AGING IN PLACE: A RESEARCH ON DESIGN ISSUES, PRACTICES, AND SUPPORT SYSTEMS FOR SENIOR LIVING

A CREATIVE PROJECT
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BY
KRISTY M. HATTON
ADVISOR – DR. THELMA LAZO-FLORES, PHD

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ABSTRACT


STUDENT: Kristy Hatton

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The mortality rate for the senior population increases when their place of residence transitions into a space that lacks ease of movement and familiarity. Current senior housing options include retirement communities, assisted living, and nursing homes. Recent trends like ‘smart growth living’ were developed to deinstitutionalize the aging in place concept in communities to increase their sense of comfort, privacy, and independence. However, the process of institutionalization can also be interpreted as a service notion or a particular strategy for physical planning. Likewise, it connotes a negative perception when seniors are living in the community and segregated from mainstream society through intolerances on attitudes, lack of safety, and inadequate support to facilitate integration. Given the illustrated shortfalls in current typologies of senior housing, this creative project investigated the design context of aging in place with particular focus of using one’s own home to identify issues, practices and innovative support systems. The aging in place approach provides various benefits to the senior population as they live in the comfort of their re-designed existing homes. Good
practices associated to modifications indicate the removal of architectural barriers and increase of safety measures to allow seniors to remain in their homes and retain full independence, control, flexibility of movement, sense of purpose, and preservation of integrity. The purpose of this creative project was to identify the attitudes toward senior citizens through published literature, study several aging in place models, and examine the significance of place theory in association to senior citizens. The methodology for this project utilized the methodology known as evidence based design, visual mapping of products related to the senior population, and a residential housing assessment using post-occupancy evaluation charts. The results of this creative project serve as an additional blueprint for studies on aging in place. The identified prevalent issues were translated into workable guidelines that may possibly enlighten professional designers and design students. Moreover, the gathered information of good practices may potentially inform healthcare specialists and other family members to understand further the positive impact of smart living for seniors. Lastly, the study also increases the level of awareness on design issues for elder-friendly environments and communities, and establishes the benefits of aging in place that may possibly decrease mortality rate among seniors.
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CHAPTER 1

INTRODUCTION

In the year 2030, approximately 80 million Americans or 20 percent of the population are projected to be sixty-five years or older (Bookman & Kimrel, 2011). There is a broad array of housing options available to seniors including retirement communities, assisted living, nursing homes and specialized facilities that provide round-the-clock nursing care (Saisan & White, 2012). These options can integrate innovative technological devices to assist with monitoring safety and security measures. However, these options can have any number of the following shortfalls; affordability, unsuitability, overcrowding, poor neighborhood issues and institutionalization attributes (“Housing Problems And,” 2013). In addition, the transition from a familiar and private environment to an environment of newness and higher density can evoke feelings of fear and insecurity (Kopec, 2006).

Deinstitutionalized trends became popular to remove any restrictive and regimented environmental attributes in order to increase their sense of comfort, privacy and independence. However, a large-scale, cross sector initiative is needed to create an age-friendly society including coordinating efforts at the national, state, and county levels and to support all citizens from diverse cultures and income levels as they age (Bookman
& Kimbrel, 2011). With the numbers of older Americans rapidly growing ever larger, the landscape of elderly care in the United States is changing (Bookman & Kimbrel, 2011). People are now living longer and healthier lives causing an alarming change in caring for the senior population. Other national demographic shifts related to delayed marriage and childbearing for young adults, decreased family size, and changes in family composition and structure affects how and who is caring for the elderly (Bookman & Kimbrel, 2011).

According to the 2000 AARP survey, 92% of 65 to 74 year olds and 95% of those age over 75 living in single family detached homes, agree that they wish to remain in their home as long as possible (Dye, Willoughby, & Battisto, 2011). The concept of aging in place in one’s own home offers seniors the advantages of being in a familiar place in addition to knowing neighbors and their immediate community (Saisan & White, 2012). Simple to complex home modifications can remove physical barriers and increase safety measures in order for seniors to remain living independently longer (“Seniors Want To,” 2012). Varying from one senior to another, aging is an unavoidable constant process involving the steady decline of organ functions and body systems. In this creative project, the terms aging, elderly, senior population, and seniors are used interchangeably to describe this growing sector of our society.

Before developing guidelines for seniors’ aging in place in one’s own home, it is imperative to understand their activities, well-being needs, and the prevalent shortfalls in current senior housing typologies. The activities and needs of seniors compared to younger and other equally senior groups vary. However, such differences amidst multiple parameters like a little more light, heat, assistance in ambulation, and
requirements for fire protection (Burgun, 1983, p. 64). Every relative, friend, and neighbor will discover the aging process as a normal phase of human life, where the impact of time on our bodies will unavoidably result in physical changes. Moss (1992, p. 13) also lists the most common physical changes including disorientation, impaired judgment, muscle weakness, paralysis, poor coordination, balancing difficulties, mobility impairment, sensory-perceptual deterioration, urologic changes, and sleep disorders. Since the number and degree of physical adaptations vary among senior individuals, there cannot be an absolute and universal housing solution.

Quality of life is a multidimensional evaluation of an individual's current life circumstances in the context of the culture in which they live and the values they hold, and is primarily a subjective sense of well-being encompassing physical, psychological, social and spiritual dimensions (Hass, 1999). Factors that play a role in quality of life vary according to personal preferences, but they often include family life, health and safety. Quality of life is also perceived as the ability to enjoy and take part in life, and feel that the commitment to participate has a meaning (Perez, Fernandez-Mayoralas, Rivera, & Abuin, 2001). A person’s home is more than a symbol of quality of life considering it covers one of our basic needs, and points to accommodation indicating benefits for one’s physical health and psychological welfare (Perez et al., 2001). Some of the activities and needs of seniors are to have housing designs that provide them or permit them to have security, independence, social involvement, and privacy (Burgun, 1983). This can be achieved if the environment is adapted to remove architectural barriers and increase safety measures in interior areas including the kitchen, bathroom, bedroom, indoor stairways, exterior pathways, and entrance stairs (Moss, 1992).
**Statement of the Problem**

The 2011 Profile of Older Americans (2012) states that the population 65 and over has increased from 35 million in 2000 to 40 million in 2010 (a 15% increase) and is projected to progressively increase to 55 million in 2020 (a 36% increase for that decade). There has been a constant notion in studies that the majority of the senior population prefers to age in their own homes/communities (McDonough & Davitt, 2011). Those who are not able to age in their own homes, and are therefore institutionalized, become financial burdens on the current healthcare system, and put increasing strain on Medicare and Medicaid (McDonough & Davitt, 2011). Social support from friends, family, and the community is especially important to aging in place, but is becoming more irregular due to an increase in mobility and changes in family structure and work patterns (Dye et al., 2011). Identification of aging in place issues, practices and innovative support systems for seniors is a viable research problem today for designers due to the fact the increasing U.S. group of senior citizens. Unfortunately, they are far less informed about the reality of providing elders with personal care, health care, and social support (Bookman & Kimbrel, 2011).

**Purpose of the Project**

The main purpose of this mixed methods creative project is to further illuminate the concept of Aging in Place design for the creation of guidelines in retro-fitting homes owned by the senior population. The design problem also addresses multiple objectives which are enumerated as follows: 1) identify and evaluate the identity and public perceptions toward the senior population, 2) categorize the common attributes, activities,
and needs for the senior population, 3) examine the senior housing typologies and current trends, 4) classify support systems for the senior population, 5) recognize the issues in a typical senior’s home in order to develop aging in place design guidelines for retro-fitting purposes, and 6) study the theories associated to aging in place models.

**Rationale**

In the past few years, there have been a number of technological advancements that were designed specifically with the purpose of helping seniors stay in their homes longer (“New Technology Helps,” 2013). The use of technology can help promote successful aging in place by integrating a range of monitoring and supportive devices including emergency detection and response, pill dispensers, safety sensors, security monitoring and assistance, and social interaction (“New Technology Helps,” 2013). However, designers have very limited access to aging in place knowledge which is necessary to provide seniors with the appropriate personal care, health care, and social support. The main purpose of this mixed methods creative project is to further illuminate the concept of Aging in Place design for the creation of guidelines in retro-fitting homes owned by the senior population. The design problem also addresses multiple objectives which are enumerated as follows: 1) identify and evaluate the identity and public perceptions toward the senior population, 2) categorize the common attributes, activities, and needs for the senior population, 3) examine the senior housing typologies and current trends, 4) classify support systems for the senior population, 5) recognize the issues in a typical senior’s home in order to develop aging in place design guidelines for retro-fitting purposes, and 6) study the theories associated to aging in place models. This
information will be identified through the review of published literature and digital resources, as well as analyzing the common senior housing typologies for appropriate adaptations. It is anticipated that the results of this creative project will serve as an additional blueprint for studies on aging in place; identify current issues and translate them into workable guidelines that could enlighten professional designers and design students; and collate good practices that will inform healthcare specialists and other family members to understand further the positive impact of smart living for seniors. Further the study could also increase the level of awareness on design issues for elder-friendly environments and communities, and establish the benefits of aging in place that may possibly decrease mortality rate among seniors.

Assumptions

The following assumptions were made in the development and implementation of the creative project:

- The senior population shares common activities and needs.
- The perceptions toward the senior population are mostly negative.
- Seniors are provided full care in institutionalized settings.
- The research will find innovative technologically advanced devices to monitor and support seniors aging in place in their own homes for safety, security, and social interaction measures.
The senior population has an interest in learning technologically advanced devices to increase their safety and independence while aging in place in their own homes.

The most common aging in place home typologies owned by seniors are identified as the Ranch, Cape Cod, Bungalow, and Craftsman.

The research will provide adequate information on aging in place to develop a design guideline for retro-fitting homes owned by seniors.

The senior population can afford the design modifications necessary to allow them to remain in their homes and age in place.

The creative project will increase the level of awareness on design and safety issues of retro-fitting homes owned by seniors to achieve a better sense of aging in place.

Definitions

For the purpose of this creative project, the following definitions will be used:

1. **Aging** – gradual change in a human being that leads to increased risk of weakness, disease, and death. It takes place in a cell, an organ, or the total organism over the entire adult life span. There is a decline in biological functions and in ability to adapt to metabolic stress. Changes in organs include the replacement of functional cardiovascular cells with fibrous tissue. Overall effects of aging include reduced immunity, loss of muscle strength, decline in memory
and other aspects of cognition, and loss of color in the hair and elasticity in the skin (“Aging,” 2013).

2. **Aging in Place** – is used to describe a senior living in the residence of their choice as they age, while being able to have any services or other support they might need over time as their needs change, for as long as they are able (“What Is Aging,” 2013).

3. **Assisted Living** – a system of housing and limited care that is designed for senior citizens who need some assistance with day-to-day activities but are not sufficiently incapacitated to require care in a nursing home and that usually includes private quarters, meals, personal assistance, housekeeping aid, monitoring of medications, and nurses' visits (“Assisted Living,” 2013).

4. **Bungalow Style** – a derivation of the Indian house type, notably popular especially during the first quarter of the 20th century, usually having one and a half stories, a widely bracketed gable roof, and a multi-windowed dormer and frequently built of rustic materials (“Bungalow,” n.d.).

5. **Cape Cod Style** – a compact rectangular dwelling type of one or one-and-a-half stories usually with a central chimney and steep gable roof (“Cape Cod,” 2013).

6. **Craftsman Style** – also known as an arts and crafts style house type, promotes a simplification of life, beauty through design, and creativity. It is typically one story tall and has a low, gentle sloping roof (Smith, 2013).
7. **Elderly** – another term for being old, past middle age, senior citizen. Factors include age, health, activity level, ability to think and reason, and independence level (“Elderly,” 2013).

8. **Evidence Based Design** – an informed approach to design that intentionally bases decisions on quantitative and qualitative research. It is systematic inquiry that not only creates knowledge but also solves design problems (Nussbaumer, 2009).

9. **Health Care Institutions** – a public or nonprofit organization that provides health care and related services, including but not limited to the provision of in-patient and out-patient care, diagnostic or therapeutic services, laboratory services, provision of medicinal drugs, nursing care, assisted living, elderly care housing, including retirement communities, nursing homes, and assisted living (“Health Care Institutions,” n.d.).

10. **Modifications** - the making of a limited change in something; also the result of such a change (“Modification,” 2013).

11. **Nursing Home** – private residential institution equipped to care for persons unable to look after themselves, as the aged or chronically ill (“Nursing Home,” n.d.).

12. **Perception** – the capacity of apprehending by means of the senses or of the mind, cognition, and understanding (“Perception,” n.d.).

13. **Quality of Life** – is a multidimensional evaluation of an individual's current life circumstances in the context of the culture in which they live and the values they
hold and is primarily a subjective sense of well-being encompassing physical, psychological, social, and spiritual dimensions (Hass, 1999).


15. Retirement Community – a group of houses in a suburban area or a town designed primarily for retired persons (“Retirement Community,” n.d.).

16. Senior Citizen – an elderly person particularly one who has retired (“Senior Citizen,” 2013).

17. Typology – study of or analysis or classification based on types or categories (“Typology,” 2013).

Summary

A senior’s own home retrofitted for aging in place provides a quality of life that has no substitute in an institutional setting. It is crucial for the designers to gain aging in place knowledge to provide elders with personal care, health care, and social support. The main purpose of this mixed methods creative project is to further illuminate the concept of Aging in Place design for the creation of guidelines in retro-fitting homes owned by the senior population. The design problem also addresses multiple objectives which are enumerated as follows: 1) identify and evaluate the identity and public perceptions toward the senior population, 2) categorize the common attributes, activities, and needs for the senior population, 3) examine the senior housing typologies and
current trends, 4) classify support systems for the senior population, 5) recognize the issues in a typical senior’s home in order to develop aging in place design guidelines for retro-fitting purposes, and 6) study the theories associated to aging in place models. It is anticipated that the results of this creative project will serve as an additional blueprint for studies on aging in place; identify current issues and translate them into workable guidelines that could enlighten professional designers and design students; and collate good practices that will inform healthcare specialists and other family members to understand further the positive impact of smart living for seniors. Further the study could also increase the level of awareness on design issues for elder-friendly environments and communities, and establish the benefits of aging in place that may possibly decrease mortality rate among seniors.
CHAPTER 2

REVIEW OF LITERATURE

The main purpose of this mixed methods creative project is to further illuminate the concept of Aging in Place design for the creation of guidelines in retro-fitting homes owned by the senior population. The design problem also addresses multiple objectives which are enumerated as follows: 1) identify and evaluate the identity and public perceptions toward the senior population, 2) categorize the common attributes, activities, and needs for the senior population, 3) examine the senior housing typologies and current trends, 4) classify support systems for the senior population, 5) recognize the issues in a typical senior’s home in order to develop aging in place design guidelines for retro-fitting purposes, and 6) study the theories associated to aging in place models. This chapter will present a review of the literature that describes the aging in place concept and design guidelines for retro-fitting four common housing styles for aging in place in one’s own home. Identity and public perceptions of the senior population along with their attributes, activities, and needs are also discussed. This review will also cover senior housing typologies, current trends and support systems for the senior population. Finally, the issues of aging in place in one’s own home and the theories associated to aging in place models will be discussed.
Aging in Place Concept and Design Guidelines for Retro-Fitting Homes Owned By Seniors

Aging in place in a retro-fitted home is an emerging consideration to enable people to stay in their own homes as they grow older by making available the social support, health care and home maintenance services they need to achieve a better quality of life (“About The Center,” 2011). This option allows seniors to stay in a residence of their choice as they age while adding various degrees of home care services. According to the U.S. Census Bureau 2005, 85% of the senior population own their own homes and are “free and clear” of mortgages (Sabia, 2008). Seniors are more apt to staying in a home they already own because it allows them to have more financial freedom. Studies have found that most seniors prefer to hold on to housing equity to insure against costs of any unanticipated future health problems or against other unexpected losses in income (Sabia, 2008). This option is typically the most cost effective model for the senior population.

Another advantage to aging in place in one’s own home is the tendency to maintain or improve their quality of life. The home is a physical built structure but also operates largely interconnected to social and symbolic levels (Wiles, Leibing, Guberman, Reeve, & Allen, 2011). Seniors have a connection to the place that enables a sense of meaning and security. This concept is also extended beyond the physical barriers of the home and into the community. To assist the aging in place concept, consideration needs to be given to transportation, recreational opportunities, and amenities that facilitate physical activity, social interaction, cultural engagement, and ongoing education (Wiles et al., 2011).
On the other hand, aging in place does present some disadvantages to the senior population too. As the inevitable physical changes occur, there are specific areas in the home and community where seniors are faced with physiological limitations and architectural barriers. The architectural barriers can be removed with the expense of modifications. A few examples of simple and low-cost adaptations are handrails in hallways, easy-to-reach work and storage areas in the kitchen, lever handles on doors and grab bars in the bathroom (Wagner, Shubair, & Michalos, 2010). The cost could sometimes pose as an issue for seniors combined with the physical ability to perform the modification. Some more expensive modifications involve adapting the structure to include widening the doorways and increasing the space for wheelchair maneuvering (Wagner et al., 2010).

Common Housing Styles for Aging in Place in One’s Own Home

Since approximately 65% of seniors in 2009 own their home free and clear of mortgages (“A Profile Of Older,” 2012), aging in place in one’s own home is the residential preference for seniors. The majority of seniors live in homes that are 40 or more years old. In 2007, the median construction year for homes owned by seniors was 1970, with the average purchase price of $49,000 resulting in a 2009 median value of $150,000 (“A Profile Of Older,” 2012). Common housing styles for seniors aging in place in their own home are the Ranch, Cape Cod, Bungalow, and Craftsman.

The Ranch house style (Appendix A, Figure 1) is one of the most ubiquitous icons of American life and was popular from 1935 to 1980 (“Home Styles,” 2011). The most identifiable characteristic a Ranch house typology offers is a long, low, ground hugging
profile of a single story structure. With influences from the Spanish Colonial and California Bungalow, the Ranch provides an open floor plan for easy living within the modern American lifestyle (“Home Styles,” 2011). There are also evident exterior features including natural materials of brick, wood, or stucco, a long low roof line, an attached garage, a large picture window in the front of the house, and sliding doors leading to a patio area (Guerra, 2013). Seniors prefer a single story Ranch style home because there are typically no stairs in the home unless built with a basement and the open interior space makes cleaning easier (Guerra, 2013).

Another common housing style for seniors aging in place in their own home is the Cape Cod (Appendix A, Figure 2). It is apparent in almost every American neighborhood and was most popular from 1920 to 1960 due to its small size and affordability (“Home Styles,” 2011). The appeal of the Cape Cod is described as a simple, charming rectangular footprint with a steep gabled roof, minimal ornamentation, and a centered entrance with shuttered windows on each side (“Home Styles,” 2011). The exterior features display a side gabled roof with narrow eaves, wood shingles, dormers, and wood clapboard and shingle siding treatment (“Home Styles,” 2011). These inexpensive houses were excellent for soldiers returning from World War II and are also ideal for aging in place seniors because they are space-efficient and economical in building cost.

A third common senior housing style is the Bungalow (Appendix A, Figure 3) featuring an efficient floorplan, connecting rooms without hallways, and a low pitched roof with broad eaves (“Home Styles,” 2011). In addition, the entry typically opens directly into the living room and has a large front porch that creates an outdoor room.
The Bungalow style was built from the 1900 to 1935, influenced from the Arts and Crafts Movement, and was popular because of its low cost of construction and low profile. Versions of this style can be found all over the United States today. Bungalows allow seniors to age in place successfully because they are low maintenance, offer privacy, ease of mobility, and easy to clean.

The last common senior housing style is the Craftsman style (Appendix A, Figure 4) which also was influenced from the Arts and Crafts Movement. Built from the 1900 to the 1930, the Craftsman style is unique due to its handcrafted quality of a true craftsman using natural materials (“Home Styles,” 2011). Characteristics include one to two stories, low-pitched roof, broad eaves, knee braces, dormers, open floor plans, substantial covered porches, built-in cabinetry, and craftsman-designed hardware, lighting, and tile work (“Home Styles,” 2011). Incorporating nature into the design, the Craftsman is very common to identify largely due to the unique custom features such as exposed ceiling beams, archways, wooden architectural trims, and exposed shelving units. Seniors who remain in this type of housing style values the high quality of materials and craftsmanship in addition to the low maintenance.

**Identity and Public Perceptions on the Senior Population**

There are different terms for describing someone who is experiencing the last phase of human life. Some prefer the term “senior”, “senior citizen”, “older adults,” “elderly”, “old”, or “aged”. There are variances between the formal definitions of these terms. Dictionary.com (n.d.) states a senior is a person older than another. However, the term old is described as someone far advanced in the years of one’s life; of or pertaining
to the latter part of the life or term of existence of a person (“Old,” n.d.). Some people define this population according to their physical health issues, while others define it only by chronological age. These definitions do not give a thorough explanation or profile of someone who is a part of the senior population. This is because the terms do not have the same meaning in all societies.

Where do we draw a line between someone who is middle-aged and elderly? In the United States, an elderly person is classified as over the age of 65, at which point citizens are eligible for federal benefits such as Social Security and Medicare (Bator, 2012). Likewise, the World Health Organization has no standard, other than noting that 65 years old is the commonly accepted definition in most core nations. But it suggests a cut-off somewhere between 50 and 55 years old for semi-peripheral nations, such as Africa (“Definition Of An Older,” 2013). An elderly person’s profile can also demonstrate aging signs with psychological, sensory, cognitive, and personality changes.

In the last forty years, attitudes towards aging seniors have rapidly improved. However, research shows that in a world with high demands for geriatric care, health care professionals, and in particular physicians tend to exhibit negative attitudes toward the elderly (Zambrini, Moraru, Hanna, Kalache, & Nunez, 2008). This fact was unexpected since most medical programs include courses specifically related to geriatric care. The origins of personal attitudes are far more complex than the current trends and relate to personal experiences, specific training, and lack of exposure (Zambrini et al., 2008).

The reason why the public has negative perceptions and attitudes toward seniors goes back to our younger years. People were taught ageism, to equate old age with disability and loss of competence resulting in an underlying fear to grow old.
(Leavenworth, 2012). This unconscious behavior is considered stereotyping and discrimination. People tend to only remember and focus on the negative aspects of the aging process. The senior population is a very diverse group and does not want to be viewed as a problem. The North American culture embraces its youth where alternatively, China views the elderly as a vault full of wisdom and tradition. These public misconceptions will change as the baby boomers age since they are more knowledgeable about their health, intermediations across age groups, and medical advances.

**Attributes, Activities, and Needs of the Senior Population**

In order to age successfully, seniors need to maintain a healthy diet, get adequate sleep and exercise, have a social network, and engage in enjoyable activities and projects (Kopec, 2006). However, all these factors combined cannot prevent the process of aging and experiencing major physical changes. The notable declines in physical changes can be either gradual or immediate. Moss (1992) indicates that risk factor categories include cardiovascular, neurologic, musculoskeletal, urologic, sleep disorders, medications, and history of falls. These changes can cause a person to have various degrees of disorientation, impaired judgment, muscle weakness, paralysis, incoordination, balancing difficulties, mobility impairment, and sensory-perceptual deterioration (Moss, 1992).

Every person ages differently according to the genetic make-up and the damage subjected to the body in previous years. The most significant physical changes of aging really begin to appear between the ages of 50 to 60. The most commonly reported physical difficulties is the inability to reach objects below the knee level, standing for
long periods of time, walking up and down stairs, hearing a conversation on the telephone, and reaching for overhead cabinets (Wagner et al., 2010). Physical changes can also cause seniors to have a much slower reaction time and evacuation speed resulting in a higher chance for injury or death. Living with physical limitations can make performing activities of daily living, routine functional tasks such as grooming and dressing; and can significantly damage a person’s sense of self-worth, not to mention quality of life (Kopec, 2006).

**Senior Housing Typologies and Current Trends**

This section provides an overview of senior housing typologies including retirement communities, assisted living, and nursing homes. It is necessary to understand the advantages and disadvantages of these typologies in order to identify the modifications pertinent for seniors to successfully age in place in one’s own home. This review will also focus on current trends within senior housing typologies and examine the benefits of incorporating technological resources in aging in place environments.

