Days with Dignity: a new adult day services typology to support wellness and rehabilitation

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DAYS WITH DIGNITY
A New Adult Day Services Typology to Support Wellness and Rehabilitation

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Architecture

by
Heather Bachman
May 2011

Accepted by:
David Allison, Committee Chair
Dr. Dina Battisto
Dr. Cheryl Dye
Adult Day Services (ADS) facilities have been shown to enable aging in place through the cost-efficient delivery of senior health-related services. However, the most common ADS typologies often work in opposition to the goals of care delivery. The primary intention of this proposal is to envision an Adult Day Services program that is holistically focused on senior wellness and rehabilitation, and which is articulated and reinforced through facility design. A new programmatic and facility typology is proposed and evaluated against a set of design guidelines based on research findings and best practices found in a literature review. In addition, this study aims to achieve a more thorough understanding of the benefits and limitations of Adult Day Services to reveal health-related service goals that are most appropriate for the aging population. These findings would inform a design that could contribute to a more economical and appropriate delivery of long-term health and wellness care in contemporary society.
DEDICATION

This thesis is dedicated to Seville, Martha, and Mollie; you are the face and the heart of this project.
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INTRODUCTION

The United States is facing an imminent and historically unprecedented growth in its elderly population. Such a growth in both the actual number and percentage of older Americans will significantly challenge public policy makers, businesses, health care providers, and families to meet the needs of aging individuals.

Most of the population growth will occur among the aging Baby Boom Generation. The number of people age 65+ is expected to grow by 89% from 2007 to 2030 (Houser et al., 2009). At this time, one in five Americans will be elderly (Older Americans 2010). The oldest old segment of this population—those who are age 85+—is expected to increase 74% by 2030, but then spike even more rapidly as the Baby Boomers turn 85 in 2031. This oldest old age group is expected to more than double again by 2050 (Houser et al., 2009), representing a growth from 5.7 million (in 2008) to 19 million (Older Americans 2010). This is of particular concern because the oldest old are the greatest consumers of health care in the nation and represent the greatest predictor for long-term care services (Houser et al., 2009).

While the health of older Americans has improved significantly over the last half-century, both the use of health care services and health spending have risen (Kramarow et al., 2007). Currently, those who are 65+ represent 12% of the population but nearly 33% of the health care spending (S.P. Keehan et al., 2004). If this trend continues, those 65+ will represent nearly 20% of the population and 56% of health care spending by 2030. Those with greater disabilities—denoted as having more impairments in Activities of Daily Living (ADLs)—
daily activities linked to self-care, work, homemaking, or leisure (Medterms.com)—spend more than those without limitations. Approximately 38% of older persons reported some form of disability in 2008; as more people live into older age, this number will likely increase. The increase of cognitive disabilities—such as dementia and Alzheimer’s disease—is also a growing concern (MetLife ADS, 5, 2010). In addition, there is growing evidence of declines in the health of middle-aged people. This age group reports higher levels of chronic conditions and obesity than ever before. Rising obesity and related conditions predict higher levels of Medicare spending as this population ages. Unless there is an intervention, research points to deteriorating health conditions in a larger population of elderly with escalating cost.

The United States is at a crucial point in health care reform. As concerns of future government expenditures shape public policy, necessary questions arise as to the best course of action for health care delivery and management of an elderly population. Past precedents with a Medicare-funded, institutional bias for long-term care—such as placement in a nursing home—is now obsolete due to unsustainable cost and changing market demand.

Market demand indicates that 8 in 10 elderly express a desire to age in place by remaining in their respective homes and communities throughout the aging process (Bayer & Harper, 2000). When the amount of intervention required to meet an older person’s needs is visualized on a levels of care continuum, with no formal care intervention being required in a Naturally-Occurring Retirement Community (NORC), and 24-hour, end-of-life care being
delivered by hospice, then aging in place is found to occur on the first three levels. Adult Day Services, located on the third level of this continuum is the focus of this thesis. In order for aging in place to be a possibility at this level of care, some services relating to ADLs, mobility, vision, hearing, and nutrition must be offered within the home or community to bridge the gap between an elder’s needs and what he is able to provide or perform for himself.

Figure 7: Bridging the ability gap

Figure 8: Levels of care continuum
Despite the wide spectrum of preventive and supportive services required to keep an elder living in her home, home- and community-based care has proven to be much more cost effective than institutionalization. Nearly three older adults with physical disabilities can be supported by Medicaid with home- and community-based care for every one person in a nursing facility (Houser et al., 2009). There is now a growing trend toward redirecting public funds towards these alternative care services. States have shown interest in exploring this option of care—49 states increased home- and community-based expenditures from 2002-2007 (Houser et al., 2009). As a result, several alternative care models have evolved that provide home and community-based services to better meet the needs and market demands of the nation’s elderly.

Figure 9: Home- & community-based vs. institutionalized care
Adult Day Services (ADS) is a particularly effective way of delivering community-based care. ADS provide therapeutic day services that allow chronically ill people to continue living at home and relieve informal caregivers from the burden of care during working hours. These community-based group programs typically provide support services for those 65 years and older (though some also serve younger clients) with decreased physical, mental, and social functioning. Adult Day Services are typically (86%) state-certified or licensed, open Monday through Friday between the hours of 6:30am and 6pm, (MetLife ADS, 2010) and provide services related to transportation, health screening and monitoring, ADLs—including bathing and toileting, mobility and exercise, social and cognitive stimulation, and nutrition, including meals. There is also a growing demand for ADS centers to offer rehabilitation, short-stay respite and overnight stays. Services offered vary by site, resources, and client preferences.
In 2002 at the time of the national Partners in Caregiving/Robert Wood Johnson survey, there were 3407 ADS centers in operation, while 8520 centers were still needed—1424 in rural areas and 3991 in urban areas (RWJF, 2004). Fifty-six percent of counties in the United States are reported as underserved. Since that time, the number of ADS centers has increased to 4610 which represents significant growth, but this number still falls seriously short of the demand (Notarstefano). At the time of the RWJF survey, 26 percent of all ADS had opened within the past five years, which is indicative of strong market growth.

Despite strong market growth, there is a lack of clarity and agreement within the industry as to how ADS can be best positioned to positively impact senior health in a profitable way. Keith Diaz Moore, arguably the nation’s most respected research architect and expert on Adult Day Services, describes a constant state of adaptation as ADS facilities attempt to offer the mix of social and medical services most relevant to their clients (Diaz Moore et al., 2006). While this may be motivated by best intentions, both the operational and design decisions made at the individual facility level are rarely validated by research evidence and have created unfortunate ambiguity among regulatory and funding bodies, as well as the public at large.
This ambiguity is evident in ADS facility typologies, the two most common of which being the open and the subdivided plans. Though usually unconscious, a facility’s endorsement of one of these two typologies represents a fundamental philosophical orientation that may actually be in opposition to their program goals.

For example, most ADS centers have specific therapeutic activity programs designed for physical, social, and cognitive stimulation. However, the open plan typology is associated with unrelenting social obligation and loss of privacy (Diaz Moore et al, 2006). These conditions encourage social withdrawal, rather than positive social interaction, and therefore are working against program goals. Neither typology provides the environmental cuing necessary to understand the space. Though participants may be receiving some benefit from programs that offer cognitive stimulation, the environment in which they interact is doing nothing to further their understanding or independence.

The subdivided plan, in which participants are most typically assigned to a room by cognitive ability, has been associated with “disorientation and disconnection from others while simultaneously enforcing a cultural milieu” (Diaz Moore et al, 2006). At best, these conditions are doing nothing to reinforce therapeutic activity goals; at worst the environmental conditions are counteracting whatever progress has been made in the participants’ therapeutic regimens.
The primary intention of this proposal is to envision an Adult Day Services program that is holistically focused on senior wellness and rehabilitation, and which is articulated and reinforced through facility design. A new programmatic and facility typology is proposed and evaluated against a set of design guidelines based on research findings and best practices found in a literature review. In addition, this study aims to achieve a more thorough understanding of the benefits and limitations of Adult Day Services to reveal health-related service goals that are most appropriate for the aging population. These findings would inform a design that could contribute to a more economical and appropriate delivery of long-term health and wellness care in contemporary society.

To place Adult Day Services in context, a literature review was conducted on the subject. Next, because there is a gap in environmental data specifically relating to ADS, environmental design relating to the physiology of aging and long-term care was reviewed to identify what strategies could be appropriate for an ADS facility’s participant population.

Existing ADS facilities were visited to gain a more complete understanding of the daily operations and use of space. Interviews with directors, staff that care for the participants, and participants themselves offered valuable insight and ‘lessons learned’ based their daily experiences at an ADS center. The opportunity to view and analyze the various typologies and philosophical orientations was essential to the research and case study analysis and aided in forming and developing a set of design
guidelines that are used to inform and evaluate a more successful ADS facility design. These design guidelines consider zones of activity, flexible boundaries, intuitive circulation, a privacy gradient, access to the outdoors, and daylighting without glare.

The site chosen for this thesis exploration is a vacant urban parcel in downtown Greenville, South Carolina. A demand estimate was conducted to determine there is more than adequate need for Adult Day Services within a twenty minute drive. The location is conducive for community integration and public transportation. The site is large enough to accommodate both green space and parking, without losing connection to the liveliness of West End Main Street restaurants, services, and entertainment. A for-profit ADS center targeting both lower and middle-class participants is proposed for the site. It is staffed according to national average ratios with a ratio-variable option. The facility is programmed and designed to serve 100 current registrants, with an average daily census of 60 with plans of growing to a census of 100 within 3 years.

This study is among the few devoted to examining Adult Day Services in conjunction with place-type environmental/typology design. It attempts to address pressing issues of elderly population growth and the appropriate response to this population’s health care needs. In addition, it is expected that this thesis will aid in education about the ability of Adult Day Services to deliver wellness, transitional and rehabilitative participant care. Also, studies pertaining to flexibility within ADS
facilities may generalize to other health care settings that serve aging and long-term care populations with censuses subject to flux.

