding Ride Share Services in Your Community: An Example

The screenshot shows the ITN America REGENERON website interface. At the top, there is a navigation bar with links for HOME, BLOG, ABOUT, WHAT IS ITN?, WHY REGENERON?, and CONTACT US. Below the navigation bar, there is a banner for "Complete our Customer Feedback Survey for a chance to win \$25". The main content area features a search bar with the text "Try a different search" and a "Share your results" button. Below the search bar, there are filter options for "Filter your results (optional)".

The filter options include:

- Your age: [75]
- Limit to programs for...
 - Disabled
 - Veteran
- Do you want to pay using...
 - Cash
 - Check
 - Credit Cards
 - Medicaid
 - Insurance
- Your ride is for...
 - Medical or Healthcare
 - Grocery Shopping
 - Necessary Errands
 - Social
 - Recreation
 - Work or Volunteer

Below the filters, it indicates "3 programs listed". A note states: "Results show transportation options in your area that serve seniors and people with visual impairments. If you would like help finding the best transportation for you or a loved-one, call the free hotline at 866-607-4337."

The search results are displayed in a list format, each with a "More info >" button and a "Visit Website >" button.

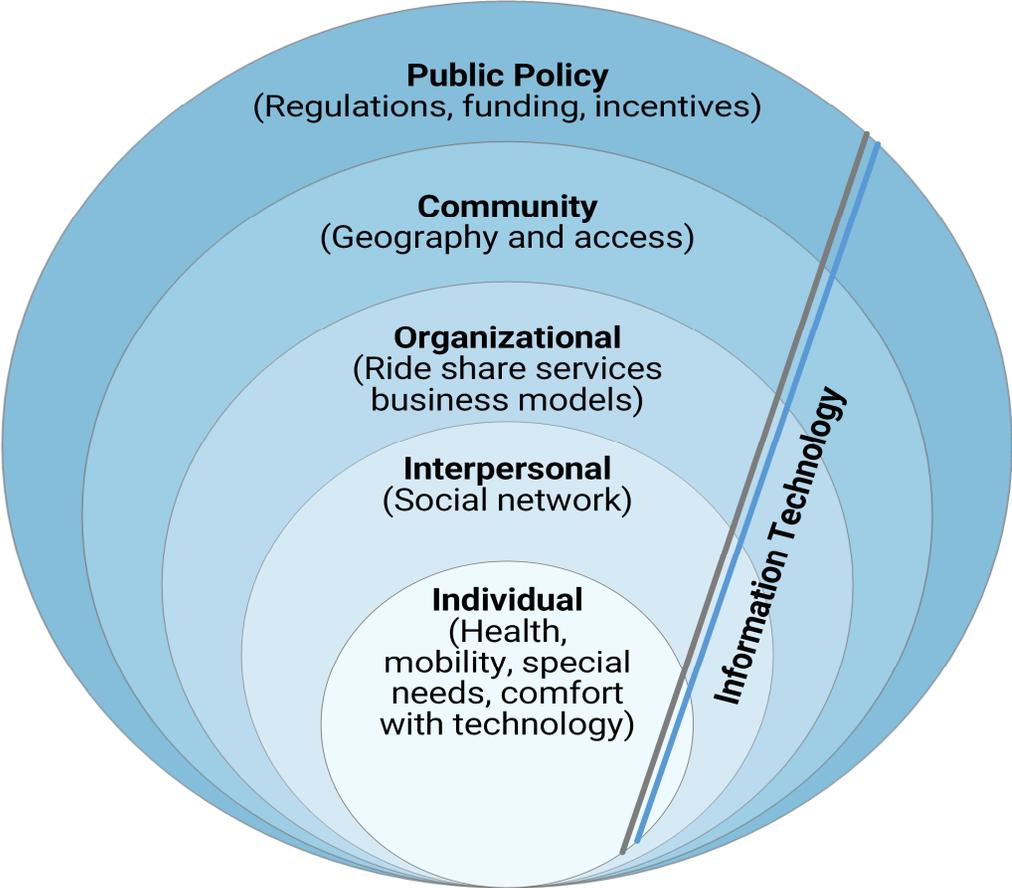
Program Name	Program Description	Eligible Trip Purpose(s)	Areas Served	Address	Phone	Fax	Eligibility To Ride	Days and Times Available
Comfort Keepers	In-Home Care Services w/transportation	Any	Chatham County and Richmond Hill	5 Oglethorpe Professional Blvd, Suite 120, Savannah, GA 31406	(912) 365-0111		Disabled, Seniors	24/7
Home Instead Senior Care	Companion Care w/Incidental Transportation	Grocery Shopping, Necessary Errands, Social, Recreation	Savannah, Beaufort, Bluffton, Hilton Head	7505 Waters Ave, F1, Savannah, GA 31406	(912) 365-0099	(912) 355-0101	Seniors	24/7
Lyft Savannah	Ride Sharing Transportation Services	Any	Savannah and surrounding areas	GA			Available To The Public	24/7