**Retirement Communities**

Retirement Communities are also known as Continuing Care Retirement Communities (CCRC). They are typically appealing to seniors and their families by providing three levels of care from independent living, to assisted living and nursing care (“What Is A Continuing,” 2010). According to the AARP, healthy seniors can reside independently in single-family homes, apartments or condominiums. AARP further discusses when assistance with everyday activities becomes necessary, residents can
move into assisted living or nursing care facilities (“Aging in Place,” 2013). This gives residents the option of choosing which level of care is appropriate to fit their needs. CCRC’s largest advantage is not having to relocate a resident to another facility when their level of care changes. Another advantage of being a resident in a CCRC is the wide range of services, amenities, and health and wellness programs (“What Is A Continuing,” 2010).

The largest downfall to this type of senior housing option is the expense. Entrance fees can range from $100,000 to 1 million, an upfront sum to prepay for care as well as to provide the facility money to operate, in addition to monthly charges from $3,000 to $5,000 (“Aging In Place,” 2013). Other disadvantages to CCRCs are the complex contracts and the economic vulnerability. It is important for seniors and their families to understand exactly what they are agreeing to when signing the agreement. It is advised to review the paperwork with an attorney who also requires an additional fee. Another thing to consider is what will happen to the resident if the economy takes a downturn and the CCRC gets into financial trouble.

Assisted Living

The senior housing option Assisted Living (AL) is also another type of a residential care facility or personal care home. AL is in between levels of care of an independent living community and a nursing home. A typical assisted living home might offer 24-hour monitoring of its residents and various support services such as medication administration or bathing, while providing the resident with more freedom and privacy than a nursing home (“What Is An Assisted,” 2010). The facility type and care type can
vary in each state since there is no federal standard. However, the physical characteristics can range from a house or small building with just a few beds to a large senior living campus with multiple buildings and hundreds of beds (“What Is An Assisted,” 2010).

The residents of AL will benefit from having large areas for socializing and activities offering the convenience of a community atmosphere within the facility. When the resident wants some privacy, they have the option to return to their private room decorated with furnishings and appropriate finishes providing the comfort and convenience of being at home. The biggest advantage of this type of senior housing is being able to live independently yet have access to trained staff as needed within the facility. Having these services available gives the resident and family members a peace of mind.

The services at an AL facility come with a price typically lower than the CCRC but can still be pricy for some seniors and their families. Depending on the facility, the services available and other variables, an assisted living center can cost anywhere between $1,500 and $5,000 per month (“Information About Assisted,” 2012). However, some seniors can take advantage of turning these expenses into the Department of Veterans Affairs and long-term care insurance companies to make this housing option more affordable. Even if a senior can afford this option the biggest challenge is living in an unfamiliar environment.
Nursing Homes

Nursing homes provide high level skilled nursing care to residents who do not typically need the acute care provided by a hospital, but they do need health care assistance each and every day (“The Difference Between,” 2011). Oftentimes, some nursing home residents will be hospitalized or endure a chronic illness which has gradually gotten worse where daily living activities become a constant challenge. Seniors diagnosed with long-term diseases such as Alzheimer’s or dementia might choose this option due to the daily and attentive level of care. Nursing homes also offer temporary care to those seniors who have injuries from a fall and need a place to reside until they are rehabilitated. Some facilities have medical professionals such as occupational or physical therapists on site. There are guidelines under the federal and state laws to regulate how the facility is operated. However, a licensed physician supervises each resident’s care and an in-house nurse or other medical professional is almost always on the premises (Saisan & White, 2012).

Current Trends

Senior housing options are expected to change since people are living longer and the senior population will increase in size with the addition of the baby boomers. The 2012 senior housing trends primarily focused on adaptations for the current reality, positioning along with all aspects of fiscal realities, and political/policy-oriented concerns that face uncertainty in the future of senior housing (Yedinak, 2012). Trends were also developed to deinstitutionalize senior housing options by integrating contemporary
design along with modern furniture, implement senior care technology, and increase in-home and community based services.

There is a growing, nationwide movement among many nursing homes to change the nursing home culture from the rigid institutional living to a setting that has characteristics of a single family home (“Your Guide To,” 2011). This trend has spread to all the senior housing options in order to increase the number of residents and income. Some facilities changed aesthetics while others changed the residents’ schedule to allow more freedom and choices. Close relationships have also been formed among the staff and residents when they have been repeatedly assigned together (“Your Guide To,” 2011). Another positive aspect has been the non-restriction for the residents’ dogs and cats.

New technologies are entering the market in order to improve the safety, mobility, and independence of seniors residing in community settings, such as assisted living or independent living (Stringfellow, 2011). These advances can offer assistive devices to help seniors function independently and monitor their changing needs (Greenfield, Scharlach, Lehning, & Davitt, 2012). Other research includes medication management systems, fall sensors and tracking devices. Fall sensors will also offer financial benefits since the most frequent cause of injuries among seniors is falls (Moss, 1992). Adding technology to the home also gives the seniors opportunities to learn new skills which stimulate brain cells.

In today’s aging society, aging in place in combination with professional home care is commonly promoted as a strategy for maintaining autonomy, independence, sense of identity, as well as maximizing financial resources (Hoof, Kort, Waarde, & Blom,
Another current trend is the increase in home and community based services available to seniors aging in place in their own homes. These services are valuable because they avoid the forced relocation option to an undesirable higher level of care facility. Another benefit to this trend are the savings the home care services provides to the total cost of health care, specifically the Medicare and Medicaid programs when compared to nursing homes (Rantz et al., 2011). Home services include personal care, medication management, rehabilitation visits, nurse visits, and a 24/7 on call nurse (Rantz et al., 2011). Community-based services consist of medical and dental services, retail stores, social and recreational facilities, parks, libraries, and churches (Wagner et al., 2010).

**Support Systems for the Senior Population**

Today’s technology has the capability to ease the emotional burden of aging for seniors. There are innovative technology products available for integration into aging in place in one’s own home allowing safety and independence to seniors (Dickison, 2012). These products consist of home safety and security, fire prevention and protection, health and wellness, and communication. Seniors can reduce their medical costs and can prevent hospitalization by incorporating the innovative products to fit their needs and activities.

Home safety products provide emergency personnel and caregivers on site or off site to be notified when activities in the home are out of the ordinary or emergency in nature (“Technology Products For,” 2013). Examples of home monitoring and fall prevention devices include weight sensing bed and chair sensor pads and floor mats
(Appendix B1, Table 7, Tag #55-56), motion sensors, chair belts, door bars, bathroom call systems, fall cushions, pagers and paging systems, and central monitoring units (“Technology Products For,” 2013). Some fall censors are designed to be worn around the neck and automatically alert help if a fall is detected or the senior can call for help with the touch of a button (Dickison, 2012). Another safety product is a tracking device with GPS technology to locate the senior when missing or wandering (Dickison, 2012). Additionally, a front door peephole viewer (Appendix B1, Table 6, Tag #41) can be installed for seniors with difficulty seeing who is at the front door through a peephole. The peephole viewer turns a hard to see image into a bright image using a LCD panel (“Technology Products For,” 2013).

Technology can help prevent injuries and fires in a kitchen when a senior is cooking daily meals. A cookstop stovetop fire prevention device (Appendix B1, Table 6, Tag #42) can be installed on a stove to continuously check for movement in the kitchen and can shut off the stove if the resident leaves the room or falls asleep while cooking (“Technology Products For,” 2013). This product can also reduce the chances of an accident by setting the stove by use during only certain hours or days (“Technology Products For,” 2013).

It is important to manage senior’s health and wellness in addition to identify trends in chronic disease before they become more serious or life threatening (“Technology Products For,” 2013). Examples of chronic diseases consist of diabetes, congestive heart failure, hypertension, asthma, and obesity. There are vital monitoring systems (Appendix B1, Table 6, Tag #40) to read at designated times a senior’s blood pressure, weight, dissolved oxygen, or blood sugar (“Technology Products For,” 2013).
Medical personnel and/or caregivers can be notified through the use of a cell telephone chip if the reading was not taken or if the level is out of range. In addition, medication management systems (Appendix B1, Table 2, Tag #13) are available using microchips to dispense multiple medications at preset times to help seniors with medication use (Dickison, 2012). The device is set with a digital alarm clock and usually can be loaded with multiple medications at once (Dickison, 2012). If a dose is missed, caregivers can be notified either by email or text message.

Keeping in regular contact with friends and family can prevent seniors from becoming socially isolated and improve their quality of life (“Technology Products For,” 2013). Seniors should have access in their home to a simplified, easy to use computer (Appendix B1, Table 6, Tag #43) in order to communicate with family and friends via email, photos, and video chat. Seniors can easily use this technology with the benefits of touch screen monitors, large fonts, and icons. Other uses include accessing news and weather, gathering information on topics, shopping online, interactive calendar for appointments and birthdays, DVD and CD player, and playing games to improve eye-hand coordination and memory skills (“Technology Products For,” 2013). Another communication device for seniors is enhanced land line phones and cell phones (Appendix B1, Table 6, Tag #44 & 47) designed to combat communication barriers caused by hearing loss, vision loss, and cognitive impairment (“Technology Products For,” 2013). These phones feature powerful amplification, tone management, loud ringer, amplified speakerphone, oversized keypad, large display, talking controls, talking caller id, and photo memory dial buttons (“Technology Products For,” 2013). Seniors
can also communicate using an easy but tech savvy tablet (Appendix B1, Table 6, Tag #45).

**Issues in Aging in Place in One’s Own Home**

In 2007, the median construction year for homes owned by seniors was 1970 (“A Profile Of Older,” 2012). Homes built during this time frame could have some material issues affecting a person’s health especially the frail seniors. Less expensive aluminum wiring was used as house wiring instead of the worldwide shortage of copper (Heller, 2013). Homes with aluminum wiring will need to replace it with copper since it usually results in house fires from corrosion. Another material issue is the use of carcinogenic asbestos. Asbestos was commonly used on the heating system to protect the surrounding wood and insulate the ducts in addition to any “popcorn” ceiling texture (Heller, 2013). Lead found in all household paint until 1978 is another compound that is linked to health issues such as behavioral problems and learning disabilities in children (“Lead-Based Paint,” 2012). Lead paint should be removed from the home by professionals equipped to handle this compound appropriately.

Moss (1992) states the most frequent cause of injuries in the home are falls which accounts for 23,000 deaths each year for persons 65 years old and older. Since most people do not live in a risk-free environment, home modifications are necessary to remove any architectural barriers and increase safety measures. 70% of seniors who are able to make changes to their homes have made at least one modification to increase mobility and 67% of seniors believe that the modification will allow them to live in their homes longer, another ten years or more (“Seniors Want To,” 2012). However, the
reasons most often cited for seniors not making home modifications were the inability to make the changes themselves (37%), and not being able to afford the modifications (37%) (“Seniors Want To,” 2012).

There are certain areas of the home that deserve special attention for modifications including the kitchen, the bathroom, the bedroom, the indoor stairways, and the exterior pathway and stairs (Moss, 1992). These areas can limit or enhance daily activities, mobility, self-confidence, and independence. Home modifications can range from simple to complex measures and also vary in price. An AARP survey conducted in 2000 found 85% of seniors have already made simple changes to their homes, such as placing non-skid strips in bathtubs or replacing low-wattage light bulbs with higher wattage bulbs to increase visibility (“Seniors Want To,” 2012).

Accidents are more common in high activity areas such as the kitchen where 22% of accidents occurred during meal preparation (Graham & Firth, 1992). Simple kitchen modifications include install timers to kitchen equipment, install gas alarm, transparent shelving and doors or removal of doors, place pictures/signs on drawers, grab bar in front of sink, minimize counter clutter, and create sufficient work space (Hoof et al., 2010). Kitchen modifications that are more complex consists of installing non-slip floor surfaces, ground fault interrupted (GFI) outlets, single controlled faucet, and expanding traffic areas for adequate space for maneuvering a wheelchair or walker (Hoof et al., 2010). The selected modifications should be based on the individual floor plan and the senior’s physical and mental capabilities.

The bathroom is often viewed as the most dangerous room in the house due to slips and falls, burns, poisoning, cuts, electrocution, as well as drowning (Hoof et al.,
2010). The modifications should provide a sense of worth and dignity while allowing seniors to act independently. However, privacy is usually sacrificed for safety measures when a space for a caregiver to assist with bathing is required (Hoof et al., 2010). Since seniors have a slow reaction time the bathroom should be easy to find with visual cues. Examples of modifications include removing the toilet lid, raised toilet seat, toilet/tub grab bars (Appendix B1, Table 5, Tag #35), nonslip flooring, lever door handle (Appendix B1, Table 6, Tag #46), shower seat (Appendix B1, Table 5, Tag #32), handheld showerhead (Appendix B1, Table 5, Tag #33), a lower temperature of water heater, and adequate space for maneuvering a wheelchair or walker (Hoof et al., 2010). Replacing the bathtub with a roll-in shower (Appendix B2, Image 6) can be valuable for wheelchair users and can also be easier to clean.

The bedroom is both a sanctuary and a personal space where a pleasant sleeping environment needs to be maintained. The major problems in the bedroom are falls resulting from walking around and dressing (Hoof et al., 2010). Simple modifications include raising the height of the bed (Appendix B1, Table 7, Tag #50), de-cluttering and clearing pathways, removal of throw rugs, and placement of light switches within close proximity to entrance and bed (Hoof et al., 2010). These modifications will help a senior maintain their confidence and independence with mobility in their own home.

A floor plan with an interior stairway can give seniors a sense of anxiety and fear. Limiting the use of stairs can be achieved if the floor plan can be modified to relocate the master bedroom and bath from the second floor to the first floor. However, seniors do not want to feel over-protected and should be encouraged to use the stairs even if it takes a long time and involves risks (Burgun, 1983). To increase safety measures for interior
stairways the following modifications should be considered; install secure rounded corner handrails or grab bars in stairway, illuminate stairways (Appendix B1, Table 8, Tag #60), remove pictures and memorabilia along stairway walls, install colored reflective slip-resistant strips on stairs (Appendix B1, Table 3, Tag #17), install chair lift, and avoid patterns on the wall and flooring (Hoof et al., 2010).

The exterior pathways can introduce several problems to decreasing a senior’s mobility and independence. There is an increased risk of injury due to a senior’s lack of balance outside the home because of issues with uneven surfaces caused by poor pavement quality, unstable stairs, high curbs, or the presence of obstacles in pathways such as garbage bins and weather conditions (Chippendale & Bear-Lehman, 2010). Modification recommendations from Moss (1992) includes porch treads (Appendix B1, Table 3, Tag #17), outdoor lights (Appendix B1, Table 8, Tag #60), alarm systems, handrails on both sides of steps (Appendix B1, Table 4, Tag #30), top and bottom steps marked with bright contrasting tape, and ramps (Appendix B1, Table 4, Tag #26-28). Further, seniors value support services and justifies personal payment for snow removal and garden maintenance (Wagner et al., 2010).

**Theories Associated to Aging in Place Models**

Design theories are used to synthesize and analyze the data collected for design projects because the examination can inform decisions that may affect the entire project (Nussbaumer, 2009, p. 20). The theories associated to aging in place models include the Gestalt, Functionalism, Meaning of Place, and Person-Environment Theory. These
theories were chosen for this creative project in order to strengthen the design solution for aging in place.

The Gestalt theory is based around the idea of people experiencing things as a whole instead of their individual parts (Nussbaumer, 2009, p. 20). Another words people who only look at the individual parts will not fully understand the meaning until they observe the whole. To associate this theory with the aging in place models, the focus is on elements and principles of design, space planning, lighting design, and furniture as they come together in the space instead of individually. Patterns of behavior throughout the entire home should be identified instead of the individual spaces. These elements and principles of the home should be analyzed as a whole in order to understand the best possible design solutions.

The Functionalism theory is based on the principle of form follows function based on the three concepts of function, fitness, and utility (Nussbaumer, 2009, p. 22). This theory allows for the identification of the purpose of the home and the spaces therein. The suitability of the home and interior spaces in relation to the senior’s needs is also analyzed. Another observation is the satisfaction level of the senior with the home’s usefulness. This theory is associated with the aging in place models by examining the interior space planning, design elements and principles, lighting, furniture, fixtures, and equipment that define the space.

Seniors value homeownership since the home does not only mean a residence but also mental capacities, emotional relationships, and social ties (Sabia, 2008). The Meaning of Place theory is often associated with the terms commonly used in architectural poetics as place identity, sense of place, and place attachment (Nussbaumer,
Seniors become attached to their homes because they are important to them and provide security and a place for family to gather. Place identity refers to how people incorporate a place into the larger concept of their own identities or sense of self (Kopec, 2006, p. 62). Moreover, Kopec argues that a sense of place occurs for a person when a level of comfort and feelings of safety associated with a place translates to a sense of belonging (2006, p. 62) which can be either through a person’s culture or on a personal level. Place attachment is when individuals form an emotional bond with their immediate social and physical environment (Nussbaumer, 2009, p. 31). Seniors become attached to their place because of the following facts: 1) settings have deep meaning, 2) settings and identities are interlaced, and 3) settings provide a restorative environment (Nussbaumer, 2009, p. 31). Aging in place in one’s own home is the preferred choice because seniors attach symbolic meanings to their homes and establish strong bonds with their homes and communities (Dye et al., 2011).

The Person-Environment Theory focuses on the factors of function, competence, and congruence (Nussbaumer, 2009, p. 26). This theory will determine if the senior is able to function in the environment, is considered competent to handle the demands of the environment, and indicates a harmonious environment (Nussbaumer, 2009, p. 26). The connection between the senior and the environment is visible with the interaction and behavior of the senior. The Person-Environment Theory can be applied to the aging in place models in this creative project in addition to other environments for seniors including retirement communities, assisted living, and nursing homes.
Summary

This literature makes it clear that aging in place in one’s own home is the preferred alternative for seniors and provides them the benefits of familiarity, access to neighborhood services, proximity to friends, and financial security (Dye et al., 2011). However, home modifications will need to be addressed on an individual basis to remove architectural barriers, reduce any potential risks to injuries, and increase security, independence, self-confidence, mobility, and enhancing daily activities among many others. Additionally, seniors feel a great comfort with their home and have a psychological attachment that other senior housing options cannot provide. The primary challenge is to develop a set of design guideline for aging in place in one’s own home with the intention to accommodate the aging baby boomers entering the senior population.
CHAPTER 3

METHODOLOGY

Identification of aging in place issues, practices and innovative support systems for seniors is a viable research problem today for designers due to the fact the increasing U.S. group of senior citizens. Unfortunately, they are far less informed about the reality of providing elders with personal care, health care, and social support (Bookman & Kimbrel, 2011). The main purpose of this mixed methods creative project is to further illuminate the concept of Aging in Place design for the creation of guidelines in retro-fitting homes owned by the senior population. The design problem also addresses multiple objectives which are enumerated as follows: 1) identify and evaluate the identity and public perceptions toward the senior population; 2) categorize the common attributes, activities, and needs for the senior population; 3) examine the senior housing typologies and current trends; 4) classify support systems for the senior population; 5) recognize the issues in a typical senior’s home in order to develop aging in place design guidelines for retro-fitting purposes; and 6) study the theories associated to aging in place models. The mixed methods and theories used to implement the creative project will be presented in this chapter.
Evidence Based Design

Evidence based design (EBD) is defined as a process for the conscientious, explicit, and judicious use of current best evidence from research in making critical decisions of each unique project (Nussbaumer, 2009, p. 4). This creative project used EBD as a mixed method to identify the highest quality of relevant research in order to determine the best possible design solution for this particular project. Research included published journal articles, online research database, and relevant aging websites. This method is an informed approach where design solutions are made based on the plethora of research findings.

The creative project followed EBD’s three steps. The first step of EBD was to conduct and find a variety of pertinent research related to the individual project. This is also known as the programming phase of the design process. Information was gathered, the design problem identified, and an Residential Housing Assessment (Appendix C 1) was conducted to determine the needs and activities of the senior population and the shortfalls of the four common housing typologies. This included identifying and examining the current and future needs of the senior, the housing typologies, issues, space functions/activities, equipment, furniture, lighting, codes/regulations, human factors, safety, psychological, and social needs. The next step of the process was analyzing and synthesizing the gathered information and new evidence found in the research. The facts are analyzed by generating ideas, brainstorming, visual data collection and mapping (Appendix A, Figure 5 and Appendix B1-B2), and developing alternative solutions to the design problem. The last step is known as the design development phase where final design drawings (Appendix A, Figure 1 – 4.7), details,
sections, elevations, and perspectives were conducted. The design development phase allows the senior to visually understand the proposed design solutions.

**Residential Housing Assessment**

This creative project also used a Residential Housing Assessment (Appendix C 1) as another method to collect data. The Residential Housing Assessment was developed using multiple sections of the following three assessment templates by Nussbaumer (2009); Residential Programming Document (Appendix C 2), (Nussbaumer, 2009, p. 269-271), Site Survey of Existing Conditions (Appendix C 3), (Nussbaumer, 2009, p. 282-283), and Post Occupant Evaluation Survey (Appendix C 4), (Nussbaumer, 2009, p. 284-288). Appendix C1-C4 was heavily referenced from the Evidence Based Design for Interior Designers textbook by Nussbaumer (2009). Due to the given timeframe of this creative project, the Residential Housing Assessment initially utilized existing as-built floor plans of four housing typologies instead of fully conducting actual physical onsite inspections. The Residential Housing Assessment consisted of open-ended questions related to the current and future activities and needs of the senior population, the designed environment, the natural environment, and the social environment.

The current and future activities and needs of the senior population identified specific psychological needs, any special needs and activities, mid and long range plans related to the space, and current or future health-related conditions. The designed environment questions identified the exterior architectural style of the housing typologies, the quality of the present space layout, adequacy of the bathrooms and kitchens, and technological needs. This section also discovered the senior’s needs for
safety, furniture, lighting, and surface treatments. The natural environment assessment evaluated the orientation of windows relative to natural light. The social environment assessed housing restrictions related to codes, psychological needs, and the role and main activities of seniors in the community.

The last section of the Residential Housing Assessment was related to the four senior housing typologies; Ranch, Cape Cod, Bungalow, and Craftsman. They were assessed based on a rating system on their quality level as either poor (P), fair (F), good (G), or excellent (E) with regards to eleven categories. The eleven assessment categories consisted of ease of mobility, security, safety, functionality, comfort, independence, fall prevention, space layout, natural lighting, flexibility of space, and adaptability of changes. This part of the assessment identified areas of strengths and weaknesses based on quality within the housing typologies in order to assist development of home modifications for seniors to successfully age in place in one’s own home.

**Visual Data Collection and Mapping**

Visual data collection and mapping is the process of collecting visual data/images and visually translate them on paper to communicate ideas visually instead of with written words to the viewer (“Visual Thinking And,” n.d.). This method reveals patterns, relationships, hidden connections, and shows the big picture in order to connect new information to existing knowledge encouraging creative design solutions. This method also helps visual thinkers understand the meaning of the text and the potential to identify unique design solutions unidentifiable in the narrative or text.
The creative project used this method to collect and analyze support systems and products for the senior population (Appendix B1). The support systems and products were clustered into nine categories consisting of sensory modalities, memory, spatial cognition, mobility, independent living, technological, furniture accommodation, lighting accommodation, and leisure and recreation using a model set by industrial designers (Fisk, Rogers, Charness, Czaja, & Sharit, 2009). In fact, the search for support systems and products was partially completed prior to the identification of applicable clusters. Each category consists of 6-10 products resulting in a total of 75 images. The product information and images were collected from the manufacturer’s websites online. The creative project also used visual data collection and mapping to combine an existing floorplan image with the recommended modifications (Appendix A, Figure 5). This image allows the viewer a quick visual overview of the potential design modifications for the Cape Cod floor plan.