On the cusp of a never-before experienced population growth phenomenon, health care architects find themselves uniquely positioned to enable the words of Ghandi, “A nation’s greatness is measured by how it treats its weakest members.” What if these weakest members—the elderly and disabled—could be empowered by appropriate design? What if a focus on wellness and rehabilitation allowed them to age in place? What if, through honoring the health of our elders, we were actually establishing our own legacy and establishing a precedent for our own future health care?
ADULT DAY SERVICES IN CONTEXT

History of Aging in America

Living to old age is a relatively new phenomenon, which is why such a dramatic increase in the nation’s elderly is historically unprecedented. At the time America was founded, the average life expectancy was only 35 years of age (Diaz Moore et al., 13). The wealthy were typically the only ones with means to live into old age, and likely had extended family nearby to provide care. Though life expectancy increased with the changes brought by industrialization—such as enhanced nutrition—dispersal of people migrating into urban areas in search of work meant families were not always present to become caregivers for aging relatives. This lack of available family care and the increasing life expectancy of people lacking economic resources resulted in society’s answer of charitable custodial care facilities to solve the “problem” of aging and remove this unwanted population from view (Diaz Moore et al., 13). The Social Security Act of 1935, by providing old-age benefits to workers, did much to promote independence among the elderly. However, those who were not able to independently care for themselves had few options beyond institutionalization. Nursing homes flourished during this period and the stigma of aging became associated with medical necessity and illness. An amendment to the Hill Burton Act of 1965 expanded federal funding of hospitals to other care facilities such as nursing homes, but their regulation was heavily influenced by acute care hospitals. With the establishment of Medicare and Medicaid in 1965 offering reimbursements for services linked to hospitalization and institutionalization, the stigma of aging shifted from a social problem to one of illness (Diaz Moore, 13).
Though the stigma of aging and its association with illness and institutionalization remained in place for decades, there is now a growing trend toward redirecting public funds towards home- and community-based care. This is due to an attempt at Medicaid/Medicare cost containment while responding to consumer demand to age in place. Several alternative care models have evolved to better meet the needs and market demands of the nation's elderly. One important component in the continuum of home- and community-based care is Adult Day Services (ADS).
According to the National Adult Day Services Association, adult day service centers provide a coordinated program of professional and compassionate services for adults in a community-based group setting. Services are designed to provide social and some health services to adults who need supervised care in a safe place outside the home during the day. They also afford caregivers respite from the demanding responsibilities of caregiving. Adult day centers generally operate during normal business hours five days a week. Some programs offer services in the evenings and on weekends (nadsa.org).

Although they vary by center location, typical services include: social activities, transportation, meals and snacks, personal care, and therapeutic activities, including exercise (nadsa.org). Additional therapeutic services include music/art/pet therapies, psychosocial assessment, specialized dementia programs, and caregiver-support programs (MetLife ADS, 2010).

The typical American ADS program was initiated in the early 1990’s as a “single-site, stand-alone, private, non-profit service provider” (MetLife ADS, 2010). Most centers have no parent organization and are state-certified or licensed to provide services, operating on a Monday-Friday, 6:30am—6:00pm schedule. Registered Nurses (RN) or Licensed Practical Nurses (LPN) typically provide care at least 8 hours a day and are usually included in the 1:6 staff to participant care ratio (MetLife ADS, 2010).
Adult Day Service centers collect an average fee of $61.71/day from a public funding source, such as Medicaid waivers, the Veterans’ Administration, state or local social service agencies, or through direct participant pay. However, the actual cost of providing care to each participant is $68.89; the difference may be made up through non-operating revenue such as grants, fundraising, or donations (MetLife ADS, 2010). A diversification of funding is crucial because it protects an organization in the case that a revenue stream diminishes and allows some clients to receive care based on a mix of payers (Hartle & Jensen). Successful anticipation of reimbursable services by various funding sources will allow an ADS center to remain financially viable. It may be more efficient for some of these services—such as transportation, meals, physical, occupational, and speech therapies, and hair care—to be provided through other community agencies.

The 2010 MetLife Study of Adult Day Services, considered the most definitive data on ADS in the United States, predicts that these future reimbursable services will focus on managing chronic illnesses, delaying/preventing institutionalization, and providing socialization, dementia care, and caregiver support. The planning of future ADS centers will ideally accommodate a diversity of services in a way that allows for change in delivery or implementation through strategic community partnerships.
The origin of Adult Day Services can be traced back to psychiatric day hospitals in Moscow in the 1930’s. An acute lack of inpatient beds necessitated early patient discharge. Patients lived at home and returned to the hospital during the day for follow-up care. Thirty years later, Britain adopted this day hospital model to care for the elderly disabled. Acute care patients were discharged to their homes and returned to the hospital during the day for follow-up outpatient treatment. These programs emphasized medical rehabilitation and treatment, providing nursing care and ancillary health services—such as podiatry, dentistry, and nutrition programs. The skill-generative day hospital was brought to the United States by physician Lionel Cousin in the 1960’s. Cousin’s psychiatric inpatients in Cherry Hospital in Goldsboro, North Carolina attended the day program in order to develop skills. These programs, however, were different from their British counterparts in that they were geared to adults of all ages with developmental and mental disabilities and focused on teaching independent living skills and integration into the community (Diaz Moore et al., 13-15). Though open to a broader population, day hospitals in the United States, like their British predecessors, were hospital-sponsored, offered both medical and rehabilitative services and targeted populations at risk of institutionalization.

O’Brien (1982) claims that the need for a more socially-focused and less medically intensive model of care became apparent by the 1970’s. Around this time, social “day centers” opened that offered companionship, meals, and sometimes baths, but did not incorporate any of the medical services that characterized day hospitals (Diaz Moore et al., 15). Day
centers for the elderly offered peer support and social activities rather than medical or rehabilitative ones, and were run by local or volunteer agencies (Diaz Moore et al., 15).

Theses philosophical and historical differences between the day hospital and the day center resulted in the evolution ADS into three operational models by 1980. Operationally, these philosophies manifested differences in client population served, expected outcomes, and staffing. The medical model employed nursing staff to provide skilled medical assessment, treatment, and rehabilitation to a frailer client population, while the social model tended to focus on socialization and preventative services for a more able-bodied elder population. Combined, or hybrid, models covered all medical and social services (MetLife, 2010). It is impossible to provide a definitive list of services for each model, since ADS centers have historically been community-based and have responded to the specific needs of the local participants. According Keith Diaz Moore, research conducted by Weissert and colleagues to classify ADS centers by either a medical or social model had the “unfortunate consequence of obscuring the much broader variation in the character and content of such services” (Diaz Moore et al., 15). Thus, a classification of ADS according to a specific care model may be more limiting than disclosing about the nature of Adult Day Services.
Adult Day Services Care Models

The 2010 MetLife National Study of Adult Day Services no longer draws a distinction between care models. According to this most recent survey, “The distinction among these models has become increasingly unclear as these models have evolved into a dynamic, comprehensive model of care” (MetLife ADS, 2010). This comprehensive model of care is most closely related to the historic hybrid model.

Comprehensive models of care offer a “full day of health services and supervision, assistance with daily living, and stimulating activity” (MetLife, 2010). Nearly all present-day ADS centers ensure this breadth of services through care planning, in which information on medical conditions, treatment plans, medication, activities, and progress is recorded and updated for each participant. Additionally, assistance with Activities of Daily Living (ADLs)--including walking, toileting, and bathing, medication management, monitoring of chronic conditions, meals, and transportation are services offered in most ADS centers. Therapeutic--including occupational, physical, and speech--services are often available, though sometimes for an additional fee (MetLife, 2010). This evolution to a more comprehensive care model can be explained by changing reimbursement structures and market demand.
The overwhelming majority of ADS centers assemble a patchwork of public and private funding in order to keep their doors open. While some clients pay for Adult Day Services privately, most are currently able to utilize ADS through Medicaid waivers or Medicaid state plans. Funding is also available from Title III B and E of the Older American’s Act, the Veteran’s Administration, and Social Services Block grants (Notarstefano interview).

The 2010 MetLife Study provides the most recent data available on ADS funding sources. According to this national survey, over half (55%) of ADS center funding comes from publically paid participant fees, such as Medicaid home- and community-based waivers, the Veteran’s Administration (VA), and state and local funding (MetLife ADS, 14, 2010). Only 26% of funding comes from privately paid participant fees, with the rest of the gap being filled by grants, donations, fundraising, parent organization funding, and insurance (MetLife ADS, 14, 2010). This represents an increase in available public funding for ADS facilities—a 2004 Robert Wood Johnson Foundation study found it to be 38% (RWJF, 2004). This trend suggests that centers may be serving clients with fewer resources and/or efforts have been made to increase available home- and community-based waiver programs (MetLife ADS, 14, 2010). The VA, by increasing community-based service allocation, has also been identified as a growing source of public funding (MetLife ADS, 14, 2010).

Site visits and interviews with staff conducted as a part of the thesis research indicate that the most profitable and expanding centers have a higher percentage of third-party income—closer to 60%. This can be explained by much higher public reimbursements.
for serving younger, developmentally disabled adults. Many predict, however, that these types of reimbursements—which are nearly three times those received by the elderly—are simply not economically sustainable and will drop dramatically in coming years. If this indeed comes to fruition, ADS centers will need to look elsewhere to expand their client base. This expansion may come from not only seeking public sector reimbursements, but recruiting more private pay clients, such as the middle class who have thus far been neglected in most ADS marketing efforts.

Perhaps linked to similar sources of income, Leitsch et al. found great similarities across ADS operational models. They offer several suggestions to explain the lack of differences in program characteristics. First, it is argued that program characteristics are not due to philosophical model differences, but rather an “evolution of the models as Medicaid-eligible facilities” (Leitsch et al, 494). Programs are motivated to operate according to the medical model in order to qualify for Medicaid reimbursement (Leitsch et al, 494).