Source: <https://www.ridesinsight.org/>

**Barriers and Facilitators Impacting Older Adults'
Use of Ride Share Services
(Preliminary Findings)**

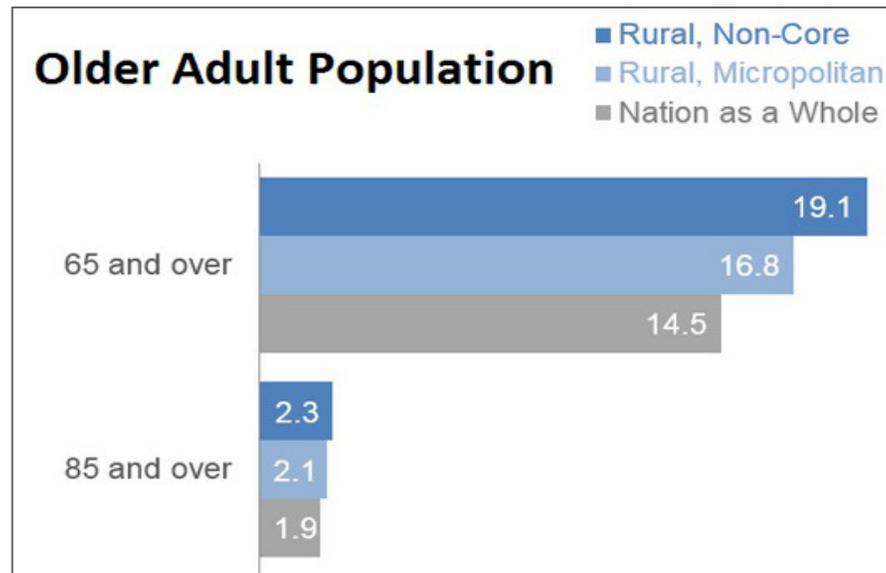


Barriers and Facilitators of Older Adults' Use of Ride Share Services: A Socio-Ecological Model



Community Level Factors: Geography

- On average, rural populations are older than populations in other parts of the country
- Populations of older adults increase by level of rurality



Source: Geographic Comparison Tables...

A Closer Look at Geography: Where You Live Matters

- There are a greater number of ride share services in **higher density urban areas** than in suburban or rural locations. (Clewlow & Mishra, 2017)
- Suburban and rural communities lack the density for traditional transit systems.
- Since three out of four older Americans live in rural or suburban communities, this points to a large area of unmet need.