Appendix B2 was developed to collect and analyze the housing accessibility standards applicable to this creative project. The images of the housing accessibility standards were extracted from the Interior Graphic Standards textbook by McGowan and Kruse (2004). These standards are based on the American National Standards Institute (ANSI) and primarily focused on the needs of wheelchair users. The standards are also applicable for this creative project as they include the wheelchair turning radius, reach limits, and accessible guidelines for kitchen and bathroom fixtures and appliances. The images further identified additional issues during the analysis of the four existing housing typologies’ floor plans and elevation views.
Design Development Phase

The Design Development phase covers the transitional results from the schematic phase by preparing drawings to finalize the needed modifications and proposed design solutions. The creative project used this method to define and describe visually all the important aspects of the project. The architectural drawings (Appendix A) are technical representations of the modified space showing the adaptable products and accessibility standards. The drawings include floor plans, elevations, and perspectives. The detailed drawings also present the visual images of what the space will look like after the proposed modifications. The Design Development method’s main goal is to enable the designer the ability to articulate the retro-fitting objectives and acceptable measurements, and for the seniors to understand the functionality of their modified spaces.

Multiple Theories on Aging in Place Models

The creative project was analyzed with theories in order to strengthen and improve the design solutions. There were four theories applied to the creative project including the Gestalt, Functionalism, Meaning of Place, and Person-Environment Theory. These theories were heavily referenced from the Evidence Based Design for Interior Designers textbook by Nussbaumer (2009).

The Gestalt theory relates to the elements and principles of design, space planning, lighting, and furniture. The selected home modifications were based on a system of putting components together with the belief that the user will experience the home as a whole while also considering the function of all individual rooms. Patterns of behavior were also identified with understanding the functions performed in the
individual spaces. This theory uses six Gestalt Laws to organize the elements and principles of design. These Laws consist of the Law of Closure, Law of Similarity, Law of Proximity, Law of Symmetry, Law of Continuation, and the Law of Figure-Ground (Nussbaumer, 2009, p. 20). These laws will be discussed further in Chapter 5 Discussion.

The Functionalism theory is widely known to designers as the form follows function with three key concepts of function, fitness, and utility (Nussbaumer, 2009, p. 22). The creative project used functionalism to examine the basic function relative to its fit in the environment and to satisfy the user’s needs. Areas examined include space planning, design elements and principles, lighting design, furniture, fixtures, and equipment. The function aspect was applied to the creative project with identifying the purpose of the structure, space, or object. In addition, the suitability of the structure, space, or object relative to its purpose belongs to the fitness aspect. Lastly, the utility aspect relates to the structure, space, or object’s usefulness relative to the satisfaction of the user.

The Meaning of Place theory is an individual concept of place since each person has their own association with place identity, sense of place, place attachment, and third place theory. The home modifications were made to increase the senior’s sense of place so their level of comfort and feelings of safety associated with the home will translate to a sense of belonging. Seniors will also have place attachment to their homes because there is an emotional bond with their immediate social and physical environment. Seniors also believe the home is a restorative environment, provides emotional security, freedom, and offers deeper meanings and underlying metaphors of attachment. The research also
supported the application of Third Place Theory where seniors have place attachment within the community. Third place locations also include the store, library, restaurant, bar, mall, sacred space, and coffee shops (Nussbaumer, 2009, p. 31).

The application of the Person-Environment Theory was very pertinent to the creative project because it shows the connection between the environment and the senior citizen and how they affect each other. The senior must be able to function in the environment, to act with competence in handling the demands of the environment, and to have harmony with the environment (Nussbaumer, 2009, p. 26). For example, an older adult who has cognitive limitations may seem capable of handling daily activities when they function in a supportive environment with all resources available (Nussbaumer, 2009, p. 26). The home modifications were selected to provide a supportive environment, improve the quality of life, allow for personal autonomy, and lessen potential injury for seniors aging in one’s own place.

**Challenges**

The creative project identified several challenges related to space planning and a variety of senior issues. The first challenge was creating a balance of selecting the specific home modifications to accommodate the needs of the current senior living in the home, the senior’s future needs, as well as the future occupants after resale. Both temporary and permanent modifications were selected for the four housing typologies. For this creative project, the modifications accommodate a senior using a wheelchair. This is also a challenge because not every senior aging in place in one’s own home uses a wheelchair. The home modifications for wheelchair users require more space for
mobility, more structural changes, and are considered the most expensive. For example, the Craftsman Master Bathroom Typology (Appendix A, Figure 4.1) required structural changes to existing walls and adapted the large walk-in closet to accommodate the roll-in shower. A standard full bath which is a non-American Disabilities Act (ADA) compliant fixture is approximately 5’ x 8’ or 40 square feet. However, a senior in a wheelchair will require a larger bathroom space approximately 8’ x 10’ or 80 square feet. This is mostly due to a wheelchair user requiring a 5’ turnaround radius parallel to all the fixtures. Seniors that are not in a wheelchair will not require a bathroom this large in size. However, the senior could potentially need a wheelchair accessible bathroom in the future.

Another challenge is the broad amount of information and theories available when researching the topic of aging in place for seniors. There are various aspects to consider when researching aging in place including the various types of facilities, health changes, products, statistics, organizations, and designs. It was a major task to narrow down and extract only the most relevant information to the specific objectives of the creative project. The ability to narrow down the information evidently saves time.

Summary

The mixed methods and selected theories in this creative project will utilize the most relevant research in order to identify the senior’s current and future needs, activities, space functions, patterns, relationships, issues, and the best design solutions toward aging in place in one’s own home. The results of this creative project will serve as an additional blueprint for studies on aging in place; identify current issues and translate
them into workable guidelines that could enlighten professional designers and design
students; and collate good practices that will inform healthcare specialists and other
family members to understand further the positive impact of smart living for seniors.
Further the study could also increase the level of awareness on design issues for elder-
friendly environments and communities, and establish the benefits of aging in place that
may possibly decrease mortality rate among seniors.
CHAPTER 4

RESULTS

Identification of aging in place issues, practices and innovative support systems for seniors is a viable research problem today for designers due to the fact the increasing U.S. group of senior citizens. Unfortunately, they are far less informed about the reality of providing elders with personal care, health care, and social support (Bookman & Kimbrel, 2011). The main purpose of this mixed methods creative project is to further illuminate the concept of Aging in Place design for the creation of guidelines in retrofitting homes owned by the senior population. The design problem also addresses multiple objectives which are enumerated as follows: 1) identify and evaluate the identity and public perceptions toward the senior population; 2) categorize the common attributes, activities, and needs for the senior population; 3) examine the senior housing typologies and current trends; 4) classify support systems for the senior population; 5) recognize the issues in a typical senior’s home in order to develop aging in place design guidelines for retro-fitting purposes; and 6) study the theories associated to aging in place models. The visuals for this creative project utilized three different visuals labeled as figures, tag numbers, and images. The figures are architectural drawings, tag numbers are pictures of support systems and products from manufacturers, and images are used to
mark the scanned visuals from published literature. The finished creative project will be discussed in this chapter.

**Residential Housing Assessment**

The Residential Housing Assessment (Appendix C1) identified both strengths and weaknesses in the four housing typologies based on the following criteria consisting of the current and future activities and needs of the senior population, the designed environment, the natural environment, and the social environment. A comparative analysis based on the quality level of the four housing typologies was also conducted. The comparative analysis was based on a rating system on the quality level as either poor (P), fair (F), good (G), or excellent (E) in regards to the eleven categories. The eleven assessment categories consisted of ease of mobility, security, safety, functionality, comfort, independence, fall prevention, space layout, natural lighting, flexibility of space, and adaptability of changes. The comparative analysis shown below was extracted from Appendix C1, number 25.


<table>
<thead>
<tr>
<th></th>
<th>Cape Cod</th>
<th>Ranch</th>
<th>Bungalow</th>
<th>Craftsman</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Ease of mobility</td>
<td>F</td>
<td>G</td>
<td>F</td>
<td>P</td>
</tr>
<tr>
<td>B) Security</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>C) Safety</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>D) Functionality</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>E) Comfort</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>F) Independence</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>G) Fall Prevention</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>H) Space layout</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>F</td>
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<tr>
<td>I) Natural lighting</td>
<td>P</td>
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<td>G</td>
<td>G</td>
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<tr>
<td>J) Flexibility of space</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>F</td>
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<tr>
<td>K) Adaptability of changes</td>
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</tbody>
</table>
It is explicit that there are a number of common strengths and weaknesses represented in this comparative analysis. The four housing typologies rated poor in the security, safety, and fall prevention categories and fair in the functionality, comfort, and independence categories. These areas can improve with the selected modifications in Appendix A. The ratings for the ease of mobility varied from poor, fair, and good quality. The housing typologies indicating weaknesses in this area can benefit from the modifications specified in Appendix A. The four housing typologies rated excellent in the area of adaptability of change and good in space layout, natural lighting, and flexibility. This result indicates the four housing typologies are good indicators for developing design guidelines for seniors aging in place in one’s own home.

Support Systems and Products for the Senior Population

An extensive review was conducted on support systems and products available in the market to enhance senior living (Appendix B1). The extensive but not necessarily exhaustive search for products generated seventy five support systems and products. They were clustered into nine categories consisting of sensory modalities, memory, spatial cognition, mobility, independent living, technological, furniture accommodation, lighting accommodation, and leisure and recreation using a model set by industrial designers (Fisk et al., 2009). The analysis of this review indicated that the support systems and products consisted mainly of gadgets and product enhancements instead of directly addressing the senior’s issues in their immediate spaces. The analysis also revealed the repetition of products available as different brands and the corresponding
high costs of purchase values for these items resulting in the interpretive connotation that manufacturers appear to be capitalizing on the weaknesses of the senior population.

**Interior Graphic Standards for Accessibility**

The Interior Graphic Standards (McGowan & Kruse, 2004) was specifically reviewed for the applicable standards under the accessibility acts for the modified rooms in the four housing typologies. The selected standards included in the modifications are listed in Appendix B2. The focus was related to accessibility standards for seniors using a wheelchair. The standards chosen were identified as weak areas based on the ratings of the four housing typologies in the Residential Housing Assessment (Appendix C1).

The issues identified consisted of ease of mobility, safety, functionality, comfort, and independence. A senior using a wheelchair must have the appropriate maneuvering clearances, a 5 foot turning radius throughout the spaces, and appropriate floor and knee space for parallel or front approach to kitchen fixtures and appliances. Safety issues were resolved with placing shelving and countertops at reachable heights, changing a standard bathtub to an accessible roll-in shower, and switching a stovetop with raised burners to a smooth cooktop surface with front mounted controls. The functionality of the spaces were modified with the installation of open shelving and cabinetry with pull out shelves, replacement of a standard refrigerator with a side-by-side refrigerator, and placement of a dishwasher in a reachable distance from the kitchen sink. All of the selected standards increase the senior’s level of comfort and independence in the modified spaces.
Architectural Drawings

The creative project consisted of architectural drawings (Appendix A) consisting of temporary and permanent home modifications for seniors aging in place in one’s own home within four rooms in four housing typologies: 1) Ranch Master Bedroom Typology (Appendix A, Figure 1.1-1.2B), 2) Cape Cod Kitchen Typology (Appendix A, Figure 2.1 – 2.5), 3) Bungalow Porch Typology (Appendix A, Figure 3.1), and 4) Craftsman Master Bathroom Typology (Appendix A, Figure 4.1 – 4.7). These modifications are guidelines giving seniors the ability to stay in their own homes by removing architectural barriers, reducing any potential risks to injuries, and enhancing daily activities resulting in an increase of security, independence, self-confidence and mobility. The chosen modifications were selected after an analysis was conducted and weaknesses were identified based on the research, Support Systems and Products for the Senior Population (Appendix B1), Interior Graphic Standards for Accessibility (Appendix B2), and the Residential Housing Assessment (Appendix C1). The modifications were also selected with emphasis on a senior using a wheelchair.

The creative project was completed using Autodesk Revit Architecture 2012, which is a Building Information Modeling (BIM) software. Images of the four existing housing typologies were originally in a jpeg format were imported into Revit in order to create a two dimensional (2D) blueprint of the structure. A call-out command was selected in Revit to enlarge the rooms in order to conduct the selected modifications. The interior components were built in three-dimensional (3D) within Revit including the flooring, walls, ceiling, cabinetry, work surfaces, appliances, furniture, plumbing fixtures, and lighting. Details were added to the enlarged floor plan views including dimension
After the modifications were completed on the floor plan views, elevations were constructed in Revit. The elevation views show information that cannot be identified on floor plan views. The elevation views start at the finished floor and stop at the ceiling. The interior components visible in the elevation views are attached or against the wall showing only the front view. Details were also added to the elevation views including dimension lines indicating measurements, entourage (a senior in a wheelchair), and symbols locating placement of journal note modifications. This type of view helps seniors visualize and understand the outcome of the modified room. Likewise, designers will be able to use such measurement guidelines in considering modifications for other parallel floor plans.

Perspective views were also generated in Revit to visually show a three-dimensional view of the room and how it is viewed by the human eye. The perspective views show objects drawn smaller as their distance from the observer increases. The perspective views portray height, width and depth while providing the senior a more realistic image of the room. A senior in a wheelchair was also added to the perspective views in proportion relative to the structure.

**Ranch Master Bedroom Typology**

The finalized master bedroom with modifications is shown in floor plan view (Appendix A, Figure 1.1). Structural changes were first implemented to remove physical
barriers and increase mobility throughout the space for the clearance of a wheelchair. This included the option of enlarging doorways from 24 inches to 30 inches. Space planning was another imperative modification since a wheelchair user needs clear pathways and a 5 foot turnaround circle to maneuver throughout the space (Appendix B2, Image 2). The analysis also identified issues with seniors having a decrease with reaching and bending abilities as they age. This resulted in the height of a queen bed to be raised between 18 and 20 inches with the bed frame positioned 8 inches above the finished floor (Appendix B1, Table 7, Tag #50). Other furniture selected such as nightstands and dressers is between 15 inches and 48 inches in height for any appropriate reach accessibility. Closet shelves also meet this height requirement. (Appendix B2, Image 1).

The research also identified issues with senior’s ability to grasp, squeeze and twist items with their hands due to arthritis and other hand disabilities. Therefore, door knobs were replaced with lever handles because a slight easy turn of a hand, arm, or elbow opens a door where strength or dexterity is no longer needed to operate (Appendix B1, Table 6, Tag #46). Other modifications included the installation of a bedside alarm with vibrating pads, bright lights, and sound patterns to alert the senior (Appendix B1, Table 1, Tag #1). Another safety modification applied was the removal of throw rugs to decrease any potential risks for falls. Motion sensors to activate lighting were also added to the space to increase safety measures (Appendix B1, Table 8, Tag #59). The motion sensors help illuminate the space when entered and at night when the senior gets out of bed to use the bathroom. An enhanced land line phone should also be installed in the master bedroom to eliminate communication barriers and allow seniors to make a phone call in
case of an emergency (Appendix B1, Table 6, Tag #44). This type of phone was designed to help seniors with hearing and vision loss, and cognitive impairment with features that provide powerful amplification, loud ringer, oversized keypad, talking caller ID, and photo memory dial buttons.

Cape Cod Kitchen Typology

The finalized kitchen with modifications is shown in a floor plan view (Appendix A, Figure 2.1), elevation views (Appendix A, Figure 2.3 – 2.4), and a perspective view (Appendix A, Figure 2.5). The viewer is standing in the northeast corner of the room facing southwest in the perspective view. The layout of the kitchen was identified as a galley kitchen; long and narrow with appliances and cabinetry in two facing lines. The identified activities in a kitchen included cleaning dishes, preparing, cooking, and eating food.

The kitchen features a variety of modifications providing safety and independence for wheelchair users, including pull out storage, side-by-side refrigerator, and accessible workspaces. Structural modifications were executed to widen the entryways to 36 inches in order to allow a wheelchair user access into the kitchen. A 40-inch minimum clearance is required in the aisle between the cabinets and opposing appliances or cabinets (Appendix B2, Image 8). This allows access for a wheelchair user to maneuver in the kitchen. The floor space, knee space and approach requirements for appliances depend on the type of appliance (Appendix B2, Image 9). The existing sink was replaced with a shallow sink with easy to operate faucets in order to provide 27 inches for knee
space of a senior using a wheelchair (Appendix B2, Image 3). A dishwasher was also installed next to the sink for easy access (Appendix B2, Image 10).

The kitchen cabinetry was modified to be supportive and accessible to a senior using a wheelchair by enabling minimum efforts. The selected base cabinets offer pullout shelves to provide easy access to items stored in the back (Appendix B2, Image 11). The base cabinets are 33 inches in height topped with a 1-inch countertop resulting in a total of 34 inches above finished floor (AFF). The research supported a countertop depth of 20 inches in order for a senior using a wheelchair to reach items placed on countertops (Appendix B2, Image 14). The upper cabinets were replaced with open shelves to permit visual recognition of stored kitchen items. This also helps seniors remember where items are stored if diagnosed with dementia. A workspace of 4 foot 4 inches was added to the east side of the dishwasher in order for a senior using a wheelchair to have sufficient space to prepare food. The workspace also provides adequate clearance for knee space to allow the senior using a wheelchair the ability to roll under the countertop.

Safety measures were also considered in the modifications to decrease hazardous elements such as fires and burns. The range was replaced with a smooth cooktop surface with front mounted controls and moved to the north kitchen wall (Appendix B2, Image 12). This prevents a senior using a wheelchair from getting burned by reaching over heated surfaces. The smooth cooktop surface also helps pots and pans slide across the surface rather than lifted on and off the burners. To help prevent kitchen fires, a stovetop fire prevention device was installed (Appendix B1, Table 6, Tag #42). The device can be
set to limit the hours of use and can shut off the stove and burners if left unmonitored for a certain period of time.

**Bungalow Porch Typology**

The finalized porch with modifications is shown in a floor plan view (Appendix A, Figure 3.1). The design solutions were developed with two different options; 1) a senior with walking capabilities or 2) a senior using a wheelchair. The existing exterior steps were identified as the most prominent physical barrier for affecting mobility. The two design solution options include both permanent and temporary modifications.

The modifications for option one, senior with walking capabilities, increases safety measures and reduces potential injuries from falls. Stair handrails are added to each side of the steps allowing seniors to maintain balance and coordination (Appendix B1, Table 4, Tag #30). The research also identified issues of visual acuity with seniors as they age. Installing reflective stair treads is the best design solution to add stability to footing and define the edge of each step (Appendix B1, Table 3, Tag #17). Another design solution is the addition of stair lighting to illuminate the individual steps (Appendix B1, Table 8, Tag #60). Installing these lights will also increase the senior’s safety and security. The lights can be either battery-operated or motion-sensored.

The modifications for option two focus on a senior using a wheelchair in order to increase safety, security, and mobility measures. The selected ramp options offer either temporary or permanent design solutions. There are temporary ramps offering the benefits of various sizes, folds for convenient storage, light in weight, and supports portability (Appendix B1, Table 4, Tag #26). A semi-portable ramp option includes
handrails, rust-proof aluminum material, meets ADA specifications, and offers a modern appearance (Appendix B1, Table 4, Tag #27). This ramp option does not require any anchoring into concrete footings or pads. There are also aesthetically pleasing ramp options made out of simple or ornate wood (Appendix B1, Table 4, Tag #28). This durable option can blend the ramp with existing features of your home.

Craftsman Master Bathroom Typology

The finalized master bathroom with modifications is shown in a floor plan view (Appendix A, Figure 4.1), elevation views (Appendix A, Figure 4.3 – 4.5), and perspective views (Appendix A, Figure 4.6 – 4.7). The viewer is standing in the northeast corner of the room facing southwest in the perspective view showing the roll-in shower (Appendix A, Figure 4.6). The viewer is standing in the southwest corner of the room facing northeast in the perspective view showing the sink and toilet (Appendix A, Figure 4.7). The daily activities identified in the master bathroom include using the toilet, and other hygiene activities such as bathing, brushing teeth, and washing hands.

The master bathroom features a variety of modifications providing safety and independence for wheelchair users, including grab bars, a roll-in shower, and an accessible sink with cabinetry. The existing layout and size of the master bathroom did not provide sufficient space for a senior using a wheelchair to function in this space. Therefore, structural modifications were implemented first to enlarge the space by removing the existing walls and occupying the south area of the master bedroom closet. The reduction of the existing master bedroom closet is justifiable since the master bedroom has an existing second closet. The bathroom and master bedroom closet door
swings were switched to swing out into the master bedroom. The bathroom door was also moved along the wall 1 foot 6 inches to the west. The master bedroom closet door was enlarged from 27 inches to 30 inches to accommodate a senior using a wheelchair with closet shelves installed at reachable heights between 15 and 48 inches above finished floor (Appendix B2, Image 1). Standard door knobs were also replaced with lever door handles due to identifiable issues with senior’s ability to grasp, squeeze and twist items with their hands due to arthritis and other hand disabilities (Appendix B1, Table 6, Tag #46).

The best design solution for a senior using a wheelchair bathing is to replace the standard bathtub with a roll-in shower (Appendix B2, Image 6). This allows the senior to roll the wheelchair directly into the shower to bathe without having to transfer to a shower seat or lift in and out of a standard bathtub. Other bathing options include a transfer shower (Appendix B2, Image 5) or a modified bathtub (Appendix B2, Image 4). Other modifications such as a single handheld shower head (Appendix B1, Table 5, Tag #33), and open shelving (Appendix B2, Image 1) also help the senior maintain their privacy and independence. To prevent the senior from getting burned, the water heater temperature should be lowered to 120 degrees.

The bathroom is one of the most dangerous rooms in a residential home. Nonslip flooring such as vinyl, cork, rubber, or ceramic tile should be installed to lessen the possibility of injuries from falls. Installing side and rear toilet grab bars can also help prevent falls. The side grab bar should be installed 42 inches minimum and the rear grab bar should be 36 inches minimum (Appendix B1, Table 5, Tag #35). Optional grab bar configurations are also available (Appendix B1, Table 5, Tag #34 & 36). Another safety
modification is installing a wall panic alarm to call for help in case of an intruder (Appendix B1, Table 5, Tag #31). The height of the toilet should also be raised 17 to 19 inches above finished floor (AFF) to prevent possible falls. The toilet has to be centered from the wall 1 foot 6 inches in order for the user to reach the grab bars. The sink and cabinetry was selected to allow sufficient knee clearance of 27 inches for a wheelchair-dependent senior (Appendix B2, Image 3).

Summary

The creative project used several facets of gathered information and relevant product research in order to identify the senior’s current and future needs, activities, space functions, patterns, relationships, issues, and the best design solutions toward aging in place in one’s own home. The modifications, support systems and products for the senior population, and visual views such as floor plan call-outs, elevations, and perspectives conducted in Revit assisted in articulating and understanding the best design solutions. The master bathroom solutions also offer additional options for those seniors with limited expenses or housing typologies with other restrictions. The creative project serves as an additional blueprint for studies on aging in place; identifies current issues and translates them into workable guidelines that could enlighten professional designers and design students; and collate good practices that will inform healthcare specialists and other family members to understand further the positive impact of smart living for seniors. Further the study also increases the level of awareness on design issues for elder-friendly environments and communities, and establishes the benefits of aging in place that may possibly decrease mortality rate among seniors.
CHAPTER 5

DISCUSSION

Identification of aging in place issues, practices and innovative support systems for seniors is a viable research problem today for designers due to the fact that the increasing U.S. group of senior citizens. Unfortunately, they are far less informed about the reality of providing elders with personal care, health care, and social support (Bookman & Kimbrel, 2011). The main purpose of this mixed methods creative project is to further illuminate the concept of Aging in Place design for the creation of guidelines in retro-fitting homes owned by the senior population. The design problem also addresses multiple objectives which are enumerated as follows: 1) identify and evaluate the identity and public perceptions toward the senior population; 2) categorize the common attributes, activities, and needs for the senior population; 3) examine the senior housing typologies and current trends; 4) classify support systems for the senior population; 5) recognize the issues in a typical senior’s home in order to develop aging in place design guidelines for retro-fitting purposes; and 6) study the theories associated to aging in place models. This chapter will discuss the relevant theories of the creative project and how the completed project will add to the body of knowledge with aging in place studies.
Relevant Theories

The creative project used the Gestalt, Functionalism, Meaning of Place, and Person-Environment theories to develop the best design solutions. The Gestalt theory was relevant to the creative project since it is related to the elements and principles of design, space planning, lighting design, and furniture within the residential homes. The user views these components as a whole in addition to the individual parts. The functions and activities performed in the individual spaces were first identified. The issues within the spaces consisting of mobility, physical barriers, safety, security, and independence were also determined. The individual modifications were then selected based on a system of putting the components together as a workable solution with the concept of the senior experiencing the home as a whole in addition to their individual spaces.

