



Livable Community Indicators for Sustainable Aging in Place

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Executive Summary

Aging in place is the ability to remain in one's own home or community in spite of potential changes in health and functioning in later life. The concept of livable communities calls attention to the ways the physical, social, and economic infrastructure of cities and towns can promote or hinder older residents' ability to age in place. Aging in place has the potential to benefit not only older adults, but also their families, their communities, and their governments.

Sustainable aging in place involves helping older residents remain in their community while also addressing the long-term economic, social, and environmental health of both current and future generations at every age. Based on an extensive review of existing literature and interviews with aging in place experts, the MetLife Mature Market Institute in partnership with the Stanford University Center on Longevity developed an initial list of indicators that can be measured using information that is readily available and adaptable to local governments, providing a low-cost way for local governments to begin to examine the specific needs of their aging population. These indicators reflect a framework of how livable community characteristics influence aging in place.

- A livable community offers a variety of accessible, affordable, and visitable housing options so that older adults have a place to live.



- A livable community has features that promote access to the community, including:

- Safe and walkable neighborhoods
- Transportation options
- Safe driving conditions
- Emergency preparedness



- A livable community provides a wide range of supports and services, and opportunities to participate in community life:

- Health care
- Supportive services
- General retail and services
- Healthy food
- Social integration



In recent years, a number of organizations have developed checklists and guides describing the characteristics that could make a community more livable and facilitative of elder health, well-being, and the ability to age in place. The indicator system presented in this report differs from previous work in a number of ways:

- **First**, this indicator system was developed using existing research, rather than the preferences of older adults.
- **Second**, this indicator system is relatively low cost for the user, as it is comprised of information that local governments can access through existing data sources rather than incurring the costs and labor of collecting information directly from community residents.
- **Third**, this indicator system describes how the various characteristics of a community operate in relation to one another, rather than simply providing a list of community characteristics.

The characteristics in this indicator system include a variety of physical and social features that could create more livable communities and facilitate sustainable aging in place for older residents, as well as improve the quality of life for residents of all ages. Each community should consider adapting the indicators to best meet the needs of their population. These indicators are a first step towards understanding how community characteristics can help current and future generations of older adults stay in their homes and communities as long as possible. The indicators also point to characteristics that may need to be modified. Strategies to achieve change include adopting incremental changes, focusing initially on low-cost policies and programs, and partnering with other stakeholders.

Key Findings

- Community characteristics that promote aging in place have the potential to lead to positive outcomes for the entire population. This includes improving the health and well-being of older adults, and benefiting other residents, businesses, organizations, and local governments by, for example, fostering the economic and environmental health of the community.
- The major challenge to developing an indicator system for livable communities is the lack of existing data at the local (e.g., city or town) level. While additional data may be available for the county, metropolitan area, or state levels, these data may not provide an accurate assessment of what is happening in the community.

- Every community is unique, and therefore local governments should think about how to adapt these indicators to best meet the needs of their residents. One way in which communities differ is in terms of their population density, and the relevance of each indicator may vary depending on whether the community is urban, suburban or rural.
- As an initial assessment, this indicator system primarily focuses on the existence of goods, services, and infrastructure that the existing empirical literature and aging in place experts suggest may be particularly promising strategies for promoting sustainable aging in place. In many communities, understanding the ability of older adults to access these features and the degree to which these features are used to actually meet their needs will require additional data collection.
- Thinking about all of the community characteristics that can create more livable communities can be overwhelming, particularly at a time when local governments are struggling financially.
 - One strategy is to implement these changes incrementally.
 - A second strategy is to focus on changes that are relatively low cost.
 - A third strategy is to enlist the participation of other stakeholders, including private businesses, non-profit organizations, and community residents.
 - Finally, local governments can remove barriers to the efforts of other groups to create more livable communities.

Introduction

Aging in place is the ability to remain in one's own home or community in spite of potential changes in health and functioning in later life. Aging in place has received an increasing amount of attention in recent years. This is due to a number of factors, including the aging of the population, a potential increase in chronic disease and disability in future cohorts of older adults, and an inadequate U.S. long-term care system. Furthermore, a survey by AARP in 2003¹ and another survey by the AdvantAge Initiative in 2004² demonstrated that an overwhelming majority of adults would like to remain in their own homes for as long as possible.

In response to this growing interest in aging in place, the public, nonprofit, and for-profit sectors have developed a number of policies and services to help older adults remain in their homes and communities. The Older Americans Act reauthorization of 2006, for example, included funding for the Community Innovations for Aging in Place Initiative, which awarded grants to community organizations to identify strategies that support aging in place. Nonprofit organizations across the country are starting Village programs, Naturally Occurring Retirement Community Supportive Service Programs (NORC-SSPs), and other innovative programs that aim to help older adults age in place. Homebuilders, designers, realtors, and reverse mortgage specialists, among others, have become Certified Aging-in-Place Specialists through a program of the National Association of Home Builders.

All of these policies and services are, to varying degrees, aiming to create more livable communities. A livable community is one in which residents of all ages are able to maintain independence and enjoy a high quality of life.³ The concept of livable communities calls attention to the ways in which the physical, social, and economic infrastructure of cities and towns can help or hinder older residents' ability to remain in their own homes and communities. Local governments have an important part to play, along with the nonprofit and private sectors and residents themselves, in making existing communities more livable.

Aging in place can benefit older adults, their families, their communities, and their governments. The benefits of aging in place for older adults come from the sense of attachment, familiarity, and identity with the home and neighborhood environment.⁴ Research shows that relocating to a nursing home can reduce quality of life and increase mortality risk for older adults⁵ and lead to more mental distress for their family caregivers.⁶ Aging in place is also believed to be less expensive than institutional long-term care for older adults, their families, and governments.⁷ Efforts to help older adults age in place can also potentially improve the community as a whole. For example, older adults can make valuable contributions to community life as neighbors, caregivers, and volunteers.