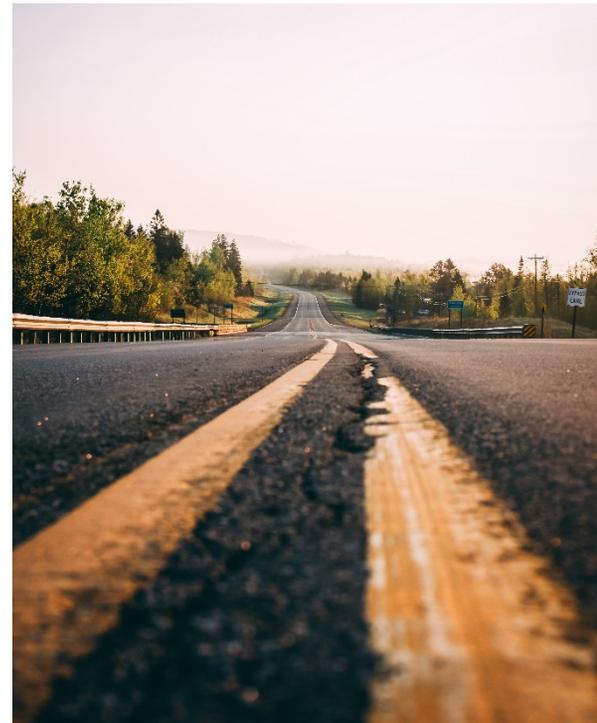


Photo by Brett Patzke on Unsplash

Source: Clewlow RR, Mishra GS. 2017.

Community Level Factors: Geography

- The young-old (people aged 65 to 74) who reside in **urban areas** may 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.
 - Difficult for drivers to stop and help riders in urban settings
- Conversely, for the 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.



Information Technology Factors

- Smartphones are the primary technology used by for-profit ride share services to schedule and pay for rides:
 - A major facilitator to use among certain populations, but presents barriers for many older adults.
 - Services like GoGoGrandparent, Lyft's Concierge, and Uber's Uber Central, initiated to help overcome this barrier.
- Among non-profit ride share services, the predominant means for older adults to request and schedule rides is the telephone.



Photo by Charles PH Unsplash



The Path Forward

- Next steps
 - Publish results of environmental scan (Late 2019)
 - Complete qualitative study (September 2020)
- Findings have potential to
 - Identify program improvements that address older adults' attitudinal and logistical barriers to using ride share services
 - Increase likelihood that older adults consider and use ride share services as a viable transportation alternative



Part 4:
CDC's MyMobility Plan

MyMobility Plan

- Purpose: help adults **plan for future mobility changes** in much the same way that they might plan for retirement
- Development based on science and evaluations
- Released in 2019



1 in 4 adults now 65 will live to 90+

MyMobility Plan

What can you do to stay independent?

Many people make financial plans for retirement, but not everyone plans for other changes that may come with age. This includes changes in your mobility—your ability to get around.

It's not easy to talk about, but as we get older, physical changes can make it harder to get around and do things we want or need to do—like driving, shopping, or doing household chores.

There may be a time when you still need to get around, but can no longer drive.

You might not have mobility problems now, but you could in the future. You may even know others who already do—perhaps a parent, relative, friend, or neighbor. While it may not be possible to prevent all of these changes, there are actions you and your loved ones can take today, and as you age, to help keep you safe and independent tomorrow.

MySelf A plan to stay independent	MyHome A plan to stay safe at home	MyNeighborhood A plan to stay mobile in my community
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 Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

**Make a plan today.
Stay independent tomorrow.**

bit.ly/CDC-MyMobilityPlan

Cover Page

- Positive, healthy aging perspective
- Targeted toward older adults who haven't thought about or planned for future mobility changes
- Introduces three areas for mobility planning



1 in 4 adults now 65 will live to 90+

MyMobility Plan

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MySelf A plan to stay independent	MyHome A plan to stay safe at home	MyNeighborhood A plan to stay mobile in my community
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 Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

**Make a plan today.
Stay independent tomorrow.**

MySelf Page

- Health and fitness tips for maintaining safe driving and preventing falls
- Emphasizes strength and balance activities

 MySelf | A plan to stay independent



Staying healthy and managing chronic conditions help maintain your mobility.

To start building your plan, complete the checklist below.