The Gestalt’s theory is a concept of visual perception that identifies patterns of behavior within the Gestalt laws. The Gestalt’s Law of Similarity was followed where similar items were grouped together to create a form of continuity (Nussbaumer, 2009, p. 20). For example the kitchen in the Cape Cod grouped together similar components consisting of appliances and countertops to form horizontal lines (Appendix A, Figure 2.3-2.4). Another applied Gestalts law was the Law of Proximity, where close together items are seen as belonging together regardless of the actual connection (Nussbaumer, 2009, p. 20). The master bathroom in the Craftsman is an example of similar attributes forming a group (Appendix A, Figure 4.7). The Gestalt Law of Symmetry groups dissimilar items together in order to create symmetry (Nussbaumer, 2009, p. 20). The placement of the two nightstands and bed against the west wall in the master bedroom in the Ranch are viewed as symmetrical (Appendix A, Figure 1.1).
The Functionalism theory was also relevant to the creative project with the concept of form follows function with three key concepts of function, fitness, and utility (Nussbaumer, 2009, p. 22). The creative project used the Functionalism theory to examine and analyze the selected modifications. Areas examined included space planning, design elements and principles, lighting, furniture, fixtures, and equipment. For example the roll-in shower selected for the master bathroom in the Craftsman was analyzed based on its function relative to its fit in the environment and to satisfy the user’s needs (Appendix A, Figure 4.6). The function concept determined the purpose of the roll-in shower along with understanding how it will be used and in what context. The fitness concept determined if the roll-in shower was appropriate for its purpose; if it was suitable for its location and the user, the level of quality, and if it meets code requirements. The utility concept analyzes the roll-in showers’ usefulness or users’ satisfaction in addition to its intended purpose. The roll-in shower should also fulfill the intended purpose of the requirements and satisfy the senior’s needs.

The Meaning of Place theory is relevant to the creative project since seniors have their own individual association with their home in terms of place identity, sense of place, place attachment, and third place theory (Nussbaumer, 2009, p. 30). The creative project indicated seniors are emotionally attached to their social and physical environment due to years of memories, traditions, self-identification, and feelings of comfort, safety, and relaxation. The place, in this case is the home and community, which also aids with forming part of the senior’s identity and sense of ownership. The home modifications were necessary and enabled seniors the opportunity to remain in their own home and age in place by increasing the senior’s level of comfort, safety, security, freedom and
independence. This allows seniors to continue living in a familiar environment and maintain their sense of belonging. Seniors also want to remain socially connected as they take part in the community by visiting local stores, libraries, restaurants, malls, sacred spaces, and coffee shops (Nussbaumer, 2009, p. 31).

The Person-Environment theory was also relevant to the creative project and showed the relationship between the environment and the senior in addition to how they affect each other (Nussbaumer, 2009). The home modifications were necessary and enabled the seniors the opportunity to function in the environment, to be competent in handling the demands of the environment, and to enjoy a harmonious environment (Nussbaumer, 2009, p. 26). For example, a senior using a wheelchair can handle daily activities in a master bathroom with supportive modifications including a roll-in shower, single handheld shower head, raised toilet, grab bars, levered door handle, lowered closet shelves, sink and cabinetry with knee/toe clearance, nonslip flooring, and a wall panic alarm (Appendix A, Figure 4.1). The factors within the Person-Environment theory was applied to all the home modifications in order to provide a supportive environment, improve quality of life, allow for autonomy, and lessen potential injury for seniors aging in one’s own place.

**Body of Knowledge**

The creative project adds to the body of knowledge as it significantly contributes classified and clustered data using mixed-methods as well as new information addressing aging in place studies. The facts and information presented in this creative project manifest the potential for the individual observer/reader to apply based on their individual
level of aging in place knowledge. The creative project also required knowledge across other disciplines, including psychology (senior’s functions and behaviors), sociology (senior/environment interaction), human ergonomics, and interior design. Collectively, these disciplines and mixed methods shaped the knowledge base necessary to modify the spaces effectively for the aging population within the four typologies of housing.

Further, information around pragmatic and current issues were identified within the aging in place housing typologies. The study also foregrounded the senior’s current and future needs and activities, current issues on institutionalized environments, innovative technological trends, and home modifications. All this information expands the level of awareness on design issues of elder-friendly environments and communities to increase among interior design professionals, design students, healthcare specialists, and other family members. The design issues were translated into alternative solutions and resulted in feasible guidelines addressing the design problem in many ways possible.

The aging in place home modifications, also known as the design solutions, included a variety of current support systems and products for the senior population (Appendix B1) and interior graphic standards for accessibility (Appendix B2). The design solutions serve as an additional blueprint for advancing evidence-based knowledge among the interior design professionals, design students, healthcare specialists, and American families. The practice of extracting innovative technological devices from a current trends and implementing the appropriate device into a design solution similarly informs and promotes smart living for seniors aging in place. The creative project also establishes the multiple benefits of seniors aging in place in one’s
own home and introduces the concept of possibly decreasing the mortality and accident rate among seniors aging in place in one’s own home.

**Summary**

The creative project used relevant theories to develop the best design solutions for seniors’ aging in place in one’s own home. The applied theories include concepts of viewing the components of the home as a whole as well as in parts; weigh in the form follows function concept, balance the emotional attachment to social and physical environments, and the support relationships between the environment and the senior in addition to how they affect each other. The home modifications enable seniors the opportunity to remain in their own home and age in place by increasing the senior’s level of comfort, safety, security, freedom and independence. The design solutions indicated in the creative project essentially adds to the body of knowledge by identifying and clustering the facts while showing new information surrounding aging in place studies. The research foregrounds many factors of value that eventually will provide a supportive environment, improve the quality of life, allow for autonomy, and lessen the potential injuries for seniors aging in place in one’s own home. The knowledge and benefits of aging in place can enlighten interior design professionals, design students, healthcare specialists and other family members.
CHAPTER 6

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

Identification of aging in place issues, practices and innovative support systems for seniors is a viable research problem today for designers due to the fact the increasing U.S. group of senior citizens. Unfortunately, they are far less informed about the reality of providing elders with personal care, health care, and social support (Bookman & Kimbrel, 2011). The main purpose of this mixed methods creative project is to further illuminate the concept of Aging in Place design for the creation of guidelines in retrofitting homes owned by the senior population. The design problem also addresses multiple objectives which are enumerated as follows: 1) identify and evaluate the identity and public perceptions toward the senior population; 2) categorize the common attributes, activities, and needs for the senior population; 3) examine the senior housing typologies and current trends; 4) classify support systems for the senior population; 5) recognize the issues in a typical senior’s home in order to develop aging in place design guidelines for retro-fitting purposes; and 6) study the theories associated to aging in place models. The contents of this chapter will include a brief summary of the creative project, limitations, and recommendations for further research.
Creative Project Summary

The creative project focused on the benefits of seniors aging in place while they use their own home instead of transitioning to other senior facilities consisting of assisted living, nursing homes, and retirement communities. Seniors feel emotionally attached to their home because the environment and community enables a sense of belonging, connection to memories, representations of security, safety, and familiarity with the area and surroundings. As seniors age, the body goes through physical changes resulting in various levels of functional limitations creating challenges in the home and preventing daily activities and mobility within the home. Design issues were identified in four housing typologies focusing on a wheelchair-dependent senior as they function in the master bedroom, kitchen, front porch, and master bathroom. In order for seniors to remain in their homes, temporary and permanent modifications were developed as workable guidelines using mixed methods consisting of evidence based design, visual data collection and mapping (Appendix B1 & B2), Residential Housing Assessment (Appendix C1), architectural drawings (Appendix A), and the application of four theories which includes the Gestalt, Functionalism, Meaning of Place, and Person-Environment.

The results of the creative project provides several evidence-based design solutions for seniors aging in place in one’s own home as manifested in increased mobility, comfort, safety, security, freedom, and independence. The creative project also adds to the body of knowledge surrounding the aging in place studies as it strongly foregrounds many factors of value that provide a supportive environment, improve the quality of life, allow for senior living autonomy, and lessen the potential injuries for seniors. This initial research will be useful for interior design professionals, design students, healthcare
specialists, and other family members as they seek to address parallel issues of value to the American aging society.

Limitations

As the reader examines the results of this creative project, several limitations must be considered:

- The senior housing typologies in the creative project was limited to four types; Ranch, Cape Cod, Bungalow, and Craftsman.

- The creative project was designed with emphasis on a senior dependent on a wheelchair for mobility, requiring more structural changes than a senior with a good walking ability.

- The researcher obtained all of the research from published journal articles and digital sources on aging in place. As such, future aging in place studies would further benefit from consulting seniors and healthcare specialists to expand additional information unavailable in current literature.

- Due to the given time frame of the creative project, the residential housing assessment utilized existing floor plans of the four housing typologies instead of conducting actual physical onsite post-occupancy evaluations.

- The classification of support systems and products for the senior population in Appendix B1 were mostly gadgets and product enhancements instead of addressing the senior’s well-being and independence needs directly. Manufacturers have also
developed various costly brands of the same item which appears to capitalize on the weaknesses of the senior population.

**Recommendations**

Based on the results of the creative project, additional research on aging in place in one’s own home should be conducted to fulfill the senior’s desire to remain in their own home. The following suggestions are made:

- Onsite home evaluations and home modifications on more than four housing typologies may serve as one potential study in identifying other issues and in further developing a more expanded guideline.

- The research and identification of home modification expenses will be useful for the future researcher to address which modifications are more likely to be affordable and implemented by the average senior based on their respective budgets.

- It would also be of interest to research and test the effectiveness on integrating innovative technological devices into the home. A focus group consisting of seniors could try and test products, and identify which ones are more effective and identify any shortfalls they present. A digital simulation of spaces with and without the modifications could also be constructed for a user valuation analysis.

- Another good research inquiry is to assess the long term value of the home when the modifications have been made. Does the modifications increase or decrease the resale value, the lifecycle of the home, and the long-term mobility upon future occupants.
• The research on integrating the home modifications to all age groups can serve as another avenue of inquiry instead of focusing on implementing only on the senior population. An analysis of aging in place design guidelines versus universal design principles could be conducted.

Summary

In summary, the creative project’s theories combined with the mixed methods developed the workable guidelines in order to serve as an additional blueprint for aging in place studies; identified prevalent design issues; and expanded aging in place knowledge for interior design professionals, design students, healthcare specialists and other family members. The creative project also promotes smart living with the understanding of innovative technological devices, increases the level of awareness and benefits of elder-friendly environments and communities with the possibility of decreasing the mortality and accident rates among seniors. Future research is needed to evaluate additional housing typologies and design issues, the expenses of aging in place home modifications, the effectiveness of seniors using innovative technological devices in their homes, the long term value of retro-fitted homes for seniors, and incorporating aging in place home modifications across all age groups.
REFERENCES


APPENDIX A

FIGURES OF DRAWINGS

Figure 1 – Existing Ranch Typology

Floor Plan View (Not to Scale)
Figure 1.1 – Ranch Master Bedroom Typology

Floor Plan View (Not to Scale)

Refer to Figure 1.2A & 1.2B Journal Notes of Modifications
1. Change closet doors from 24” to 30” wide to allow for accessible clearance.

2. Lower closet shelves height to 48” max and 15” min for forward reach accessibility (Appendix B2, Image 1).

3. Door handles changed to lever for easier access with a little downward pressure on the lever instead of gripping or twisting (Appendix B1, Table 6, Tag #46).

4. Nightstand and dresser heights for a wheelchair user should be between 15” - 48” above finished floor (aff) for reach accessibility.

5. If resident is in wheelchair a 5' turning space is required (Appendix B2, Image 2).

6. Bed height should be raised between 18" - 20" with the bed frame height up to 8" aff (Appendix B1, Table 7, Tag #50).

7. Dressers for wheelchair users should be situated with a clear access aisle of 42" in front.

8. Furniture with doors should have relatively narrow leaves 9" - 15" so the arc of the swing when opened is small. This allows the leaf easier to operate w/o moving the wheelchair as the door is opened.

9. If resident has difficulty maintaining balance, a chair with armrests can be added to provide dressing support.

10. Bedside fire alarm with vibrating pad (Appendix B1, Table 1, Tag #1).

11. Appropriate space planning and decluttered pathways for easy mobility.

12. Remove throw rugs to decrease falls.

13. Install motion sensors for lights (Appendix B1, Table 8, Tag #59).

Figure 1.2A – Journal Notes of Modifications

Refer to Figure 1.1 Ranch Master Bedroom Typology Floor Plan View
14. Consider enhanced land line phone (Appendix B1, Table 6, Tag #44).

15. Install talking smoke and carbon monoxide alarm (Appendix B1, Table 2, Tag #12).

16. Install bedroom door sign on bedroom entry door (Appendix B1, Table 2, Tag #14).

17. Install organizer labels in closet (Appendix B1, Table 2, Tag #15).

18. Install wall panic alarm on west wall by nightstand/bed (Appendix B1, Table 5, Tag #31).

19. Install bedside assist to the side of bed to help senior get in and out of bed (Appendix B1, Table 7, Tag #49).

20. Install a bed alarm mat in the bed for seniors who wander at night (Appendix B1, Table 7, Tag #55).

21. Install a bedside mat alarm on the floor next to the bed where a senior will put their feet to get up (Appendix B1, Table 7, Tag #56).

22. Install soft foam covers to any furniture with sharp corners (Appendix B1, Table 7, Tag #58).

23. Install touch lamp dimmers (Appendix B1, Table 8, Tag #61) or switch enlargers (Appendix B1, Table 8, Tag #62) to all lamps.

24. Install wall switch extension handles to all wall light switches for wheelchair users (Appendix B1, Table 8, Tag #58).

Figure 1.2B – Journal Notes of Modifications

Refer to Figure 1.1 Ranch Master Bedroom Typology Floor Plan View
Figure 2 – Existing Cape Cod Typology

Floor Plan View (Not to Scale)
Figure 2.1 – Cape Cod Kitchen Typology

Floor Plan View (Not to Scale)

Refer to Figure 2.2A & 2.2B Journal Notes of Modifications
1. A parallel or front approach for fixtures or appliances (Appendix B2, Image 7).

2. A 40" min clearance is required between kitchen cabinets and opposing walls, cabinets, or appliances where the counters provide knee space (Appendix B2, Image 8).

3. Floor space and knee space requirements for fixtures and appliances (Appendix B2, Image 9).

4. Replace sink with a shallow unit with easy to operate faucets. A tall spout and a pullout spray attachment are also recommended. Garbage disposals must be offset in order to provide full knee space under the sink. Dishwasher placement is next to sink for easy access (Appendix B2, Image 10).

5. The design of kitchen storage space for wheelchair users should provide both visual and physical access to wall and base cabinets, drawers, and pantries. Base cabinets will have pullout shelves or drawers that will provide easy access to items stored in the back of the cabinets (Appendix B2, Image 11). Maximum reach limit is 21" for wheelchair users.

6. Replace range with a cooktop with front or side mounted controls so the seated user does not need to reach over the heated surfaces. A smooth cooktop surface allows pots to be slid rather than lifted on and off the burners (Appendix B2, Image 12). Move cooktop unit to north kitchen wall.

7. Replace the standard refrigerator with a side-by-side unit. A side-by-side refrigerator offer a wheelchair user access to both the freezer and refrigerator storage at all height levels from the floor to the top shelf (Appendix B2, Image 13).

8. Widen entry ways to 3'-0" for wheelchair clearance.

9. Base cabinets are 33" in height with a 1" countertop for a total of 34" above finished floor (aff).

Figure 2.2A – Journal Notes of Modifications

Refer to Figure 2.1 Cape Cod Kitchen Typology Floor Plan View
10. Countertop depth should be 20" (Appendix B2, Image 14).

11. Replace upper cabinets with open shelving for visual recognition of stored kitchen items.

12. Workspace for a wheelchair user is added to the east side of the dishwasher extending 4'-4".


14. Install stovetop fire prevention device (Appendix B1, Table 6, Tag #42).

15. Install nonslip flooring such as vinyl, cork, rubber, or ceramic tile.

16. Install a talking organizer/calendar (Appendix B1, Table 2, Tag #10).

17. Provide a talking food can device (Appendix B1, Table 2, Tag #11).

18. Install a talking smoke and carbon monoxide alarm (Appendix B1, Table 2, Tag #12).

19. Provide an automatic pill dispenser (Appendix B1, Table 2, Tag #13).

20. Provide a talking microwave (Appendix B1, Table 6, Tag #48).

21. Install soft foam covers to any furniture with sharp corners (Appendix B1, Table 7, Tag #58).

22. Install wall switch extension handles to all wall light switches for wheelchair users (Appendix B1, Table 8, Tag #63).

Figure 2.2B – Journal Notes of Modifications

Refer to Figure 2.1 Cape Cod Kitchen Typology Floor Plan View
Figure 2.3 – Cape Cod Kitchen Typology

South Wall Elevation View (Not to Scale)
Figure 2.4 – Cape Cod Kitchen Typology
North Wall Elevation View (Not to Scale)
Figure 2.5 – Cape Cod Kitchen Typology

Perspective View (Not to Scale)
Figure 3 – Existing Bungalow Typology

Floor Plan View (Not to Scale)
Figure 4 – Existing Craftsman Typology

Floor Plan View (Not to Scale)
Figure 4.1 – Craftsman Master Bathroom Typology

Floor Plan View (Not to Scale)

Refer to Figure 4.2A & 4.2B Journal Notes of Modifications
1. Move door west 1’ 6". Door swings out of bathroom.

2. Remove wall north and west of toilet.

3. Remove existing closet.

4. Remove standard bathtub. Optional accessible tub (Appendix B2, Image 4) with bath mat (Appendix B1, Table 5, Tag #37), bath seat with handles (Appendix B1, Table 5, Tag #32), safety grips (Appendix B1, Table 4, Tag #29) and portable bath steps (Appendix B1, Table 3, Tag #20).

5. Move toilet to east wall. Center of toilet is 1’-6" from corner.

6. Install side toilet grab bar on north wall and rear grab bar on east wall. Length minimum for side bar is 42" and rear bar is 36" (Appendix B1, Table 5, Tag #35). Optional grab bar configurations (Appendix B1, Table 5, Tag #34 & #36).


8. Install wall north of roll-in shower.

9. Install closet shelves on south wall.

10. Change indoor swing to outdoor on closet door. Change 27" door to 30".

Figure 4.2A – Journal Notes of Modifications

Refer to Figure 4.1 Craftsman Master Bathroom Typology Floor Plan View

12. Install nonslip flooring such as vinyl, cork, rubber or ceramic tile.

13. Install wall panic alarm (Appendix B1, Table 5, Tag #31).

14. Install single handheld shower head (Appendix B1, Table 5, Tag #33).

15. Install lever door handle on bathroom door (Appendix B1, Table 6, Tag #46).

16. Lower water heater temperature to 120 degrees to prevent burns.

17. Install shelves at a reachable height of 48" and 30" above finished floor (aff), (Appendix B2, Image 1).

18. Install bathroom door sign on bathroom entry door (Appendix B1, Table 2, Tag #14).

19. Install toilet foot flusher (Appendix B1, Table 5, Tag #39).

20. Install wall switch extension handles to wall light switch for wheelchair users (Appendix B1, Table 8, Tag #63).

Figure 4.2B – Journal Notes of Modifications

Refer to Figure 4.1 Craftsman Master Bathroom Typology Floor Plan View
Figure 4.4 – Craftsman Master Bathroom Typology
South Wall Elevation View (Not to Scale)

Legend:
1 JOURNAL NOTES FOR FIGURE 4.2A & 4.2B
Figure 4.5 – Craftsman Master Bathroom Typology

West Wall Elevation View (Not to Scale)
Figure 4.6 – Craftsman Master Bathroom Typology

Perspective View 1 (Not to Scale)
Figure 4.7 – Craftsman Master Bathroom Typology

Perspective View 2 (Not to Scale)
Figure 5 – Visual Mapping Home Modifications

- Raised, front load washer/dryer
- Install ramp or handrail
- Lighting by stairs
- Colored, reflective stair strips
- Tread on stairs
- Install garage opener
- Relocate door to allow ramp space
- Remove cabinet doors
- Pictures/signs on drawers
- Grab bar in front of sink
- Minimize counter clutter
- Non-slip flooring
- GFI outlets
- Single faucet
- Stove top fire prevention device
- Medication management system

**ROOM INDEX**

<table>
<thead>
<tr>
<th>ROOM #</th>
<th>ROOM NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LIVING ROOM</td>
</tr>
<tr>
<td>2</td>
<td>KITCHEN</td>
</tr>
<tr>
<td>3</td>
<td>DINING ROOM</td>
</tr>
<tr>
<td>4</td>
<td>MASTER BEDROOM</td>
</tr>
<tr>
<td>5</td>
<td>BATHROOM</td>
</tr>
<tr>
<td>6</td>
<td>LAUNDRY ROOM</td>
</tr>
<tr>
<td>7</td>
<td>SPARE BEDROOM</td>
</tr>
<tr>
<td>8</td>
<td>PORCH</td>
</tr>
<tr>
<td>9</td>
<td>GARAGE</td>
</tr>
</tbody>
</table>

**CAPTIONS**

- Install security system
- Front door peep hole viewer
- Install ramp or handrail on both sides of steps
- Lighting by stairs
- Colored, reflective stair strips
- Treads on steps
- Arrange for snow removal
- Bedside fire alarm with vibrating pad
- Raise bed height
- Furniture selected easy to operate
- Chairs with armrests
- Wait pull chord alarm
- Replace tub w/roll-in shower
- Install grab bars
- Remove toilet lid
- Raise toilet seat
- Non-slip flooring
- Handheld showerhead
- Non-slip strips in shower
- Shower seat
- Lavatory knee/foot clearance
- Insulate exposed pipes under lavatory
- Lower water heater temperature
- Spare bed for caregiver
- Furniture selected easy to operate
- Furniture with armrests
- Computer area

**SOURCES:**

- www.virtualcareathome.com
- www.fencedhunter.com
- www.firehoseonline.com
## APPENDIX B 1

### SUPPORT SYSTEMS AND PRODUCTS FOR THE SENIOR POPULATION

#### Table 1 Product Schedule – Sensory Modalities

<table>
<thead>
<tr>
<th>Tag #</th>
<th>Product Name</th>
<th>Company</th>
<th>Brief Description</th>
<th>Size</th>
<th>Focus Features</th>
<th>Company Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ClearSounds Alarm Clock</td>
<td>Virtual Care at Home</td>
<td>Adjustable tone, vibrating pads, flashing lights, and sound patterns to effectively wake people with hearing loss.</td>
<td>7.5” x 4.25” x 4.75”</td>
<td>Provides magnification and illumination for reading and tasks.</td>
<td>Elderly</td>
</tr>
<tr>
<td>2</td>
<td>Illuminated Hand-held Magnifier</td>
<td>EnChentech Optic of America</td>
<td>Use sensors to improve cognitive functioning in those with Alzheimer’s disease and dementia.</td>
<td>Not listed</td>
<td>Touch control hearing aid for moderate to severe hearing loss.</td>
<td>Elderly</td>
</tr>
<tr>
<td>3</td>
<td>Mini BTE Hearing Aid</td>
<td>Starkey</td>
<td>Provides many advantages to seniors with decreased motor skills and poor vision. The unit contains a large and brightly colored 3 inch trackball.</td>
<td>Not listed</td>
<td>The universal remote has large buttons and only contains the buttons that are essential to basic tasks. Glows in the dark. Distinguishes and announces color of clothes.</td>
<td>Elderly</td>
</tr>
<tr>
<td>4</td>
<td>Tangle Aroma Therapy</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>TouchBite</td>
<td>Assistechnology Needs</td>
</tr>
<tr>
<td>5</td>
<td>PocketTalk Pro Listening Device</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>TouchBite</td>
<td>Assistechnology Needs</td>
</tr>
<tr>
<td>6</td>
<td>BigTrack Mouse with 3 inch Trackball</td>
<td>Hy-Tek Tek Partner BV056D</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Digital Thermostat with audio playback of day, indoor temperature, temperature setting.</td>
<td>Assistechnology Needs</td>
</tr>
<tr>
<td>7</td>
<td>Color Reading</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Digital Thermostat with audio playback of day, indoor temperature, temperature setting.</td>
<td>Assistechnology Needs</td>
</tr>
<tr>
<td>8</td>
<td>VIP Talking Thermostat for the Blind</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Digital Thermostat with audio playback of day, indoor temperature, temperature setting.</td>
<td>Assistechnology Needs</td>
</tr>
<tr>
<td>9</td>
<td>Low Vision</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Digital Thermostat with audio playback of day, indoor temperature, temperature setting.</td>
<td>Assistechnology Needs</td>
</tr>
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Table 1 Product Schedule – Sensory Modalities