They also suggest that while ADS may have been distinguished according to medical or social models originally, the convergence may also be explained by programs adapting their characteristics to care for similar clientele with specific needs. In other words, medical and social models serve very similar populations (Leitsch et al, 495).

Diaz Moore claims that advocates of ADS have recognized “that the needs of the elderly
were not solely functional or physical in nature and that the interaction of these two needs involved psychosocial issues as well.” The result has been that many ADS centers have taken an expansive approach to their services in an attempt to fluidly meet diverse needs (Diaz Moore, 16).

This model convergence is additionally supported by two national trends identified by Nancy Cox, the Director of Partners in Caregiving (sadly now dissolved due to a shortage in funding): new adult day centers are being opened as adult day health centers to be more appealing to managed care companies, and existing social model day centers are converting to adult day health centers (RWJF, 2000). Adding “health” to the name of an ADS center is strategic marketing that communicates a holistic focus on preventative, medical, and wellness services offered. In some states, the addition of “health” to the ADS title ensures that certain medical services will be appropriately reimbursed. Despite serving a diverse population, the convergence of care models indicates that ADS centers address similar care needs in the older adult population.
ADS PARTICIPANT PROFILE

Desire to Age in Place and Typical Living Arrangements

Despite being part of the most diverse elder population in history, those utilizing Adult Day Services have similar desires and care needs: they desire to age in place, need assistance with Activities of Daily Living due to a compromised health status, can benefit from additional opportunities to socialize, and may also suffer from some form of dementia.

Despite a diverse population in need of some assistance, more than 8 in 10 elderly express a desire to remain at home and in their respective communities throughout aging (Bayer & Harper, 2000). For many, aging in place means co-habitating with an adult child or spouse. Twenty-seven percent of ADS participants live with an adult child. Living with a spouse, alone, or in a communal setting are other common living arrangements at 21, 20, and 18% respectively (MetLife ADS, 2010). Since the 2002 MetLife Survey, the number of participants living with an adult child has decreased (from 35% to 27%) and the number of participants living alone has increased (from 11% to 20%). This may be indicative of the potential of ADS to successfully empower independently aging in place (MetLife ADS, 2010). Further research is needed to determine if those who are able to independently age in place are empowered to do so through access to additional in-home or community-based services. If this is the case, ADS centers can form collaborative partnerships with these services to empower more people to live as independently as possible.
Reasons for Enrollment and Disenrollment in Adult Day Services

Given an elderly population in need of assistance and primarily dependent on caregivers to enable aging in place, Adult Day Services plays an important supportive role. Most ADS participants need assistance with 2-3 Activities of Daily Living (Cox, 2003, as cited in Diaz Moore et al., 2006). Specifically, incontinence is a particularly burdensome and likely rationale for many caregivers seeking ADS to help care for their loved one (Diaz Moore et al., 2006; Pynoos & Stacey, 1986). According to the MetLife Survey, the most common reasons for enrollment into Adult Day Services, which the 2010 MetLife Survey suggests are “indicators of family caregivers in crisis” (MetLife ADS, 2010) and an “imbalance between care recipient needs and caregivers’ sustained ability to meet those needs”:

- Increased functional needs of the participant
- Caregiver respite
- Declines in caregiver ability
- Increased behavior problems in the participant

Disenrollment from ADS is most usually due to placement in a nursing home (institutional care), death of the participant, and a participant health decline beyond what ADS services are able to accommodate. According to the MetLife Study, “the fact that death continues to be one of the top reasons for disenrollment suggests that ADS may allow individuals to not only age in place, but to maintain community-based living until the end of life” (2010).
Compromised Health Status and Care Needs

Most ADS participants need help with Activities of Daily Living due to a compromised health status. The most common health conditions of ADS participants are: dementia, hypertension/high blood pressure, physical disability, cardiovascular disease, and diabetes (MetLife ADS, 22, 2010). Though the 2010 MetLife Survey indicated these as the most common conditions, it did not mention possible co-morbidities or the duration participants have been successfully managing these conditions on their own or with a caregiver before seeking adult day health services.

Overall trends in participant populations indicate an increase in the frailty of participants (RWJF, 2000). Between 2002 and 2010, there has been a dramatic increase in the percentage of ADS participants with physical disability, from 23% to 42%, respectively (MetLife ADS, 22, 2010). Additionally, the percentage of participants with chronic mental health issues has risen from 14% to 25% between the 2002 and 2010 MetLife ADS Surveys (MetLife ADS, 22, 2010).

Some ADS centers are expanding their target populations to include younger adults with developmental disabilities and the chronically mentally ill (RWJF, 2000). Interviews with staff directors indicate that if the elderly and younger adult populations are mixed, each should occupy its own area within the facility. Intergenerational activities that mix the two populations, such as a musical program, have been met with success, but should be planned events and not the everyday condition. In addition, specific staff members need
to be dedicated to the educational activities of the younger adults.

The most common care needs of ADS participants are: toileting, medication management, bathing, and transferring. It is suspected that, with the rise of physical frailty, participants will need an increasing amount of help with these Activities of Daily Living (MetLife ADS, 23-24, 2010).

Figure 24: Assistance with Care Needs (MetLife ADS Survey, 2010)
Currently 13% of those 65+ have Alzheimer’s disease (AA – 2009 Facts and Figures, 10) and 47% of ADS participants have it (MetLife ADS, 2010). Since the number of Americans living into their 80’s and 90’s is expected to increase, and since the incidence and prevalence of Alzheimer’s Disease increases with age, the number of people with this disease is also expected to grow significantly (AA – 2009 Facts and Figures, 19). When Baby Boomers turn 85 in 2031, there will be an estimated 3.5 million people with Alzheimer’s (AA – 2009 Facts and Figures, 19). By 2050 the number of people 65+ with Alzheimer’s is expected to be between 11 and 16 million. Barring medical breakthroughs, more than 60% of those with Alzheimer’s will be 85+ (AA – 2009 Facts and Figures, 19).

While the 2010 MetLife Survey discovered that the percentage of participants with dementia have remained relatively static since 2002, it cannot be ignored that the overwhelming majority of ADS centers—95%—already serve clients who have some form of dementia (Diaz Moore et al., 2006). With all this in mind Diaz Moore says, “It is essential, therefore, for care providers to recognize that even an adult day program does not initially serve individuals with cognitive impairments, they will in the future; in short, every adult day center should be programmed and designed to be ‘dementia capable’” (2006).
ADS AS A Viable Healthcare Delivery Option

Research confirms ADS as a cost-effective way to deliver senior care. Besides receiving daily care, there have been demonstrated overall benefits to participants and their caregivers who take advantage of ADS. Despite the medical, social, and supportive capability of ADS, the successful planning, design, and operation of an ADS facility involves meeting several challenges. The nature of these challenges must be understood in order to effectively market to potential clients and ultimately delay the need for long-term care by enabling aging in place, sustained health status, and improved therapeutic outcomes.
Cost Efficiency of ADS

The cost of supporting aging in place through ADS is low relative to other long-term care options, averaging $67/day, versus $198/day for a nursing home (semi-private room) and $104 for assisted living. Nearly three older adults with physical disabilities can be supported by Medicaid in home- and community-based care for every one person in a nursing facility (Houser et al., 2009).

States have shown interest in exploring this option of care—49 states increased home- and community-based expenditures from 2002-2007 (Houser et al., 2009). Though gaining more federal and state support, ADS is still reliant on multiple funding sources to cover operating costs (O’Keeffe & Siebenaler, 2006). However, the number of private pay ADS clients has been increasing, representing 25-35% of consumers in 2008 (Dearborn, 2008). The MetLife Study discovered a 5% increase in the number of for-profit ADS centers compared to what was found in the 2002 study (2010). All of the aforementioned evidence indicates a strong market demand for this more sustainable form of elder healthcare service delivery. The MetLife Study claims, “This increase in for-profit centers may be indicative of the financial health of the industry and an expected evolution as ADS centers become more sophisticated and focused on medical services” (2010).
The effectiveness of ADS extends beyond cost. Though difficult to measure because of this diversity in focus, design, and client population, ADS has been linked to improvements in psychosocial functioning and a general satisfaction among its elderly clients (Gaugler & Zarit, 2001). Use of ADS services is also associated with lower mortality rates among the frail elderly (Kuzuya et al., 2006), and a reduction in nighttime sleep problems among those with dementia (Femia, Zarit, & Greene, 2007). In a recent study by Eva M. Schmitt et al., participation in Adult Day Services was associated with “perceived reductions in the extent to which participants’ physical and emotional health problems affected their regular daily activities,” suggesting that ADS, “is another option in the continuum of community-based long-term care that is associated with improved quality of life.”
The vast majority of elderly are supported in their decision to age in place by a network of family and friends acting as informal caregivers. Nearly 19% of all American adults provide some form of care to a family member age 50 or older (Houser et al., 2009). Informal caregivers have been described as the “backbone of the nation’s long-term care system” providing an estimated value of care that ranges from $45-96 billion a year (O’Keeffe & Siebenaler 2006). Seventy-six percent of recipients are receiving care because of some long-term physical condition (Houser et al., 2009). By definition, caregivers provide assistance with at least one Activity of Daily Living (ADL) and one Instrumental Activity of Daily Living (IADL), but on average these caregivers provide at least two and four, respectively (Caregiving, 2009).

Whether or not they live with their parent, adult children provide 36% of ADS participants with care. Spouses and paid professionals provide 23 and 19% respectively (MetLife ADS, 2010). Three-fourths of caregivers work outside the home. While this number has remained fairly constant since 2004, there has been an increase in those who have had to make workplace accommodations, such as arriving late, leaving early, or taking time off during the day to fulfill their caregiving responsibilities (Caregiving, 2009). Caregivers of persons with dementia without behavioral problems were 31% more likely than caregivers of other older persons to reduce work hours or quit work; this number jumps to 68% for those caring for a demented recipient exhibiting behavioral problems (Alzheimer’s Association, 2009). All caregivers working outside the home are more likely to report needing help
balancing work and family responsibilities (Caregiving, 2009).