Often, older adults who chose to relocate after retirement are younger, healthier and wealthier.⁸ Policies and programs to help older adults age in place may encourage this segment of the older adult population to remain in their current community rather than moving away. Finally, many of the community changes that could help older adults age in place will also benefit younger residents and promote the economic and environmental health of the community. For example, walkable neighborhoods encourage physical activity and create safer neighborhoods for individuals of all ages.

This report presents an indicator system for livable community characteristics that could promote sustainable aging in place. Sustainable aging in place involves helping older residents remain in their communities while also addressing the long-term economic, social, and environmental health of both current and future generations at every age. The indicators in this report are based on an extensive review of the research literature and existing checklists, as well as interviews with aging in place experts across the country. The goal is to identify an initial list of indicators that can be measured using information that is readily available to local governments, providing a low-cost way for cities and towns to begin to examine the needs of their aging population.

Specific criteria for the indicators include:

- Strength of research evidence
- Strength of support by aging in place experts
- Ability to measure the indicator using existing data sources, including U.S. Census data, federal administrative data, and information at the local level regarding the presence or absence of policies and programs
- Potential for multiple benefits, such as for the economic and environmental health of the community or for residents of other age groups
- Degree of adaptability to different types of communities, such as urban, suburban, and rural communities

The hope is that these indicators will help local governments identify areas for policy and programmatic intervention, as well as offer guidance for additional data collection directly from older adults and other stakeholders to better understand the particular community's facilitators and barriers to aging in place.

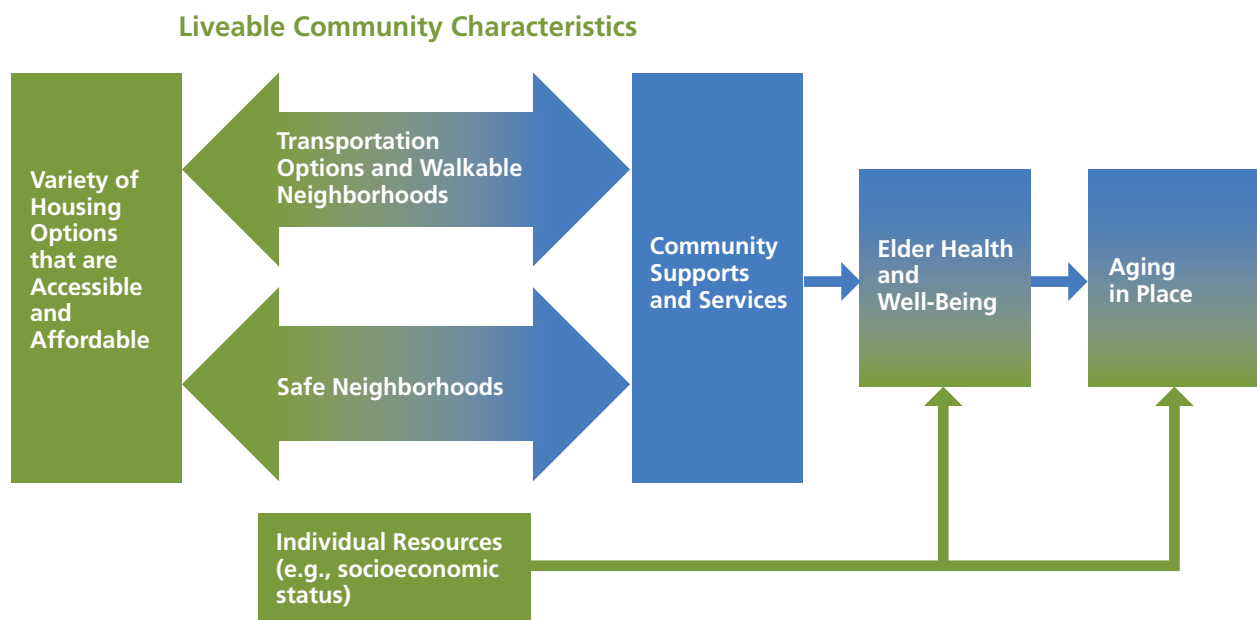
Major Findings

Aging in place first requires that older adults have a place to live. Ideally, the community should offer a wide array of housing options that are accessible to those with disabilities and affordable to those with varying incomes and assets such as single family homes, apartments, senior housing, assisted living, and accessory dwelling units (ADUs).

Second, older residents need to be able to access the supports and services available in the community, whether by leaving their homes and venturing out into the community or by bringing these supports and services into their own homes. Offering a range of mobility options, including public transportation, senior transportation, and walkable neighborhoods, and ensuring that all residents feel safe in their neighborhoods can improve the connections between the older residents and their communities.

Finally, older adults rely on a variety of supports and services (e.g., social interaction, grocery stores) to help them meet their needs. These needs can be met through public, non-profit, for-profit, and informal organizations within the community. While research is limited in terms of documenting the direct relationship between these community characteristics and aging in place, there is evidence that these characteristics can promote the physical, mental, social, and economic health and well-being of older adults, which in turn could help them age in place. **Figure 1** provides a framework for the way livable community characteristics can influence aging in place.

Figure 1: Livable Communities and Aging in Place



This livable community indicator system does not address all of the factors that contribute to older adults' ability to age in place. First, the indicator system focuses on the physical and social features of the community, and not on individual health, social, and financial resources. As shown in Figure 1, these resources can directly affect elder health, well-being, and the ability to age in place. For example, older adults with limited income and assets may be at a much higher risk of not aging in place because they are unable to purchase the goods and services that allow them to remain independent.