Tag Numbers 1 – 9
<table>
<thead>
<tr>
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<th>Size</th>
<th>Company</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Lifetime Voice Calendar Talking Organizer</td>
<td>11 3/8&quot; L x 9&quot; W x</td>
<td>Assistech Special</td>
<td>Easy to use and set, helpful for seniors with visual impairments. Record important dates, appointments, birthdays and anniversaries in your own voice for reminder playbacks.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7/8&quot; D</td>
<td>Needs</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Talking Food Can</td>
<td>Not listed</td>
<td>Assistech Special</td>
<td>Designed to help identify the contents of your canned food. Record a voice message to tell you what the item is and play it back anytime to remind you what is in the can. Used on other items such as bottles, household sprays, and plastic storage containers.</td>
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<td></td>
<td></td>
<td></td>
<td>Needs</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>OneLink Talking Smoke and Carbon Monoxide Alarm</td>
<td>Not listed</td>
<td>Assistech Special</td>
<td>Voice can be easily programmed for alarm's location within the home. A voice notifies which hazard is being sensed. Example “Warning, evacuate. Smoke in kitchen.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Needs</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Med-E-Lert Automatic Pill Dispenser</td>
<td>Not listed</td>
<td>Virtual Care at Home</td>
<td>Battery operated. 28 compartments. Dispenses pills once a day or up to four times a day. Alerts with a buzzer alarm and flashing light.</td>
</tr>
<tr>
<td>14</td>
<td>Bedroom Door Sign</td>
<td>5.5&quot; x 2.5&quot;</td>
<td>Person Care</td>
<td>Helps loved one know where bedroom is. Place sign on bedroom door so wandering loved one knows what is behind closed door.</td>
</tr>
<tr>
<td>15</td>
<td>At A Glance Closet Organizers 60 Labels</td>
<td>3.75&quot;H, 3&quot;W at the</td>
<td>Independent Living</td>
<td>12 plastic dividers and 60 pre-indexed labels help you dress faster and be more coordinated. They fit around the hanger rods to organize your closet into any categories that make it easier and faster to find clothes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>top, 3.25&quot;W at the</td>
<td>Aids</td>
<td></td>
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<td>bottom, with a hole</td>
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<td>diameter.</td>
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<tr>
<td>Tag #</td>
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<td>Size</td>
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<tr>
<td>16</td>
<td>Glow-in Dark Stair Treads</td>
<td>15-1/4&quot; x 6-3/4&quot;.</td>
<td>The Lakeside Collection</td>
<td>Install with peel and stick adhesive backing. A slotted design for extra traction.</td>
</tr>
<tr>
<td>17</td>
<td>Anti-Slip Exterior Stair Treads</td>
<td>9&quot; depth, 36&quot; or 48&quot; length</td>
<td>Group Building Solutions</td>
<td>Meets ADA contrasting color requirements for the visually impaired. Exceeds ADA recommendations for slip resistance on flat surfaces.</td>
</tr>
<tr>
<td>18</td>
<td>Park EZ</td>
<td>8&quot;diam base x 51&quot;H</td>
<td>FirstStreet</td>
<td>Flashing LED's signal when your bumper has touched the pole. Adjustable height up to 51&quot; to accommodate any size vehicle.</td>
</tr>
<tr>
<td>19</td>
<td>Pathlighter</td>
<td>Adjustable from 34&quot; to 39&quot;</td>
<td>Modern Senior Products</td>
<td>PathLighter is a Lighted Safety Adjustable Walking Cane that provides a circle of light at your feet for walking safely at night.</td>
</tr>
<tr>
<td>20</td>
<td>Portable Bath Step</td>
<td>19.5&quot; W x 16&quot; D x 4&quot; H</td>
<td>Parentgiving, Inc</td>
<td>The steps make getting in and out of the bath tub easy and safe. It adds a 4 inch boost with an attractive slip-resistant textured soft top and rubber.</td>
</tr>
<tr>
<td>21</td>
<td>High Visibility Door Alarm Banner with Alarm System</td>
<td>Not listed.</td>
<td>Parentgiving, Inc</td>
<td>An arresting yellow banner and bright red STOP sign will catch the patient's eye. The high visibility combined with a magnetically activated alarm on this alarm door banner provides an effective deterrent to wandering.</td>
</tr>
<tr>
<td>Tag #</td>
<td>Product Name</td>
<td>Size</td>
<td>Company</td>
<td>Brief Description</td>
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<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>22</td>
<td>TuffCare Challenger Electric Wheel Chair</td>
<td>Overall width 25&quot;, height 34-45&quot;, depth 43&quot;</td>
<td>1st Senior Care</td>
<td>High back sport seat with head rest, swing back armrests and seat belt. Arms adjust to accommodate widths from 19&quot; to 26&quot;. Weight limit 250 lbs.</td>
</tr>
<tr>
<td>23</td>
<td>Folding Aluminum Rollator</td>
<td>31.5&quot;H x 23.75&quot;W x 30&quot; deep</td>
<td>FirstStreet</td>
<td>Folds easily and compactly for easy storage or travel. Weight limit 250 lbs.</td>
</tr>
<tr>
<td>24</td>
<td>Retractable Ice Tip Cane</td>
<td>30&quot; - 39&quot; L</td>
<td>FirstStreet</td>
<td>Traditional, standard, round-top handle cane with soft foam grip. Push button, retractable ice tip helps to ensure safe, secure footing on snow or ice.</td>
</tr>
<tr>
<td>25</td>
<td>TuffCare Electric Scooter</td>
<td>Overall width 24&quot;, length 42&quot;, height 44&quot; - 51&quot;</td>
<td>1st Senior Care</td>
<td>Powerful three-wheeled electric scooter with low energy consumption. Weight limit 250 lbs.</td>
</tr>
<tr>
<td>26</td>
<td>Portable Singlefold Ramp</td>
<td>30&quot; width. Length is 1&quot; increments from 2&quot; to 8'</td>
<td>1st Senior Care</td>
<td>Lightweight, easy to handle and set-up. Folds in half and is carried like a suitcase. Provides excellent stability.</td>
</tr>
<tr>
<td>27</td>
<td>SlimLine Steel Ramp</td>
<td>Custom built</td>
<td>Ramparts</td>
<td>A complete modular ramp system. Permanent or temporary, it adapts easily to various widths, odd angles and unusual configurations.</td>
</tr>
<tr>
<td>28</td>
<td>Wood Ramp</td>
<td>Custom built</td>
<td>Ramparts</td>
<td>Simple or ornate designs. The ramps blend with features of your home. Match railings to an existing deck or fence, or screen the ramp from view with a siding-clad wall.</td>
</tr>
<tr>
<td>29</td>
<td>Bath Safety Grip</td>
<td>16.5&quot;L x 3.75&quot;H x 3.75&quot;W</td>
<td>FirstStreet</td>
<td>Assists resident getting in and out of a slippery tub. Two large suction cups secure handle on the side of the tub or shower wall to allow a good grip. Easy to install.</td>
</tr>
<tr>
<td>Tag #</td>
<td>Product Name</td>
<td>Size</td>
<td>Company</td>
<td>Brief Description</td>
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</tr>
<tr>
<td>31</td>
<td>Wall Panic Alarm</td>
<td>10 3/4&quot;L x 6&quot;W x 3&quot;H.</td>
<td>Taylor Gifts</td>
<td>Wireless and wall mounted. Features bright flashing LED light. One pull of the chord instantly releases a siren to ward off possible intruders in the residence.</td>
</tr>
<tr>
<td>32</td>
<td>Bath &amp; Shower Seat with Handles</td>
<td>18&quot;L x 21&quot;W x 29-34.5&quot;H</td>
<td>FirstStreet</td>
<td>Features large handles to make it easier for the user to safety get up and down. Adjustable seat height. Full backrest. Non-slip feet. 300lb capacity.</td>
</tr>
<tr>
<td>33</td>
<td>Shower Massage</td>
<td>9.5&quot;L x 4&quot;W x 1.50&quot;D</td>
<td>FirstStreet</td>
<td>This is the perfect showerhead for seniors and adults living alone since users are able to bathe while sitting on a bath bench in the shower or tub.</td>
</tr>
<tr>
<td>34</td>
<td>HealthCraft P.T. Rail</td>
<td>Height of 36.5&quot; and a wall plate that is 5.5&quot; x 9&quot;.</td>
<td>1st Senior Care</td>
<td>Improves self-mobility and helps to maintain bathroom dignity. An innovative support rail system which promotes safe standing and transfers to and from a toilet.</td>
</tr>
<tr>
<td>35</td>
<td>Horizon Grab Bars</td>
<td>Toilet side wall 42&quot; min and rear wall 36&quot; min.</td>
<td>Great Grabz</td>
<td>These bars have the strength, stability and safety of a traditional grab bar without the institutional look. ADA compliant and can hold over 250 lbs of force.</td>
</tr>
<tr>
<td>36</td>
<td>Invacare Safety Toilet Seat Frame</td>
<td>Arm Height 26 ½&quot; - 30 ¾&quot; and Arm Widths 17&quot; - 19 ¼&quot;</td>
<td>1st Senior Care</td>
<td>Prevent falls and improves self-reliance and dignity. Adjustable height arms fold back for cleaning and are easily height adjusted. Weight limit 300 lbs.</td>
</tr>
<tr>
<td>37</td>
<td>Drive Medical Bath Mat</td>
<td>15.75&quot; x 35.5&quot;</td>
<td>1st Senior Care</td>
<td>Helps reduce injuries related to falls. Extra-long bath mat adds safety and security by providing a large, slip proof surface in the bath.</td>
</tr>
<tr>
<td>38</td>
<td>Invacare Homefill II Post Valve Cylinder</td>
<td>ML6, M9 and D cylinder sizes</td>
<td>American Discount Home Medical Equipment</td>
<td>Gives ambulatory patients greater freedom and independence. Connection and controls are designed for ease of operation. Small and lightweight.</td>
</tr>
<tr>
<td>39</td>
<td>Toilet Foot Flusher</td>
<td>Not listed</td>
<td>Person Care</td>
<td>Made for loved one with limited hand or arm mobility. Use your foot to flush toilet.</td>
</tr>
<tr>
<td>Tag #</td>
<td>Product Name</td>
<td>Size</td>
<td>Company</td>
<td>Brief Description</td>
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</tr>
<tr>
<td>40</td>
<td>Vitals Monitoring System</td>
<td>Not listed</td>
<td>Safe Living Technologies</td>
<td>Collects data consisting of blood sugar, blood pressure, pulse ox, and weight. Provides the needed 24/7-365 watch for health issues.</td>
</tr>
<tr>
<td>41</td>
<td>Brinno Peephole Viewer</td>
<td>6&quot; x 3.5&quot; x 1&quot;</td>
<td>Virtual Care at Home</td>
<td>Simple push button for large image of who is at the door to be displayed on LCD panel.</td>
</tr>
<tr>
<td>42</td>
<td>Cookstop Stovetop Fire Prevention</td>
<td>Not listed</td>
<td>Virtual Care at Home</td>
<td>Continuously checks for movement in the kitchen. Will shut the stove off if the resident leaves the room or falls asleep while cooking.</td>
</tr>
<tr>
<td>43</td>
<td>KIWI PC Senior Computer</td>
<td>15&quot; Monitor</td>
<td>Not listed</td>
<td>Keyboard has color-coded keys to make it easier to locate function keys. Customize the Me Menu to get access to selected programs including mail, internet access, etc. The screen icons and text are designed for better visual acuity.</td>
</tr>
<tr>
<td>44</td>
<td>ClearSounds A1600 DECT 6.0 ClearDigital Amplified Cordless Phone Bundle</td>
<td>Base: 9.25 x 8 x 2.25 Handset: 6.5 x 2.25 x 1.25</td>
<td>Virtual Care at Home</td>
<td>Combines the ultimate solutions for hearing loss, visual challenges and mobility limitations. This all-in-one set makes communicating easy with call clarity and amplification, bright visual ringers, and background noise suppression.</td>
</tr>
<tr>
<td>45</td>
<td>IC Social Communication Tool</td>
<td>Not listed</td>
<td>Mikael Johansen</td>
<td>A tablet designed for seniors. Easy to use and tech savvy. Allows isolated seniors the chance to be more connected.</td>
</tr>
<tr>
<td>46</td>
<td>Schlage F10-ACC Lever Door Set</td>
<td>Not listed</td>
<td>Schlage Lock Company</td>
<td>Adjusts to fit all standard door preparations. Easy installation makes for a one-person project.</td>
</tr>
<tr>
<td>47</td>
<td>Samsung Jitterbug Cell Phone</td>
<td>Not listed</td>
<td>TouchBrite</td>
<td>The simple design and large buttons combine to give seniors just what they need.</td>
</tr>
<tr>
<td>48</td>
<td>Talking Microwave Oven</td>
<td>20.2&quot; x 12&quot; x 16.7&quot;</td>
<td>Assistech Special Needs</td>
<td>Specially modified to talk for people with low or no vision. Features an adjustable cook time, power level, built in timer, and a clock.</td>
</tr>
<tr>
<td>Tag #</td>
<td>Product Name</td>
<td>Size</td>
<td>Company</td>
<td>Brief Description</td>
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</tr>
<tr>
<td>49</td>
<td>Bedside Assist</td>
<td>21.5&quot;L x 20&quot;W x 16&quot;H</td>
<td>FirstStreet</td>
<td>This is a helpful product that can help the elderly, those living alone, avoid falls &amp; remain independent. Provides assistance in &amp; out of bed, standing or sitting.</td>
</tr>
<tr>
<td>50</td>
<td>Adjustable Bed Riser System</td>
<td>Not listed</td>
<td>Bed Bath Store</td>
<td>Instantly raises the height of the bed either using the 3&quot;, 5&quot; or 8&quot; risers. Contains 4 of each small and large.</td>
</tr>
<tr>
<td>51</td>
<td>Recliner Lever Extended</td>
<td>Not listed</td>
<td>Elder Store</td>
<td>The large, easy grip handle puts the recliner's lever within easy reach.</td>
</tr>
<tr>
<td>52</td>
<td>Uplift Seat Assist</td>
<td>15&quot; w x 16&quot; d</td>
<td>Elder Store</td>
<td>A self-powered, lifting cushion that helps users gently seat and raise themselves from a chair or sofa.</td>
</tr>
<tr>
<td>53</td>
<td>Couch Cane</td>
<td>29&quot;-32&quot; h x 15&quot; w</td>
<td>Elder Store</td>
<td>Provides the stability and security to pull yourself to a standing position with confidence. Sitting down will be more secure as you can eliminate &quot;the fall&quot; as you ease yourself down into your chair or couch.</td>
</tr>
<tr>
<td>54</td>
<td>Comforter Lift Chair</td>
<td>Various</td>
<td>Elder Store</td>
<td>Provides a safe and secure way to get into and out of your chair, but also offers superior comfort and design.</td>
</tr>
<tr>
<td>55</td>
<td>Bed Alarm</td>
<td>10&quot; x 30&quot;</td>
<td>Person Care</td>
<td>Made for restless loved one or wanderer who leaves bed during sleep time. Alerts caregiver in or near room of movement getting out of bed.</td>
</tr>
<tr>
<td>56</td>
<td>Bedside or Door Mat Alarm</td>
<td>30&quot; x 15&quot;</td>
<td>Person Care</td>
<td>Place control unit with alarm near bedside/door or hang on bed frame with silver clip. Alarm is heard when feet touch the floor mat.</td>
</tr>
<tr>
<td>57</td>
<td>Magnetic Alarm</td>
<td>Not listed</td>
<td>Person Care</td>
<td>When loved one leaves chair, magnet pulls off control unit and alarm sounds. Attach to wheelchair with clip or transfer belt.</td>
</tr>
<tr>
<td>58</td>
<td>Soft Foam Covers</td>
<td>Not listed</td>
<td>Person Care</td>
<td>Made to protect a loved one from the hard edge corner. Protects skin from bruises or cuts.Trim to what is needed for that corner.</td>
</tr>
<tr>
<td>Tag #</td>
<td>Product Name</td>
<td>Size</td>
<td>Company</td>
<td>Brief Description</td>
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</tr>
<tr>
<td>59</td>
<td>Battery Powered Motion Sensor Lights</td>
<td>Not listed</td>
<td>Virtual Care at Home</td>
<td>Battery operated lights with built-in motion sensors can be tilted to automatically turn on when motion is detected.</td>
</tr>
<tr>
<td>60</td>
<td>Hinkley Lighting H59040 Halogen Step Light</td>
<td>Faceplate 10&quot;W, 3.5&quot; H and Housing 8&quot;W, 2.5&quot;H, 4.125&quot; Depth</td>
<td>Hinkley Lighting</td>
<td>Features flat, clear, tempered, shock and heat resistant glass lens.</td>
</tr>
<tr>
<td>61</td>
<td>Magic Tap Touch Lamp Dimmer</td>
<td>Not listed</td>
<td>Elder Store</td>
<td>With a tap of your finger you can turn your lamp on or off or adjust the brightness lever.</td>
</tr>
<tr>
<td>62</td>
<td>Lamp Switch Enlargers</td>
<td>Not listed</td>
<td>Elder Store</td>
<td>Designed to fit easily over the great majority of lamp switch knobs. Easily turn on and off lamps.</td>
</tr>
<tr>
<td>63</td>
<td>Wall Switch Extension Handle</td>
<td>14&quot; long x 1.75&quot; wide</td>
<td>Elder Store</td>
<td>Puts wall switches within easy reach of wheelchair users or people with limited reach.</td>
</tr>
<tr>
<td>64</td>
<td>Mobility Light</td>
<td>3&quot; long</td>
<td>Person Care</td>
<td>Be safe and never move in the dark again. Motion sensor detects movement, light goes on. No movement, light goes off. Simple clamp secures light to walker, rollator, wheelchair or cane.</td>
</tr>
<tr>
<td>65</td>
<td>Balanced Spectrum Portable Reading Light</td>
<td>1.625&quot;L x 1.25&quot;W x 1.125&quot;H</td>
<td>First Street</td>
<td>Powerful clip-on light to glasses, ball cap, etc. Perfect for traveling in a car at dusk, reading quietly in bed, any place with dim lighting, even outdoors in the dark.</td>
</tr>
<tr>
<td>66</td>
<td>Motion-Activated Wireless LED Floodlight</td>
<td>5¾&quot;H X 5¾&quot;Dia</td>
<td>Gold Violin</td>
<td>Instant security and safety with this motion-activated wireless light. Perfect for porches, attics, basements, tool sheds, garage, etc</td>
</tr>
<tr>
<td>67</td>
<td>Caribbean Sun Blue</td>
<td>9&quot;x 5&quot;x1 1/4&quot;</td>
<td>Light Therapy Products</td>
<td>A highly effective new light therapy light box that uses 108 LED lamps to treat the symptoms associated with Seasonal Affective Disorder (SAD).</td>
</tr>
<tr>
<td>Tag #</td>
<td>Product Name</td>
<td>Size</td>
<td>Company</td>
<td>Brief Description</td>
</tr>
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</tr>
<tr>
<td>68</td>
<td>Playing Card Holder</td>
<td>2&quot; x 1 3/8&quot; x 10&quot;</td>
<td>Elder Store</td>
<td>Seniors with pain and/or limited use of their hands can use this holder instead of holding multiple cards in one hand.</td>
</tr>
<tr>
<td>69</td>
<td>Gripper Water Faucet Handle</td>
<td>Not listed</td>
<td>Elder Store</td>
<td>Attaches over your existing handle creating a large, comfortable gripping area with more leverage for turning your water spigots.</td>
</tr>
<tr>
<td>70</td>
<td>Simple Needle Threader</td>
<td>Not listed</td>
<td>Elder Store</td>
<td>Helps seniors having trouble steadying hands or pinching the small needle and thin thread.</td>
</tr>
<tr>
<td>71</td>
<td>Levo Bookholder Stand</td>
<td>31&quot;-58&quot; h x 22.5&quot;</td>
<td>Elder Store</td>
<td>Six unique movements, the holder brings your book to you. Use while reclining in your favorite chair or lying in bed. Removes the stress of arched necks &amp; fatigued hands.</td>
</tr>
<tr>
<td>72</td>
<td>knfb Reader Classic</td>
<td>Not listed</td>
<td>TouchBrite</td>
<td>A text-to-speech reader that works by taking a picture. A senior can then listen to the device as it repeats the text of what is in the picture.</td>
</tr>
<tr>
<td>73</td>
<td>Wii Sports Accessories 15 in 1</td>
<td>Not listed</td>
<td>TouchBrite</td>
<td>This bonus pack gives seniors some options instead of the controllers that come with the Wii. Instead of having to play tennis with the standard controller, a lightweight and small tennis racket makes the game easier to play.</td>
</tr>
<tr>
<td>74</td>
<td>Brain Age - From Nintendo DS</td>
<td>Not listed</td>
<td>TouchBrite</td>
<td>Offers a variety of engaging games including math and counting games, games that involve drawing pictures, and even Sudoku. This is a great way for seniors to have a little fun and also exercise their brain.</td>
</tr>
<tr>
<td>75</td>
<td>Braille Plastic Bingo Board</td>
<td>8 ¼&quot; x 8 ¼&quot;</td>
<td>Assistech Special Needs</td>
<td>Features braille and black, raised numbers. Markers included.</td>
</tr>
</tbody>
</table>
**PRODUCT NAME:** ClearSounds ShakeUp to WakeUp Dual Large Display Alarm Clock

**PRODUCT TAG NUMBER:** 1

**SIZE:** 7.75"x4.25"x4.75"

**FULL DESCRIPTION:** Includes adjustable tone, vibrating pads, flashing lights, and sound patterns to effectively wake people with hearing loss. 4 alarm modes. Dual alarms for two different wake up times. Large LCD display with dimmer control. Adjustable volume and pitch. Built-in telephone signaler.

**CONTACT INFORMATION:**

Virtual Care at Home

Oakland, CA 94609

(510) 338-3178

**WEBSITE:** [www.virtualcareathome.com](http://www.virtualcareathome.com)

**RETRIEVED:** February 4, 2013
PRODUCT NAME: Illuminated Hand-held Magnifier 1510-3

PRODUCT TAG NUMBER: 2

SIZE: Lens size 2 ½” x 1 ½” mm

FULL DESCRIPTION: Provide magnification and illumination for reading and tasks. Are ideal for in-home uses such as looking up a phone number, setting the thermostat or reading the prescription on a medicine bottle. Portability makes them useful for spotting a price in the supermarket, reading the menu in a dimly lit restaurant or looking at a map in the car. Superior quality aspheric lens. Hinge on handle keeps top and bottom pieces together. Eliminates alignment problems when closing the handle. Noted for its simple maintenance in changing batteries and bulbs. Large raised on/off switch is easy for arthritic fingers. 1 year warranty. Magnification 3.5x. Incandescent illumination. 2 AA batteries. Manufactured out of high grade white plastic.

CONTACT INFORMATION:

Eschenbach Optik of American

22 Shelter Rock Lane

Danbury, CT 06810

WEBSITE: www.eschenbach.com

RETRIEVED: February 9, 2013
PRODUCT NAME: Mini BTE Hearing Aid

PRODUCT TAG NUMBER: 3

SIZE: Not listed.