Currently, 30% of caregivers report a high level of burden based on the number of hours of care and number of activities that they assist their recipient with (Caregiving, 2009). The levels of emotional stress, depression, and adverse health conditions increase for those providing care to someone with dementia (Alzheimer’s Association, 2009). Higher levels of stress and burden are related to a higher level of institutionalization of relatives suffering from dementia (O’Keeffe & Siebenaler 2006).

Additionally, since 2004, there has been an increase in the number of caregivers who say they need help or information. All of the trends mentioned above indicate a strain on the informal system of care. With an increase in the elderly population, it is highly likely that these already over-burdened informal care networks will not be able to keep up with the growing demand for home-based care.

Adult Day Services offers some hope to the over-burdened; caregiver benefit has been manifested in lower levels of caregiving-related stress and higher levels of psychological-related well-being (Zarit et al., 1998). This is most likely because enrolling a loved one in an ADS program relieves the caregiving burden during working hours, allows caregivers time to themselves or enables them to earn an income. Some ADS centers, by offering the additional service of healthcare coordination, are reducing the need for caregivers to make
workplace accommodations to take their loved ones to doctors appointments. Additional coordination of care is evidenced by rehabilitative therapies—physical, occupational, and speech—being increasingly offered at ADS centers. The more a center strives to be a “one stop shop” the less a caregiver will have to spend their personal and professional time on their loved one’s healthcare coordination.
Despite the evidence in favor of Adult Day Services’ ability to deliver cost-effective care to participants and caregivers, there are many challenges a center must overcome to do this. According to a market survey, “Current codes, laws, and regulations governing adult day services are not uniform among the states. Although many require licensure or certification, they are not federally regulated” (MetLife, 2009). Diaz Moore refers to Adult Day Service centers as being in a constant state of adaptation as they fluidly attempt to offer the mix of social and medical services most relevant to their clients. While this may be helpful to clients, it has created unfortunate ambiguity among regulatory and funding bodies, as well as the public at large (Diaz Moore et al., 2006).

This constant state of adaptation to regulatory and funding inconsistencies has resulted in fragmented funding streams. Adult Day Service centers must assemble a patchwork of private pay and federal, state, and local funds from Medicaid, social service block programs, the Older Americans Act, Veterans Affairs (VA), Medicare dollars (for ancillary/therapeutic) services, the Department of Agriculture’s food reimbursement program, and state general fund dollars and philanthropies. However, Medicaid and VA funds are not available in all states (RWJF, 2000). For all of these reasons, profitability in this volatile economic climate is perhaps the largest challenge to the provision of Adult Day Services. Another challenge is associated with ADS outcomes. Interestingly, the number one perceived role of ADS is delaying/preventing institutionalization. Studies demonstrating ADS ability to do this have yielded mixed results and an overall inability to consistently
delay institutionalization on a consistent basis. Most caregivers are reported to take advantage of respite (ADS) services too late in the progression of a participant’s illness; the relief offered by ADS may actually influence caregivers to expedite placement into a long-term care setting. An earlier placement into long term care actually incurs greater cost to the community at large (Gaugler & Zarit, 2001). For these reasons, this proposal assumes a need for re-visioning and expansion of ADS goals and services, and the need to facilitate an earlier delivery of care.
Though delaying or preventing institutionalization was identified as the number one priority in the MetLife Study, the inability of Adult Day Services to consistently accomplish this (see Challenges Associated with ADS - Chapter 3) implies that the priorities set by most ADS facilities need to be reevaluated. The growing evidence of ADS centers’ ability to provide cost-effective senior care and caregiver support suggests that ADS should be defined by a more proactive role enabling the health of older adults. Offering programs focused on preventative and chronic disease management, strategic partnerships with other medical care providers, and providing transitional and short-term care and rehabilitation will be critical roles for the ADS center of the future to fill.

Figure 28: Present and Future Priorities in ADS  
(MetLife ADS Survey, 2010)
In order to gain a better understanding of the future health delivery services, The Institute of Medicine appointed a committee to identify high-quality, cost-effective models of care for older adults. The committee identified three key principles to deliver care which “represents a major departure from the current system” (Institute of Medicine, 2008). These principles are: addressing the needs of the older population comprehensively, providing services efficiently, and encouraging older persons to be active partners in their own care (Institute of Medicine, 2008). Adult Day Services is ideally positioned to fulfill this charge.

According to the Institute of Medicine committee, comprehensively addressing the needs of older adults needs to include: “...preventive services (including life-style modification) and coordinated treatment of chronic and acute health conditions” (Institute of Medicine, 2008). The high percentage of preventative and health-monitoring services currently being offered at ADS centers, as illustrated in the top graphic, indicates that ADS is already a delivery platform for preventative services (MetLife, 2010). The committee also reported, “For frail older adults social services may also be needed in order to maintain or improve health. The social services need to be integrated with health care services in their delivery and financing” (Institute of Medicine, 2008). As discussed in earlier chapters, the governing care model in nearly every ADS center seamlessly integrates both medical and social therapeutic services for no extra fee.
Adult Day Services is documented as being a “preferred platform for chronic disease management” (MetLife ADS, 2010). As established in previous chapters, participants have increasingly higher levels of chronic conditions and disease; Adult Day Services has responded to this by increasing disease-specific programs and with a “heightened focus on prevention and health maintenance” with nearly 80% of facilities offering programs that address cardiovascular disease and diabetes (MetLife ADS, 2010). Adult Day Services is also uniquely positioned fulfill the vision of the Institute of Medicine committee because these preventative and chronic disease management programs are positively socially reinforced and delivered by an integrated care team.
As the implementation of the Patient Protection and Affordable Care Act introduces a new level of accountability into our nation’s health care system, Adult Day Services can benefit from strategic and structured organizational partnerships with other healthcare providers. Accountable care organizations are a network of doctors and hospitals that share responsibility for managing and coordinating care for a defined population, such as Medicare beneficiaries (Selker Rak, 2010; Gold, 2011). Currently, providers are paid to provide a service, but are not responsible for the patient outcomes (Selker Rak, 2010). In the future, though, ACOs will award business to providers who demonstrate decreased 30-day hospital readmission rates to hospitals, high-quality outcomes, and low operational costs (Selker Rak, 2010). This increase in the quality of healthcare is believed to drastically reduce costs. For example, about 1/5 of current Medicare expenditures are attributed to 30-day hospital readmissions (Kirby, 2011). Readmission may be due to patients not understanding directions for care, not knowing who to call if there’s a problem, not going back for a scheduled follow-up, or a lack of medication management (Kirby, 2011). Adult Day Services facilities are an ideal platform for care management, as 83% of ADS centers already provide health-monitoring/medical management services at no extra fee.

Exactly how a hospital’s behavior will be affected by ACOs remains to be seen, though it appears that hospitals will have great economic incentive to engage in discharge management and health coordination/monitoring, rather than readmit the same patient for another procedure. Though this may be a difficult adjustment for hospitals, a higher

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Strategic Partnerships

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Exactly how a hospital’s behavior will be affected by ACOs remains to be seen, though it appears that hospitals will have great economic incentive to engage in discharge management and health coordination/monitoring, rather than readmit the same patient for another procedure. Though this may be a difficult adjustment for hospitals, a higher
level of accountability will ultimately lower Medicare costs and benefit the patient. Since hospitals do not currently have the resources in place to manage daily follow-up care, partnerships with agencies capable of care management will be formed. Adult Day Services centers have been called the “nexus between acute care and long-term care” that “provide a critical care management function” (Smyth Henry et al., 2000). Partnering with formal referral services, such as physicians, hospital discharge planners, and social service agencies has been identified as an underexplored marketing opportunity for ADS centers, despite accounting for nearly 2/3 of actual day center enrollments (Smyth Henry et al., 2000). ADS centers can implement a physician’s directions for follow-up care or chronic disease management, including the provision of special nutrition, exercise or therapy regimens, and the monitoring of vital signs and weight. If other community agencies are present, it may be appropriate for ADS to provide services through collaborative efforts. Home health agencies, hospitals, assisted living facilities, and other long-term care providers are also eager to expand their product line by offering Adult Day Services (Smyth Henry et al., 2000).
An increasing number of ADS centers are striving to be a one-stop shop, and the provision of ancillary services is on the rise, including: personal care services (for example: spa bathing, hair and nail care), up-and-tuck services (helping clients get ready in the morning or to get ready for bed at night), respite care (from overnight to multi-week), rehabilitation therapy (speech, physical, and occupational), and the provision of subacute care (Smyth Henry et al., 2000). According to the MetLife survey, ADS centers are well-positioned to provide important ‘step-down’ medical care such as nursing, rehabilitation, and transitional support after a hospital stay (2010). Transitional care and short-term rehabilitation services are not only becoming more common, but successfully generating future long-term clientele for ADS centers. Currently, 13% of ADS participants receive short-term rehabilitation services. Of this group, approximately 39% become long-term participants (MetLife, 2010). Since participating in short-term rehabilitation is often a potential client’s first impression of the ADS center, the therapy + fitness areas of an ADS center have a justified budgetary priority over other areas. The planning of an ADS center can encourage the transition from short-term, rehabilitative care to long-term enrollment by ensuring that the rehabilitative spaces have visual access to the rest of the facility—increased familiarity with the facility will ease fears about long-term participation—and those participating in rehabilitative therapy can positively socially interact with the long-term ADS participants.