Alternatively, they may be more likely to age in place because they lack the resources necessary to move, and therefore are at risk of living under conditions that do not promote their health and well-being, including neighborhoods characterized by high crime and social disorder or with limited access to healthy foods. Also, while these indicators measure the presence or absence of particular livable community features, equally important is whether older adults have access to these features and whether they are actually using them. For example, the presence of home modification services, which can be assessed using existing data, is one potential indicator that older residents with disabilities will be able to adapt their housing and therefore remain in their homes. Understanding if older residents have access to these services will require additional assessment of the costs of these services and whether older adults are even aware that they exist. Additional assessment will also be necessary to ascertain whether older adults with disabilities are using these services, or if many older residents have an unmet need for home modifications.

This report presents an indicator system of the livable community characteristics that could facilitate aging in place. Each section includes a rationale for the inclusion of each characteristic, a brief summary of the empirical evidence supporting its linkage to the health and well-being of older adults, and a description of the specific indicators. This indicator system is an initial step towards understanding community-level influences on aging in place, and providing recommendations for specific areas of future assessment can be found in Appendix A.

Variety of Housing Options that are Accessible and Affordable

Housing that is accessible, affordable, and adaptable to changing needs over the life span is a critical component of a livable community.

Accessible/Visitable Housing

Community Characteristic	Indicator	Data Source
Accessible/Visitable Housing	Guidelines/policies encouraging development of accessible and/or visitable housing	City/Town Planning Department
	Presence of home modification services	Area Agency on Aging
Housing Options	Zoning code allows flexible housing arrangements (e.g., accessory dwelling units, home sharing)	City/Town Planning Department
	Zoning code allows assisted living/senior housing	City/Town Planning Department
	Percent of housing that is not large-lot single-family homes	City/Town Planning Department
Affordable Housing	Proportion of households headed by someone 65+ that pay less than or equal to 30% annual income on housing	U.S. Census Bureau, American Community Survey
	Property tax rates	City/Town and County Government
	Median home and rental prices	U.S. Census Bureau, American Community Survey



The majority of housing in the U.S. does not include physical features (zero-step entrance, wider doors and wider hallways, and at least a half bathroom on the ground floor⁹) that improve accessibility or visitability for individuals with impairments or disabilities. For example, nearly one-quarter of disabled older adults report an unmet need for dwelling modifications.¹⁰ Design features that support independent living include a driveway or parking space immediately outside the home, a bedroom on the main level, an attached garage or covered

parking, bathroom aids, and lever door handles.¹¹ Housing that has not been modified could result in pain, depression and fear of accidents for disabled people, and back injuries, falls and stress for caregivers.¹² In contrast, home modifications to improve accessibility could decrease Medicare expenditures¹³ and prevent a decline in physical health.¹⁴

The majority of housing in the U.S. does not include physical features that improve accessibility or visitability for individuals with impairments or disabilities.

Currently, it is difficult to determine the percentage of a town or city's housing that includes accessibility and/or visitability features using available data. However, one indicator is whether the municipal planning department has policies or guidelines encouraging the incorporation of these features into new housing. The city of Irvine in California, for example, adopted a voluntary visitability policy in 2000. The city provides new homebuyers with a form detailing visitability features and their associated costs, and also encourages builders to distribute a brochure on accessible home features to prospective homebuyers. While this policy appears to have little effect on homebuyers, there is evidence that builders are now making many visitability features standard in newly constructed homes.¹⁵ A second indicator is whether there are home modification services available in the community, which can be assessed by contacting the local Area Agency on Aging.

Housing Options

Zoning in many communities, particularly those in suburban areas, limits the housing options available to older adults. Zoning protects single-family housing primarily by restricting land use to single-family dwellings through two types of provisions:

- Occupancy restrictions limiting use to a single 'family' and the manner by which each particular ordinance defines 'family' and
- Regulations limiting land use to only one single-family home per lot.¹⁶

Housing policy experts have called for governments to promote alternative housing models such as accessory dwelling units (ADUs, a self-contained living unit built into or attached to an existing single family dwelling), shared housing (co-residence of unrelated individuals within one housing unit), and co-housing that includes the elderly.¹⁷

Initial indicators of housing options rely on information from the local government planning department, such as the existence of zoning ordinances that permit flexible housing arrangements. For example, Seattle, Washington, has permitted the creation of ADUs in new and existing housing since 1994. The law requires that the owner of the property have permanent residence in at least one of the units on the property, limits the addition of only one ADU to a single-family home, and restricts the total number of residents to eight if the people occupying the two units are not related, among other stipulations. An evaluation of the law between 1994 and 1998 showed that it increased the age diversity of many neighborhoods, since many of the new ADUs were occupied by either younger or older adults.¹⁸ An additional indicator is the presence of policies allowing for the development of senior housing and assisted living facilities. A third indicator is the percent of housing that is not single-family homes but instead multi-family rental or owner-occupied housing.

Affordable Housing

In a recent survey, slightly more than half of older adults reported that they spend more than 30% of their income on housing, suggesting that affordable housing could be a major barrier to aging in place.¹⁹ In the same survey, more than one-third expressed that they are not confident their current home will remain affordable as they age. Those elders who are unable to cover their housing costs may be at an increased risk for unwanted relocation to other housing arrangements, including low-cost housing, group homes, co-residing with relatives, or for those with serious health conditions or disabilities, a nursing home. It is possible that those who do not live in affordable housing are also less likely to be able to pay for home maintenance or modifications, and therefore may be living in unsafe conditions. About 29% of U.S. homeowners age 65 and over live in homes built before 1950. These older buildings may require more maintenance, and research suggests they are less likely to contain dwelling modifications.²⁰

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Indicators of affordable housing include the percent of older households that pay less than 30% of their income on housing, median home prices, and median rental prices. The American Community Survey, collected by the U.S. Census Bureau, includes data on these indicators. Additionally, the property tax rates levied by the city, town, and/or county governments are an indicator of housing affordability.