Get a physical checkup each year.
Some health issues may increase your risk of falling (such as leg weakness and balance problems).
Last Exam Date: _____
Next Exam Date: _____

Review all your medicines with a doctor or pharmacist.
Certain medicines can have side effects that can change your ability to drive, walk, or get around safely.
To learn more, go to:
<https://go.usa.gov/xPADs>

Get a medical eye exam each year.
Eye problems can increase your risk of falling or being in a car crash.
Last Exam Date: _____
Next Exam Date: _____

MyMobility Tip 

Good eyesight is about more than 20/20 vision. For example, you need to see well in the dark to drive safely at night.

Get a medical eye exam each year and address any issues.

Follow a regular activity program to increase your strength and balance.
Strength and balance activities, done at least 3 times a week, can reduce your risk of falling. Other activities, like walking, are good for you, but don't help prevent falls. Visit the National Institute on Aging's website for suggestions:
www.go4life.nia.nih.gov/exercises

Strength Activity		Balance Activity	
Exercise	Start Date	Exercise	Start Date
Chair stand	Next Monday	Tai Chi	Next Monday



MyHome Page

- Tips for reducing fall risk at home

 **MyHome** | A plan to stay safe at home



To continue your plan, schedule a time to go through the following home safety checklist to help prevent falls.

Check the FLOORS in each room and reduce tripping hazards:

- Keep objects off the floor.
- Remove or tape down rugs.
- Coil or tape cords and wires next to the wall and out of the way.

Check the KITCHEN:

- Put often-used items within easy reach (about waist level).
- For items not within easy reach, always use a step stool and never use a chair.

Check the BEDROOMS:

- Use bright light bulbs.
- Place lamps close to the bed where they are within reach.
- Put in night-lights to be able to see a path in the dark. For areas that don't have electrical outlets, consider battery-operated lights.

Check inside and outside STAIRS and STEPS:

- Check for loose or uneven steps. Repair if needed.
- Make sure carpet is firmly attached to every step, or remove carpet and attach non-slip rubber treads.
- Check for loose or broken handrails. Repair if needed.
- Consider installing handrails on both sides of the stairs.
- Use bright overhead lighting at the top and bottom of the stairs.
- Consider putting light switches at both the top and bottom of the stairs.

Check the BATHROOMS:

- Put non-slip rubber mats or self-stick strips on the floor of the tub or shower.
- Consider installing grab bars for support getting in or out of the tub or shower, and up from the toilet.

MyMobility Tip 
Falls are more likely when wearing inappropriate footwear, such as flip flops that don't cover the heel. Wear safe shoes that fit well, have a firm heel to provide stability, and have a textured sole to prevent slipping.

For more home modification information and resources: <https://go.usa.gov/xUEs3>



MyNeighborhood Page

- Motivates older adults to think about how they will get around if their mobility changes

 **MyNeighborhood** | A plan to stay mobile in my community



Finish your plan by filling out the table below.

Think of all the places you go and how you get there.

Then, consider how you would get to these same places if you couldn't use your current way.

Find transportation options in your ZIP code:

- Rides in Sight
1-855-607-4337
www.ridesinsight.org

Ride share services can help keep you connected to family and friends. Staying social helps maintain quality of life as you age.

Where do I go now? (Such as doctor, grocery store, or physical activity class)	How do I get there now? (Such as drive, get a ride, or use public transportation)	How will I get there in the future? (Such as bus, rideshare, or ride with a friend)
Meet friends for lunch	Drive myself	Get a ride from a friend

Consider a driver refresher course.
Some insurers give a discount on your car insurance for taking a course:

- AARP (888) 687-2277 or www.aarp.org
- AAA (800) 222-4357 or www.aaa.com

MyMobility Tip 
Practice safe behaviors, such as always wearing a seatbelt, as a driver or a passenger.

For more information visit:
www.cdc.gov/motorvehiclesafety/older_adult_drivers/mymobility

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<https://www.cdc.gov/motorvehiclesafety>



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