**Short-term Care and Rehabilitation**

An increasing number of ADS centers are striving to be a one-stop shop, and the provision of ancillary services is on the rise, including: personal care services (for example: spa bathing, hair and nail care), up-and-tuck services (helping clients get ready in the morning or to get ready for bed at night), respite care (from overnight to multi-week), rehabilitation therapy (speech, physical, and occupational), and the provision of subacute care (Smyth Henry et al., 2000). According to the MetLife survey, ADS centers are well-positioned to provide important ‘step-down’ medical care such as nursing, rehabilitation, and transitional support after a hospital stay (2010). Transitional care and short-term rehabilitation services are not only becoming more common, but successfully generating future long-term clientele for ADS centers. Currently, 13% of ADS participants receive short-term rehabilitation services. Of this group, approximately 39% become long-term participants (MetLife, 2010). Since participating in short-term rehabilitation is often a potential client’s first impression of the ADS center, the therapy + fitness areas of an ADS center have a justified budgetary priority over other areas. The planning of an ADS center can encourage the transition from short-term, rehabilitative care to long-term enrollment by ensuring that the rehabilitative spaces have visual access to the rest of the facility—increased familiarity with the facility will ease fears about long-term participation—and those participating in rehabilitative therapy can positively socially interact with the long-term ADS participants.
ENVIRONMENTAL DESIGN PRINCIPLES ASSOCIATED WITH AGING & DEMENTIA

Though helpful for understanding operational nuances and the needs of the participant population, most research pertaining to Adult Day Services does not directly relate to the environment of care. In order to grasp the architectural implications, then, the conceptual framework must be expanded to include an understanding of ecological theory with regard to physiological changes associated with aging and principles of environmental press. Most research that has been conducted in this capacity has been in the context of long term care; there is a gaping hole in the literature regarding adult day environments. As such, design principles from assisted living and dementia-specific facilities must be extrapolated for Adult Day Services. These long-term care design strategies, in combination with an increasing focus on managing chronic illnesses within the Medicare program, and the perceived priorities and roles of ADS, provide a framework from which to focus future ADS planning and design efforts.
In a literature review conducted on the physical environments of assisted living facilities, Dr. Lois J. Cutler states, “research supports the contention that a person’s behavior in his or her environment is directly related to the design of the space, and an optimal environment is designed to meet the specific needs and preferences of a given person” (Cutler, 2007). This research is based on the Ecological Theory which, pioneered by Lawton & Nahemow in 1973, is based on adaptation level. Individual adaptation level (AL) is achieved when, after a period of time, external stimuli are observed as neither strong nor weak—barely perceived at all. For example, walking into a kitchen when someone is cooking with garlic is initially perceived as a strong odor, but is barely noticed when AL is reached after a given period of time. Most people are able to reach AL in most environments, but older people require more time to reach it, and may do so with difficulty (Nahemow, 2000).

Adaptation level mediates between the level of environmental press—or the environmental forces that pressure an individual to act—and competence. Individual competence is based on biological, psychological, and social components and relates to a person’s skill or ability to perform a task. An individual’s AL occurs within a range around which a person is comfortable and behaves appropriately. In order to maintain this range, a person will normally self-select the ideal amount of environmental press or stimulation. Control of environmental press is largely related to one’s ability to move about and manipulate it. A person at a lower level of functioning, however, is more dependent on their immediate surroundings and less able to change or leave that environment. Since a qualification

![Figure 32: Ecological Theory of Aging (Nahemow, 2000)]
for participation in an ADS program is a compromised health status, the ADS participant population is characterized by decreased competence and therefore especially sensitive to the environment in which they interact. Too little environmental demand results in under-stimulation, boredom, and atrophy of functional abilities. However, if there is too much demand, stress and an inability to negotiate the environment may result. For example, in the ADS subdivided typology, participants are typically assigned to a single room based on cognitive abilities. Not typically having the freedom to move freely about the facility confines a participant to a single room for most of the day and provides very little positive stimulation or challenge and results in boredom. The open plan, on the other hand, typically provides too much stimulation or challenge. Unable to escape to a more private area, participants are subject to loud noises, distraction of simultaneous activities, and constant social exposure to other participants.

The goal of design, then, is to find the “sweet spot” in between—an Adult Day Services facility that offers the appropriate amount of challenge—enough to maintain and even sharpen skills in navigating and manipulating one’s environment—yet in a supportive context. This goal is supported by the Ecological Theory of Aging. According to Nahemow, if an individual remains within his or her AL range, increased environmental press will be perceived as challenge and given a sufficient amount of time, a person’s adaptation level will elevate and personal competence will increase (2000).
Given environmental stimulation within the adaptive range, an Adult Day Services facility becomes a kind of life-skills classroom in which a participant is empowered to take charge of one’s own health. According to Diaz Moore, “the physical setting plays an integral role in facilitating therapeutic outcomes” (Diaz Moore et al., 2006). The appropriate amount of challenge is such that independence is maintained, and the gap between the demands of the environment and a person’s ability to meet those demands is minimized. For example, in most ADS facilities, participants, regardless of ability level, are brought a cup of coffee in the morning after being escorted to a breakfast table. However, if a coffee bar was open to participant use, those with the ability to get their own coffee could do so, while those with decreased competence could still be waited on.

The thoughtful design of the environment can also be a justifiable business strategy. According to Regnier, residents move into assisted living facilities based on their perceptions of the environment, “The environment is a far more important influence than caregiving and service provision in this initial assessment” (Regnier, 2002). In other words, the impression of the space—the feeling it conveys to visitors—was the deciding factor for future residents and their families. While this has not been studied specifically for ADS centers, it is a reasonable hypothesis that participants and their caregivers would place similar emphasis on this kind of environmental first impression. If this is true, a design that conveys comfort, accommodates both groups and individuals, and achieves appropriate multi-sensory stimulation is justified as a growth strategy to increase clientele.
Physiological Aspects of Aging and Dementia-Specific Concerns

Once the need for a supportive environment is established, the nature of the participants’ functional impairments must be understood in order to implement this support. Though no participant population is heterogeneous, and no individual’s abilities are alike, there are certain physiological commonalities associated with aging and dementia that can intelligently and directly inform design. The following charts summarize some of these considerations associated with changes in vision, the musculo-skeletal system, skin, hearing, neurological functioning, and behaviors associated with dementia. Additional discussion of the physiological changes associated with the senses are explored in detail in Chapter 6.
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<thead>
<tr>
<th>Physiological Aspect of Aging</th>
<th>Description</th>
<th>Result</th>
<th>Design Suggestions</th>
<th>Sources</th>
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</table>
| Changes in vision            | Pupil decreases in size with decreased response to light | Older people require 3x’s the amount of illumination a younger person does | - Indirect lighting to provide illumination and reduce glare  
- Avoid sudden changes in lighting levels—plan transition zones  
- Provide roof overhangs to shade interior space and reduce glare  
- Use colors in the red spectrum for visibility (Ex: incorporate/use red detail on toilet seats or red edge of stair)  
- Contrast is especially important for stairs and food  
- Avoid pastel colors  
- Minimize patterning on floors and walls  
- Use high tonal contrast when discernment of objects is important (Ex: toilet)  
- Avoid contrast/change of floor material, as it will appear to be a change in levels (such as a dark stripe appearing as a stair)  
- Computer-linked light sensors to detect when people are moving around their rooms at night | Lata H., Walia L. Ageing: Physiological aspects. JK Science September 2007; 9(3):111-115  
| Changes in musculo-skeletal system | Loss of muscle tone and strength, bones become less dense, thinning of vertebrae, degenerative inflammation of joints | Reduction of weight-bearing capacity, reduction in height, arthritis (most common chronic condition of the elderly) | - Handrails for support  
- Anti-slip flooring  
- Sturdy chairs with arms  
- Signs visible at lower heights  
- Warm water therapy (arthritis)  
- Commercial grade carpet provides more protection for falls; avoid plush carpets, which may contribute to tripping  

Figure 35: Physiological aspects of aging and appropriate design responses
<table>
<thead>
<tr>
<th>Physiological Aspect of Aging</th>
<th>Description</th>
<th>Result</th>
<th>Design Suggestions</th>
<th>Sources</th>
</tr>
</thead>
</table>
| Changes in the skin          | The skin loses underlying fat layers and oil glands; reduction in normal pain sensations, decreased ability to regulate body temperature; tactile sensitivity in palms and soles decreased | Increased susceptibility to cold, bruising and bedsores; damage may occur before the person can move away | • Aim for ventilation without draft  
• Provide heating lamps in bathrooms to prevent chilling                                           | Lata H, Walla L. Ageing: Physiological aspects. JK Science SeptemberLata H, Walla L.               |
| Changes in hearing           | Decrease in sensitivity to high frequency tones and pitch; change in vestibular function | ~30% of all elderly persons have some hearing impairment; balance affected | • Acoustical panels  
• Carpeting  
• Sound-damping materials/techniques for large rooms  
• Minimize noise from outside the building (Ex: add double glazing and lined curtains)  
• Consider how to minimize competing sounds, such as TVs, radios, conversations, telephones, the washing machine, vacuum cleaner, etc.  
| Impaired hearing + cognitive impairments | Difficulty identifying which sound to attend to                                     |                                                                         |                                                                                                                        | Lata H, Walla L. Ageing: Physiological aspects. JK Science SeptemberLata H, Walla L.               |
| Neurological functioning     | Slowing of neural transmission impulses                                         | Impaired ability to react quickly to hazards, difficulty orientating body in space, unstable balance and less able to avoid obstacles | • Avoid abrupt flooring transitions  
• Intuitive wayfinding, in which most areas of the space can be viewed simultaneously  
• Handrails for balance  