Features that Promote Access to the Community

Community characteristics can influence whether older adults are able to leave their homes and get around their communities. Furthermore, these same characteristics can facilitate the home delivery of many services and supports available in the community.

Transportation Options

Being able to safely travel around one’s community and beyond is vital for older adults to remain civically and socially engaged and maintain health and quality of life. Older Americans rely as heavily on personal automobiles as their younger counterparts, and few plan for a time when they are no longer able to drive.²² Either being a nondriver or having no other drivers in the home can precipitate entry into long-term care.²³ Nondrivers travel outside their homes less often, with an average of two trips per week, compared to six trips by drivers.²⁴

Community Characteristic	Indicator	Data Source
Transportation Options	Presence of public transportation (e.g., bus, light rail, subway)	City/County/Regional Transportation Agency
	Presence of senior transportation (e.g., volunteer-based)	Area Agency on Aging
Walkable Neighborhoods	“Complete Streets” policies (e.g., sidewalks in good condition, frequent and safe pedestrian crossing, median islands, bicycle lanes)	City/Town Planning and Public Works Departments
	Existence of Parks and Recreation areas	City/Town Parks and Recreation Department
Safe Driving Conditions	Protected left-hand turns (e.g., designated lanes, arrows)	City/Town Public Works Department
	Infrastructure to improve visibility (e.g., road signs that are easy to read, adequate lighting)	City/Town Public Works Department



Older adults, non-drivers especially, are commonly more dependent on their local communities for resources and transportation. Older adults make an estimated 1% of trips using public transportation,²⁵ with 12% of older adults reporting using public transportation in the past 12 months.²⁶ The variety and number of nondriving options varies widely from community to community.

The Five A's of Age-Friendly Transportation

- Availability
- Accessibility
- Acceptability
- Affordability
- Adaptability to diverse needs

These improvements to public transportation systems could increase safety, comfort, and ridership for all ages.

In addition, the Beverly Foundation points out that it is not only the availability of such services that is crucial, but also their accessibility, acceptability, affordability, and adaptability to diverse needs of the riders.

These are known as the five A's of senior-friendly transportation,²⁷ and in many communities will need to be assessed through additional data collection. The failure to provide these features may account for the relatively small number of trips by older adults made via public or alternative transportation. Furthermore, these improvements to public transportation systems could increase safety, comfort, and ridership by residents of all ages.

Indicators for community transportation options are measured by examining the presence of choices other than driving. Having access to public transportation (buses, trains, light rail, etc.) or alternative senior transportation options (usually smaller vehicles with more flexible schedules and routes) can offer ways for older adults to meet their needs and wants outside of driving. Some communities already use creative solutions to improve the transportation options for older residents. In New Hampshire, the Grafton County Senior Citizens Council, Inc. helps seniors meet their medical, shopping, and social needs by providing on-demand transportation throughout the 1,800 square miles of their rural community using paid and volunteer drivers.²⁸ This service is available to all older residents through the closest senior center, and has no set fee, although contributions are requested.

Walkable Neighborhoods

Walking is not only an important mode of transportation for those who do not own or are unable to drive a car, but is also the preferred form of exercise for older adults. Regular walking can result in a number of positive outcomes, including the prevention of health problems such as cognitive impairment and mobility limitations.^{29,30}

In New Hampshire, the Grafton County Senior Citizens Council, Inc. helps seniors meet their medical, shopping, and social needs by providing on-demand transportation throughout the 1,800 square miles of their rural community using paid and volunteer drivers.²⁸

Many neighborhoods, however, are not designed for the enjoyment and safety of pedestrians. Older adults who live in neighborhoods without properly maintained sidewalks, parks, curb cuts, or places to sit and rest tend to have more disabilities.³¹ Furthermore, sidewalks that are uneven, too narrow, or hard to move through because of physical barriers, such as trash cans or overgrown weeds, are responsible for most outdoor falls among older adults.³²

One indicator of walkability is whether the city or town planning and/or public works department has adopted Complete Streets policies and infrastructure changes. Complete Streets policies are guided by three principles:

- 1) reducing vehicle travel speeds, particularly in areas used by both automobiles and pedestrians
- 2) improving the physical layout of streets to make it easier for drivers and pedestrians to navigate; and
- 3) enhancing visual cues and information for drivers and pedestrians.³³

Specific infrastructure changes to improve walkability include sidewalk repair, widening existing sidewalks to improve accessibility for those who use wheelchairs, new pedestrian pathways or sidewalks, improved street lighting,

In 2009, the mayor of Philadelphia signed a Complete Streets Executive Order, which directs all city agencies and departments to give consideration to the needs and safety of all users of city streets when planning, designing, constructing, maintaining or operating transportation infrastructure.³⁴

and traffic calming measures (e.g., narrowing lanes, raised crosswalks, and speed humps). For example, in 2009 the mayor of Philadelphia signed a Complete Streets Executive Order, which directs all city agencies and departments to give consideration to the needs and safety of all users of city streets when planning, designing, constructing, maintaining or operating transportation infrastructure.³⁴ A second indicator is whether the community has parks or recreation areas where people of all ages can walk and participate in physical activities.

Safe Driving Conditions

Currently, approximately four out of five Americans over the age of 65 are drivers.³⁵ By 2020, an estimated 80% of US population will be or will have been licensed drivers, with 60-90% of women and 100% of men driving as they enter retirement.³⁶ Older drivers rely heavily on driving to get around their communities, and express little to no interest in giving up that piece of their independence.