FULL DESCRIPTION: First-ever touch control panel. No hard-to-use buttons or dials. Discreet design. For moderate to severe hearing loss. Variety of color options available.

CONTACT INFORMATION:

Starkey
6700 Washington Avenue S.
Eden Prairie, MN 55344

WEBSITE: www.starkey.com

RETRIEVED: February 9, 2013
PRODUCT NAME:  Tangle Aroma Therapy

PRODUCT TAG NUMBER:  4

SIZE:  Not listed.

FULL DESCRIPTION:  Contains four sections that can be filled with the aromatherapy oil of your choosing. Has been proven to improve cognitive functioning lessen agitation, and improve sleep in people with Alzheimer’s disease and dementia. Oils not included.

CONTACT INFORMATION:

Best Alzheimer’s Products

(847) 223-3021

WEBSITE:  https://store.best-alzheimers-products.com

RETRIEVED:  March 16, 2013
**PRODUCT NAME:** PockeTalker Pro Listening Device

**PRODUCT TAG NUMBER:** 5

**SIZE:** Not listed.

**FULL DESCRIPTION:** Amplifies sound to be clearly and easily understood. Device is compact and can be taken anywhere. Ideal for 1 on 1 conversations, TV listening, small and large groups. Amplifier picks up sounds and boosts them to the volume you set. Works indoors and outdoors. Includes amplifier unit, belt clip, plug in microphone, two AA batteries, TV listening extension cord, carrying case, choice of listening device. 100 hours of battery life. Five year warranty on amplifier and 90 day on listening device.

**CONTACT INFORMATION:**

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

**WEBSITE:** [www.elderstore.com](http://www.elderstore.com)

**RETRIEVED:** March 16, 2013
PRODUCT NAME: Bigtrack Mouse with 3 Inch Trackball

PRODUCT TAG NUMBER: 6

SIZE: Not listed.

FULL DESCRIPTION: Provides many advantages to seniors with decreased motor skills or poor vision. The unit contains a large and brightly colored 3 inch trackball. The trackball on this device requires only the movement of the thumb which reduces the need for complex arm movements. The large size makes movement even easier. The large buttons mean that seniors will have increased accuracy when clicking. It also makes the unit much easier to see.

CONTACT INFORMATION:

TouchBrite

816-694-5374

WEBSITE: www.touchbrite.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Hy-Tek Tek Partner BW056D Universal Remote Control

PRODUCT TAG NUMBER: 7

SIZE: Not listed.

FULL DESCRIPTION: This great remote control combines several nice features. It has large buttons and only contains the buttons that are essential to basic tasks. The controller is also a universal remote and will work with most TVs and DVD players. This is a great feature if your DVD player came with controller that is too small and too complicated. The device also glows in the dark to make it easy to find and avoid stepping on.

CONTACT INFORMATION:

TouchBrite

816-694-5374

WEBSITE: www.touchbrite.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Rainbow Color Reader

PRODUCT TAG NUMBER: 8

SIZE: 2.2” W x 2.8” L x .95” T

FULL DESCRIPTION: Distinguishes and announces color of clothes, papers, or other items. A compact, handy and lightweight tool can easily be carried in a purse or pocket. Great for the blind or visually impaired to match clothing, identify household items, take shopping, etc. Identifies 38 different colors. Also a light detector. Uses one AA battery.

CONTACT INFORMATION:

Assistech Special Needs

4801 W. Calle Don Miguel

Tucson, AZ 85757

WEBSITE: www.assistech.com

RETRIEVED: March 17, 2013
PRODUCT NAME: VIP Talking Thermostat for the Blind or Low Vision

PRODUCT TAG NUMBER: 9

SIZE: Not listed.

FULL DESCRIPTION: Digital thermostat with audio playback of day, time, indoor temperature, temperature setting and programming instructions so the blind and low vision users can precisely and easily manage their indoor comfort.

CONTACT INFORMATION:
Assistech Special Needs
4801 W. Calle Don Miguel
Tucson, AZ 85757

WEBSITE: www.assistech.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Lifetime Voice Calendar Talking Organizer

PRODUCT TAG NUMBER: 10

SIZE: 11 3/8” L x 9” W x 7/8” D

FULL DESCRIPTION: Easy to use and set, helpful for seniors with visual impairments. Record important dates and appointments in your own voice. When the day of the appointment come, a red light flashes to alert you of that day’s message. Touch the button and you’ll hear the reminders and appointments that you had pre-recorded read back to you. Also set reminders for birthdays, anniversaries, etc. Can mount on wall or refrigerator. Can also record a todo list. Stores up to 900 messages.

CONTACT INFORMATION:
Assistech Special Needs
4801 W. Calle Don Miguel
Tucson, AZ 85757

WEBSITE: www.assistech.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Talking Food Can

PRODUCT TAG NUMBER: 11

SIZE: Not listed.

FULL DESCRIPTION: Designed to help identify the contents of your canned food. A magnetic yellow cap sits on top of any sized aluminum can. Record a voice message to tell you what the item is and play it back anytime to remind you what is in the can. Adaptor allows the device to be used on other items such as bottles, household sprays, and plastic storage containers. Great for the blind or visually impaired. Uses 4 AG13 batteries. 90 day warranty.

CONTACT INFORMATION:

Assistech Special Needs

4801 W. Calle Don Miguel

Tucson, AZ 85757

WEBSITE: www.assistech.com

RETRIEVED: March 17, 2013
PRODUCT NAME: OneLink Talking Smoke and Carbon Monoxide Alarm

PRODUCT TAG NUMBER: 12

SIZE: Not listed.

FULL DESCRIPTION: Battery operated. Voice can be easily programmed for alarm’s location within the home. A voice notifies which hazard is being sensed. Example “Warning, evacuate. Smoke in kitchen.” Photoelectric smoke sensor reduces false alarms from cooking smoke or shower steam. Meets UL standards. Recommended for people who are blind or hard of hearing. 5 year limited warranty.

CONTACT INFORMATION:

Assistech Special Needs

4801 W. Calle Don Miguel

Tucson, AZ 85757

WEBSITE: www.assistech.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Med-E-Lert Automatic Pill Dispenser

PRODUCT TAG NUMBER: 13

SIZE: Not listed.

FULL DESCRIPTION: Battery operated. 28 compartments. Dispenses pills once a day or up to four times a day. Alerts with a buzzer alarm and flashing light. Alarm continues for 30 minutes or until medication is taken.

CONTACT INFORMATION:

Virtual Care at Home

Oakland, CA 94609

(510) 338-3178

WEBSITE: www.virtualcareathome.com

RETRIEVED: February 4, 2013
PRODUCT NAME: Bedroom Door Sign

PRODUCT TAG NUMBER: 14

SIZE: 5.5” x 2.5”

FULL DESCRIPTION: Helps loved one know where bedroom is. Place sign on bedroom door so wandering loved one knows what is behind closed door. Simple to install with tape or a screw; can even hang on a small picture nail. Light weight corrugated plastic. Signs can be made for any room.

CONTACT INFORMATION:

Person Care

15417 W National Avenue, #162

New Berlin WI 53151

WEBSITE: www.personcare.net

RETRIEVED: March 17, 2013
PRODUCT NAME: At A Glance Closet Organizers 60 Labels

PRODUCT TAG NUMBER: 15

SIZE: 3.75"H, 3"W at the top, 3.25"W at the bottom, with a hole that is 1.5" in diameter.

FULL DESCRIPTION: 12 plastic dividers help you dress faster and be more coordinated. They fit around the hanger rods to organize your closet into any categories that make it easier and faster to find clothes. You can use the 60 pre-indexed labels, with identifiers such as 'sweaters', 'dress pants', 'dressy', 'jackets' or write your own categories on the 3 extra labels. The dividers can also be identified using braille labeling tape. Each package comes with 60 pre-indexed wardrobe labels in English and Spanish and 12 dividers that fit any conventional rod.

CONTACT INFORMATION:

Independent Living Aids

200 Robbins Lane

Jericho, NY 11753

WEBSITE: www.independentliving.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Glow-In-The-Dark Stair Treads

PRODUCT TAG NUMBER: 16

SIZE: 15-1/4" x 6-3/4".

FULL DESCRIPTION: These light-up stair treads feature a slotted design for extra traction and if installed outside allows water to run off safely. Easy to install with peel and stick adhesive backing that keeps them securely in place on any flat surface, including wood and concrete. Great for deck, patio, basement and attic stairs. The durable PVC treads glow for up to 6 hours. Sold as a set of 4.

CONTACT INFORMATION:

The Lakeside Collection

P.O. Box 3088

Northbrook, IL 60065

WEBSITE: www.lakeside.com

RETRIEVED: February 9, 2013
**PRODUCT NAME:** Anti-Slip Exterior Stair Treads

**PRODUCT TAG NUMBER:** 17

**SIZE:** 9” depth, 36” or 48” length.

**FULL DESCRIPTION:** Resistant to corrosion, extruded aluminum also is heat-treated for strength. Colored closed-cell, anti-slip epoxy coating is combined with mineral abrasive grits to resist marring, scratching and chipping. Coal and Sunshine combination meets ADA contrasting color requirements for the visually impaired. Exceeds ADA recommendations for slip resistance on flat surfaces. Two-section tread surface has a 5cm strip in front and a wider channel in back, so treads can be one color or two. Select from many popular colors. All UV stable for fade resistance. Factory pre-drilled with countersunk holes for a flush finish and easy installation.

**CONTACT INFORMATION:**

Group Building Solutions

45 Porana Road

Auckland, New Zealand

**WEBSITE:** [www.gbsnz.co.nz](http://www.gbsnz.co.nz)

**RETRIEVED:** February 11, 2013
PRODUCT NAME: Park EZ

PRODUCT TAG NUMBER: 18

SIZE: 8" diam base x 51"H

FULL DESCRIPTION: Flashing LED’s signal when your bumper has touched the pole. Adjustable height up to 51" to accommodate any size vehicle. Weighted base to keep it in position. Easy assembly: 4 pop-together sections. Requires 2 AG-13 button cell batteries.

CONTACT INFORMATION:

FirstStreet

1998 Ruffin Mill Road

Colonial Heights, VA 23834

WEBSITE: www.firststreetonline.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Pathlighter

PRODUCT TAG NUMBER: 19

SIZE: Adjustable from 34" to 39".


CONTACT INFORMATION:

Modern Senior Products

123 W. Chandler Heights Rd. # 13223

Chandler, AZ 85248

WEBSITE: www.modernseniorproducts.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Portable Bath Step

PRODUCT TAG NUMBER: 20

SIZE: 19.5" W x 16" D x 4" H

FULL DESCRIPTION: The steps make getting in and out of the bath tub easy and safe. It adds a 4 inch boost with an attractive slip-resistant textured soft top and rubber feet ensuring user safety and comfort. This bath step has a unique modular design which allows the multiple steps to be stack adding an additional 2 inches with every step. The bath step comes with four removable covers on the surface that locks into another step when stacking. The plugs can be removed when stacking steps to ensure a secure fit. Comes with a one year limited warranty. Color is white and blue. Weight capacity: 450lbs. Steps sold singly.

CONTACT INFORMATION:

Parentgiving, Inc

105 Grove Street Suite 14

Montclair, NJ 07042

WEBSITE: www.parentgiving.com

RETRIEVED: March 17, 2013
PRODUCT NAME:  High Visibility Door Alarm Banner with Alarm System

PRODUCT TAG NUMBER:  21

SIZE:  Not listed.

FULL DESCRIPTION:  The high visibility combined with a magnetically activated alarm on this alarm door banner provides an effective deterrent to wandering. An arresting yellow banner and bright red STOP sign will catch the patient's eye. The alarm features an off/soft/loud switch and LED low-battery indicator. It attaches to the doorjamb with a hook and loop and fits doors from 30 to 42 inches wide. The product includes a 6 month warranty and requires two AAA batteries, which are sold separately.

CONTACT INFORMATION:

Parentgiving, Inc

105 Grove Street Suite 14

Montclair, NJ 07042

WEBSITE:  www.parentgiving.com

RETRIEVED:  March 17, 2013
PRODUCT NAME: TuffCare Challenger 5510 Electric Wheel Chair

PRODUCT TAG NUMBER: 22

SIZE: Overall width 25”, height 34-45”, depth 43”

FULL DESCRIPTION: One piece polyester coated power base. High back sport seat with head rest, swing back armrests and seat belt. Arms adjust to accommodate widths from 19” to 26”. Cast aluminum front wheels with pneumatic tires and puncture resistant tubes. Cast aluminum rear caster wheels with air foam tires. Flip up stepping foot platform with safety roller wheels. Programmable controller with direct drive, right angle gear motor. 5 amp automatic charger. Weight limit is 250 lbs.

CONTACT INFORMATION:

1stSeniorCare, LLC

16387 SW O’Neill

Tigard, OR 97223

WEBSITE: www.1stseniorcare.com

RETRIEVED: February 9, 2013
PRODUCT NAME:  Folding Aluminum Rollator

PRODUCT TAG NUMBER:  23

SIZE:  31.5"H x 23.75"W x 30" deep (wheel to wheel)

FULL DESCRIPTION:  Aids balance and provides comfortable support. Made of ultra-light aluminum. Large cushioned seat with padded backrest. Comes with loop-lock braking system just like a bicycle (one on each handle). The loop lock brake mechanism locks into place when fully engaged for added security by pressing the lever down. Folds easily and compactly for easy storage or travel. Handle bars are adjustable in height from 31.5” to 35.5”. Four 8” wheels make going over any terrain easier. Width between handles 18”. Seat width 14”. Seat depth 13”. Seat height 22”. Weight capacity 250 lbs.

CONTACT INFORMATION:

FirstStreet

1998 Ruffin Mill Road

Colonial Heights, VA 23834

WEBSITE:  www.firststreetonline.com

RETRIEVED:  February 9, 2013
PRODUCT NAME: Retractable Ice Tip Cane

PRODUCT TAG NUMBER: 24

SIZE: 30” - 39” L

FULL DESCRIPTION: Traditional, standard, round-top handle cane with soft foam grip. Push button, retractable ice tip helps to ensure safe, secure footing on snow or ice. Constructed of bronze anodized aluminum. Handle height adjusts from 30” to 39” in 1 inch increments. Weight capacity is 250 lbs.

CONTACT INFORMATION:

FirstStreet

1998 Ruffin Mill Road

Colonial Heights, VA 23834

WEBSITE: www.firststreetonline.com

RETRIEVED: February 9, 2013
PRODUCT NAME: TuffCare 3210 Electric Scooter

PRODUCT TAG NUMBER: 25

SIZE: Overall width 24”, length 42”, height 44” – 51”

FULL DESCRIPTION: Powerful three-wheeled electric scooter with low energy consumption. Functional and durable design provides high performance with low maintenance. Controller 24 volt, solid state one horsepower, permanent magnet, high efficiency motor. Maximum speed is 5.5 miles per hour. Maximum range is 25 miles. Available in two colors: Real blue and candied apple red. Utilizes two U-1 Sealed Batteries. Weight capacity: 250 lbs.

CONTACT INFORMATION:

1stSeniorCare, LLC

16387 SW O’Neill

Tigard, OR 97223

WEBSITE: www.1stseniorcare.com

RETRIEVED: February 9, 2013
PRODUCT NAME: Portable Singlefold Ramp

PRODUCT TAG NUMBER: 26

SIZE: 30” width. Length is available in 1 foot increments from 2’ to 8’

FULL DESCRIPTION: Lightweight, easy to handle and set-up. Folds in half and is carried like a suitcase. Durable welded fabrication. Full platform provided excellent stability. Anti-slip, high traction surface. Accommodates wheelchairs and three and four wheeled scooters. Safety video and steel security pins with each ramp.

CONTACT INFORMATION:

1stSeniorCare, LLC

16387 SW O’Neill

Tigard, OR 97223

WEBSITE: www.1stseniorcare.com

RETRIEVED: February 11, 2013
PRODUCT NAME: SlimLine Steel Ramp

PRODUCT TAG NUMBER: 27

SIZE: Custom built

FULL DESCRIPTION: A complete modular ramp system. Permanent or temporary, it adapts easily to various widths, odd angles and unusual configurations. Can be installed and removed quickly. Affordable and safe access for your home.

CONTACT INFORMATION:

Ramparts

(206) 440-9999

ramparts@qwestoffice.net

WEBSITE: www.rampartsnw.com

RETRIEVED: February 11, 2013
PRODUCT NAME: Wood Ramp

PRODUCT TAG NUMBER: 28

SIZE: Custom built

FULL DESCRIPTION: Simple or ornate designs. The wood ramps blend with features of your home. Match railings to an existing deck or fence, or screen the ramp from view with a siding-clad wall.

CONTACT INFORMATION:

Ramparts

(206) 440-9999

ramparts@qwestoffice.net

WEBSITE: www.rampartsnw.com

RETRIEVED: February 11, 2013
PRODUCT NAME: Bath Safety Grip

PRODUCT TAG NUMBER: 29

SIZE: 16.5"L x 3.75"H x 3.75"W

FULL DESCRIPTION: Assists resident getting in and out of a slippery tub. Two large suction cups secure handle on the side of the tub or shower wall to allow a good grip. Easy to install, just push levers down to secure, push levers up to repositions or remove. Can be mounted vertically, diagonally, on shower walls, or horizontally along the rim of your bath tub. Portable for travel. Not intended to fully support total body weight.

CONTACT INFORMATION:

FirstStreet

1998 Ruffin Mill Road

Colonial Heights, VA 23834

WEBSITE: www.firststreetonline.com

RETRIEVED: February 4, 2013
PRODUCT NAME: Cast Iron Handrail

PRODUCT TAG NUMBER: 30

SIZE: Custom built.

FULL DESCRIPTION: Quality iron railing. On-site welding capabilities. Custom fabrication. 110ft 12 ton mobile crane and roll off truck provided.

CONTACT INFORMATION:

C & S Ornamental Iron Company, Inc.

157 North Haven Street

Baltimore, MD 21224

WEBSITE: www.csiron.com

RETRIEVED: February 11, 2013
PRODUCT NAME: Wall Panic Alarm

PRODUCT TAG NUMBER: 31

SIZE: 10 3/4"L x 6"W x 3"H.

FULL DESCRIPTION: Wireless and wall mounted. Requires 2 AAA batteries. Features bright flashing LED light. One pull of the chord instantly releases a siren to ward off possible intruders in the residence.

CONTACT INFORMATION:

Taylor Gifts
600 Cedar Hollow Road
Paoli, PA 19301
(800) 868-6169

WEBSITE:  www.taylorgifts.com

RETRIEVED: February 4, 2013
PRODUCT NAME: Bath and Shower Seat with Handles

PRODUCT TAG NUMBER: 32

SIZE: 18"L x 21"W x 29-34.5"H

FULL DESCRIPTION: Features large handles to make it easier for the user to safely get up and down. Adjustable seat height. Full backrest. Non-slip feet. 300lb capacity. Sturdy construction. The seat back folds and the legs and be removed for convenient storage. Fits most tubs or showers. No tools required for assembly. This seat is an appropriate element in home safety for older adults and senior citizens and can be an essential aid to daily living, especially for those aging in the home or those with some level of mobility problems.

CONTACT INFORMATION:

FirstStreet

1998 Ruffin Mill Road

Colonial Heights, VA 23834

WEBSITE: www.firststreetonline.com

RETRIEVED: February 4, 2013
PRODUCT NAME: Shower Massager

PRODUCT TAG NUMBER: 33

SIZE: 9.5"L x 4"W x 1.50"D

FULL DESCRIPTION: This is the perfect showerhead for seniors and adults living alone since users are able to bathe while sitting on a bath bench in the shower or tub. The extra-long hose hives added freedom to the user. Adjustable massaging head with 5 spray flow patterns. Wide showerhead handle provides for a secure grip. Handle features an on/off switch for your convenience. Chrome shower head and tangle-free extra-long 84” hose. Includes an easy to install holder.

CONTACT INFORMATION:

FirstStreet

1998 Ruffin Mill Road

Colonial Heights, VA 23834

WEBSITE: www.firststreetonline.com

RETRIEVED: February 4, 2013
PRODUCT NAME: HealthCraft P.T. Rail

PRODUCT TAG NUMBER: 34

SIZE: Height of 36.5” and a wall plate that is 5.5" x 9".

FULL DESCRIPTION: Improves self-mobility and helps to maintain bathroom dignity. An innovative support rail system which promotes safe standing and transfers to and from a toilet. Combines an exceptionally solid feel, and an innovative offset rail design for user stability and comfort. One or both sides of the toilet. ADA compliant. Product is safe and provides out of the way storage. Hinged models fold up to store out of the way, yet pull down in an instant when needed. Smooth "fluid-feel" hinge holds its position wherever you leave it – even half way up- it will not inadvertently fall down casing impact injuries. No wrist strain. Available in fixed model, hinged model, floor mount mast, toilet roll holder, and two different rail lengths (28" & 32").

CONTACT INFORMATION:

1stSeniorCare, LLC

16387 SW O’Neill

Tigard, OR 97223

WEBSITE: www.1stseniorcare.com

RETRIEVED: March 13, 2013

Configuration (right) - McGowen & Kruse (2004)
PRODUCT NAME: Horizon Grab Bars

PRODUCT TAG NUMBER: 35

SIZE: Toilet side wall 42” min and rear wall 36” min.

FULL DESCRIPTION: These bars have the strength, stability and safety of a traditional grab bar without the institutional look. ADA compliant and can hold over 250 lbs of force. Adjustable. Stainless steel material. Finish available in brushed, polished, satin nickel, polished brass, and matte oil rubbed.

CONTACT INFORMATION:

Great Grabz

(866) 478-4722

WEBSITE: http://greatgrabz.com

RETRIEVED: February 13, 2013

PRODUCT NAME: InvaCare Safety Toilet Seat Frame

PRODUCT TAG NUMBER: 36

SIZE: Arm Height Adjustment 26 ¾” - 30 ¾” and Width between Arms 17”- 19 ½”

FULL DESCRIPTION: Prevent falls and improves self-reliance and dignity. Adjustable height arms fold back for cleaning and are easily height adjusted. Frame is made of anodized, non-corrosive 1” aluminum tubing. Aluminum bracket is easy to attach securely. Armrests provide secure hand support. Weight limit is 300 lbs.

CONTACT INFORMATION:

1stSeniorCare, LLC
16387 SW O’Neill
Tigard, OR 97223

WEBSITE: www.1stseniorcare.com

RETRIEVED: March 13, 2013

Configuration (right) - McGowen & Kruse (2004)
PRODUCT NAME:  Drive Medical Bath Mat

PRODUCT TAG NUMBER:  37

SIZE:  15.75” x 35.5”

FULL DESCRIPTION:  Helps reduce injuries related to falls. Extra-long bath mat adds safety and security by providing a large, slip proof surface in the bath. Mat is held securely by multiple suction cups. Soft rubber mat is easy to clean and roll up for storage. Mat has a contour cut design to fit around drain. Color is white. 90 day limited warranty.

CONTACT INFORMATION:

1stSeniorCare, LLC

16387 SW O’Neill

Tigard, OR 97223

WEBSITE:  www.1stseniorcare.com

RETRIEVED:  February 13, 2013
PRODUCT NAME: Invacare Homefill II Post Valve Cylinder

PRODUCT TAG NUMBER: 38

SIZE: ML6, M9 and D cylinder sizes.

FULL DESCRIPTION: Gives ambulatory patients greater freedom and independence. Connection and controls are designed for ease of operation. Small and lightweight. Cylinder is delivered empty. Warranty is 1 year for cylinder and 3 years for post valve. Shoulder bag sold separately.

CONTACT INFORMATION:

American Discount Home Medical Equipment

(800) 956-6616

service@home-med-equip.com

WEBSITE: www.home-med-equip.com

RETRIEVED: February 9, 2013
PRODUCT NAME:  Toilet Foot Flusher

PRODUCT TAG NUMBER:  39

SIZE:  Not listed.

FULL DESCRIPTION:  Made for loved one with limited hand or arm mobility. Use your foot to flush toilet. Can still use standard handle for flushing. Easy to install, no tools needed. Works with most toilets.