Figure 36: Physiological aspects of aging and appropriate design responses (continued)
<table>
<thead>
<tr>
<th>Physiological Aspect Dementia</th>
<th>Description</th>
<th>Result</th>
<th>Design Suggestions</th>
<th>Sources</th>
</tr>
</thead>
</table>
| Short-term memory deteriorates | Memories from the past are remember as if they were occurring in the present | Certain ‘modern’ items may not be recognized by someone with dementia | • Cue the environment whenever possible  
• Use visually/pictorially-oriented wayfinding with images of tradition-style objects (Ex: picture of bathtub on bathroom sign)  
• Toilets located near the bedroom and living room for ease of locating it  
• Use tradition-style/familiar equipment/objects/furniture  
• See-through cabinets  
• Labels on drawers/objects  
| Wandering behavior/elopement | Sometimes (seemingly) aimless, sometimes aimed at ‘escape’ | People with dementia often will wander or escape into situation/areas where their disorientation puts them in danger (Ex: walk outside into traffic, or board a bus without knowing where it is going) | • Aim for security without a feeling of restriction: Engaged Wandering  
• Avoid dead ends  
• Create multiple and intersecting loops of circulation  
• Consistent color/material to designate a continuous path  
• Keep scale of circulation path small with resting points  
• Reinforce visual connection between circulation and destination  
• Provide landmarks  
• Exit doors monitored and alarmed, but do not rely on this solely for security  
• Secure only doors leading to high-risk areas  
• Garden/outdoor space should have walls, min 8’ 0”  
• Knives locked away  
Though the physiological aspects of aging and dementia must be taken into consideration, simply reacting to functional impairments alone is not enough to generate good design. For example, while installing acoustical panels to compensate for hearing impairments is important, it is a design decision incapable of generating an overall design concept. The identification of overarching design principles, then, is necessary to establish goals and a set of decision criteria against which an ADS facility can be evaluated. As the research is lacking for Adult Day Services, the literature for assisted living facilities represents a good platform from which to extrapolate appropriate design principles for ADS. The following chart is a re-creation of Table 4: Design Principles for Assisted Living Facilities Identified in Literature (Cutler, 2007) which lists principles developed by the leading research and design experts of assisted living facilities. Similar principles have been highlighted with like colors to demonstrate the overlap and recurrence among authors.
<table>
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<td>- <strong>Appear residential</strong> &lt;br&gt;- Be perceived as small in size by residents &lt;br&gt;- Provide privacy and completeness in residential units &lt;br&gt;- Recognize each resident’s uniqueness &lt;br&gt;- Foster independence, interdependence, and individuality &lt;br&gt;- Focus on health maintenance, physical movement, and mental stimulation &lt;br&gt;- Support family involvement &lt;br&gt;- Maintain connections with the surrounding community &lt;br&gt;- Serve frail persons</td>
<td>- Resident satisfaction &lt;br&gt;- Social interaction &lt;br&gt;- Management &lt;br&gt;- Sensory aspects &lt;br&gt;- Physiological constraints &lt;br&gt;- Wayfinding</td>
<td>- <strong>Privacy</strong> &lt;br&gt;- Social interaction &lt;br&gt;- Control/choice/autonomy &lt;br&gt;- Aesthetics/appearance &lt;br&gt;- Personalization &lt;br&gt;- Orientation/wayfinding &lt;br&gt;- Safety/security &lt;br&gt;- Accessibility and functioning &lt;br&gt;- Stimulation/challenge &lt;br&gt;- Sensory aspects &lt;br&gt;- Adaptability &lt;br&gt;- Familiarity</td>
<td>- Ensure safety and security &lt;br&gt;- Support functional ability through meaningful activity &lt;br&gt;- Heighten awareness and orientation &lt;br&gt;- Provide appropriate environmental stimulation and challenge &lt;br&gt;- Develop a positive social milieu &lt;br&gt;- Maximize autonomy and control &lt;br&gt;- Adapt to changing needs &lt;br&gt;- Establish links to the healthy and familiar &lt;br&gt;- Protect the need for privacy</td>
<td>- <strong>Attributes:</strong> &lt;br&gt;- Privacy &lt;br&gt;- Dignity &lt;br&gt;- Choice &lt;br&gt;- Independence &lt;br&gt;- Individuality &lt;br&gt;- Homelike surroundings</td>
<td>- Safety and security &lt;br&gt;- Resident orientation &lt;br&gt;- Stimulation without stress &lt;br&gt;- Privacy and personal control &lt;br&gt;- Facilitation of social interaction &lt;br&gt;- Continuity with the resident’s past &lt;br&gt;- Cleanliness and maintenance</td>
</tr>
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</table>

Figure 38: Design principles for assisted living facilities identified in literature (Cutler, 2007)
In addition, The Society for the Advancement of Gerontological Environments (SAGE) (sagefederation.org) has identified the following core values:

- **Physical safety and psychological security**: provide appropriate safe guards and enhance perception of security
- **Environment as a therapeutic resource**: utilize all aspects of the environment (physical, programmatic and organizational) as a resource for healing and improved functioning
- **Holism and well-being**: focus on needs and desires of the whole person--social, emotional, spiritual, physical, vocational, and intellectual
- **Individual rights and personal autonomy**: maximize available choices, opportunities for self determination, and accessibility of options
- **Communities and relationships**: generate opportunities for meaningful interactions and relationships among peers, families and staff
- **Support of caregivers**: create an environment that promotes safety, efficiency, and emotional support
- **Function-enhancing technology**: harness new technology to increase functionality of the environment
- **Creating and evaluating**: encourage innovation, diversity of approaches, experimentation with new solutions, and systematic evaluation of outcomes
By grouping similar terms and concepts from Figure 38 and the SAGE core values, the following list of design principles was generated:

- Privacy
- Social interaction/interdependence
- Awareness/orientation/wayfinding
- Choice/control
- Sensory stimulation/challenge
- Adaptability
- Physical and psychological safety/security
- Familiar/homelike/continuity
- Independence/autonomy/individual/uniqueness
- Health, well-being +functional ability maintenance/improvement
- Connections with community
- Involvement of family

Several of the design principles in the list above are actually integral parts of others. For example, wayfinding/orientation, privacy and regulation of social interactions, safety/security, and familiarity/continuity are all aspects of independence and one’s exercise of control (Diaz Moore et al., 2006). These relationships are visualized in Figure 40 as Areas of Architectural Focus for ADS and then explored in greater depth in subsequent chapters.
Figure 40: Areas of architectural focus for ADS (Bachman)
Areas of Focus for Adult Day Services centers, which were identified in Chapter 5 and visualized in Figure 40, represent the environmental design principles that are appropriate for this participant population while taking into account the future rehabilitative capacity of ADS. Empowering participant independence and environmental control is accomplished by addressing issues of movement and wayfinding, privacy, safety, and continuity. Therapy and fitness are prioritized and placed on display to the rest of the ADS facility, which socially reinforces healthy habits and establishes ADS as a future healthcare delivery vehicle for rehabilitative and wellness services. Finally, sensory appropriateness is discussed as a balance between overstimulation and deprivation. The Design Guidelines follow this chapter to establish a practical framework for the implementation of these architectural foci.
The importance of participant autonomy, or the ability to act according to one’s free will, in adult day environments increasingly reveals itself both in the literature (see design principles in Chapter 5) and with every visit to an ADS center. Unfortunately, in most cases, it is the lack of independence that makes such a strong impression. For example, a participant named Walter expresses the desire to go outside, and attempts to do so, but a loud alarm sounds when he opens the door. Staff, because there is no protected outdoor area, cannot allow him to safely be outside by himself. To accommodate his request would require a staff member to individually accompany him. Since staffing ratios are strict, he is redirected to participate in an indoor group activity in which he has no interest. This common example illustrates how participants are rarely challenged to—or even given the freedom to—maintain their physical and cognitive decision-making abilities, and instead settle into a state of learned helplessness. As they are encouraged to defer decision-making to staff to smooth daily operations and programs, the abilities of participants atrophy.

ADS facilities may indeed offer social, cognitive, and physical “therapeutic programming” but the number of participants actively taking part in these planned activities varies. Sometimes this is due to a participants’ choice to opt out of an activity, but more often, there are more people (usually sitting in a large circle) than the activity can reasonably support. Diaz Moore et al. refer to this as an “overpopulated activity” in which there are more people than roles (2006). In Figure 41, participants sit around in a circle, waiting for...
a turn without being actively engaged. Without purposeful activity to occupy their time, many participants routinely settle into a semi-catatonic state; this is simply not acceptable.

The goal instead should be to “maximize participants’ personal control of situations according to their cognitive and physical abilities” (Diaz Moore et al., 2006). In other words, participants are allowed freedom of choice as long as it does not compromise safety. In the example above, the design of the ADS center would safely empower Walter’s decision to go outside. He would have unrestricted access to a secure outdoor area in which he can choose between activities such as gardening, sitting and reading, or walking around. The design of and ADS center can maximize a participant’s environmental control by addressing dimensions of orientation and wayfinding, the regulation of (social) interactions with varying degrees of privacy, and safety, given special consideration of the physiological changes associated with aging and dementia (Figures 35-37, Chapter 4) (Diaz Moore et al., 2006).
Environmental Control: Freedom of Movement and Wayfinding

According to Diaz Moore et al., “The exercise of a participant’s personal control is particularly dependent on the degree to which he or she is able and free to ambulate” (Diaz Moore et al., 2006). In other words, freedom of movement throughout an ADS center is necessary to empower participant independence. Engberg et al. confirmed that nursing home residents who had their movements physically and deliberately restrained were significantly more likely to exhibit low cognitive and ADL performance and more walking dependence than non-restrained residents (2008). This mental and physical health decline counteracts the therapeutic goals of ADS centers; the use of restraints should therefore be strictly against policy. Accessibility is also a prerequisite for freedom of movement. Since the majority of participants have chronic cognitive or physical limitations, an ADS center should be planned according to ADA guidelines. Issues related to freedom of movement include: site access (ADA 4.1), wheelchair-related ambulation (ADA 4.2-3), slopes and ramps (ADA 4.8) elevators (ADA 4.10) doors (4.13), and bathing spaces (ADA 4.21).

