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# Aging in our Communities: Six Case Studies of Neighborhood Walkability in Clackamas and Washington Counties, Oregon and Clark County, Washington

Reema Alhamidi
*Portland State University*

Edelina Naydenova
*Portland State University*

Katherine Dahlin
*Portland State University*

Jason Rush
*Portland State University*

Margarita Gonzales
*Portland State University*

See next page for additional authors

## Authors

Reema Alhamidi, Edelina Naydenova, Katherine Dahlin, Jason Rush, Margarita Gonzales, Kevin Ryan, Laura Harmon, Marcel Schaeffer, Bianca Iliesi, Laura Silverman, Brady Jones, John Todoroff, Megan Mulsoff Brown, and Adrian Wells

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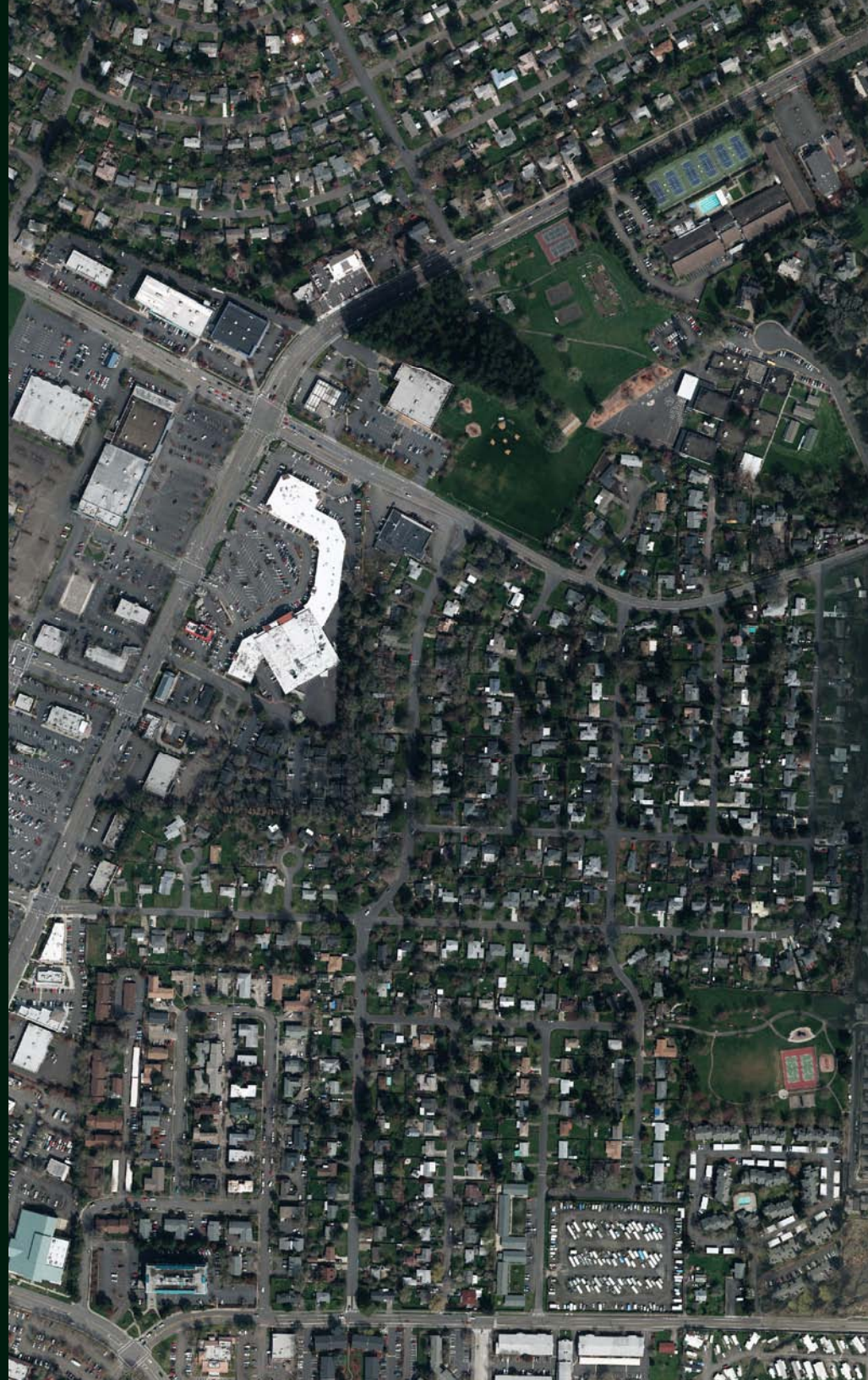
**Senior Capstone Students**
Reema Alhamidi
Edelina Naydenova
Katherine Dahlin
Jason Rush
Margarita Gonzalez
Kevin Ryan
Laura Harmon
Marcel Schaeffer
Bianca Iliesi
Laura Silverman
Brady Jones
John Todoroff
Megan Mulsoff (Brown)
Adrian Wells

**Instructor**
Meg Merrick, Ph.D.
Institute of Portland Metropolitan Studies
Portland State University

**Partner**
Elizabeth Morehead, Director of Research and Web Development,
Greater Portland Pulse

# Project Overview

Population data indicates that the Portland metropolitan region, much like the rest of the nation, will see rapid growth in the population of seniors. In order to ensure that seniors remain productive and healthy in the latter stages of life, support networks and age-friendly measures will need to be embraced across the region. The focus of this project was to evaluate the age-friendliness of the communities surrounding assisted living facilities in Clark, Clackamas, and Washington counties. Two facilities were selected in each of the aforementioned counties and researchers from our team surveyed the pedestrian environmental features of the surrounding area within a quarter-mile radius of the each facility. The survey data from each site was then distributed among two groups for qualitative and quantitative analysis. Quantitative analysis consisted of a compiling process that took the measures of quantifiable features (e.g. number of sidewalk breaks, abandoned lots, etc.) gathered in the field and standardized them in a single database, allowing an objective, cross-county comparison of the frequency of pedestrian environmental qualities identified as being indicative of age-friendliness. Qualitative analysis involved the distillation of recurring themes and observations reported by surveyors as they gave their impressions of the areas they visited, which were then used to interpret and appraise the accuracy of marketing materials issued by the target facilities. Both investigations were then contextualized by a separate group tasked with reviewing existing scholarship and impressions of academics working in geriatrics and other pertinent fields. Ultimately this examination also sought to identify the exact dimensions and characteristics of an age-friendly community, as well. Taken together, the research done in this project has lead us conclude that each county will have unique obstacles to overcome in pursuit of greater age friendliness yet they will need to act cohesively and cooperatively in order to do so. This will involve paying closer attention to how integrated the senior population is in the wider social sphere of their communities as well as working to ensure that crucial resources remain accessible to them wherever they may live.

# Literature Review

Senior citizens hoping to age in place in the Portland metropolitan region are confronted by a variety of barriers. Literature and interviews conducted with academics versed in age-related issues reveal that a lack of support networks, negative perceptions of the aging population, and the absence of a unified regional plan exacerbate the extant difficulties of aging in place. In order to address these issues, comprehensive regional strategies will need to be implemented in a sustained and robust effort involving citizens, local governments, anchoring institutions, philanthropic

entities, and non-profit organizations. Additionally, creating social outlets for seniors such as employment and volunteer opportunities would strengthen the local economy, diversify social networks, and improve health outcomes for the elderly.

As the lifespan of the average American increases and sizable segments of the US population reach retirement age, the United States is rapidly approaching a significant shift in the overall age of its population. Demographic projections suggest that the population of Americans 65 and older will increase from 36 million in 2003 to 87 million by 2050 (Kerr et. al, 2012). This means that one in every five Americans will be over the age of 65 by 2030, a possibility that will create dramatic challenges for future generations (Kerr et. al, 2012). With such a drastic population shift looming, the importance of promoting age-friendly environments and resources in urban locations is increasingly more urgent. Current efforts to prepare for the growth of the elderly population by establishing age-friendly spaces have considerably aided both older adults looking to age in place as well as supporting those living in group or assisted living homes. Nevertheless greater and more innovative steps must be taken if the transition to a future with a considerably larger population of senior citizens is to occur smoothly. As such, developing age-friendly spaces, which is defined by the Journal of Gerontological Social

Work as "communities where older adults are actively involved, valued, and supported with infrastructure and services that effectively accommodate their needs", requires an acute understanding of both the desires of the elderly population and the larger social circumstances they live in (Smith, 2013).

Although there is no standardized measurement of the age-friendliness of a region, the criteria developed by the World Health Organization (WHO) are frequently used as a guideline to assess a city's ability to adequately support senior citizens. This framework provides an effective means of evaluating transportation and housing options accord-



Source: US Census Bureau

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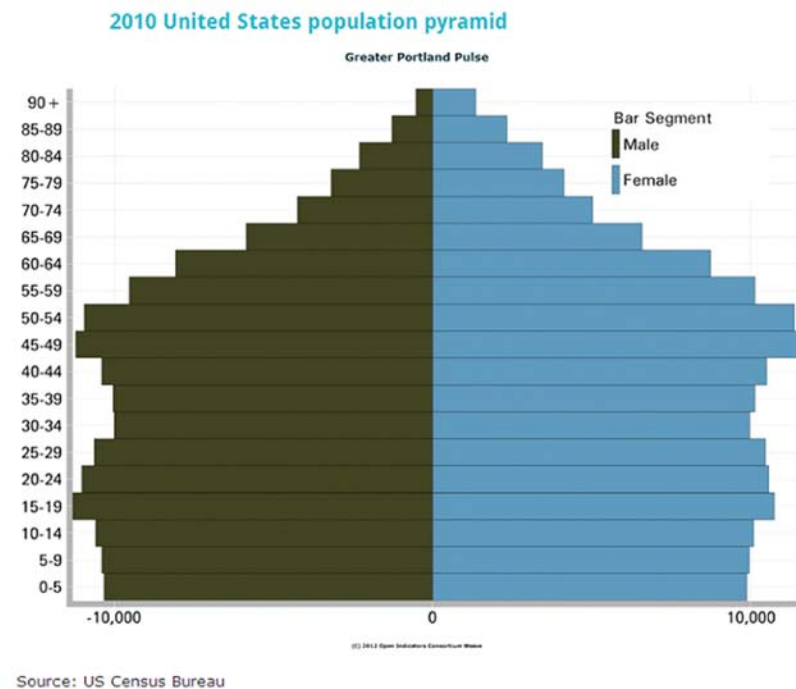
ing to cleanliness, safety, and availability, as well as measuring the prevalence of resources that offer opportunities for increased social interaction. Attention is also paid to issues surrounding employment and volunteer work (World Health Organization, 2009). These basic principles encompass the overarching qualities which characterize age-friendly communities. When one applies the methodology used by WHO, it becomes apparent that various aspects of America's infrastructure will pose significant challenges to integrating age-friendly strategies and features into existing communities.