Given the range of negative physical, mental, and social outcomes associated with driving cessation,^{37,38,39} it is understandable why older Americans wish to drive as long as possible. However, certain physical and cognitive changes that can occur with age can make it more challenging to continue driving safely. These include worsening eyesight, which can make it difficult to read road signs or estimate the speed of oncoming traffic, as well as slower reaction time and physical movements in response to the movements of other vehicles, pedestrians, and roadway impediments. Because of these changes, older drivers are more likely than younger to be involved with crashes during the day, in good weather, and at intersections (especially due to failure to yield).⁴⁰

While much concern has been expressed about the dangers of older drivers, the Federal Highway Administration has set guidelines for roadway designs that can facilitate automobile safety for drivers, passengers, and pedestrians.^{41,42} Indicators of safe driving environments include features such as designated left-hand turn lanes at stoplights with their own green arrow to protect the turning drivers from having to cross through oncoming traffic, greater visibility and readability of road signs, and adequate lighting on the streets.

Neighborhood Safety

Community Characteristic	Indicator	Data Source
Safety	Crime Rate (Property and Violent)	City/Town Police Department
Emergency Preparedness	Emergency Preparedness Plans take into account needs of older residents	City/Council/Regional Emergency Planning Agency



When older adults do not feel safe in their neighborhood, they may be less likely to leave their homes, and therefore have limited access to supports and services available in their community. For example, one study found that older adults with a disability had more social interaction when their neighborhood was safe.⁴³ Research has also shown that perceptions about crime and safety can reduce elders' physical activity,⁴⁴ which then places them at a higher risk for physical decline.⁴⁵ Signs of social disorder, such as crime, loitering, or drug use, often co-occur with signs of physical disorder, such as abandoned buildings and litter. Taken together, these types of neighborhood problems can contribute to outcomes that could affect an older adult's ability to age in place, such as limitations in physical functioning.⁴⁶ An indicator for safety is the violent and property crime rate as reported by the city or town's police department.

Emergency Preparedness

Older adults are particularly vulnerable during community disasters because of their higher rates of limited mobility, chronic illness, and impaired sensory abilities, as well as social and economic constraints.⁴⁷ Furthermore, older adults may be less likely than their younger neighbors to respond to disaster warnings.

After Hurricane Katrina in 2005, the Trinity Christian Community group and the Carrollton-Hollygrove Community Development Corporation in New Orleans developed a block captain program and emergency planning and response guide for residents.⁵¹

As a result, older adults fare worse than other age groups following incidents such as earthquakes, floods, and tornadoes, with higher rates of injury and death and lower rates of economic recovery.⁴⁸

An indicator for emergency preparedness is whether the local government's plan takes into account the needs of older adults. Experts have made a number of recommendations for disaster preparation, including developing identification and tracking methods for older adults and their health information, providing public information

on emergency preparedness in appropriate formats for older adults,⁴⁹ using mapping systems to identify areas with high concentrations of older adults, and developing an emergency plan specifically for older adults and those with disabilities that addresses the need to transport their medications and medical equipment.⁵⁰ For example, after Hurricane Katrina in 2005, the Trinity Christian Community group and the Carrollton-Hollygrove Community Development Corporation in New Orleans developed a block captain program and emergency planning and response guide for residents.⁵¹ Part of the block captains' responsibility is to identify community residents who may need extra assistance during emergencies, and they also help residents keep track of important documents and medications during disasters.

Community Supports and Services

A wide range of community supports and services affect older residents' quality of life by helping them to meet their physical and social needs. These include the availability of health care, support services for older adults and their caregivers, retail and other services, social integration, and opportunities to participate in community life.

Health Care

Community Characteristic	Indicator	Data Source
Health Care	Not designated as a Health Professional Shortage Area	U.S. Department of Health and Human Services, Health Resources and Services Administration
	Presence of hospital, primary care physicians, specialists (e.g., physical therapists, geriatricians)	American Medical Association and American Osteopathic Association
	Presence of preventative health programs (e.g., immunizations, fall prevention)	Area Agency on Aging



Livable communities provide access to health care to support the physical and mental health of the residents. This is particularly necessary for older adults, who are more likely to live with multiple chronic conditions, such as heart disease, diabetes, and dementia. Around 80% of older Americans have a chronic health condition, and 50% have two or more.⁵² It is important to not only have the resources for older residents to be diagnosed with and manage their existing health conditions, but also to provide opportunities to avoid developing new illnesses or health problems.

The number and type of health care providers in a community, as well as access to hospitals and preventative services, can indicate how well a community is able to meet the medical needs of its residents. Communities where there are not enough primary medical, dental, or mental health care providers are called Health Professional Shortage Areas (HPSAs) by the U.S. Department of Health and Human Services. However, cities or towns that are not HPSAs can still lack adequate health care providers to meet the needs of all residents. Hospitals provide the resources necessary to diagnose and treat chronic illnesses, as well as access to the appropriate health care specialists. Having more health conditions often requires the care of specialists, such as geriatricians, doctors who treat primarily older adults and physical therapists to improve or maintain strength and flexibility. In addition, the presence of programs that reduce the risks of further health problems, such as immunizations and fall preventions, can help older residents stay healthy and safe within their homes and communities.

Many communities across the country offer *A Matter of Balance*. This program, developed by the Roybal Center for Enhancement of Late-Life Function at Boston University and the New England Research Institute, teaches practical physical and emotional coping skills to reduce fears of falling and improve activity levels among older adults. These classes, which are facilitated by volunteers, are effective in increasing seniors’ fall efficacy, management, and control, suggesting that the program can be successful in a variety of community-based organizations without the need for professional staff.⁵³

Supportive Services



Community Characteristic	Indicator	Data Source
Supportive Services	Presence of home- and community-based services (e.g., home health care, meals on wheels, adult day care)	Area Agency on Aging
	Presence of caregiver support services (e.g., respite, support groups)	Area Agency on Aging