CONTACT INFORMATION:

Person Care

15417 W National Avenue, #162

New Berlin WI 53151

WEBSITE:  www.personcare.net

RETRIEVED:  March 17, 2013
PRODUCT NAME: Vitals Monitoring System

PRODUCT TAG NUMBER: 40

SIZE: Not listed.

FULL DESCRIPTION: Decreases re-hospitalization by collecting important medical data leading to quick and effective communication with the person’s doctor. Collects data consisting of blood sugar, blood pressure, pulse ox, and weight. Provides the needed 24/7-365 watch for health issues, compile information and make it accessible online through graphs the doctor can also access.

CONTACT INFORMATION:

Safe Living Technologies

(262) 780-0848

WEBSITE:  www.safelivingtech.com

RETRIEVED: February 4, 2013
PRODUCT NAME: Brinno Peephole Viewer

PRODUCT TAG NUMBER: 41

SIZE: 6” x 3.5” x 1”

FULL DESCRIPTION: Simple push button for large image of who is at the door to be displayed on LCD panel.

CONTACT INFORMATION:

Virtual Care at Home

Oakland, CA 94609

(510) 338-3178

WEBSITE: www.virtualcareathome.com

RETRIEVED: February 4, 2013
PRODUCT NAME: Cookstop Stovetop Fire Prevention

PRODUCT TAG NUMBER: 42

SIZE: Not listed.

FULL DESCRIPTION: Continuously checks for movement in the kitchen. Will shut the stove off if the resident leaves the room or falls asleep while cooking. Can be set for use during only certain hours or days. A button can pushed to cook longer than set time. Configured for different levels of security or attention span. Functional upon installation and immediately reduces the chances of an accident. Unit can be keyed for a different family member or caregiver. Choice of corded, plug-in, direct wire, or smart socket.

CONTACT INFORMATION:
Virtual Care at Home
Oakland, CA 94609
(510) 338-3178
WEBSITE: www.virtualcareathome.com
RETRIEVED: February 4, 2013
PRODUCT NAME: KIWI PC Senior Computer

PRODUCT TAG NUMBER: 43

SIZE: 19” Monitor.

FULL DESCRIPTION: Runs a customized Linux Ubuntu 10.10 OS with a “Me Menu” system to simplify the choices. Customize the Me Menu to get access to selected programs including mail, internet access, etc. The screen icons and text are designed for better visual acuity. Keyboard has color-coded keys to make it easier to locate function keys, etc.

CONTACT INFORMATION:

Not listed.

WEBSITE: www.pcworld.com

RETRIEVED: February 4, 2013
PRODUCT NAME: ClearSounds A1600 DECT 6.0 ClearDigital Amplified Cordless Phone Bundle

PRODUCT TAG NUMBER: 44

SIZE: Base: 9.25 x 6 x 2.25 Handset: 6.5 x 2.25 x 1.25

FULL DESCRIPTION: Combines the ultimate solutions for hearing loss, visual challenges and mobility limitations. This all-in-one set makes communicating easy with call clarity and amplification, bright visual ringers, and background noise suppression that expand throughout your home with additional handsets. Tone and volume control. Hearing aid compatible. One-touch emergency button. Visual ringer on base and handset. Talking internal phonebook, keypad and caller ID. Photo memory dial buttons.

CONTACT INFORMATION:

Virtual Care at Home

Oakland, CA 94609

(510) 338-3178

WEBSITE: www.virtualcareathome.com

RETRIEVED: February 4, 2013
PRODUCT NAME: IC Social Communication Tool

PRODUCT TAG NUMBER: 45

SIZE: Not listed.

FULL DESCRIPTION: A tablet designed for seniors. Easy to use and tech savvy. Allows isolated seniors the chance to be more connected. Automatically sets up email accounts. Voice activation capability. Designed to remain stable even while shaky hands go to the touch screen. Contacts are automatically gathered from email and networking sites.

CONTACT INFORMATION:

Mikael Johansen

mikael@mikaeljohansen.com

(+47) 468 25 337

WEBSITE: http://mikaeljohansen.com

RETRIEVED: February 4, 2013
PRODUCT NAME:  Schlage F10-ACC Lever Door Set

PRODUCT TAG NUMBER:  46

SIZE:  Not listed.

FULL DESCRIPTION:  Adjusts to fit all standard door preparations. Easy installation makes for a one-person project. Materials and construction are high quality for exceptional security. Lifetime finish and mechanical guarantee. Quality finishes coordinate with plumbing and lighting. Reversible lever allows for use as both right-hand and left-hand levers.

CONTACT INFORMATION:

Schlage Lock Company

2119 E Kansas City Rd

Olathe, KS 66061

WEBSITE:  http://consumer.schlage.com

RETRIEVED:  February 12, 2013
PRODUCT NAME: Samsung Jitterbug Cell Phone

PRODUCT TAG NUMBER: 47

SIZE: Not listed.

FULL DESCRIPTION: The Jitterbug Cellphone from Samsung is a great cell phone for seniors that want to keep in touch while on the move. The simple design and large buttons combine to give seniors just what they need.

CONTACT INFORMATION:

TouchBrite

816-694-5374

WEBSITE: www.touchbrite.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Talking Microwave Oven

PRODUCT TAG NUMBER: 48

SIZE: 20.2” x 12” x 16.7”

FULL DESCRIPTION: Specially modified to talk for people with low or no vision. Features an adjustable cook time, power level, built in timer, and a clock. Around each button of the keypad is a raised ring to make them easy to locate by touch. A momentary press of a button will tell you what the button does. 1.0 cubic foot oven space. Adjustable male voice volume.

CONTACT INFORMATION:

Assistech Special Needs

4801 W. Calle Don Miguel

Tucson, AZ 85757

WEBSITE: www.assistech.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Bedside Assist

PRODUCT TAG NUMBER: 49

SIZE: 21.5"L x 20"W x 16"H

FULL DESCRIPTION: This is a helpful product that can help the elderly, especially those living alone, avoid falls and remain independent, and it makes the job easier for caregivers, too. Provides assistance in and out of bed, standing or sitting. Made of hardened anodized aluminum. Collapsible to fit in carry-on suitcases. Travel tote for compact portability. 4-pocket organizer pouch included. Supports up to 300 lbs. Grips and safety strap secures rail in-between mattress and bed frame. Universal height can accommodate any home or hospital bed. Snap together assembly allows installation in seconds with no tools required.

CONTACT INFORMATION:

FirstStreet

1998 Ruffin Mill Road

Colonial Heights, VA 23834

WEBSITE: www.firststreetonline.com

RETRIEVED: February 9, 2013
PRODUCT NAME: Adjustable Bed Riser System

PRODUCT TAG NUMBER: 50

SIZE: Not listed.

FULL DESCRIPTION: Instantly raises the height of the bed either using the 3", 5" or 8" risers. Contains 4 of each small and large. Customize to fit the residents individual needs. The bed leg or caster fits safely and securely into the recess cup built into the bed riser. The small bed riser rests securely over the locking ring on the Large Bed Riser and will not slide. Made of high impact plastic.

CONTACT INFORMATION:

Bed Bath Store

147 Sunrise Highway

Lynbrook, New York 11563

WEBSITE: www.bedbathstore.com

RETRIEVED: March 13, 2013
PRODUCT NAME: Recliner Lever Extended

PRODUCT TAG NUMBER: 51

SIZE: Not listed.

FULL DESCRIPTION: The Lever Extender puts an end to bending and reaching over the side of your recliner to find the lever. The Lever Extender with its large, easy grip handle puts the recliner's lever within easy reach. The four bolt attachment method used by the Lever Extender ensures a secure, tight fit of the extension handle to the recliner's lever. The padded design protects the lever from damage. The Lever Extender is made of heavy duty steel for durability and strength. Works on all types of reclining chairs.

CONTACT INFORMATION:

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

WEBSITE: www.elderstore.com

RETRIEVED: March 16, 2013
PRODUCT NAME: Uplift Seat Assist

PRODUCT TAG NUMBER: 52

SIZE: 15” wide x 16” depth

FULL DESCRIPTION: People who have lost mobility and can no longer get up unassisted due to insufficient upper or lower body strength will benefit from this product. A self-powered, lifting cushion that helps users gently seat and raise themselves from a chair or sofa. It provides safe, controlled support and lifts up to 80% of a user's body weight. Lightweight and portable, can be used in any room of the house, but is especially helpful in the kitchen, dining and living rooms.

CONTACT INFORMATION:

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

WEBSITE: www.elderstore.com

RETRIEVED: March 16, 2013
PRODUCT NAME: Couch Cane

PRODUCT TAG NUMBER: 53

SIZE: 29”-32” adjustable height and 15” width of handle

FULL DESCRIPTION: Adjustable height allows for personalized positioning. Wide handle creates a variety of potential grip positions. Reversible, installs on either side of a chair or couch. Anti-skid pads reduce slipping and protect your floors. Includes pocket organizer. Fits all couches with legs (front and back) between 21 inches to 33 inches. Weight capacity: 300 lbs. The wide handle is made of quality steel components with powder coat finish providing long lasting durability. The base of the CouchCane is adjustable and reversible.

CONTACT INFORMATION:

Elder Store
6820 Meadowridge Ct., #A9
Alpharetta, GA 30005

WEBSITE: www.elderstore.com

RETRIEVED: March 16, 2013
PRODUCT NAME: Comforter Lift Chair

PRODUCT TAG NUMBER: 54

SIZE: Various sizes

FULL DESCRIPTION: The chair has three positions, fully reclines, incredibly comfortable, reliable and versatile. Provides a safe and secure way to get into and out of your chair, but also offers superior comfort and design. Features luxurious chaise lounge padding, a portioned comfort seat system and unsurpassed craftsmanship. The weight capacity ranges from 300 lbs. to 375 lbs. depending on the chair size and up to 500 lbs. with the double motor chair. The Bariatric Comfort Lift Chair has a weight capacity of 700 lbs. The lift chair is available with your choice of sizes, fabric variations and fabric styles.

CONTACT INFORMATION:

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

WEBSITE: www.elderstore.com

RETRIEVED: March 16, 2013
**PRODUCT NAME:** Bed Alarm

**PRODUCT TAG NUMBER:** 55

**SIZE:** 10"x 30"

**FULL DESCRIPTION:** Made for restless loved one or wanderer who leaves bed during sleep time. Alerts caregiver in or near room of movement getting out of bed. Includes bed sensor pad and control unit. Pad plugs into control unit. Bed sensor pad is placed under bed sheet, but on top of mattress. Bed sensor pad detects body weight off pad for alarming condition. Control Unit is placed near bedside or on bed frame. 6 month sensor pad life and non-returnable. 9v battery included for control unit. Control unit has adjustable alarm level and low battery indicator.

**CONTACT INFORMATION:**

Person Care

15417 W National Avenue, #162

New Berlin WI 53151

**WEBSITE:** [www.personcare.net](http://www.personcare.net)

**RETRIEVED:** March 17, 2013
**PRODUCT NAME:** Bedside or Door Mat Alarm

**PRODUCT TAG NUMBER:** 56

**SIZE:** 30” x 15”

**FULL DESCRIPTION:** Place control unit with alarm near bedside/door or hang on bed frame with silver clip. Alarm is heard when feet touch the floor mat. Two pieces: floor mat and control unit with alarm. Floor mat has rubber strips on bottom to prevent sliding. 9v battery included for control unit with alarm.

**CONTACT INFORMATION:**

Person Care

15417 W National Avenue, #162

New Berlin WI 53151

**WEBSITE:** [www.personcare.net](http://www.personcare.net)

**RETRIEVED:** March 17, 2013
PRODUCT NAME: Magnetic Alarm

PRODUCT TAG NUMBER: 57

SIZE: Not listed.

FULL DESCRIPTION: Made for loved one who is unstable walking on their own or prone to wander. Alerts caregiver when loved one gets off chair. When loved one leaves chair, magnet pulls off control unit and alarm sounds. Attach to wheelchair with clip or transfer belt. Wrap belt around chair and then clip on to the transfer belt. Adjustable alarm level. Low battery indicator. Adjustable 30” long pull string. 9v battery included.

CONTACT INFORMATION:

Person Care

15417 W National Avenue, #162

New Berlin WI 53151

WEBSITE: www.personcare.net

RETRIEVED: March 17, 2013
PRODUCT NAME: Soft Foam Covers

PRODUCT TAG NUMBER: 58

SIZE: Not listed.

FULL DESCRIPTION: Made to protect a loved one from the hard edge corner. Protects skin from bruises or cuts. Trim to what is needed for that corner. Comes as a pair. Grey color. Smooth for the skin. Wipes clean. Adheres to surface with velcro strip.

CONTACT INFORMATION:

Person Care

15417 W National Avenue, #162

New Berlin WI 53151

WEBSITE: www.personcare.net

RETRIEVED: March 17, 2013
PRODUCT NAME: Battery Powered Motion Sensor Lights

PRODUCT TAG NUMBER: 59

SIZE: Not listed

FULL DESCRIPTION: Battery operated lights with built-in motion sensors can be tilted to automatically turn on when motion is detected. Can be positioned in bathrooms and along hallways instead of turning on lights when getting up during the night. Easy way to illuminate dark closets and cabinets. Can be used indoors and outdoors.

CONTACT INFORMATION:

Virtual Care at Home

Oakland, CA 94609

(510) 338-3178

WEBSITE: www.virtualcareathome.com

RETRIEVED: February 12, 2013
PRODUCT NAME: Hinkley Lighting H59040 Halogen Step Light

PRODUCT TAG NUMBER: 60

SIZE: Faceplate 10"W, 3.5" H and Housing 8"W, 2.5"H, 4.125" Depth.

FULL DESCRIPTION: Features flat, clear, tempered, shock and heat resistant glass lens. Durable die-cast aluminum shroud fitted to the housing with dual EPDM silicone o-ring gaskets providing a superior weather-tight seal. Requires 1 40w G-9 Halogen Bulb. c-ETL-us certified for wet locations.

CONTACT INFORMATION:

Hinkley Lighting
(800) 446-5539

WEBSITE: www.hinkleylighting.com

RETRIEVED: February 11, 2013
**PRODUCT NAME:** Magic Tap Touch Lamp Dimmer

**PRODUCT TAG NUMBER:** 61

**SIZE:** Not listed.

**FULL DESCRIPTION:** With a tap of your finger you can turn your lamp on or off. Or, you can use the Magic Tap to adjust the brightness of your lamp with just a tap. Adjusts your lamp's light from dim, medium to bright. Option of device with a remote control is also available. The Remote control has an operational range of 50 feet. Convert any standard plug in lamp. Plug in the touch dimmer into your regular wall socket and then plug your lamp into the dimmer. Works with standard bulbs. Built in nightlight.

**CONTACT INFORMATION:**

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

**WEBSITE:** [www.elderstore.com](http://www.elderstore.com)

**RETRIEVED:** March 16, 2013
PRODUCT NAME: Lamp Switch Enlargers

PRODUCT TAG NUMBER: 62

SIZE: Not listed.

FULL DESCRIPTION: Designed to fit easily over the great majority of lamp switch knobs. Just push onto the existing switch knob; no need to remove the existing knob. Made of a durable white hard plastic. Sold in a package of two.

CONTACT INFORMATION:

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

WEBSITE: www.elderstore.com

RETRIEVED: March 16, 2013
PRODUCT NAME: Wall Switch Extension Handle

PRODUCT TAG NUMBER: 63

SIZE: 14” long and 1.75” wide

FULL DESCRIPTION: Puts wall switches within easy reach of wheelchair users or people with limited reach. It provides a 12” extension to any standard toggle switch. Screws and bushings are included. Made of molded clear plastic. Comes packaged with two extension handles per package.

CONTACT INFORMATION:

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

WEBSITE: www.elderstore.com

RETRIEVED: March 16, 2013
PRODUCT NAME: Mobility Light

PRODUCT TAG NUMBER: 64

SIZE: 3” Long


CONTACT INFORMATION:

Person Care

15417 W National Avenue, #162

New Berlin WI 53151

WEBSITE: www.personcare.net

RETRIEVED: March 17, 2013
PRODUCT NAME: Balanced Spectrum Portable Reading Light

PRODUCT TAG NUMBER: 65

SIZE: 1.625"L x 1.25"W x 1.125"H

FULL DESCRIPTION: Powerful clip-on light to glasses, ball cap, etc. Powerful stream of Balanced Spectrum light that focuses exactly where you look. Perfect for traveling in a car at dusk, reading quietly in bed, any place with dim lighting, even outdoors in the dark. Requires three "LR41" batteries.

CONTACT INFORMATION:
FirstStreet
1998 Ruffin Mill Road
Colonial Heights, VA 23834

WEBSITE: www.firststreetonline.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Motion-Activated Wireless LED Floodlight

PRODUCT TAG NUMBER: 66

SIZE: 5¾”H X 5¼”Dia

FULL DESCRIPTION: Instant security and safety with this motion-activated wireless light. Perfect for porches, attics, basements, tool sheds, garage, etc. Floodlight technology maximizes the illuminating power of LED lights by providing an ultra bright, glare free, wide beam. Durable plastic housing. Round shaped. Weatherproof - can be used indoors or outdoors. Six bright LED lights. LED bulbs will last up to 100,000 hours. Motion sensor above LED's. Light pivots to direct light where it's needed most. Battery compartment on back of pivoting light head. Requires four "C" batteries. Motion sensor detects movement up to 25 feet and has a detection angle of 100 degrees. Light comes on for approximately 30 seconds and remains on as long as motion is detected. Mounting plate and hardware included.

CONTACT INFORMATION:

Gold Violin

PO BOX 147

Jessup, PA 18434

WEBSITE: www.goldviolin.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Caribbean Sun Blue

PRODUCT TAG NUMBER: 67

SIZE: 9"x 5"x1 1/4".

FULL DESCRIPTION: A highly effective new light therapy light box that uses 108 LED lamps to treat the symptoms associated with Seasonal Affective Disorder (SAD). LEDs provide long life, BLUE light, and are shock and vibration resistant. Small and fits on any desk or counter-top. It comes with a swing-out leg that allows you to position the box at a comfortable angle for best exposure. Take it with you when you travel. It has a carefully constructed body made of steel, yet it weighs less than 3 lbs.

CONTACT INFORMATION:

Light Therapy Products

(800) 486-6723

WEBSITE: www.lighttherapyproducts.biz

RETRIEVED: March 17, 2013
PRODUCT NAME: Playing Card Holder

PRODUCT TAG NUMBER: 68

SIZE: 2" x 1 3/8" x 10"

FULL DESCRIPTION: People with pain and/or limited use of their hands will find using this holder much easier than trying to hold multiple cards in one hand. A slot in the card holder is designed so that cards can be easily added or removed. Also holds Mahjong tiles. Comes in a bag of four 10 inch holders with a deck of low vision playing cards included.

CONTACT INFORMATION:

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

WEBSITE: www.elderstore.com

RETRIEVED: March 16, 2013
PRODUCT NAME: Gripper Water Faucet Handle

PRODUCT TAG NUMBER: 69

SIZE: Not listed.

FULL DESCRIPTION: The Gripper Faucet Handle attaches over your existing handle creating a large, comfortable gripping area with more leverage for turning your water spigots. Particularly great for people working in a garden with the use of only one hand or arm, those with Arthritic and Parkinson's or other motility difficulties. Comes with two separate grip locks and is compatible with most valve and spigot handles. Color coded with Red and blue indicator caps.

CONTACT INFORMATION:

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

WEBSITE: www.elderstore.com

RETRIEVED: March 16, 2013
PRODUCT NAME:  Simple Needle Threader

PRODUCT TAG NUMBER:  70

SIZE:  Not listed.

FULL DESCRIPTION:  For seniors having trouble steadying hands or pinching the small needle and thin thread. Place your bobbin and needle in the designated place and the thread in the groove and push the button to get the thread placed in the eye of the needle.

CONTACT INFORMATION:

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

WEBSITE:  www.elderstore.com

RETRIEVED:  March 16, 2013
PRODUCT NAME: Levo Bookholder Stand

PRODUCT TAG NUMBER: 71

SIZE: 31”-58” height and 22.5” from pole to middle of book board

FULL DESCRIPTION: With six unique movements, the holder brings your book to you. Use while reclining in your favorite chair or lying in bed. Removes the stress of arched necks and fatigued hands. The spin joint on the book board allows for exact horizontal placement of your book, as well as quick repositioning of your BookHolder from one side of your furniture to the other (without tools). Construction Materials: steel, nylon (super strong polymer), ABS (book board) and sturdy cast iron base with decorative cover.

CONTACT INFORMATION:

Elder Store

6820 Meadowridge Ct., #A9

Alpharetta, GA 30005

WEBSITE: www.elderstore.com

RETRIEVED: March 16, 2013
PRODUCT NAME: knfb Reader Classic

PRODUCT TAG NUMBER: 72

SIZE: Not listed.

FULL DESCRIPTION: The K-NFB Classic Reader is a text-to-speech reader that works by taking a picture. A senior can then listen to the device as it repeats the text of what is in the picture. This is much easier to use than devices that require pages to be scanned. The reader is also small, compact, light and easy to manage. This is a reader that a senior can easily take with them on outings. Use it for newspapers, labels, directions, addresses, and ingredients.

CONTACT INFORMATION:

TouchBrite

816-694-5374

WEBSITE: www.touchbrite.com

RETRIEVED: March 17, 2013
PRODUCT NAME: Wii Sports Accessories 15 in 1

PRODUCT TAG NUMBER: 73

SIZE: Not listed.

FULL DESCRIPTION: Wii Sports is a game that comes with the Wii Game System when purchased. This bonus pack gives seniors some options instead of the controllers that come with the Wii. For example, instead of having to play tennis with the standard controller, the bonus pack includes a lightweight and small tennis racket that makes the game easier to play. Other bonus items that are included in the package include extensions for baseball, tennis, pool and golf.

CONTACT INFORMATION:

TouchBrite

816-694-5374

WEBSITE: www.touchbrite.com

RETRIEVED: March 17, 2013
PRODUCT NAME:  Brain Age - From Nintendo DS

PRODUCT TAG NUMBER:  74

SIZE:  Not listed.

FULL DESCRIPTION:  The Brain Age game for Nintendo DS offers a variety of engaging games. They have math and counting games, games that involve drawing pictures, and even Sudoku. This is a great way for seniors to have a little fun and also exercise their brain.

CONTACT INFORMATION:

TouchBrite

816-694-5374

WEBSITE:  www.touchbrite.com

RETRIEVED:  March 17, 2013
PRODUCT NAME:  Braille Plastic Bingo Board

PRODUCT TAG NUMBER:  75

SIZE:  8¼” x 8¼”

FULL DESCRIPTION:  Features braille and black, raised numbers. Markers included.