Research into the attitudes of American seniors 65 and older has revealed that an overwhelming majority (88 percent) have indicated a desire to age in their current place of residence (DeGood, 2011). To senior citizens, the importance of doing so lies in the need to retain identity, independence, and meaningful relationships established in their lifetimes (Smith, 2013). If the automobile-oriented objectives that currently guide city planners remain unchanged, the intent of seniors to age in place can be expected to produce communities of elderly citizens largely isolated from the rest of the population at large, given that 79 percent of seniors are currently living in suburban or rural areas accessible only by cars (DeGood, 2011). When seniors remain in areas only accessible by automobiles, a regression of physical and mental acuity and concomitant loss of driving skills render them prisoners of their own homes.

Mobility and accessibility issues are however, not just restricted to non-urban areas. In a study of 241 metropolitan areas across the country, researchers from the Center for Neighborhood Technology discovered that an estimated 11.5 million seniors over the age of 65 lived in areas with poor access to public transportation (DeGood, 2011). When coupled with issues surrounding walking as a means of transportation, the alarming lack of alternative modes of transport available to seniors highlights how much work remains to be done towards readying America for the retirement of the Baby Boomers. When exploring this issue locally it is tempting to look towards Multnomah County, which has already made many promising strides towards promoting age-friendliness. Nevertheless, the surrounding counties of Clark, Clackamas, and Washington better reflect the infrastructural issues that are found across the United States. Local governments and their constituencies will need to address not only their structural readiness for the coming challenges of an aging population but will also need to reflect upon how the elderly population is viewed in society. A positive shift in attitudes toward the elderly as assets will engender better intergenerational relations, social exchange, and health outcomes for seniors.

**Towards an Age-Friendly Portland Metropolitan Region**
Promoting age-friendliness is not a responsibility that has been forgotten within the Portland Metro area. Portland stands as one of only two cities in the US accepted into the

WHO's Global Network of Age-Friendly Cities. The city has plans to expand these efforts through many actions detailed within the Portland Plan (Portland, 2012). The proposed strategies are cohesive, targeting many areas of age-friendliness, including the creation of accessible housing, welcoming community hubs, making public streets more
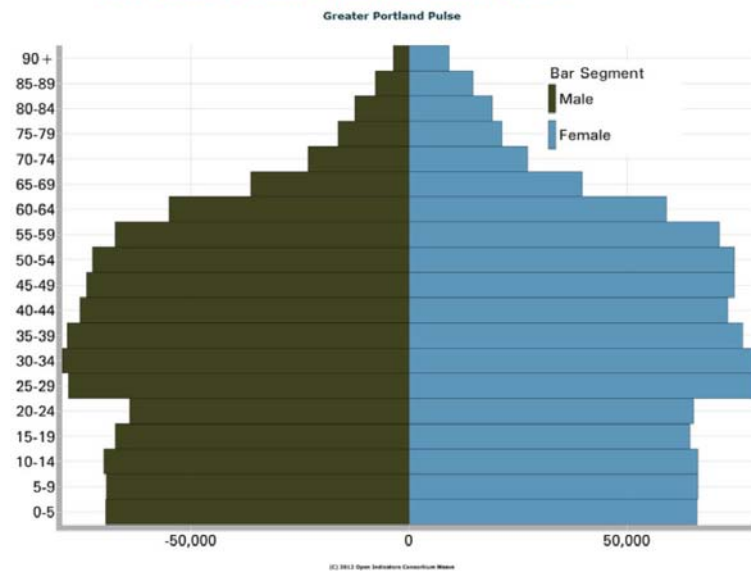


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safe and accessible, expanding the ease of receiving medical services, and encouraging intergenerational mentoring (Portland, 2012).

In terms of physical infrastructure, the city aims to create many "20 Minute Neighborhoods" to achieve these goals. This means a neighborhood which contains most basic amenities within a 20 minute walk of a person's residence. By 2030, the city's goal is for 90 percent of residents to have their neighborhoods up to this standard (Portland, 2012). This means an additional focus will be paid to creating a safe, walkable environment. Such infrastructure would allow seniors that are mobile the opportunity to achieve everyday tasks such as grocery shopping or partaking in recreational activities without the need to drive. However, challenges may remain for seniors who are not mobile or in need of care. Additionally, simply being in a walkable area with nearby amenities does not ensure that seniors will actively choose walking as their mode of transport. While the Portland Plan is not yet finalized, these strategies show a commitment to age friendliness in the realms of housing, transportation, social activity, and health.

Efforts to make the region an age-friendly place to live are also underway in the greater metropolitan area. In 2012, the Board of Clark County Commissioners created a Commission on Aging, whose members then outlined a number of strategies in an Aging Readiness Plan for the county to follow. Recognizing that Clark County's population of people over 60 is steadily rising, their plan aims to put measures in place to support this rising demographic, while making the county more livable for all ages. This plan focuses upon five

areas, providing detailed strategies within each: transportation, supportive services, community engagement, housing, and healthy communities (Dunn et. al, 2012).

Within each of these focus areas are projects that the county is undertaking, showcasing the steps towards making greater age-friendliness a reality. Currently, one of the projects is promoting the use of neighborhood electric vehicles among the elderly. With a maximum speed of around 25 miles per hour, these cars are useful for local trips, while their slow speeds make them safer for older drivers that are more prone to accidents while driving at higher speeds. An additional transportation project is switching street signs to a larger font, making them easier to read for the elderly and visually impaired (Dunn et. al, 2012). Even though some of the work being done to make the Portland metropolitan region is still in the planning stages, there are also concrete plans being actively implemented, as indicated by the reports from Clark County. These current projects, along with the promise of strategies to come, indicate that the region is indeed actively working towards age-friendliness as things stand.

**Accessibility and Transportation**

The extent to which senior citizens remain active in their local communities is contingent upon two practical and interrelated concerns: the real and perceived accessibility of their surrounding environment and their ability to transverse that environment safely and efficiently. In regards to the former, isolating the variables that shape the viewpoints and behaviors of the senior population is a task which has received increased attention in the last few decades. Research into this subject matter has brought to light the manner in which the layout of cities themselves, particularly the historic emphasis on arterial roadways and discrete districts, have negatively impacted the elderly. Efforts to reduce traffic in designated residential neighborhoods have lessened the prevalence of through-routes, that is direct routes through neighborhoods which allow drivers to bypass highways and other busy road systems. Elders' aversions to the high speed situations found on arterial roadways is both well-documented and justified, given the disproportionate of traffic-related facilities suffered by seniors and the decreased visual acuity and spatial awareness has been shown to accompany aging. (Dumbaugh, 2008)

Further compounding the degree to which elderly populations are compelled to enter into stressful and potentially-dangerous automobile interactions are increased travel times brought on by contemporary city planning patterns. Fewer means of merging onto primary roadways entails longer travel times, discouraging more health-friendly methods of transportation and increasing the financial burden on the segment of the senior population that still retains the capacity to drive. It should also be noted that the im-

portance of traveling on arterial roadways stems from the absence of crucial facilities in the immediate vicinity of elderly housing. Comparative studies of the travel behaviors of driving and non-driving elderly populations have shown a substantial decrease in the number of trips taken by seniors once they cease to drive, which in turn demonstrates the negative repercussions of allowing certain resources to be rendered too distant from senior citizens (Dumbaugh, 2008).

What is also made evident by the way in which elderly populations respond to the varying accessibility of their environment is how crucial their perceptions of the overall process of traveling outside of their homes are in determining whether or not they undertake such ventures at all. Researchers have long been aware of the roles some environmental features (dilapidated buildings, businesses seen as promoting illicit activities, presence of graffiti, etc.) play in defining what constitutes a safe, senior friendly envi-



**Transit Access and Above Regional Average Percent Seniors (65+) by Census Tract**

Indicator Layer

Above regional average % seniors (ages 65+) [Tracts]

Below 10.76%

Above 10.76%

Oregon Metro Regional Basemap

Natural Resources

Major rivers and water bodies

Published using the Equity Atlas 2.0, powered by the Metro Context Tool

DENSITY

Regional Equity Atlas 2.0
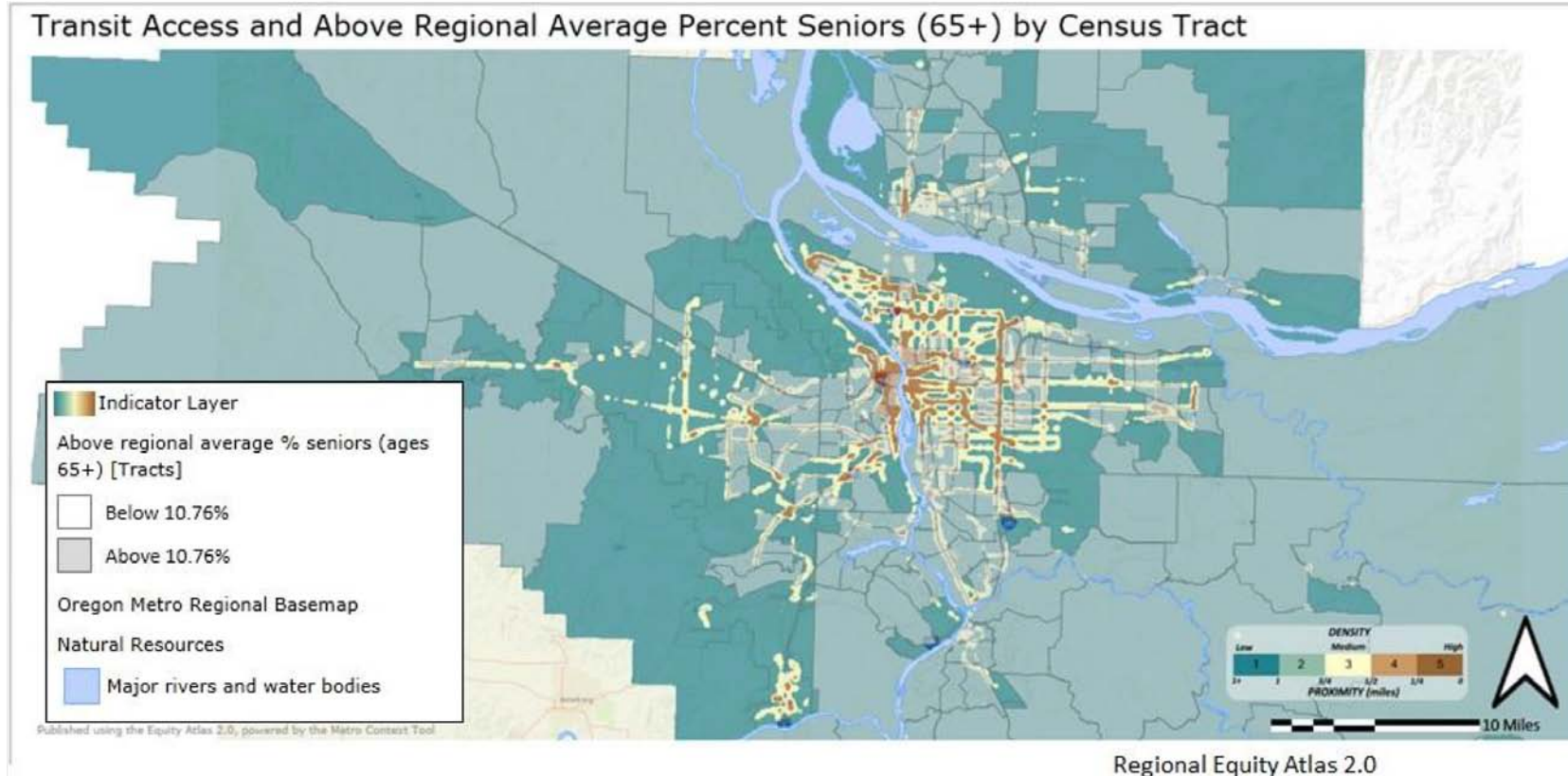
ronment. Continued investigation into this subject matter, however, suggests that more subtle factors inform senior perceptions of their environment and transportation options in general (Loukaitou-Sideris, 2006). Beyond desiring recreational and commercial facilities in close proximity to their places of residence, seniors respond more positively to neighborhoods that possess substantial public seating, which eases the difficulty of traveling longer distances by foot (Dumbaugh, 2008). Significant, too, is the number of controlled intersections and the length of crossing times, a concern which has a great deal of merit when one considers that elderly pedestrians are twice as likely to be killed when compared to other pedestrians, despite typically being more cautious with their walking habits than their younger counterparts (Kerr, 2012).