Approximately 41% of adults age 65 and over have limitations in activities of daily living (e.g., eating, bathing, dressing) and instrumental activities of daily living (e.g., household chores, shopping, meal preparation).⁵⁴ Those who report an unmet need for assistance with daily activities experience a variety of negative consequences, including depression, poor health, and the need for costly health services, such as hospitalizations and emergency room visits.⁵⁵ Older adults often require assistance from both formal and informal sources to meet their needs. Evidence regarding the impact of home and community-based services (e.g., home health care, adult day health, homemaker) on aging in place is somewhat mixed, though one study found that these services reduced the risk of nursing home placement for older adults with cognitive impairment.⁵⁶ Additionally, older adults who have knowledge about the availability of supportive services are more likely to expect to age in place.⁵⁷ The implications of support for informal caregivers is clearer, as research has shown that the burden of care, including hours of caregiving and the degree of difficulty of caregiving tasks, can lead to nursing home placement for care recipients.⁵⁸

The local Area Agency on Aging (AAA) can provide data for the two indicators of supportive services. The federal Older Americans Act designates Area Agencies on Aging to develop plans and coordinate services for aging, including those offered through the National Family Caregiver Support Program. The majority of Area Agencies on Aging provide information and referral assistance, and therefore have data on the location of a variety of supportive services offered by public and non-profit providers in the community.

General Retail and Services

Community Characteristic	Indicator	Data Source
General Retail and Services	High Walk Score	walkscore.com
	Percent of land area zoned for mixed use/retail	City/Town Planning Department
Healthy Food	Not designated as a Food Desert	U.S. Department of Agriculture, Economic Research Service
	Policies supporting creation of local farmer's' markets (e.g., providing public land for farmers' markets)	City/Town Planning Department
	Existence of home-delivered and congregate meal programs	Area Agency on Aging



In order to age in place, older adults need access to a variety of public and private providers of goods and amenities, including banks, post offices, restaurants, pharmacies, and beauty salons, among others. Many older adults, particularly those living in rural or suburban areas, do not live close to businesses and public services. Recently there has been a push for the creation of more mixed-use neighborhoods that allow businesses and homes in the same area, as opposed to zoning policies that require them to be separate. Mixed-use development allows high densities of development, a mix of housing types, and easy access to a variety of destinations.

Mixed-use neighborhoods allow business and homes in the same neighborhood, providing easy access to a variety of destinations. Older adults and residents of all ages experience increased physical activity and have fewer limitations of daily activities in mixed-use neighborhoods.

Older adults who live in mixed-use neighborhoods engage in more physical activity and have fewer limitations in daily activities.^{59,60} Mixed use neighborhoods also increase physical activity among residents of all ages,⁶¹ and therefore could promote the health and well-being of current and future generations of older adults.

The first indicator of goods and amenities is the community's score provided by Walk Score (www.walkscore.com). Walk Score uses data from Google, Education.com, Open Street Map, and Localeze to calculate a score (ranging from 0 to 100) based on the location of five categories of amenities: educational, retail, food, recreational, and entertainment.⁶² The second indicator is the percent of the community that is zoned for mixed-use development.

Healthy Food

Both the empirical literature and conversations with aging in place experts highlight the particular importance of access to healthy food for aging in place. Research has demonstrated that residents of all ages who live in neighborhoods with easy access to grocery stores, farmers markets, and other healthy food purveyors have healthier diets and lower rates of obesity.⁶³

One indicator of healthy food is not being designated as a food desert by the U.S. Department of Agriculture's Economic Research Services, which has developed an online food desert locator (www.ers.usda.gov/data-products/food-desert-locator.aspx). A food desert is defined as a low-income census tract (i.e., has a poverty rate of at least 20% or median family income no more than 80% of the area's median family income) where a substantial number or share of residents has low access to a supermarket or large grocery store (i.e., at least 500 people and/or at least 33% of the census tract's population live more than one mile from a supermarket or large grocery store in urban areas or 10 miles from a supermarket in rural areas). A second indicator is whether the city or town has policies in place to encourage the development of farmers' markets and grocery stores (e.g., relaxed parking requirements or increased density for grocery stores). New York City, for example, introduced the Food Retail Expansion to Support Health (FRESH) Program in 2009. The FRESH program offers both zoning and tax incentives to grocery store developers and operators in underserved areas, with the goal of helping to create 15 new grocery stores and upgrade 10 existing stores.⁶⁴ A third indicator can be measured using data from the Area Agency on Aging regarding the existence of home-delivered or group meal programs for older adults in the community.

Social Integration



Community Characteristic	Indicator	Data Source
Social Integration	Percent of 65+ who live alone	U.S. Census Bureau, American Community Survey
	Existence of activities and events that promote intergenerational contact	City/Town Parks and Recreation Department, Local Community Center, Area Agency on Aging

Research suggests that older adults often have smaller social networks and less contact with members of their networks than those at younger ages, and that the loss of social ties is predominantly with those who are not family members.⁶⁵ Older adults who are socially isolated are at risk for a number of negative outcomes, including depression,⁶⁶ chronic illness,⁶⁷ and mortality.⁶⁸ Alternatively, being integrated into strong social networks could protect older adults from disability and functional decline.⁶⁹ Having large social networks may increase an older adult's ability to receive social support or assistance with everyday tasks. Social networks also can provide opportunities to participate in enjoyable activities.

Social integration is a characteristic that is particularly difficult to assess using existing data sources. One indicator is the percent of older adults who live alone, which is available through the American Community Survey. Those who live alone are more likely to have an unmet need for assistance⁷⁰ and a higher risk of moving into a nursing home.⁷¹ However, it should be noted that those who live alone may still have large social networks. A second indicator is whether the city or town offers activities and events that promote intergenerational contact. The city of San Marcos in California, for example, established the Intergenerational Community Garden Project in 2011. This initiative brings together middle school students in special education classes with older adults who are experienced gardeners.