Given an unrestrained participant population and an ADA-accessible space, the largest barrier to freedom of movement is effective wayfinding. Wayfinding enables successful movement through a space and is defined as the ability to reach a desired destination (Passini et al., 1998). Even participants with relatively severe cognitive impairment are able to solve some wayfinding problems in a familiar (or semi-familiar) environment (Passini, et al., 2000). Assumptions should not be made that ADS participants are unable
or unwilling to make independent wayfinding decisions, even through mid-late stages of dementia. Passini et al. state, “The danger to an overly protective approach is to cause a possible atrophy of potential wayfinding abilities and a reduction of the patients’ sense of achievement and autonomy” (Passini, et al., 2000).

People who have dementia have a reduction in cognitive mapping abilities (Passini et al., 1998). This means that they often cannot successfully “see” and therefore navigate a space in their mind. Due to this, the setting in which they are moving should ideally not be large and no wayfinding decisions should be based on memory (Passini et al., 1998). Understanding (and therefore wayfinding through) a space is enhanced when participants have visual accessibility of spaces and functions (Passini et al., 1998). The Greenwich Street loft in Figure 42 exemplifies this principle of visual preview into the office space without compromising a sense of privacy (moneobrock.com). Participants’ “capacity of decision making is reduced to decisions based on immediate and visually accessible information” and they navigate from one decision point to another in a sequential linear order (Passini et al., 2000, 1998). Simply, participants will go where they can see and willingly participate in what they can understand.

Designs which enable a participant to preview activities and spaces—for example, through glass French doors—without demanding the full commitment of participation enable an individual’s choice and regulation of social interaction and stimulation levels. Open cores
in multi-story buildings, such as shown in Figure 43, have been found to aid in participant orientation because it is a way of allowing understanding without integrating memory of the space (Passini et al., 1998).

Environmental Control: Privacy Orientation and environmental control are closely linked to privacy. Understanding the purpose of a place and one’s expected role within it is another form of orientation that is foundational to the exercise of personal choice (Diaz Moore et al., 2006). Thus a clear cueing of the appropriate levels of sociability or privacy of a space is essential for participant empowerment. According to Augustin, a leading researcher in applied psychology, within any set of spaces opportunities for solitude, small groups, and casual acquaintances or the general public should exist (2009). This idea is further illustrated in Guideline 2, Figure 68. Providing varying levels of privacy allows the self-selection of healthy social interactions or solitude as needed (Diaz Moore et al., 2006). Augustin claims, “Control that establishes privacy is the most important sort of control we can have—it does the most positive things for us psychologically” (Augustin, 2009). One interesting tenant of control is that feeling in control is the key—we don’t actually have to exercise our control to reap psychological benefit (Augustin, 2009). For example, an ADS center that provides the option of escaping to a private windowseat, such as the one in Figure 44, will still have positive psychological benefits for a participant that never chooses to sit there.
Privacy can be visual or auditory. Auditory privacy is the most valuable, while visual is less important (Augustin, 2009). An ADS design that enables visual monitoring by staff while providing acoustic privacy for participants, balances security and individual autonomy.

**Environmental Control: Safety & Security** While an ADS environment should be designed to maximize participant control, this area of design focus should be balanced with a participant’s safety. Those with dementia are at risk for eloping (escaping) the facility and jeopardizing their own safety through disorientation or unintentional dangerous behavior, such as stepping out into traffic. However, most attempted elopments occur because participants feel trapped in an unfamiliar place and are attempting everything in their power to escape a world they do not find fundamentally orienting. While safety is a primary concern, a facility that is overly restrictive will actually encourage elopment attempts. Providing places where participants can safely “escape” at will is much more respectful of their autonomy. Areas of appropriate escape include at least partially unrestricted access to a secure outdoor space, ideally with views to nature as seen in Figure 45 (Calkins & Marsden, 2000). Participant access to the outdoors is discussed in Guideline 5.

Additinally, respect for participant autonomy can be preserved without compromising safety through the implementation of psychological barriers. The use of psychological barriers will require less dependence on physical ones. For example, it is very disrupting
to have doors that are alarmed. In most ADS centers, elopement attempts through facility doors result in a loud warning that disrupts the rest of the staff and participants. Instead, using techniques to make exits “disappear” from view, such as having exits shielded from view, darkened, or camouflaged to blend in with the wall, are better approaches than overt security measures. This concept is illustrated in Figure 46. Dark strips on the floor at exits are another example of psychological barriers. Due to decreased depth perception in an aging eye, the dark areas are visually “read” as level changes, which participants are more likely to avoid. Finally, it is far better altogether to aim for an environment where participants want to stay rather than one so unpleasant that they feel they have to escape.

Dementia-Specific Environmental Control: Continuity

The need to escape is often the result of an environment that is under- or over-stimulating, lacks meaning, or one that feels unfamiliar or scary. For this reason, the principle of continuity/familiarity has been linked to successful orientation in people with dementia. Many researchers and designers suggest traditional environments for those with dementia without elaborating on what “traditional” actually means. Augustin offers some enlightenment on this issue, defining “traditional” design as a space in which people without a design education can anticipate the elements used in it (Augustin, 2009). This does not necessarily mean that a dementia-capable ADS center has to look or be “home-like” especially since ADS participants still live in an environment they would consider “home.” Rather than attempting to recreate home in an ADS facility, then, the environment to should enable a state of being that

Figure 48: Psychological barrier (hiddendoors.com)
is comfortable, ordered, and fundamentally orienting (Caulkins & Marden, 2000). For example, a facility with programmatic areas designed to cue expected behaviors, such as a therapeutic kitchen, empowers a state of individual autonomy similar to what one would experience at home. An accessible refrigerator with a transparent door, such as the one in Figure 47, stocked with refreshments, would encourage participants to act on their own needs instead of waiting for a staff member to wait on them. Accommodating familiar domestic patterns such as cooking, reading, gardening, and cleaning without requiring participation in these activities not only implies the control and comfort experienced at home, but engages the environment as a therapeutic resource.

Figure 49: Visually accessible refrigerator (appliancist.com)
One way for an Adult Day Services center to maximize independence is to encourage participants to be responsible for their own health, empowering an active consumerism of rehabilitation and fitness. As the orientation shifts “from illness care to wellness care” (Polhamus & Johansen, 2010) the program grows to include space for physical, occupational, and speech therapies, as well as space for fitness and exercise activities. This inclusion of both therapy and fitness reflects an emphasis that Victor Regnier has identified in northern European facilities, “Use of exercise equipment is often combined with physical therapy, occupational therapy, and other rehabilitation regimens” (Regnier, 2002). In other words, participants with fitness goals have free use of equipment that is often solely dedicated to physical therapy in American facilities. Interactions between the fitness and therapeutic populations in this combined space socially reinforce participant health and wellness.

Though traditionally more passive, the United States is starting to make the transition from senior facilities as ‘rest’ homes to facilities focused on wellness and rehabilitation. Justification for this shift is illustrated in Figure 48. Dr. John W. Travis demonstrates that a treatment paradigm can only take individuals to the neutral point, whereas the wellness paradigm carries through to higher levels of well-being. To be maximally effective, Regnier states “the clinical perspective of physical therapy must be linked with more informal access to exercise equipment” (2002). Ideally, participants are able to enter the wellness continuum at any ability/functional level, reaping a multitude of benefits as they progress.
Designated active space in the program “emphasize[s] physical engagement for the purpose of enhancing the health of the body and the mind” (Diaz Moore et al., 2006). Michael V. Vitiello summarizes research findings regarding this mind body connection by stating that regular physical activity may directly impact cognition, but also has an indirect mediating effect because it has been shown to increase sleep quality (2008).

According to Older Americans 2010, physical activity is beneficial for people of all ages—improving mobility and functioning even among the frail and very old adults. Physical activity has been shown to reduce the risk of certain chronic diseases, alleviate the symptoms of depression, and enhance the overall quality of life (Older Americans, 2010). Exercise—in the form of Tai Chi, balance and gait training, and strength building—has been cited as perhaps the single most effective intervention for fall prevention in the elderly. Since 30% of seniors fall each year, and falls too often result in a downward spiral of decreased mobility and increased risk of premature death, fall prevention becomes a crucial health and wellness strategy for maximizing senior independence (Stevens, 2005). Exercise is also an important mediating factor with regard to other adverse health conditions in seniors. The Health and Retirement Study, conducted by the National Institute on Aging, reports that in persons 70+, “overweight and obesity are [...] factors in functional impairment, having an independent effect on the onset of impairment in
The design solution placed therapy and fitness programs in close, visible adjacency. This allows residents to view all programs being offered, to become familiar with staff and to experiment with various different opportunities for health and wellness. The separate land therapy and fitness program areas connect through a series of bridges across the pond garden courtyard, integrating functional programs—water therapy, land fitness, land therapy, and rehabilitation therapy (Kahle, 2010a; Lirland, 2010).

- **Integrating Functional Programs**

A purposeful combination of the rehabilitation and fitness programs, staffed with professionals qualified in kinesiology, will help to create an open, social, and welcoming environment for those seeking to improve their health. The Saban Center for Health and Wellness provided inspiration for this decision; staff members work in “both a rehabilitative and fitness capacity, rather than one or the other.” The therapy and fitness programs at the Saban Center are blended to both motivate residents to try new activities and progress from therapy to fitness (Polhamus & Johansen, 2010). This organizational decision reflects an overall orientation towards wellness, which, according to Polhamus, “...can be a powerful marketing tool to attract active seniors, especially those for whom the type of social interaction a wellness center provides is not readily available in their current living situation” (2010).

In the few ADS centers that provide a therapy or fitness area, these rooms are often locked and isolated—to be used only when a traveling therapist makes the once weekly rounds. This is not desirable, as for many participants, if exercise and therapy are out of sight, they are out of mind. The Mather Cafe+, a non-traditional senior center successfully
operating in Chicago, takes a different approach. Instead of isolating exercise activities to a dark corner, fitness is literally put on center stage near the cafe. This ‘fitness on display’ approach celebrates exercise as both a health physical and social activity, which is positively reinforced by other cafe activities and giveaways, such as a drawing for a yearly fitness membership.