Still, intangible barriers to fostering a mobile elderly population remain problematic. The ability to drive continues to be synonymous with a sense of independence among seniors, a reality which undoubtedly influences the impressions seniors hold of alternate methods of transport (Dumbaugh, 2008). The use of mass transit accounts for a mere two percent of all senior travel nationally, partly due to the perceived difficulties and dangers of utilizing public transportation (Dumbaugh, 2008). Furthermore, surveys of senior opinions of walking have revealed that many elderly individuals refrain from walking simply because they view it less as a method of transportation and more as a form of recreation (Dumbaugh, 2008). Additionally, some evidence suggests a rural-urban divide on how walking is perceived by senior citizens as well (Kerr, 2012). While some of these intellectual barriers to a wider usage of non-autocentric transit can be addressed by infrastructural changes, specifically beautification, installation of more public seating and diminishing the centrality of districts to city layouts, the solution to eliminating many of the negative connotations that surround alternative methods of traveling remains elusive.

**Changing the Conversation**

Across the nation, the elderly population continues to grow, and with this historical expansion comes a stigma. Viewed through a lens of increased governmental and social burden, seniors have increasingly been considered a problem to be dealt with (DeLaTorre Interview 2013 & Carder et al., 2011). Though the difficulties in accommodating such a large, vulnerable population are real, a shared, negatively-skewed outlook toward the aging, centered only on costs, is counterproductive and causes society to overlook benefits that elders offer. Alan DeLaTorre, researcher for the Institute on Aging at the College of Community Health - Portland State University, observes that: "As a society... we've been looking at the aging society as a 'needs-based' problem in a lot of ways, and the aging of our Baby-Boom popu-

lation carries with it some real opportunities by planners, policy makers, and leaders. If we continue to see aging as a deficit, and aging as full of needs and needs alone, then we're not looking at some of the assets that come along with the wisdom and experience of older adults. The question is: As we see the Boomers aging, how do we figure out a way to incorporate those experiences, that wisdom, into intergenerational mentoring opportunities and a furthering, in some way, of our economic development? It is an untapped resource in a time when natural resources are declining…" (DeLaTorre Interview – May 2013).

DeLaTorre's assertion is undergirded by the concept of "productive engagement" in aging communities, which is described as: "activities, whether paid or not, that produce goods and services. These activities include working in the labor force, volunteering for an organization, informal volunteering (mutual aid, helping friends and neighbors), and providing care to relatives or friends of any age (caregiving to dependent relatives, grandparenting)." (Gonzalez & Morrow-Howell, 2009) Often, seniors are confronted with a variety of societal and physical barriers that prevent them from interacting with others, such as ageism, unfriendly building structures, a lack of volunteer opportunity outreach, and a failure to pair senior skills with tasks, and these barriers need to be confronted and countered (Gonzalez & Morrow-Howell, 2009). Elderly populations have learned innumerable lessons in their lives, and productive engagement provides an outlet through which they can transmit this knowledge. Such interactions construct a framework for mentorship and social exchange but also provide another supportive network for the aging. Simply put, elderly citizens with more social connections have more people to turn to when things go awry.

Research also indicates that a lack of social interaction can lead to depression for some elderly, while, conversely, increased contact leads to better health outcomes (Choi & McDougall, 2009). Enhancing social opportunities for senior citizens is a vital aspect of the Age Friendly Cities Checklist and the notion conforms to the tenets of the Portland Plan, but doing so also relieves pressure on an encumbered health system, supplements retirement funds, and lengthens lives (Gonzalez & Morrow-Howell, 2009). A shift in the perception of the elderly as assets in society would improve life for all.

**Health Outcomes**

Whether by encouraging more walking through pedestrian-oriented reforms, increasing the scope and frequency of public transit systems, or by modifying the existing roadways to promote greater age-friendliness, changes to the overall environment seniors live in can have immediate effects on their quality of life and health. Cardiovascular fitness has been demonstrated to be a strong predictor of

cognitive function, speed, and attention as well as verbal memory among seniors (Zhao, 2013). In a study of seniors over the age of 55 who lacked any cognitive impairment, the extent of grey and white matter tissue loss was also tied to physical fitness, a discovery which reinforced the findings of similar research that showed a correlation between the size of the hippocampus and fitness level (Zhao, 2013). Improving the walkability of communities can thus be seen as a method of maintaining the mental faculties of senior citizens, with even small increases in the amount of physical activity undertaken by older adults leading to noticeable gains in mental ability. Walking as little as 1.5 hours a week can lead to improved cognitive function, and over two months of aerobic training can also lead to improvements in motor skills, frontal lobe function, and the general perceptions of quality of life (Zhao, 2013).

Among seniors already afflicted with age-related ailments, increased physical exercise has also been shown to reduce pain and disability among individuals suffering from osteoarthritis and other physical disabilities (Kerr et. al, 2012). Additionally, physical activity has a positive effect on the physical capabilities of individuals suffering from cognitive impairments such as Alzheimer's disease, dementia, organic brain disease and other cognitive disorders (Heyn, 2004). Notably these benefits also extend into the realm of mental abilities as multiple studies have shown a strong cor-

relation between increased physical activity and a reduced risk of further cognitive decline in patients with suffering from mild mental impairment (Geda et. al, 2010). Observed gains in controlled characteristics such as "selective attention, search efficiency, processing speed, and cognitive flexibility" were reported in trial study performed by the American Medical Association, findings which coincide well with the outcomes of other research done on this subject matter. (Baker 76) In light of the substantial and shared improvements physical exercise has demonstrated for both healthy and impaired seniors, asserting continued physical activity in old age must be one of the primary focuses of efforts to develop age-friendly environments.

Unfortunately, fewer than 10 percent of individuals over the age 85 participate in light-to-moderate physical activity at least five times a week for thirty minutes or more, a reality that sheds light on the health benefits being lost to sedentary lifestyles. (Kerr et. al, 2012) Considering the extreme cost of supporting aging populations to both retirees and taxpayers at large, the importance of rectifying the factors which keep seniors from living more active lifestyles should be apparent. Working to promote physical exercise among seniors can lead to an increased ability to live independently and by extension reduce the portion of the population which needs intensive care. (Kerr et. al, 2012) The advantage of increasing the fitness level of seniors is also

visible in regards to automobile usage as well, as the protective effects of exercise on the reflexes, motor skills, and spatial acuity of aging populations can extend the length of time seniors can still drive competently. But deeper than the more visible facets of healthy living for seniors, physical activity has great utility in bolstering social participation, managing emotional well-being and sustaining interpersonal relations among seniors.

**Housing**

A lack of affordable and age-friendly housing continues to be a source of frustration and anxiety for seniors hoping to age in place. Nationally, 37 percent of 5 million HUD assisted households are headed by people aged 62 or older (Carder et al., 2012). This trend exists in the Portland metropolitan area, as well. In Clark County alone, approximately 27 percent of residents 65 and older pay more than 30 percent of their income for housing (Dunn et al., 2012). Seniors hoping to age in place are confronted by a variety of difficulties in maintaining a place to live ranging from affordability, limited housing stock that can enable aging in place, and lack of amenities surrounding existing homes. Seniors also experience an information gap in terms of not knowing what services are available to them that would help them stay in their homes as they age (Dunn et. al, 2012).

Private nursing homes in Oregon cost $226 a day ($82,935 per year) on average, and assisted living accommodations can cost from $22,000 to $60,000 per year, depending on where in the continuum of care an individual falls (Carder et al., 2011). Many people of lesser means will be priced out of institutions that offer these services, and many could see their quality of life degraded by the onerous price of housing and care.
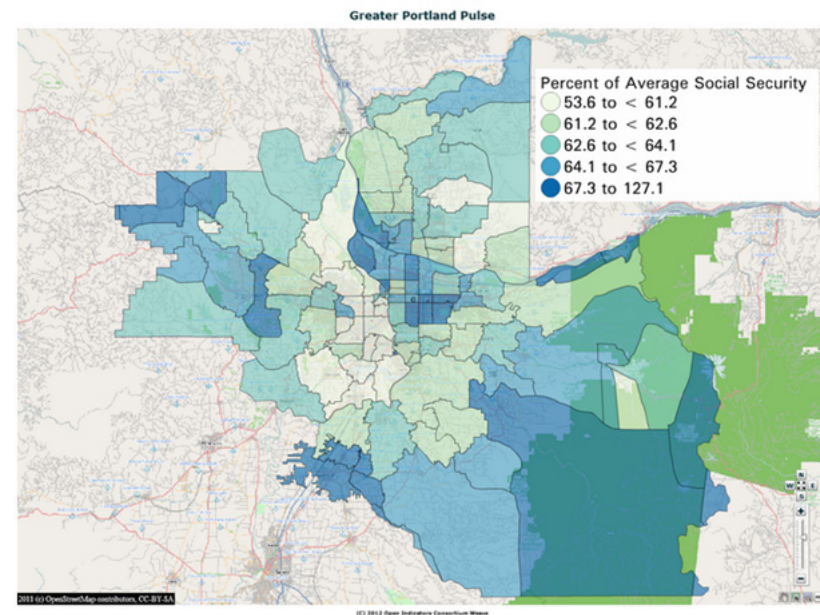


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## Policy Implications

### Transportation

For many seniors, the loss of the ability to drive is a pivot point in terms of mental, physical, and social activity, and the results are often negative (Choi & McDougall, 2009). However, local and regional government can serve to stem the deleterious effects of not being able to operate a vehicle by erecting supportive environments that 'negate the effects of functional decline' (Kerr et al, 2012). The Federal Transit Administration offers three programs that provide funding for transportation improvements in outlying areas:

- Section 5310 – Transportation for Elderly Persons and Persons with disabilities program provides funding to states for the capital costs of providing services to older adults and persons with disabilities. Typically, vans or small buses are available to support nonprofit transportation providers. SAFETEA-LU, the current surface transportation law, authorized $674 million over six years. This program provides funding for both urban and rural areas.

- Section 5311 - Rural Area Formula Program provides funding to maintain and improve public transportation systems in rural areas and small towns. A portion of these funds is dedicated to the Tribal Transit Program (TTP), which provides direct federal grants to Indian tribes to support public transportation on Indian reservations. SAFETEA-LU authorized $2.2 billion over six years.