CONTACT INFORMATION:

Assistech Special Needs

4801 W. Calle Don Miguel

Tucson, AZ 85757

WEBSITE:  www.assistech.com

RETRIEVED:  March 17, 2013
APPENDIX B 2

INTERIOR GRAPHIC STANDARDS FOR ACCESSIBILITY

Image 1 – Reach Limit for Closet & Shelves

( McGowen & Kruse 2004, 14)

Image 2 – Wheelchair Turn around Clearance

Retrieved February 12, 2013 from www.access-board.gov
Image 3 – Minimum Knee/Toe Clearance

(McGowen & Kruse 2004, 13)

Image 4 – Accessible Bathtub

(McGowen & Kruse 2004, 19)
Image 5 – Transfer Shower Option

(McGowen & Kruse 2004, 19)

Image 6 – Standard Roll-In Shower

(McGowen & Kruse 2004, 21)
Image 7 – Front & Parallel Approach Diagram for Fixtures/Appliances

(McGowen & Kruse 2004, 24)

Image 8 – Galley Kitchen Plan with Clearance Minimum

(McGowen & Kruse 2004, 24)


### Floor Space and Knee Space Requirements for Fixtures and Appliances

<table>
<thead>
<tr>
<th>APPLIANCE</th>
<th>REQUIREMENT</th>
<th>FAIR HOUSING</th>
<th>ANSI/UFAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sink</td>
<td>Approach</td>
<td>Parallel</td>
<td>Parallel or front</td>
</tr>
<tr>
<td></td>
<td>Knee space</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Range/ cooktop</td>
<td>Approach</td>
<td>Parallel</td>
<td>Parallel or front</td>
</tr>
<tr>
<td></td>
<td>Knee space</td>
<td>No</td>
<td>Optional</td>
</tr>
<tr>
<td>Workspace</td>
<td>Approach</td>
<td>Not required</td>
<td>Front</td>
</tr>
<tr>
<td></td>
<td>Knee space</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>Approach</td>
<td>Parallel or front</td>
<td>Parallel or front</td>
</tr>
<tr>
<td></td>
<td>Knee space</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Dishwasher</td>
<td>Approach</td>
<td>Parallel or front</td>
<td>Parallel or front</td>
</tr>
<tr>
<td></td>
<td>Knee space</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Oven (self-cleaning)</td>
<td>Approach</td>
<td>Parallel or front</td>
<td>Front</td>
</tr>
<tr>
<td></td>
<td>Knee space</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Oven (non-self-cleaning)</td>
<td>Approach</td>
<td>Parallel or front</td>
<td>Front</td>
</tr>
<tr>
<td></td>
<td>Knee space</td>
<td>No</td>
<td>Yes (off-set)</td>
</tr>
<tr>
<td>Trash compactor</td>
<td>Approach</td>
<td>Parallel or front</td>
<td>Parallel or front</td>
</tr>
<tr>
<td></td>
<td>Knee space</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Image 9 – Floor & Knee Space for Fixtures & Appliances

(McGowen & Kruse 2004, 24)

---

The sink should be a shallow unit with easy-to-operate faucets. A tall spout and a pullout spray attachment are also recommended. Garbage disposals must be offset in order to provide full knee space under the sink.

**KITCHEN SINK AND DISHWASHER**

Image 10 – Kitchen Sink & Dishwasher Layout for Wheelchair User

(McGowen & Kruse 2004, 24)
A range or cooktop should have front- or side-mounted controls so the seated user does not need to reach over the heated surfaces. A smooth cooktop surface allows pots to be slid rather than lifted on and off the burners.

**STOVES AND COOKTOPS**

Image 12 – Stove & Cooktop Requirements for Wheelchair Users

(McGowen & Kruse 2004, 24)
Side-by-side models offer the user both freezer and refrigerator storage at all height levels from the floor to the top shelf.

**REFRIGERATORS**

Image 13 – Refrigerator Requirements for Wheelchair Users

(McGowen & Kruse 2004, 24)

Image 14 - Counter Depth and Reach Height for Wheelchair User

(McGowen & Kruse 2004, 14)
APPENDIX C 1
RESIDENTIAL HOUSING ASSESSMENT

Programming for Residential Space

Human Organism

Client and User Needs

Profile Clients:
1. Identify the users of the space, number of people and approximate ages.
   1) 1-2 residents who are senior citizens. 2) Possible caregivers or homecare employees. 3) Senior citizens are 65+ years old.

2. Identify specific psychological needs of the senior population. (territory, crowding, isolation, privacy, security).
   Feelings of safety, security, comfort, independence, sense of belongingness, ability to be useful and act with competence. Senior citizens also have social and self-esteem needs.

3. Determine any special needs of the senior population and their activities.
   Daily activities include hygiene, getting dressed, using the bathroom, cooking, eating, communicating with others and reading. Senior citizens could have special needs for mobility and transportation including the use of a walker, scooter, wheelchair, or cane. Senior citizens might also have a portable oxygen tank.

4. Identify mid and long range plans that are likely to outgrow this space.
   Senior citizens can outgrow their residential space if their level of care is high and hospitalization is necessary.

5. Log any current or future health-related conditions of senior citizens.
   Senior citizens are noted to suffer from the following conditions: 1) cardiovascular, 2) neurologic, 3) musculoskeletal, 4) urologic, 5) sleep disorders, 6) visual impairment, 7) depth perception, 8) contrasts, 9) color blindness, 10) hearing loss, 11) reaction time, 12) cognitive impairment, 13) difficulty sitting/standing, 14) walking with assisting device, 15) disorientation, 16) impaired judgment, 17) muscle weakness, 18) paralysis, 19) incoordination, 20) balancing difficulties, 21) mobility impairment, and 22) sensory-perceptual deterioration.

Designed Environment

Contextual Assessment

Develop site analysis:
6. Identify the exterior architectural style of the existing buildings.
   The style analysis is limited to: 1) Cape Cod, 2) Bungalow, 3) Ranch, and 4) Craftsman styles
<table>
<thead>
<tr>
<th><strong>Building Needs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assess existing building and quality of the present layout:</strong></td>
</tr>
</tbody>
</table>
| 7. Are the adjacencies organized appropriately or is change needed?  
The adjacencies are organized appropriately in the four housing styles. |
| 8. Are the storage areas and/or closets adequate?  
No. All shelving will need to be lowered for wheelchair users to achieve reachability which is a major ergonomic and anthropometric concern. Storage for a wheelchair when not in use could be a potential problem. |
| 9. Are the bathrooms and kitchen adequate?  
No. The bathrooms will need to be modified to increase the size and circulation of the space for senior citizens using a wheelchair. The space for the kitchens are adequate but the cabinetry, appliances, sink, and essential workspaces will need to be adapted for wheelchair users’ sufficient mobility. |
| 10. Document foreseeable needs and technology.  
1) Safety needs wherein devices could prevent fires and falls.  
2) Security needs wherein devices could detour intruders.  
3) Communication needs wherein land line and cell phones, tablets, computers, hearing aids could improve communication skills. |

<table>
<thead>
<tr>
<th><strong>Safety Needs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Address physical safety issues:</strong></td>
</tr>
</tbody>
</table>
| 11. Identify health related conditions or special needs of senior citizens and safety needs.  
Senior citizens potentially have a slower reaction time which can compromise their safety such as getting out of the house during a fire or emergency. Interior and exterior stairs can also affect the senior citizens in terms of mobility. Senior citizens with dementia can forget where they are and wander around and outside the house without proper security devices resulting into major injuries and accidents. |

<table>
<thead>
<tr>
<th><strong>Furniture / Fixtures / Equipment Needs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assess proposed furnishings:</strong></td>
</tr>
</tbody>
</table>
| 12. List specific furniture, feature, and equipment needs or requests and their measurements.  
Multiple typologies of furniture include: 1) furniture with armrests, 2) tilted recliners, 3) raised beds, 4) raised toilets, 5) shallow sinks, 6) cabinetry with toe/knee clearance, 7) enhanced land line/cell phone, 8) security devices, 9) roll-in shower, 10) smooth surface stove with side or front knobs. |
13. Identify types of lighting needed for each area. Appropriate lighting helps the user perform activities easier, increases comfort and safety. Lighting can also eliminate shadows and prevent falls in poor illuminated areas. Lighting should not provide glares as too much or too little reflected lighting makes objects hard to see. Task lighting / bright lights should be used to perform tasks. Safety lighting can be used to illuminate stairs and hallways. Security lighting should be around the front and back doors including the garage. Ambient lighting can be added to increase comfort in the space and provide a physical relief and rest.

14. Identify any necessary special surface treatments. Non-slip flooring is recommended to decrease users’ chances of slipping and falling resulting in injuries. Throw rugs should also be removed or use of carpet underlay mats to secure them in place.

<table>
<thead>
<tr>
<th>Natural Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Climate Needs</strong></td>
</tr>
<tr>
<td><strong>Determine the orientation of windows relative to natural light.</strong></td>
</tr>
<tr>
<td>15. How will the orientation change during various times of day and seasons of the year? All the floor plans have the front door facing the south. The windows on the east will have natural daylight once the sun rises until noon. The windows on the west side of the house will have natural light from noon until the sun sets. The amount of natural light will change according to the placement and orientation of the house. The seasons also vary depending on the home's actual geographic location.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Needs</strong></td>
</tr>
<tr>
<td><strong>Research building restrictions:</strong></td>
</tr>
<tr>
<td>16. Identify the building’s regulatory constraints such as zoning, fire safety, and ADA codes. The standards and codes depend on which state the home is located in. There are federal, state, and local laws. The designers should meet with local code officials to determine what is acceptable in their jurisdiction. The restrictions cannot be determined for this project since the four housing typologies are not specific to a certain location.</td>
</tr>
<tr>
<td><strong>Psychological Needs</strong></td>
</tr>
<tr>
<td>17. Define territory and spatial needs of the senior citizens. Senior citizens want to feel independent within their own space in addition to feeling a part of a community. They do not want to feel isolated or not welcomed.</td>
</tr>
</tbody>
</table>
18. Identify markers for sense of arrival, invitation to enter, and sense of place.
Senior citizens feel welcomed in the community when the interior and exterior of buildings are accessible and free of physical barriers. They want to feel secure and safe during their visit. Circulation paths should accommodate space for a wheelchair user in addition to signage for wayfinding in view of their navigation throughout the space. Appropriate furniture also makes the senior feel comfortable and support the desire to revisit.

**Social Needs**

**Evaluate role in community:**

19. Identify main activities of senior citizens.
Common activities include: 1) going to the grocery store, 2) bank, 3) restaurant, 4) church, 5) visiting friends and family, and 6) medical appointments.

20. Define the cultural, historic, religious, social, entertainment, or political elements influencing senior citizens.
Senior citizens can be influenced to go to church more frequently, participate in senior community centers, support volunteer groups, serve as docents in museums among many others.

Use the key for questions 21-24:
Key: E = Excellent quality; G = Good quality; F = Fair quality; P = Poor quality.

21. Rate the overall quality of the Cape Cod in terms of seniors aging in place for the following:

<table>
<thead>
<tr>
<th>CAPE COD</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Ease of mobility</td>
<td>F</td>
</tr>
<tr>
<td>B) Security</td>
<td>P</td>
</tr>
<tr>
<td>C) Safety</td>
<td>P</td>
</tr>
<tr>
<td>D) Functionality</td>
<td>F</td>
</tr>
<tr>
<td>E) Comfort</td>
<td>F</td>
</tr>
<tr>
<td>F) Independence</td>
<td>F</td>
</tr>
<tr>
<td>G) Fall prevention</td>
<td>P</td>
</tr>
<tr>
<td>H) Space layout</td>
<td>G</td>
</tr>
<tr>
<td>I) Natural lighting</td>
<td>P</td>
</tr>
<tr>
<td>J) Flexibility of space</td>
<td>G</td>
</tr>
<tr>
<td>K) Adaptability of changes</td>
<td>E</td>
</tr>
</tbody>
</table>
22. Rate the overall quality of the Ranch in terms of seniors aging in place for the following:

<table>
<thead>
<tr>
<th>RANCH</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Ease of mobility</td>
<td>G</td>
</tr>
<tr>
<td>B) Security</td>
<td>P</td>
</tr>
<tr>
<td>C) Safety</td>
<td>P</td>
</tr>
<tr>
<td>D) Functionality</td>
<td>F</td>
</tr>
<tr>
<td>E) Comfort</td>
<td>F</td>
</tr>
<tr>
<td>F) Independence</td>
<td>F</td>
</tr>
<tr>
<td>G) Fall Prevention</td>
<td>P</td>
</tr>
<tr>
<td>H) Space layout</td>
<td>G</td>
</tr>
<tr>
<td>I) Natural lighting</td>
<td>G</td>
</tr>
<tr>
<td>J) Flexibility of space</td>
<td>G</td>
</tr>
<tr>
<td>K) Adaptability of changes</td>
<td>E</td>
</tr>
</tbody>
</table>

23. Rate the overall quality of the Bungalow in terms of seniors aging in place for the following:

<table>
<thead>
<tr>
<th>BUNGALOW</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Ease of mobility</td>
<td>F</td>
</tr>
<tr>
<td>B) Security</td>
<td>P</td>
</tr>
<tr>
<td>C) Safety</td>
<td>P</td>
</tr>
<tr>
<td>D) Functionality</td>
<td>F</td>
</tr>
<tr>
<td>E) Comfort</td>
<td>F</td>
</tr>
<tr>
<td>F) Independence</td>
<td>F</td>
</tr>
<tr>
<td>G) Fall Prevention</td>
<td>P</td>
</tr>
<tr>
<td>H) Space layout</td>
<td>G</td>
</tr>
<tr>
<td>I) Natural lighting</td>
<td>G</td>
</tr>
<tr>
<td>J) Flexibility of space</td>
<td>G</td>
</tr>
<tr>
<td>K) Adaptability of changes</td>
<td>E</td>
</tr>
</tbody>
</table>

24. Rate the overall quality of the Craftsman in terms of seniors aging in place for the following:

<table>
<thead>
<tr>
<th>CRAFTSMAN</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Ease of mobility</td>
<td>P</td>
</tr>
<tr>
<td>B) Security</td>
<td>P</td>
</tr>
<tr>
<td>C) Safety</td>
<td>P</td>
</tr>
<tr>
<td>D) Functionality</td>
<td>F</td>
</tr>
<tr>
<td>E) Comfort</td>
<td>F</td>
</tr>
<tr>
<td>F) Independence</td>
<td>F</td>
</tr>
<tr>
<td>G) Fall Prevention</td>
<td>P</td>
</tr>
<tr>
<td>H) Space layout</td>
<td>F</td>
</tr>
<tr>
<td>I) Natural lighting</td>
<td>G</td>
</tr>
<tr>
<td>J) Flexibility of space</td>
<td>F</td>
</tr>
<tr>
<td>K) Adaptability of changes</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>Cape Cod</td>
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<tr>
<td>---</td>
<td>----------</td>
</tr>
<tr>
<td>A) Ease of mobility</td>
<td>F</td>
</tr>
<tr>
<td>B) Security</td>
<td>P</td>
</tr>
<tr>
<td>C) Safety</td>
<td>P</td>
</tr>
<tr>
<td>D) Functionality</td>
<td>F</td>
</tr>
<tr>
<td>E) Comfort</td>
<td>F</td>
</tr>
<tr>
<td>F) Independence</td>
<td>F</td>
</tr>
<tr>
<td>G) Fall Prevention</td>
<td>P</td>
</tr>
<tr>
<td>H) Space layout</td>
<td>G</td>
</tr>
<tr>
<td>I) Natural lighting</td>
<td>P</td>
</tr>
<tr>
<td>J) Flexibility of space</td>
<td>G</td>
</tr>
<tr>
<td>K) Adaptability of changes</td>
<td>E</td>
</tr>
</tbody>
</table>
## Appendix B

### Program Document: Residential

<table>
<thead>
<tr>
<th>Human Ecosystem Programming Model</th>
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<tbody>
<tr>
<td><strong>Problem Statement:</strong></td>
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<tr>
<td><strong>Project Goals:</strong></td>
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<tr>
<td><strong>Project Objectives:</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Programming for Residential Space</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Human Organism</strong></td>
</tr>
<tr>
<td><strong>Client and User Needs</strong></td>
</tr>
</tbody>
</table>

**Profile Clients:**

1. Determine image/formality desired for whole family and individual members.
2. Determine status marker for individual family members.
3. Identify specific psychological needs of individual family members (territory, crowding, isolation, privacy, security).
4. Identify the anthropometric measurements applicable to these users.
5. Identify the number and frequency of visitors.
6. Determine any special needs of the visitors or their activities.
7. Identify mid- and long-range plans that are likely to outgrow this space.
### Economic Needs

**Establish budget range:**
1. Price furnishings and extend out as necessary.
2. Determine if build-out costs are included.
3. Determine if maintenance costs are built in.
4. Determine if post-occupancy evaluation is included.

### Designed Environment

### Contextual Assessment

**Develop site analysis:**
1. Identify the exterior architectural style of the existing building (if applicable) and of surrounding buildings.

### Building Needs

**Assess existing building or develop needs assessment for new structure:**
1. Document the interior architecture of the existing building (if applicable).
2. Inventory existing HVAC, acoustical, lighting, electrical, and plumbing conditions, and special or usual needs inventory existing fixed-in-place furnishings and fixtures or equipment and unusual spatial needs.
3. Document foreseeable needs and technology.
4. Log any existing unusual health-related conditions or special needs of user.

### Safety Needs

**Address physical and air quality safety issues:**
1. Log any existing unusual health-related conditions or special needs of user.

### Furniture/Equipment Needs

**Assess existing or proposed furnishings:**
1. List existing furnishings and measurements.
2. List specific furniture, feature, and equipment needs or requests and their measurements.
3. Identify ambient, feature, task, safety, and security lighting needed for each area.
4. Identify any necessary special surface treatments.

### Natural Environment

### Climatic Needs

**Determine the impact of the environment on the interior of the building:**
1. Identify site conditions: temperature, wind direction, precipitation, humidity levels, and quantity of sunlight for all four seasons in relationship to the building.
2. Note views and sight lines.
3. Consider temperature control by room placement.
4. Consider daylighting and artificial lighting.

<table>
<thead>
<tr>
<th>Geographic Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identify topography and vegetation conditions in relationship to the interior of the building.</td>
</tr>
<tr>
<td>2. Note daylighting and artificial lighting relative to vegetation levels throughout the year.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Test area for existing health risks such as radon, lead, etc.</td>
</tr>
<tr>
<td>2. Assess proximity to environmental risks/hazards.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Needs</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Research building restrictions:</th>
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</thead>
<tbody>
<tr>
<td>1. Identify the building’s regulatory constraints such as zoning, fire safety, and ADA codes.</td>
</tr>
<tr>
<td>2. Find nature of variances, special permits, and current and pending use control.</td>
</tr>
<tr>
<td>3. Identify neighborhood covenants.</td>
</tr>
<tr>
<td>4. Identify written and unwritten policies of neighborhoods.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Psychological Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Define territory and spatial needs of the individual users.</td>
</tr>
<tr>
<td>2. Identify markers for sense of arrival, invitation to enter, and sense of place.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Needs</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Evaluate internal social relationships, role in community:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identify decision-making route of the household.</td>
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<tr>
<td>2. Identify main activities of individuals and the family group.</td>
</tr>
<tr>
<td>3. Define the cultural, historic, religious, social, or political elements influencing this individual or family.</td>
</tr>
<tr>
<td>4. Determine what type of entertaining the family does, as well as type, length of stay, and formality level.</td>
</tr>
</tbody>
</table>
Appendix F  
Site Survey of Existing Conditions

Date: ________________________________

Company: __________________________________

Survey conducted by: _______________________

1. Determine the orientation of windows relative to natural light.
   • How will the orientation change during various times of day and seasons of the year?
   • Do nearby buildings or the potential for future buildings obstruct natural light?

2. Locate views or obstructions from windows.
   • Are the present views good or are improvements needed?
   • Are there obstructions to the view?
   • What are obstructions that may occur in the future?

3. Examine the quality of the present layout.
   • What are the present shapes of spaces and where are they located?
   • Are the adjacencies organized appropriately or is change needed?
   • Are the storage areas and/or closets adequate or is more space needed?
   • Are the bathrooms and kitchen adequate?
   • Are the elevators and stairs adequate in the building (commercial and/or apartment)?

4. Note any problems (exterior and interior) related to noise.
   • Are there noise issues from outside the building, the elevator, staircase, and/or adjacent spaces?
   • Within the spaces, are there noise and/or privacy issues for the users?

5. Examine elements that should be changed.
   • Location of walls, windows, doors
   • Adequacy of storage and/or closets
   • Improvements needed for bathrooms and kitchens
Appendix G
Post-Occupant Evaluation Survey

We want to conduct a post-occupancy evaluation (POE) of your building or space. The purpose of this evaluation is to assess how well the building or space performs for those who occupy it in terms of health, safety, security, functionality, and psychological comfort. The benefits of a post-occupancy evaluation include: identification of good and bad performance aspects of the building or space; better utilization of the building or space; and feedback on how to improve future, similar buildings or spaces.

Please respond only to those questions of the following survey that are applicable to you. Indicate your answers by marking the appropriate blank with an X.

1. In an average workweek, how many hours do you spend in the following spaces (specify):
   - Space A:
   - Space B:
   - Space C:
   - Space D:
   - Space E:
   - Space F:
<table>
<thead>
<tr>
<th>Hours</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<td>16–20</td>
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<td>21–25</td>
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<td>31–35</td>
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Answer Questions 2–5 using the following quality ratings: Quality Ratings Key: EX = Excellent quality; G = Good quality; F = Fair quality; P = Poor quality.

2. Rate the overall quality of the following area in your space.

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<thead>
<tr>
<th></th>
<th>EX</th>
<th>G</th>
<th>F</th>
<th>P</th>
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<tbody>
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<td>B)</td>
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<td>G)</td>
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</table>

3. Rate the overall quality of Space Category A in terms of the following:

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<tr>
<th></th>
<th>EX</th>
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<tbody>
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<td>B)</td>
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<td>F)</td>
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<td>G)</td>
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<td>H)</td>
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<td>I)</td>
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</table>
4. Rate the overall quality of Space Category B in terms of the following:

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<tbody>
<tr>
<td>A)</td>
<td>Adequacy of the space</td>
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<td></td>
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<tr>
<td>B)</td>
<td>Lighting</td>
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<tr>
<td>C)</td>
<td>Acoustics</td>
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<tr>
<td>D)</td>
<td>Aesthetics</td>
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<td>E)</td>
<td>Odor</td>
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<tr>
<td>F)</td>
<td>Functionality</td>
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<tr>
<td>G)</td>
<td>Security</td>
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<tr>
<td>H)</td>
<td>Flexibility of use</td>
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<tr>
<td>I)</td>
<td>Other, specify</td>
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5. Rate the overall quality of Space Category C in terms of the following:

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<tbody>
<tr>
<td>A)</td>
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<tr>
<td>B)</td>
<td>Lighting</td>
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<td>C)</td>
<td>Acoustics</td>
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<td>D)</td>
<td>Aesthetics</td>
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<td>E)</td>
<td>Odor</td>
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<td>F)</td>
<td>Functionality</td>
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<td>G)</td>
<td>Security</td>
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<td>H)</td>
<td>Flexibility of use</td>
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<td>I)</td>
<td>Other, specify</td>
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6. Rate the overall quality of Space Category D in terms of the following:

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<tbody>
<tr>
<td>A)</td>
<td>Adequacy of the space</td>
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<tr>
<td>B)</td>
<td>Lighting</td>
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<td>C)</td>
<td>Acoustics</td>
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<td>D)</td>
<td>Aesthetics</td>
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<td>E)</td>
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<td>F)</td>
<td>Functionality</td>
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<td>G)</td>
<td>Security</td>
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<td>H)</td>
<td>Flexibility of use</td>
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<td>Other, specify</td>
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7. Rate the overall quality of Space Category E in terms of the following:

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<tr>
<td>A) Adequacy of the space</td>
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<td>B) Lighting</td>
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<td>C) Acoustics</td>
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<td>D) Aesthetics</td>
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<td>E) Odor</td>
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<td>F) Functionality</td>
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<td>G) Security</td>
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<td>H) Flexibility of use</td>
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<td>I) Other, specify</td>
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8. Rate the overall quality of Space Category F in terms of the following:

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<tbody>
<tr>
<td>A) Adequacy of the space</td>
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<td>B) Lighting</td>
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<td>C) Acoustics</td>
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<td>D) Aesthetics</td>
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<td>E) Odor</td>
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<td>F) Functionality</td>
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<td>G) Security</td>
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<tr>
<td>H) Flexibility of use</td>
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<tr>
<td>I) Other, specify</td>
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9. Rate the overall quality of design of this space:

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<th>P</th>
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</thead>
<tbody>
<tr>
<td>A) Aesthetic quality of interior</td>
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<td>B) Amount of space</td>
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<tr>
<td>C) Environmental quality (lighting, acoustics, temperature, etc.)</td>
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<tr>
<td>D) Proximity to views</td>
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<tr>
<td>E) Adaptability to changing uses</td>
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(continued)
10. Select and rank in order of importance equipment of facilities that are currently lacking in this space.

11. Make any other suggestion you wish for physical or managerial improvements in your building.

12. Demographic information:
   a) Your room #/building area:
   b) Your position:
   c) # of years in the present position:

13. Other issues that could be addressed? (IMPORTANT)