Older adults who are socially isolated are at risk for a number of negative outcomes, including depression,⁶⁶ chronic illness,⁶⁷ and mortality.⁶⁸ Alternatively, being integrated into strong social networks could protect older adults from disability and functional decline.⁶⁹

Participation in Community Life



Community Characteristic	Indicator	Data Source
Participation in Community Life	Presence of places of worship, community centers, social organizations, libraries, museums, colleges/universities	City/Town Planning Department
	Volunteer opportunities	Corporation for National & Community Service, City/Town Community Services Department

The average age of retirement dropped over the late twentieth century, and today an individual can expect to live at least another 20 years after leaving the workforce.⁷² Older adults may therefore finally have the time to participate in a variety of activities in their community, including attending cultural events, taking adult education classes, and joining civic and social organizations. Older adults may also engage in volunteer work. Both social activities and volunteering can improve the health and well-being of older adults. Social

The first indicator of participation in community life is the presence of a variety of organizations, such as community centers, universities, libraries, and museums, where older adults can participate in social activities.

activities in later life can lead to less disability, lower mortality risk, and better mental health.^{73,74,75} Research has found that volunteerism among older adults can reduce the risk of mortality and increase measures of physical and mental health.^{76,77} In addition, volunteering may help older adults cope with the loss of important roles, such as employee or parent, which in turn can improve their psychological well-being.⁷⁸ Furthermore, elders' participation in community life as volunteers, neighbors, caregivers, and friends can help the community as a whole.

The first indicator of participation in community life is the presence of a variety of organizations, such as community centers, universities, libraries, and museums, where older adults can participate in social activities. The second indicator is the availability of volunteer opportunities. In some cities and towns, a municipal department, such as a community services department, maintains a list of volunteer opportunities. In other cities and towns, the Corporation for National and Community Service (www.nationalservice.gov) maintains a searchable database of volunteer opportunities.

Implications and Next Steps

This report suggests three critical issues governments should consider when moving forward using this indicator system.

- 1) Every community is unique.** Local governments, therefore, should think about how to adapt these indicators to best meet the needs of their residents. One way in which communities differ is in terms of their population density, and the relevance of each indicator may vary depending on whether the community is urban, suburban or rural. Infrastructure that creates safe conditions for older drivers may be more important in rural and suburban areas, while public transportation may be more important in urban areas. The goal is to ensure that older residents can remain mobile in their community for as long as possible, and there are multiple pathways to this mobility. Furthermore, the specific benchmarks used for each indicator may be different between communities. In urban areas where older adults may need to walk or take public transportation, a radius of $\frac{1}{4}$ or $\frac{1}{2}$ mile may be appropriate when assessing the availability of goods and services. In rural areas where older adults drive their own cars and can cover greater distances in less time, a radius of 10 miles may be sufficient.
- 2) Gather more information, at the local level, around accessibility of features.** As noted earlier, these indicators only provide information regarding the presence or absence of livable community features. In many communities, understanding if older adults are able to access these features and the degree to which these features actually meet their needs will require additional data collection. Currently there is little publically-available data at the local level that could measure livable community characteristics. A list of additional indicators can be found in Appendix A.
- 3) Get started with a strategy of incremental changes.** The purpose of this indicator system is to point to areas that may require intervention. However, thinking about all of the community characteristics that can create more livable communities can be overwhelming, particularly at a time when local governments are struggling financially. One strategy is to implement changes incrementally; examples include:
 - a) Infrastructure improvements to improve older driver safety can be made alongside regular maintenance work, such as repairs to the roads, replacing street signs, and installing or updating traffic lights.
 - b) Focusing on changes that are relatively low cost. For example, adopting a policy to encourage the incorporation of accessibility features into new housing requires little money from the local government.
 - c) Enlisting the participation of other stakeholders, including private businesses, non-profit organizations, and community residents.

It is not the intention of this report to suggest that local governments bear the sole responsibility for creating more livable communities to facilitate aging in place. In some cases, the local government can educate other stakeholders about how the physical and social environment affects residents and empower them to devise solutions. In other cases, the local government can partner with businesses and organizations to offer needed services. Finally, local governments can remove barriers to the efforts of other groups to create more livable communities.

These indicators address a variety of physical and social features that could create more livable communities to potentially facilitate sustainable aging in place for older residents. Community-level indicators for sustainable aging in place could also potentially reduce long-term care costs, facilitate the contributions of older adults to their community, and improve the quality of life for residents of all ages by promoting community-wide economic and environmental health. The hope is that local governments will decide to look further at how well the needs and wants of their older residents are being met.

Methodology

This indicator system was developed using three sources of information.

- 1) A review of existing livable community and sustainability indicator systems and checklists, including MetLife Foundation's Blueprint for Action checklist to assess a community's age-friendliness, the AdvantAge Initiative's essential elements of an elder-friendly community, Partners for Livable Community's elements of a livable community, and the Milken Institute's indicators for the best cities for successful aging.
- 2) An extensive review of the existing research literature on the community characteristics that impact elder health, well-being, and the ability to age in place. This involved the review of more than 100 published studies from such disciplines as social work, public health, urban planning, nursing, medicine, psychology, environmental science, and gerontology.
- 3) Interviews with 19 aging in place experts. These individuals represented a variety of backgrounds, including academia, city planning, advocacy, and nonprofit management, among others. For a list of interview participants, see Appendix B.