- Section 5317 - New Freedom Program provides funding to transit agencies to expand the mobility options available to people with disabilities, beyond the requirements of the Americans with Disabilities Act (ADA). SAFETEA-LU authorized $339 million over six years. This program provides funding for both urban and rural areas. (DeGood, 2011)

Accessing funding at a federal level could help to alleviate the daunting pressure placed on local governments in tackling systemic problems such as inadequate transportation infrastructure and service. In addition, community supported programs that require little to no government subsidy, such as 'volunteer programs, flex-routes, service routes and deviated fixed-routes that can be tailored to local community needs' (DeGood, 2011). Additionally, 'senior-friendly shuttles, jitneys or circulators to shopping centers and medical facilities, and local services such as flexible route services can address some of the needs for short notice or spontaneous travel that are difficult using paratransit reservations' (DeGood, 2011). Community-based solutions can utilize volunteers and their vehicles to dampen costs, but, more importantly, these programs can unite communities around issues that threaten the well-being of seniors.

*Social*

In addition to addressing the loss of mobility, community leaders should work to create structures that provide seniors with opportunities to engage with other demographics and populations thereby improving health outcomes and support networks. Researchers point out that 'Given the barriers and disincentives to the productive engagement of older adults in this society, aging- friendly communities must have specific programs aimed at employment and volunteering' (Gonzalez & Morrow-Howell, 2009). Some employment initiatives are already in place, such as Civic Ventures, a national non-profit that seeks out second careers for older adults in order for them to be financially secure while positively affecting the community (Gonzalez & Morrow-Howell 2009). The Aging Atlanta initiative in Atlanta, Georgia, a partnership of fifty public and private organizations focused on creating a more age-friendly region, formed a coalition with the Title V Senior Community Service Employment Program (SCSEP) and local workforce developers to create several programs that seek to match elderly employees with employers (Gonzalez & Morrow-Howell, 2009). Many web-based volunteer matching sites already exist, such as RSVP, Get Involved, and VolunteerMatch, and are easy to incorporate into outreach efforts to prospective senior volunteers (Gonzalez & Morrow-Howell, 2009). Partnerships such as these, that align senior workers and volunteers with

opportunities, should be emulated and implemented in the Portland metropolitan region to benefit not only the city itself but also surrounding areas.

*Housing*

Home Forward's Aging in Place Initiative identifies strategies for aiding seniors who hope to secure affordable housing and those already living in such facilities. The initiative involves: Building-Specific strategies that make structures that house the elderly more senior friendly and conducive to aging in place; Social Environment strategies that supports the social health of individuals and creates community cohesion; Supportive Services strategies that link supportive networks with affordable housing; and System-Level strategies that create partnerships to address financial difficulties that threaten low-income seniors (Carder, 2012). This initiative is translatable to Washington, Clark, and Clackamas county housing authorities, and could be productive on a regional scale. However, these strategies are not without difficulty, as they require cooperation across a variety of city, regional, and state agencies resulting in new partnerships and communication.

**Conclusion**

The challenge of adapting the current infrastructure of the Portland metropolitan region, to say nothing of the US at large, to meet the needs of the growing senior population

by developing more age-friendly environments is a daunting but necessary task. By prolonging the ability of seniors to age in place, while simultaneously providing a seamless means of transitioning them into care facilities when such environments are needed, we as a society are investing in the health and well-being of our forebears, ourselves, and our children. As this research indicates, there are a myriad of factors that must be taken into consideration when approaching the issue of an age-friendly city, and comprehensive age-friendly initiatives should aim to address many of these areas to be effective. By addressing existing gaps in the age-friendliness of transportation options, accessibility, social opportunities, health care, and housing, cities can become safer and more convenient for seniors to navigate. As one of only two cities within the US on the World Health Organization's age-friendly list, Portland is currently in a good position. However, field research indicates that there is room for improvement, particularly within the surrounding counties of Clark, Clackamas, and Washington.

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# Methodology

**Fieldwork**

When considering what sites to perform field work, the Senior Capstone team performed an initial assessment through ESRI Business Analyst to identify where assisted living facilities are located in the 4-county metropolitan area and the number of employees at each site to determine their relative size. The selection criteria included two sites in each of the following counties: Clackamas, Clark, and Washington counties. Much research has been done in Multnomah County so it was excluded from this study. Additional criterial for selection were to identify facilities with 25 or less employees and located in both urban and suburban locations.

**Qualitative**

A qualitative analysis is important for understanding the differences between the impressions that each facility wants to present to the world and real life impressions of the age-friendliness of the communities surrounding these facilities.

It is important to state at the outset that for this study, we only investigated the experience of age-friendliness in the neighborhoods immediately surrounding each facility and not the experience within each site. However, all of the descriptors that the facilities' owners have chosen to use to describe the sense of community that is offered, both internal and external, are included in our analysis.

For each facility, the information from the public relations (PR) material, such as websites and brochures, was taken and analyzed using either the Wordle or Many Eyes word cloud generator tools to show the most frequently occurring word in the entire text. These tools create data visualizations which adjust the sizes of each word proportional to the number of times it appears in a text. Therefore, the words that are used most often in the facilities' websites and brochures appear the biggest in the word cloud. The same tools were used to create word clouds for the impressions of each facility and surrounding neighborhood from the researchers that walked around the facilities. The word clouds were compared to determine differences between the ways in which facility owners describe their communities to potential residents and the researchers' observations of the communities within a walking distance (or quarter mile) of the facility. A total of six facilities were analyzed.

**Quantitative**

The following section gives an overview of the quantitative data which was collected and analyzed. It includes our summary of the research done and the deductions made on behalf of our interpretations of what makes an elderly friendly community.

As a team, we worked to gather data from facilities by visiting six different locations, two from each of the following counties; Clackamas, Clark and Washington. Then, we se-
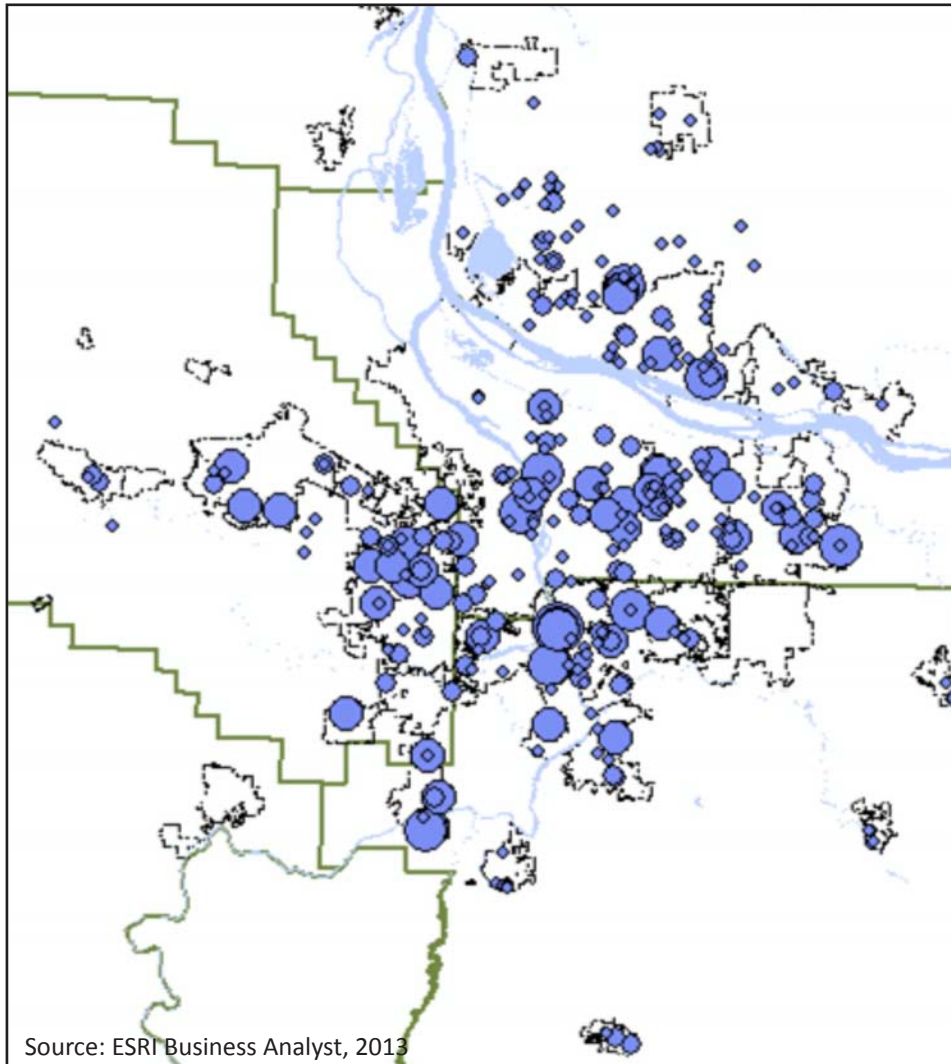
Assisted Living Facilities in the 4-County Region
by the Number of Employees
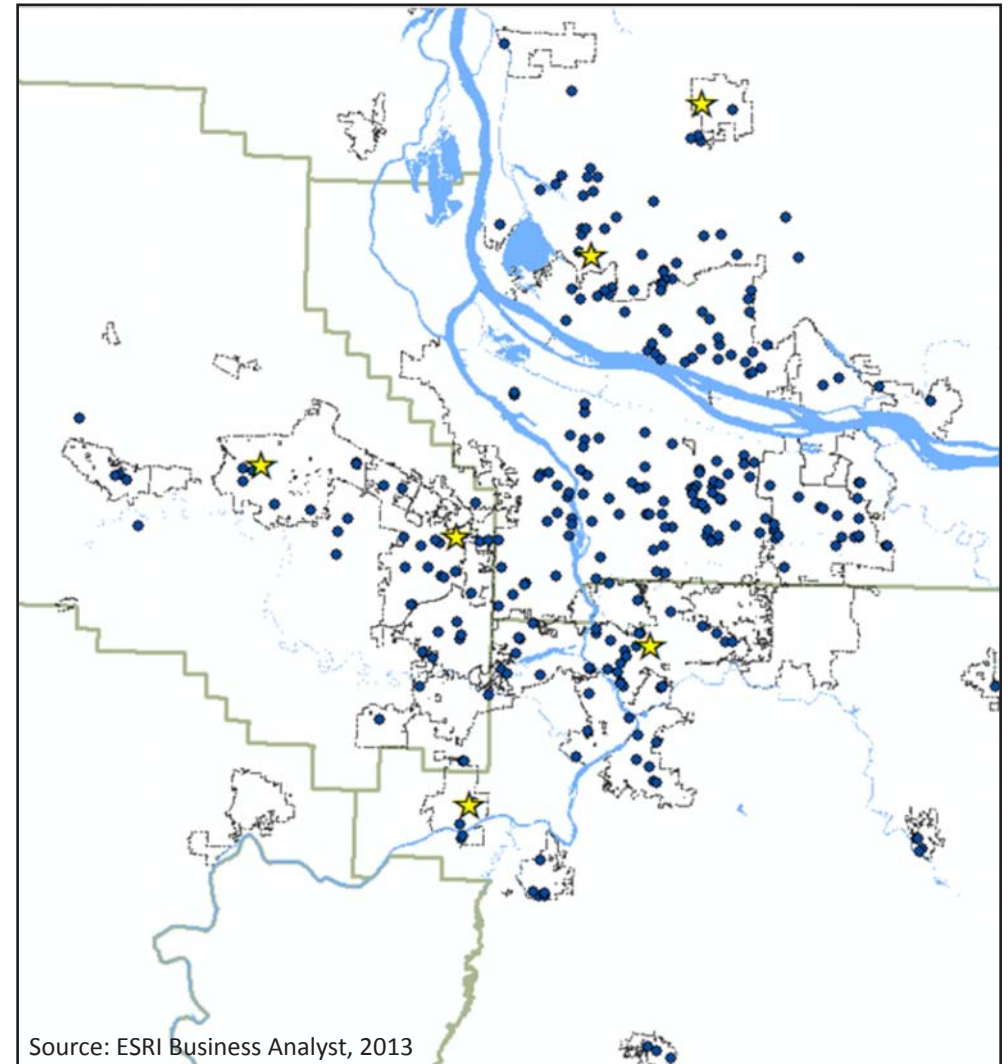
Assisted Living Facilities in the 4-County Region
and the Field Work Sites

lected which elements best contributed to an elder-friendly community. An elder-friendly community is defined as, 'places that actively involve, value, and support older adults, both active and frail, with infrastructure and services that effectively accommodate their changing needs.' (Alley, Liebig, Pynoos, Banerjee, Choi). Having this in mind, we set out to create a scoring rubric, which would allow us to grade positive assets found within a quarter mile boundary based on the surrounding street segments. Based on the San Francisco Department of Health's Pedestrian Environmental Quality Index (PEQI), and our own assessment, we worked to create a rubric based on an evaluation of available amenities surrounding each facility. This rubric allowed us to analyze both intersections and street segments based on the walkability of the sidewalk, the aesthetics of the surrounding area, including graffiti and trash; and its safety. Scoring consisted of a 0-5 scale, 0 being the lowest and 5 the highest. This method, although somewhat problematic, with adjustments, enabled the final evaluations.

Our first rubric consisted of four conditions: walkability, amenities, transportation, and perceived environmental quality, wherein we gave each condition benchmarks based on the Pedestrian Environmental Quality Index which was designed to inform pedestrian planning needs and the PEQI Street and Intersection Audit, which allowed us to assess the 1/4 mile street segment boundary, first hand.

It was then determined that our scale could be narrowed down to a 1-3 scale: 1 being poor and 3 being excellent. However, this eventually presented a problem of recording values that did not match the basis for grading an elder friendly community (i.e. more driveway cuts would indicate a neighborhood was less walkable where a wider sidewalk would mean more walkable, but both would inherently provide a high score for high numbers). Additionally, some data input counted 'how many' within a subject, which could not be translated into a value, that was the basis for our scoring.

Secondly, when working to input transportation, we found that we could access limited information through the North American Industry Classification System (NAICS) from ESRI Business Analyst, a standard used for federal statistical agencies for collecting data. Using the ESRI Business Analyst, we inputted the site addresses and designated 0.25mile, 0.5mile and 1.0mile rings surrounding it. As a class, we designated 0.25mile as an acceptable walking distance for our target population. From there, we entered the NAICS codes—listed on our original grading rubric— to find type and location of neighborhood amenities. However, this was used merely as a supplemental tool for the overall study since the ESRI maps do not explore specific accessible pathway options, but rather provides further understanding of the spatial layout of each site.

We discussed the possibility of obtaining bus stops and routes for each facility, the expanse of information that would be needed could not be obtained within the confines of our deadline.

Lastly, we discussed the possibility of scoring Perceived Environmental Quality but determined that it would be purely biased based on the observations of young students who may not be able to relate to the needs of the baby boom generation and would inevitably be irrelevant in our final findings.

Ultimately, we narrowed our analysis to three fields: Safety, Access, and Aesthetics and Subjective. To illustrate the challenge of the 'how many' data inputs—such as the driveway cuts that exhibited a higher scoring based on total number but was still perceived negatively—the group recalibrated the final rubric to show an overall score for sides of the street. Once we had a clear idea of how the community surrounding each facility would be graded, the data were translated from a numeric value into a visual map, illustrating the most senior friendly, walkable pathways within a quarter mile of each facility and therefore, the most beneficial amenities for senior citizens.

In order to create a working rubric, we normalized all data inputs into a 0 (poor), 1 (Good), 2 (Best) rating system, which allowed us to define an overall, comparable score for each site. Using Excel, we applied an arithmetic equation to develop the overall score, which translated the data inputted from each facility into comparable categories, although there were additional challenges. For example, according to the PEQI Street and Intersection Audit, a speed limit of 25 mile per hour on any street segment would have gained a '1' for data entry purposes, but would reveal a lower overall score for having a lower speed established, however we found this would skew our overall results because a slower speed would indicate a safer driving speed and should receive a higher overall score. Yet, we still debated the reasoning behind implementing a 25 mile per hour speed limit in the first place, meaning there is a lot of vehicular traffic, indicating it was less-safe. Due to these defining barriers and limited time, as a group we decided to leave this data out of our final conclusion, as this would be shown in a comparable way elsewhere in the final metadata.

Using ESRI's Network Analyst extension package for Arc Map, we imported a roads layer and segmented it into individual blocks. Each new individual road segment had a unique ID that we assigned to its corresponding road length in the walkability score spreadsheet. This allowed us to join the score data to the road segments in ArcMap. Red, yellow and green were used to represent each road in the symbology. Since data were collected on both sides of the street at each site, this process was implemented twice for each location in order to represent the Age Friendly Walkability

(AFW) for either North and West or South and East sides of the road on individual maps. This also enabled us to apply a unified scoring rubric to all six data sets and essentially eliminate human error. With this new criteria set, it was virtually effortless to copy and paste data sets into working spreadsheets that were then converted into our self-made scoring rubric. This allowed us to turn a numerical scale into a visual representation showing whether or not a facility offered elder friendly quality of life. With our newfound understanding of how to rank a facility, we wanted to create a visual example that would easily express our results.



Pedestrian Environmental Quality Index
Data Collection Sheet
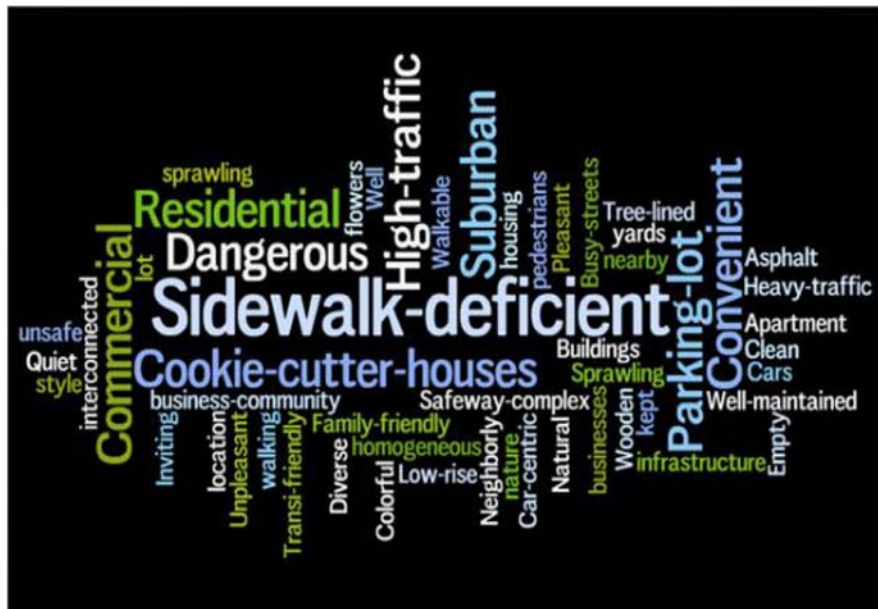Source: San Francisco Department of Health

# Findings: Individual Sites

## The Springs at Clackamas Woods
Clackamas County

The Springs at Clackamas Woods (The Springs) is a retirement facility located in the suburban neighborhood of Milwaukie, Oregon. It offers both independent and assisted living options as well as memory and respite care. It was originally built in 1999 as 72-unit assisted living community and was expanded in 2001 to include independent living. In 2011, The Springs expanded again to include memory care. It now has a total of 201 residential units of which two-thirds are dedicated to independent.

The two Wordles (see right) represent the differing interior and exterior characteristics of The Springs at Clackamas Woods retirement facility. The top illustration depicts the public relations text found on the facility's website. Larger words such as "family," "home," "grandma," "staff," and "family" repeat throughout their website. The Springs at Clackamas Woods emphasizes offering a home-like environment where seniors and their families are encouraged to continue enjoying life with the added comforts and conveniences of built-in services provided by friendly and competent staff. However, the website does not advertise any of the exterior neighborhood characteristics as was observed by the researchers who toured the nearby surrounding environment for attributes of age-friendliness. As such, the
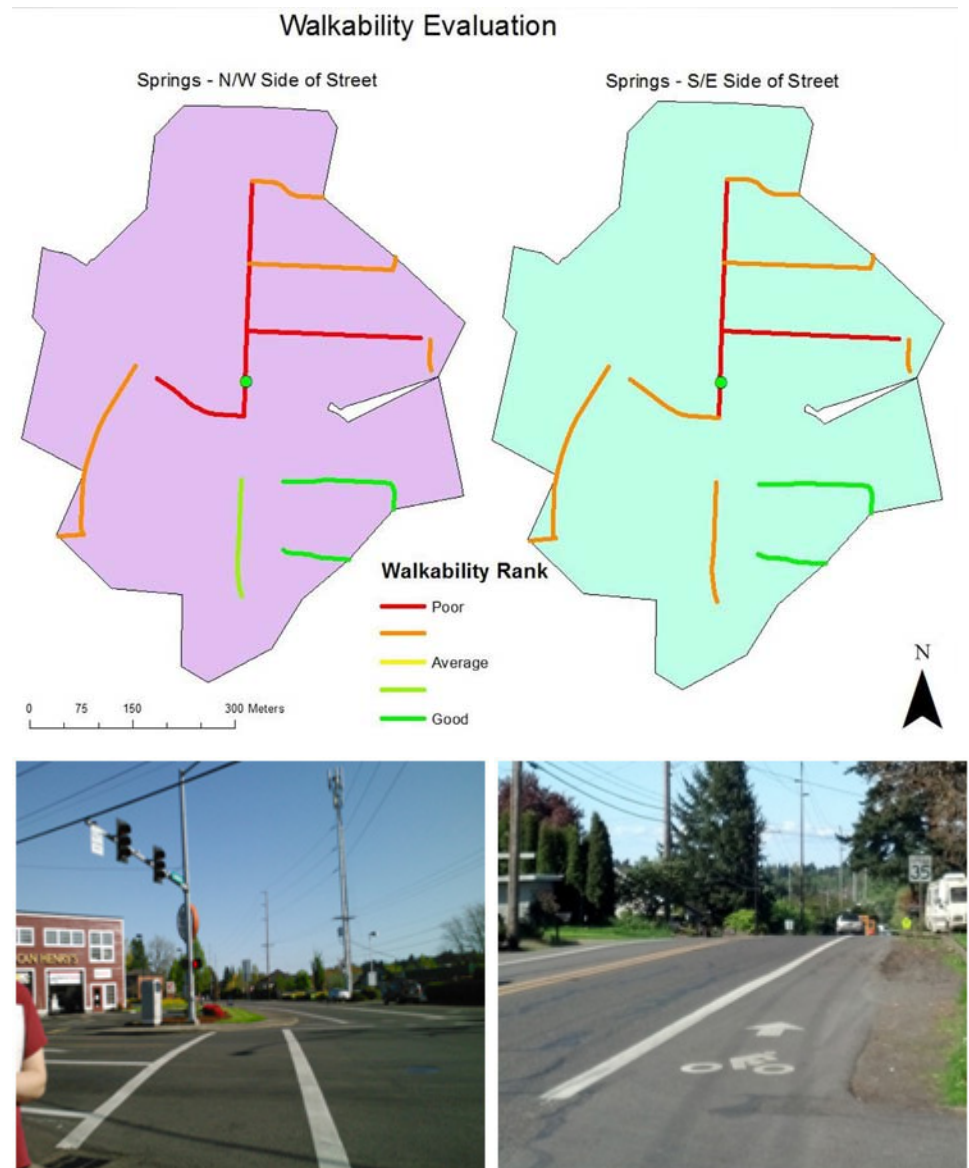