After reviewing these three sources of information, a list of indicators was developed based on the following criteria:

- Strength of research evidence
- Strength of support by aging in place experts
- Ability to measure the indicator using existing data sources, including U.S. Census data, federal administrative data, and information at the local level regarding the presence or absence of policies and programs
- The potential for multiple benefits, such as for the economic and environmental health of the community or for residents of other age groups
- The degree of adaptability to different types of communities, such as urban, suburban, and rural communities

Appendix A: Recommendations for Future Assessment*

Community Characteristic	Indicators of Access	Indicators of Use
Variety of Housing Options that are Accessible and Affordable		
Accessible/Visitable Housing	Home modification costs	Percent of housing units meeting visitability requirements
	Financial assistance for home modification	Percent of older adults with functional limitations living in housing units meeting accessibility requirements
Housing Options	Easy process for approval of flexible housing arrangements	Percent of older adults living in flexible housing arrangements
	Percent of older adults who report awareness of flexible housing options	Occupancy rate for assisted living/senior housing/ HUD 202 housing
Features that Promote Accessibility to the Community		
Transportation Options	Public transportation costs	Percent of older adults who report using public transportation
	Public transportation discounts for older adults	
	Frequency of public transportation service	Percent of older adults who report using senior transportation
	Public transportation service to locations relevant to older adults (e.g., shopping centers, community centers, health care)	
	Percent of older adults who report a bus or train station within walking distance	
	Percent of older adults who report they know how to access public transit	

Community Characteristic	Indicators of Access	Indicators of Use
Features that Promote Accessibility to the Community (continued)		
Walkable Neighborhoods	<p>Percent of older adults who report their neighborhood is walkable</p> <p>Percent of older adults who report parks and recreation areas within walking distance OR percent of older adults who report they have adequate transportation to parks and recreation</p>	<p>Percent of older adults who walk for transportation</p> <p>Percent of older adults who walk for pleasure/physical activity</p>
Driving	Gas prices	<p>Older driver crash rate below national average</p> <p>Percent of older adults who report driving as primary mode of transportation</p>
Safety		Percent of older adults who report feeling safe in neighborhood during the day or night
Community Supports and Services		
Health Care	<p>Health care costs</p> <p>Percent of older adults who report health care located within walking distance OR percent of older adults who report they have adequate transportation to health care</p> <p>Percent of older adults who report they know where to get health care</p>	<p>Percent of older adults who have a primary care physician/ usual source of care</p> <p>Percent of older adults receiving immunizations</p> <p>Percent of older adults participating in falls prevention programs</p>

Community Characteristic	Indicators of Access	Indicators of Use
Community Supports and Services (continued)		
Supportive Services	<p>Costs of supportive services</p> <p>Supportive services for middle-income older residents (e.g., village model)</p> <p>Percent of older adults who report support services located within walking distance OR percent of older adults who report they have adequate transportation to support services</p> <p>Percent of older adults who report they know where to get support services</p>	<p>Percent of older adults NOT reporting unmet needs for supportive services</p> <p>Percent of caregivers NOT reporting unmet needs for supportive services</p>
Goods and Amenities	<p>Sales and excise taxes</p> <p>Percent of older adults with income and assets above the Elder Economic Security Index</p> <p>Percent of older adults who report private and public services located within walking distance OR percent of older adults who report they have adequate transportation to private and public services</p>	<p>Percent of older adults who visited/received private and public services in past week</p> <p>Percent of older adults NOT reporting unmet needs for goods and services in past week</p>

Community Characteristic	Indicators of Access	Indicators of Use
Community Supports and Services (continued)		
Healthy Food	<p>Food costs</p> <p>Percent of older adults who report grocery stores located within walking distance OR percent of older adults who report they have adequate transportation to grocery stores</p> <p>Percent of older adults who report they know about meal programs</p>	<p>Percent of older adults who report having adequate food in the past week</p> <p>Percent of older adults who visited a grocery store in the past week</p> <p>Percent of older adults participating in meal programs</p>
Social Integration	<p>Percent of older adults who report intergenerational activities within walking distance OR report they have adequate transportation to activities</p>	<p>Percent of older adults who report socializing with family, friends and neighbors in the past week</p> <p>Percent of older adults who report participating in intergenerational activities</p>
Participation in Community Life	<p>Central clearinghouse of volunteer opportunities</p> <p>Percent of older adults who report knowledge of volunteer opportunities</p>	<p>Percent of older adults who report attending church, clubs, cultural events, activities in the past week</p> <p>Percent of older adults who report volunteering</p>

Appendix B: Aging in Place Experts

The authors are extremely grateful to the following individuals who participated in telephone interviews.

Candace Baldwin, Senior Policy Advisor, NCB Capital Impact/Village to Village Network

Kate Clark, MPA, Planner, Philadelphia Corporation for Aging

Eric Dishman, Intel Fellow and Director of Health Innovation in the Intel Architecture Group, Intel

Allen Glicksman, PhD, Director of Research and Evaluation, Philadelphia Corporation for Aging

Deborah Howe, PhD, FAICP, Department Chair and Professor, Department of Community and Regional Planning, Temple University, Ambler Campus

Helen Kerschner, PhD, President and CEO, The Beverly Foundation

Kathryn Lawler, External Affairs Manager, Atlanta Regional Commission

Robert McNulty, Founder and President, Partners for Livable Communities

Evelina Moulder, Director of Survey Research, International City/County Management Association

Mia Oberlink, Senior Research Associate, Center for Home Care Policy and Research, Visiting Nurse Service of New York

Susan Poor, Director of Innovation & Business Development, On Lok

Jon Pynoos, PhD, UPS Foundation Professor of Gerontology, Policy and Planning at the Andrus Gerontology Center; Director of the National Resource Center on Supportive Housing and Home Modification; Co-Director of the Fall Prevention Center of Excellence, University of Southern California

Sheila Roher, Senior Policy Associate, New York Academy of Medicine

Andrew Scharlach, PhD, Eugene and Rose Kleiner Professor of Aging in School of Social Welfare; Director of the Center for the Advanced Study of Aging Services, University of California, Berkeley

Philip Stafford, PhD, Director of Center on Aging and Community, Indiana University

Barbara Stucki, PhD, Vice President, Home Equity, National Council on Aging

Kathy Sykes, MA, Senior Advisor for Aging and Sustainability, U.S. Environmental Protection Agency Office of Research and Development

Louis Tenenbaum, Consultant on Aging in Place

Fredda Vladek, Director of Aging in Place Initiative, United Hospital Fund

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