Markting Materials


Field Observations

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Clackamas County

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Walkability Evaluation

Springs - N/W Side of Street

Springs - S/E Side of Street

Walkability Rank
- Poor
- Average
- Good

0    75    150         300 Meters

N

## Windfield Village at Emeritus
Clackamas County

Windfield Village, an Emeritus senior retirement living facility, is located in Wilsonville, Oregon. It offers a vast array of retirement options, from independent living to hospice, Alzheimer's, and dementia care. Rates begin at $2,145 per month and are based on level of care-giving required. It is located in a community full of resources including: a library, a community/senior center, a free community bus program (Smart Bus), freeway access, and major hospitals being just thirty minutes from Portland.

According to the website, it is a community-based facility. This means that that there is a sense of community within the facility as well as a sense of connectedness to the community at large. Residents are encouraged to become involved in the neighboring community at different levels. These levels include service at local schools, volunteering at the library, or just being present at community events.

Windfield Village's philosophy is to provide any support their residents may need to live full and meaningful lives, while maintaining independence and dignity.

Amenities include an on-site pharmacy, pet-friendly apartments, fine-dining services, and many others. Social engagement is the community aspect within the facility, and includes a walking club, game club, Tai Chi, Yoga, dance
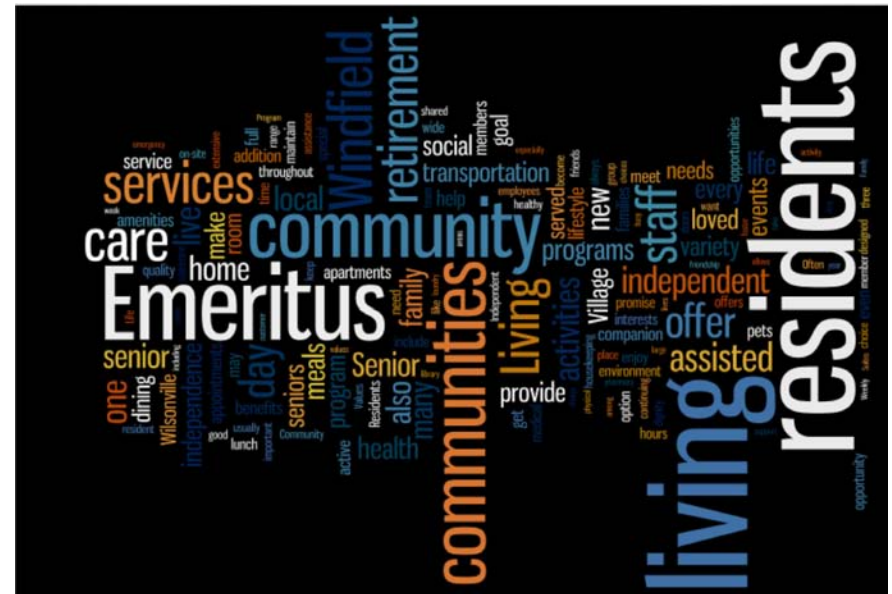


Markting Materials



Field Observations

classes, and guest speakers, to name a few. The following (or above) word cloud demonstrates a comprehensive view of Windfield Village, as documented by the management and faculty of the facility.

The field observations Wordle represents two researchers' experiences outside of the facility and the surrounding neighborhood. The neighborhood was residential, had very interconnected sidewalks and good transit access, was family-friendly, well-maintained and clean. These impressions were very similar to the descriptions provided in the public relations materials.

While the two retirement facilities in Clackamas County that were observed are alike with respect to the in-house services they provide, the most resounding difference, however, relates to the degree of connectivity offered in their respective locations. Milwaukie, Oregon, where The Springs at Clackamas Woods "The Springs" is located, has a sleepier residential feel. Its streets, sidewalks, and consumer destinations are less pedestrian-friendly compared to Windfield Village, located in Wilsonville, Or-

egon. The researchers' overall impression of the Wilsonville facility was that it seemed to be far more connected to its community resources in addition to being in close walking distance to places such as the library and community center. Wilsonville also provides a Smart Bus, which is a free transportation service offered by the city of Wilsonville. Their transit system is a great amenity for aging seniors who desire to travel independently. As such, the public relations materials of Windfield Village capitalize on these community assets as age-friendly attributes worth offering to its prospective newcomers.

Conversely, the field observations indicated that The Springs promotional material does not offer its surrounding community as an amenity for its target population. Instead, it makes the claim that its facility is rich in the services and staff it provides. They use the term "on-land cruise ship" to emphasize that a resident of The Springs would have all that they need without having to leave the facility. As such, they do not mention leaving the facility to participate in any potential activities in the

Milwaukie community as an option that would further enhance their retirement lifestyles. This retirement facility, however, may indeed be appealing to a particular segment in the senior community that prefers the comforts of being at home and would rather not travel outside of the facility. Whereas, Windfield Village clearly has the advantage of reaching those who are more inclined to take advantage of its outer community events and activities.

The walk scores that were developed for Windfield Village in the Walkability Evaluation illustrate the interconnected sidewalks and pedestrian-friendliness of the neighborhood. Most of the street segments received "good" or "average" scores, which is parallel to the researchers' positive impressions.
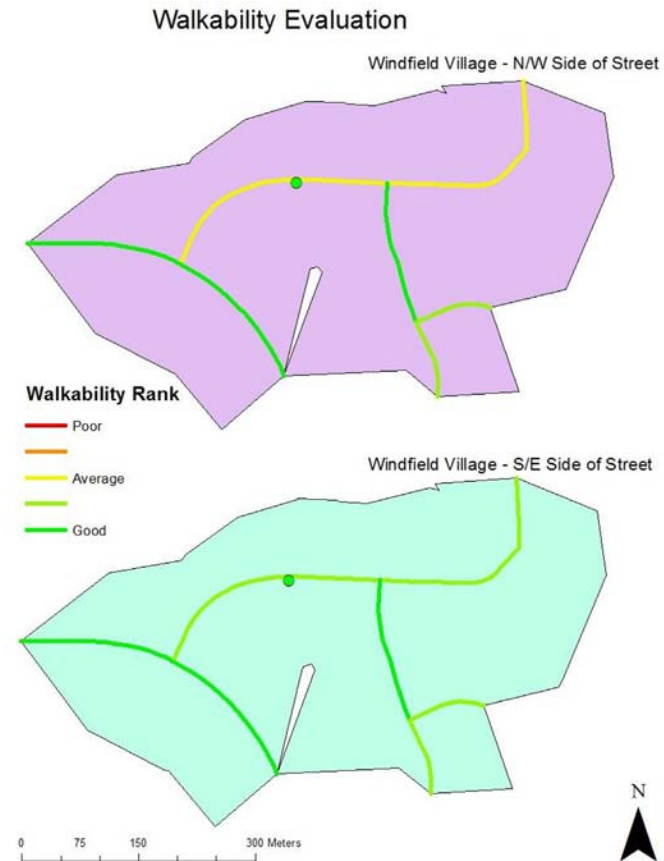
## Colonial House
Clark County

Colonial House, an assisted-living community, promotes independence while providing seniors with assistance in their daily routine. A valuable combination of services provides residents with the security of knowing that assistance, if needed, is right around the corner. It strives to find the right balance of health and wellness to avoid compromising an individual's dignity or independence.

Nestled between the Cascade Mountains and Pacific Ocean you will find southwest Washington's "best kept secret" the promotional materials suggest. Colonial House is located in Battle Ground, Washington, just north of the "majestic" Columbia River and only 19 miles from the "cosmopolitan" city of Portland, Oregon. According to the public relations materials, Battle Ground Village is amidst green rolling hills and fruit orchards and is a top honored sustainable lifestyle center featuring fine shops, state of the art community center and library. Colonial House is also in close proximity to several 50's style diners, antique shops, organic markets and comprehensive medical centers.

Host to north Clark County's traditional Harvest Days Festival and Classic Car show, Battle Ground is a community that combines a sophisticated, historic, comfortable atmosphere with small town warmth. The Colonial House





assisted-living facility is situated in a neighborhood of single family residential homes. Not only is the area walkable, with its relatively flat topography, it is safe, residing near the Battle Ground Police Department.

Field Observations

Battle Ground is located just north of Portland between the Gifford Pinchot National Forest at the base of the Cascade Mountains and the Pacific Ocean. The valley provides citizens and visitors with many opportunities to view the scenic landscape. It is easy to consider this area livable with its comfortable temperate climate and small town charac-

ter. The Colonial House is surrounded by a landscape of farms and ranches. Interstate 5 is accessible within 10 minutes and Main St is within a very walkable distance. Adjacent to the Colonial House is the Vancouver Clinic. On the other side, a small forest of thick, lush vegetation and tall trees. The landscaping surrounding the Colonial House is

well kept and the sidewalks are lined with trees, flower beds and manicured lawns. Low traffic volumes make the many services located nearby convenient and accessible. People in the area are friendly and helpful. An apartment community for seniors is located less than a block away which may offer opportunities for new friendships.

The Wordles clearly present a parallel between the facilities promotional materials and the researchers' field impressions.

The researchers' impressions, indicate that the Colonial House neighborhood is indeed walkable and has protective landscaping measures for pedestrian safety. Another important conclusion which can be drawn from the Walkability Evaluation figure (right) is that streets accessible to pedestrians are scarce and, in fact, run only along two main roadways.



Walkability Evaluation
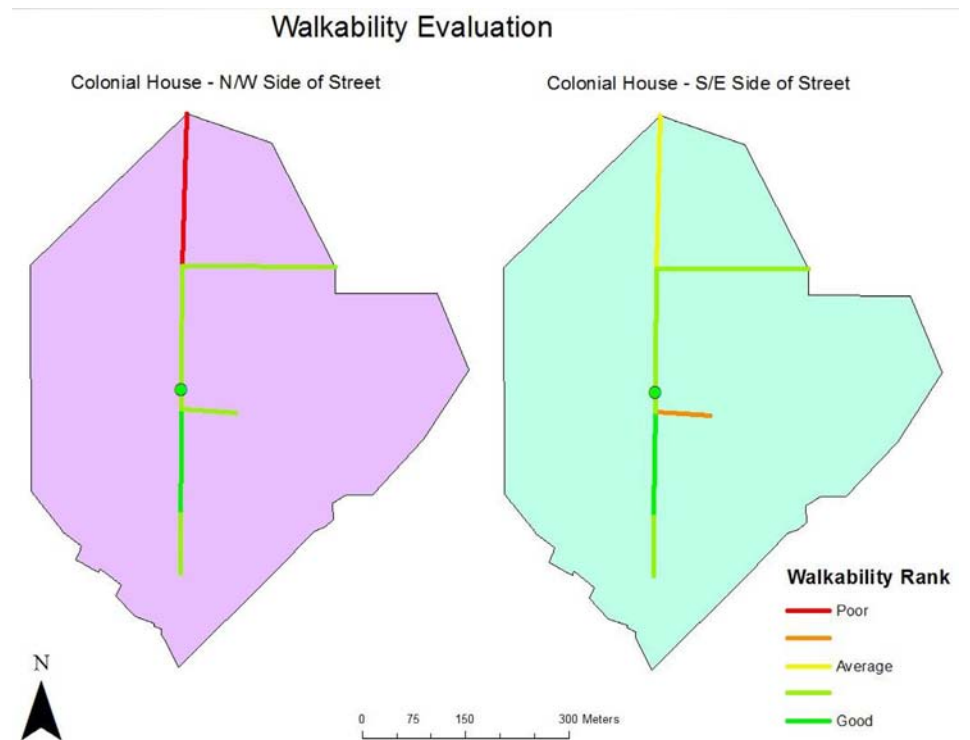
## Prestige Senior Living
### Clark County

Prestige Senior Living operates a number of assisted-living, and skilled nursing facilities in numerous western states. The Prestige Senior Living facility that was included in this study is located in Camas. Washington.

According to its website these facilities "offer luxurious housing options for active seniors. Our easy month-to-month rental programs keep you in control of your finances and help you enjoy life with new friends. If you want to maintain an independent lifestyle, but enjoy the relaxed atmosphere of a senior community, this is the place for you.

Our communities are about choices and convenience. We design all of our Senior Living communities with spacious and well-appointed living areas so that our residents can live how they want to live."

The facility's promotional materials focus on the quality of care, the sense of community and other amenites that are available inside of the facility. The researchers' observations of the area within a quarter mile of the facility, however, while noting the nearby park, otherwise suggest an unpleasant walking environment with automobile traffic and odors.



Markting Materials



Field Observations



Walkability Evaluation

Prestige - N/W Side of Street

Prestige - S/E Side of Street

Walkability Rank

— Poor
— Average
— Good

0  75  150  300 Meters

N

## Beaverton Hills
Washington County

Beaverton Hills, operated by Bonaventure Senior Living, is a retirement and assisted-living community located in Beaverton, Oregon that claims to be an "ideal home" where one can live an independent life. Its website states that their facility has great architecture, high ceilings, natural lights, and unequalled common areas for entertaining. Beaverton Hills offers choices, flexibility, independence, respect, good times and expert help and care. It claims to be different because the food is cooked from scratch, often with local and seasonal ingredients; the healthy and delicious food is often listed as a number one reason people choose to live there. It also offers top-notch building security and an advanced emergency call system. Residents can choose between comfortable and convenient studios or one-or two-bedroom apartments. Some of the amenities offered are an exercise area, on site barber shop, library, gardening are, billiard room, and outdoor patios.

According to its website, the facility is located in a peaceful and friendly neighborhood, minutes from excellent shopping, banking, restaurants, healthcare and more. Beaverton Hills invites residents to sit on the patio or go for a walk through beautifully landscaped gardens and a tranquil neighborhood. It also offers scheduled transportation that makes it easy "to stay on the go". Overall they consider their community as a place for fun, warmth, and care.

In contrast to the description offered by the website, the three researchers' overall impressions were that the facility was located in a residential but busy area with few sidewalks and various nearby amenities that are mostly inaccessible to elderly pedestrians. The facility appeared to be closed in and a bit dark with no people outside. There is one very busy street located about a block away from the facility and there are many businesses such as restaurants, barber shops, and healthcare services continuously lining both sides of the street. This main street has sidewalks on both sides but is not pleasant to walk on due to the fast-moving, noisy, and unpleasant emissions from congested traffic. There are also few crosswalks to get people safely to the other side of the street. The residential streets have very few sidewalks that often times stop and go. Some of the streets are a bit steep and narrow which makes it feel unsafe because one has to walk on the street and the cars that go by are often times speeding. Apart from not being pedestrian friendly, the neighborhood seemed pleasant overall with maintained yards and abundant trees and vegetation.
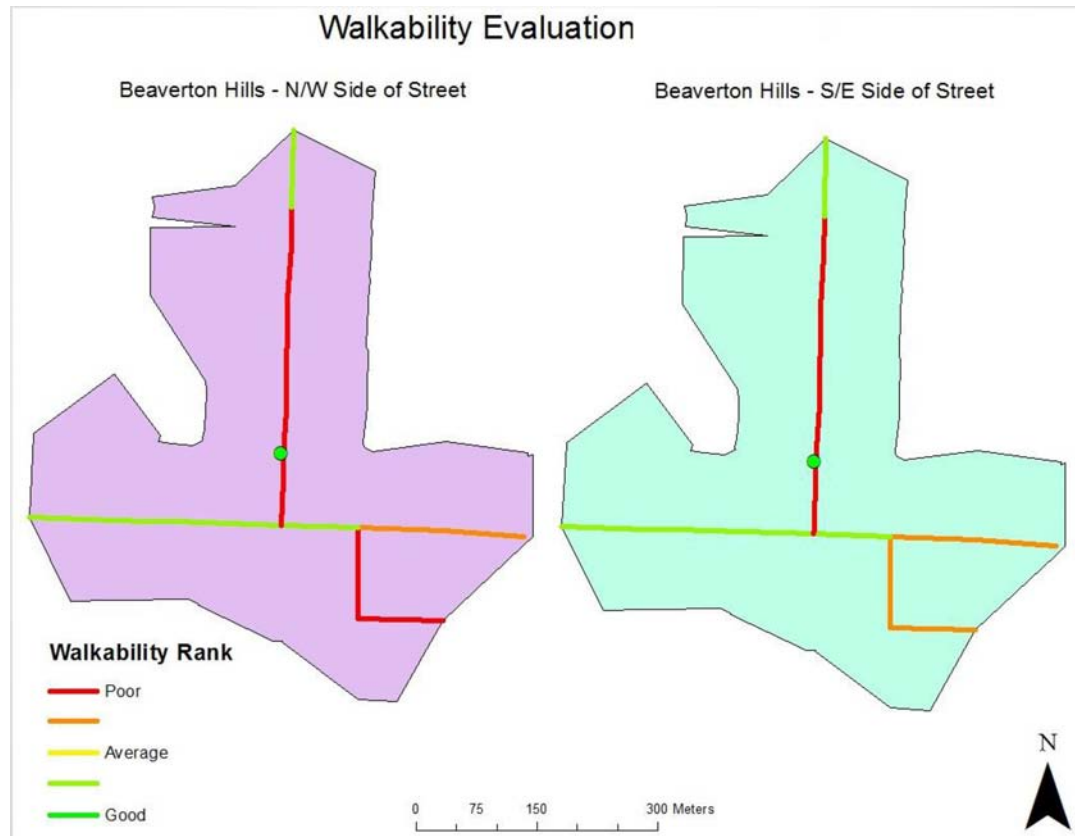
A comparison of the Wordle visualizations between the promotional material from the website and the field researchers' personal impressions of the facility and its neighborhood reveals that the words that come up most frequently are not very similar. The descriptions in the PR

material focus more on the quality of care and are all positive words such as "home," "care," "friends," "comfortable," "options," and "community." They are trying to sell their facility as a welcoming place that is comfortable, offers many options and feels like a home. It does not focus at all on the neighborhood or the amenities offered outside the facility. In contrast to this, the words that came up most often as descriptors from the field researchers' impressions were mostly negative and focused more on the surrounding neighborhood with the most frequent words being, "un-walkable", "residential," "inaccessible" and "depressing". The descriptions also focused on the park next door and the abundance of amenities on the busy street nearby.

The overall impressions were that the facility was located in a residential and busy area with few sidewalks and various nearby amenities that are mostly inaccessible. It is interesting to note that the PR material did not emphasize or describe the neighborhood in any detail and this is because the neighborhood is not very walkable or age-friendly.

The walk scores that were generated for the street segments within a quarter mile service area around the facility support the researchers' impressions that the surrounding neighborhood is not pedestrian friendly, as shown in the Walkability Evaluation below. Many of the street segments were rated



Markting Materials



Field Observations

as 'poor' or 'average' and this is mainly because they lack sidewalks and pedestrian crossing signals or generally feel unsafe to walk along.



## Walkability Evaluation

Beaverton Hills - N/W Side of Street

Beaverton Hills - S/E Side of Street

**Walkability Rank**

— Poor
— Average
— Good

0    75    150        300 Meters

N

## Cornell Estates
Washington County

Cornell Estates is a retirement and assisted living facility that is located in the middle of downtown of Hillsboro, Oregon. Based on the website's description, it provides an uplifting, warm, and inviting atmosphere, creating a comfortable, enriching assisted living experience that promotes independence. Staff members are available 24 hours a day to assist, interact, and greet residents. Residents are encouraged to interact with their neighbors and get involve through events and activities that are been offered. Cornell Estates is a locally owned and operated family business which has developed into a quiet, unique and genuine community.

According to public relations material, residents have access to major shopping centers, restaurants, churches, parks and recreational centers, bookstores, medical facilities, and door-to-door public transportation. Cornell Estate includes one-bedroom, two-bedroom, and studio units, each with private bathrooms. Amenities include delicious and nutritious breakfast, lunch, and dinner, housekeeping services, including fresh bed and bath linen, cable television, barber shop, transportation services, and an exciting array of entertainment, arts and crafts, and education programs through the "Fullness of Life" program.

Markting Materials



Field Observations
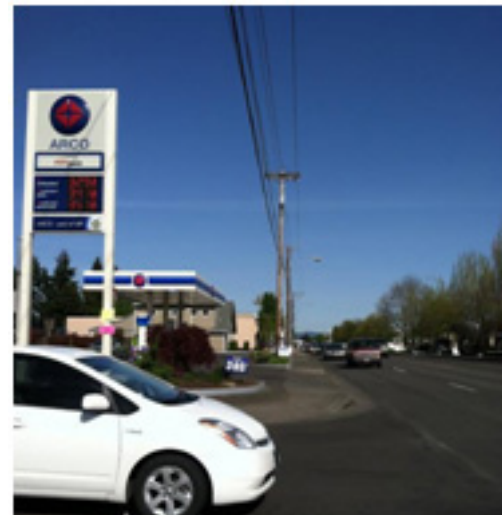
According to the researchers' observations, residents have easy access to many nearby stores, banks, and public transportations. It seemed to be a calm, nice, and clean but relatively friendly neighborhood with some missing-sidewalks and no parks nearby. There are other concerns such as the challenge of residents to interact with their neighbors due to a major amount of businesses, busy traffic, and lack of walkable sidewalks.

The main concern for this facility is the lack of sidewalks around the residential streets. The Walkability Evaluation map shows the street segments immediate to the facility as "good" or "average" but the street segments in the more inner residential streets are rated as "poor". Overall the walk scores are in line with the re-

searchers' impressions of the neighborhood and point to the variation of pedestrian-friendliness within the surrounding neighborhood.

Cornell Estates and Beaverton Hills were compared for age friendliness. Beaverton Hills is described as a facility with great architecture, offering exceptional care and assistive services from staff, and a top-notch security and emergency call system. Furthermore, it also provides comfortable and convenient studios, one-or-two bedroom apartments. But based on the researchers' impressions, the surrounding neighborhood is un-walkable, inaccessible, closed in, and unsafe, with busy-streets, and missing sidewalks. Where-as, Cornell Estates was described as fairly friendly neigh-borhood with easy access to public transportation, stores, churches, and medical facilities. Even though both Beaver-ton Hills and Cornell Estates are located in the central ar-eas of Beaverton and Hillsboro respectively, Beaverton Hills was located in a less age-friendly area than Cornell Estates and the impressions were more negative.
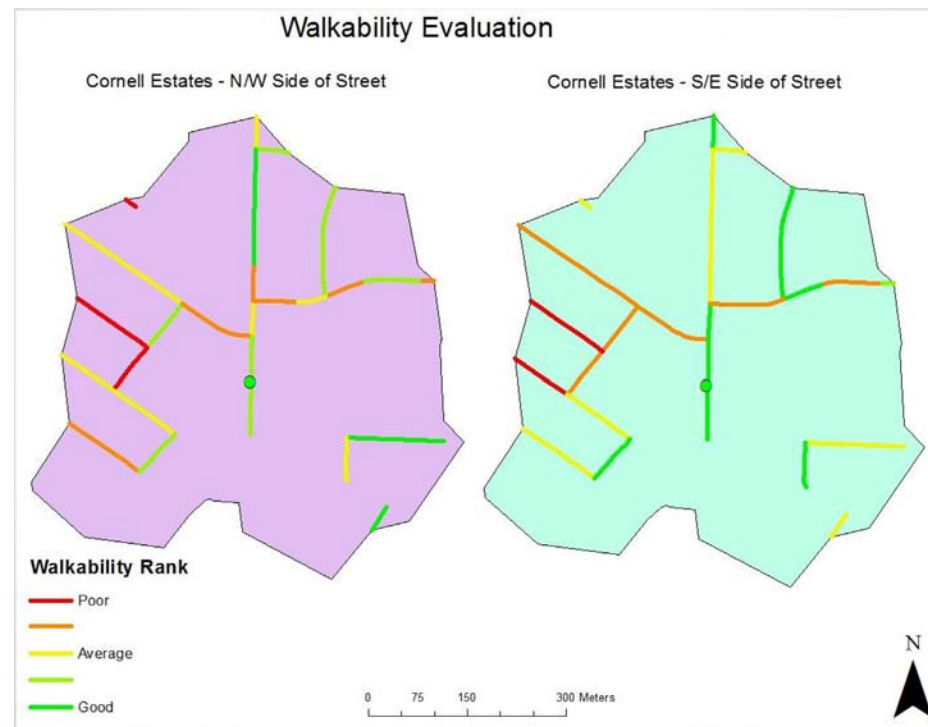
# Findings: Overall Comparisons

The analysis of the walkability of the quarter-mile street network surrounding each of the sites indicates clear differences between these sites. It is notable that Windfield Village in Wilsonville, Oregon and Colonial House, in Battle Ground, Washington rate the highest in the objective walkability analysis and the subjective visual attractives assessment. Both facilities are centrally located in relatively small cities in the Portland-Vancouver metropolitan area: Wilsonville had a population of 19,509 in 2010 and Battleground had a population of 17,571 in 2010.

The two facilities that ranked most poorly in walkability, Beaverton Hills and the Springs at Clackamas Hills, are both located in typical suburban areas that were designed around the automobile (close to highways), lack sidewalk infrastructure, and are distant from walkable town or neighborhood centers. These facilities may cultivate a strong sense of community within their structures but lack opportunities for residents to interact with the surrounding neighborhoods without the use of an automobile.
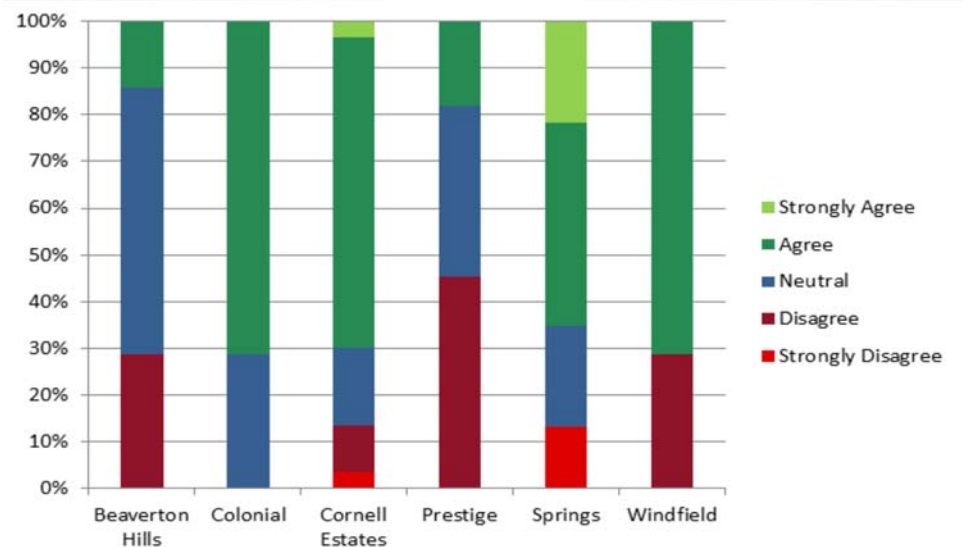


Continuous Sidewalks



Overall Walkability Evaluation
(Site Comparison: Average Street Segment Score for 1/4 Mile Service Area)
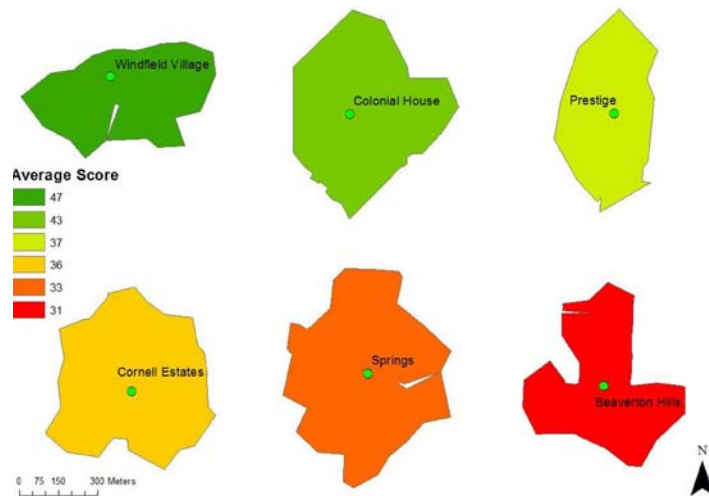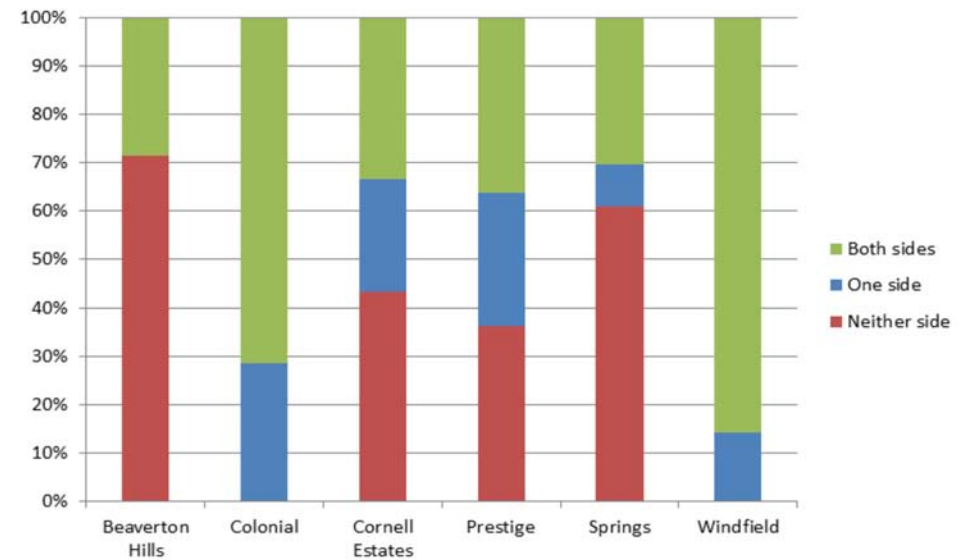


Visual Attractiveness

# Concluding Observations

In the cases presented in this study, when a facility's promotional material focuses on the amenities included within the facility rather than throughout the community, the surrounding neighborhoods were either not pedestrian friendly, or lacked some major components which would be considered age-friendly. However, it was observed that when a facility does focus on the amenities provided by the community at large, the impressions of those touring the neighborhoods is very similar to that given by the facility. For example, if a facility has a nearby park, this will certainly be included in the attractions section, while if it did not, the attractions section may speak about an inner courtyard, or some sort of lawn surrounding the facility.

It is notable that these facilities' websites include little information about pricing. This is important because developable land closest to well-developed sidewalk infrastructure and neighborhood amenities tend to be more costly than those in less developed suburban or rural areas. More research is needed to explore the connections between the cost of land and the cost of rent in assisted living facilties. However, it is noteworthy that the two facilities that had the highest walkability scores in this study were located in smaller cities where land may be less expensive than land in Portland's central neighbohoods.

## Next Steps

As of yet, the Portland metropolitan region lacks a unified plan to support its aging population in the coming decades. Though location-specific initiatives such as Clark County's Age Readiness Plan have been introduced, action has largely been siloed at the county level, and stakeholders in the region will need to achieve a new level of cooperation and communication in order to effectively implement age-friendly strategies.

Our project encountered limitations in quantifying how age-friendly a site is, and better metrics and methods should be pursued to evaluate accessibility and surrounding amenities. In addition, other questions emerged from this project that should be addressed in future research: Will elderly residents in facilities that are sited in well-connected neighborhoods be willing to take advantage of the opportunities available to them? What actions can be taken to create strong ties between future generations and the growing number of seniors who hope to age in place in the current homes and neighborhoods? How can society foster more intergenerational interactions? How can governments organize to act cohesively in support of age-friendliness programs? Could a data-analysis tool be developed that is tailored to age-friendly criteria and caters to elderly citizen?