Upon visiting one of the country’s newest, largest, and most respected PACE centers, it was discovered that physical and occupational therapy functions are incorporated into their program, but there is not a designated place for exercise and fitness to be used at the participant’s discretion. Participants ask to use the PT and OT gyms to get a “work out” or get stronger, but have been denied due to lack of space and staffing supervision. While this center is doing great work, there is a both a fundamental economic and humanistic flaw in the philosophy of using Medicare reimbursement to treat with therapy what could have been less costly to prevent with fitness. Adult Day Services could boast better health outcomes and reduce overall healthcare costs with a philosophy that prioritizes prevention over treatment and physical design that does not segregate therapy activities and spaces from everyday and accessible general use areas.

The combination of the rehabilitation and therapy areas is also a strategic business decision. According to Regnier, “It is relatively easy to open a building to the neighborhood for these types of services” (2002). As health care reform and Medicare reimbursement structures
allow for physical therapy and rehabilitation based on acute need, an ADS center could increase profit by serving this population, who may or may not be registered participants. As those seeking rehabilitation experience the positive effects of the therapy and social reinforcement of the ADS environment, they are likely to become future clients.
According to leading author and designer Elizabeth Brawley, “people with Alzheimer’s disease are losing cognitive or intellectual skills and becoming increasingly dependent on sensory cues” (Peck, 1998). Since many ADS participants have increased dependence on the senses, but a lower stress threshold (as established by the Ecological Theory on Aging in Chapter 5) thoughtful facility design must strike a “balance between environmental overstimulation and deprivation” (Day et al., 2000). This balance can be achieved through reducing unnecessary sources of overstimulation, increasing sensory information that may provide orientation cues, and seeking to triangulate—or address multiple senses simultaneously—to compensate for sensory loss associated with aging.

Overstimulation may increase distraction, agitation, or confusion in a person with dementia and decrease social interaction and self-esteem. Noise is often to blame for a state of overstimulation (Dewing, 2009). Background noise characteristic of care settings—from telephones, equipment, door alarms, televisions, and radios, etc.—magnifies difficulties with auditory discernment. Hearing loss, prevalent among ADS participants, compounds the difficulties associated with background noise and makes it difficult to participate in conversations. Exposure to periods of continuous noise is associated with alterations in memory and cognitive function, increased agitation, less pain tolerance, and feelings of isolation in people with dementia (Dewing, 2009). Strategies for reducing background noise include the use of acoustic panels, such as shown in Figure 53, and using other sound-dampening materials, such as carpet, heavy curtains, and upholstery textiles.
ADS facility should designate at least one room as “quiet” that is acoustically separate. A participant generating a lot of noise can be taken here to calm down or it can serve as a retreat for one particularly susceptible to noise.

Visual overstimulation is also common. Highly patterned surfaces or objects may be more dizzying or confusing for an elderly person than a young person and should be avoided. For example, one ADS director reported having wallpaper with a leaf pattern. This was confusing for many of the participants, but especially bothersome for one woman, who spent hours a day saying the wall was “dirty,” and attempted to pick the foliage off the wall. Patterns with high contrast, especially on a flat floor should be avoided as well. Due to a decreased depth perception associated with age, participants will visually “read” high contrast flooring as a level change and respond by stepping up or down around the darker area, which may lead to falls. However, if level changes occur or if participants need to make visual discernments, principles of contrast should be employed. This is appropriate for stair treads, bathrooms (contrast between wall and toilet seat), seating areas (seats should “read” a different tone than floor) and in dining rooms between the plate and table. Finally, visual information clutter is also a source of overstimulation in most care settings. The amount of information displayed should be reduced to the absolutely necessary, simplified as much as possible, and located at a an eye level lower than typical to accommodate those with physical impairments.
Understimulation, or sensory deprivation, is most typically the result of poor lighting, and lack of pleasant tactile and olfactory cues in ADS centers. Older people require about three times the amount of illumination that a young person does, but are subject to reduced amounts of light on an ongoing basis (Dewing, 2009). Lack of illumination has been linked to a higher incidence of falls (Dewing, 2009). Windows are an obvious source for increased daylighting of a space, but care should be taken not to introduce additional glare, to which the elderly eye is especially sensitive. This is explored further in Guideline 6. High-intensity ambient light, or bright light therapy between 1,000-5,000 lux led to less agitation, reduced sundowning, and improved activity during the day and nighttime sleep patterns (Dewing, 2009). High light levels also assists those with hearing problems read lips and expressions in those with whom they are engaged in conversation.

Olfactory stimulation is an area too often ignored in ADS center design. It is being hypothesized that olfactory cues--such as the smell of coffee brewing or food baking--provide clues that orient a participant to meal time and stimulate salivary glands and improve caloric impact (Caulkins, 2005). Substantial research verifies that fragrances affect mood, and a number of facilities in the country are introducing aromatherapy to stimulate memory, reduce agitation, and encourage participants to stay in social spaces longer (Caulkins, 2005).
Sensory awareness does not occur in isolation, and therefore effort should be taken to ensure what people are simultaneously seeing, hearing, touching, and smelling give them consistent cues about the environment. Natural coping strategies that triangulate sensory awareness compensate for diminished sensory loss. In other words, participants will naturally seek out multi-sensory clues about the environment if there is an aspect they have trouble perceiving or do not understand. Multiple sensory cues help participants orient themselves within a space and have been associated with reduced agitation and psychotic symptoms (Zeisel, 2005). For example, fragrant flowers, a highly visible screen door, and windchimes are sensory cues associated with an accessible garden.

The areas of architectural focus discussed in this chapter provide the foundation necessary for the planning and design of an ADS center. The Design Guidelines in the next chapter build on this base by providing a practical framework for the implementation of these important architectural principles. Design guidelines include strategies for grouping spaces into zones of activity, establishing a privacy gradient, planning intuitive circulation, creating transformable spaces, providing access to the outdoors, and introducing daylight without glare into an ADS facility.
DESIGN GUIDELINES

1. zones of activity
2. privacy gradient
3. intuitive circulation
4. transformable spaces
5. access to the outdoors
6. daylighting without glare
Similar, stable programmatic functions and qualities should be programmed adjacent to one another and grouped into Activity Zones of recognizable name and character. These Zones—such as The Garden, The Spa, The Living Room, The Gym, The Library, and The Restaurant—become memorable facility destinations. For example, the main dining room, quiet dining room, therapeutic kitchen, and breakfast bar all have similar functions and can be contained within The Restaurant Zone. Zones differ from one another in materials, lighting, scale and form. Zones of transition link activity zones to one another. All participant-accessible areas should be grouped within a Zone of Activity, while back of house and staff-specific spaces should be excluded from these Zones. Figure 60 suggests typical Zones of Activity and corresponding programmatic groups with transitional links.

Activities in ADS centers vary greatly in terms of group size and type and level of sensory stimulation. For example group exercise may be for 12+ people, while a craft may be designed for 6 participants, and speech therapy occurring between a therapist and a single participant. This variety is such that Diaz Moore declares, “multipurpose rooms are simply incapable of serving the heterogenous adult day setting programs” (Diaz Moore et al., 2006, 132). However, most ADC facilities rely on this multi-purpose room, for example serving dining, exercise, entertainment, therapeutic, and spiritual functions throughout the course of a single day. This constant change in function makes it difficult for those with cognitive impairments to understand the space and respond appropriately.

Figure 59: The library in the KWA assisted living facility by Feddersenarchitekten is a good example of an area with recognizable character (personal photo from site visit)

Figure 60: The restaurant in the KWA assisted living facility by Feddersenarchitekten is a good example of an area with recognizable character (personal photo from site visit)
A stable function makes recognition of a space easier (Passini et al., 2000, 701). According to Passini et al. “Basic living functions such as eating and relaxing should have a permanent locale or at least a permanent section in a locale and permanent furniture arrangements” (Passini et al., 2000, 701). They concede that recreation spaces can remain multi-functional. Christopher Alexander speaks of a system of circulation being composed of nested “realms” physically well-defined enough to be named according to their character.

In an ADS facility, spaces should be grouped by common programmatic functions into Zones of Activity. These Zones of Activity work in conjunction with Intuitive Circulation (Guideline 1.2) to become destinations/landmarks with strong identifiable character.

Study (or create) the ADS program and group similar programmatic functions. For example, the game room, the craft room, and the movie room all have similar entertainment/hobby functions. Next place settings of shared quality adjacent to one another and into Activity Zones. Give the zones a name that is recognizable and meaningful for participants. Examples include The Garden, The Gym, and The Cafe. Identify a named space that can transition one zone to the other. For example, The Coffeeshop could reasonably connect The Cafe to the Library. Finally, visit local, well-loved spots of this nature in the community to understand cultural context and character of these zones. Use this knowledge to articulate each zone by form, scale, materials, lighting, and furniture. Apply the Privacy Gradient (established by Guideline 1.3) between and within Zones.
Figure 62: Diagram of Zones of Activity with transitional areas between (Bachman)
All areas accessible to participants should flow in a hierarchy of public to private space that includes public, semi-public, semi-private, and private. The most public spaces are located on the periphery of the plan, near entrances or views to the street while the most private should be isolated in the back or center of the overall space. Participants should have a choice at which point in the spectrum to insert themselves, allowing self-regulation of social interaction and levels of stimulation.

A crucial tenant of understanding space is the degree of sociability or privacy that is expected. Undifferentiated or extremely monotonous spaces—characteristics of the most typical ADS typologies—do not adequately cue expectations. This is confusing for participants and ultimately leads to withdrawal or agitation. Gubrium links dementia behavior to place—our positive and negative assessments depend on what behavior is expected there (Diaz Moore et al., 124). Lack of a privacy gradient also limits spontaneous interactions between participants. If participants are not interacting with one another, staff are placed under a higher burden to provide activity programs that entertain participants every moment of the day.

Figure 62 at left illustrates levels of social engagement. The participatory realm encompasses a willingness to engage in social interaction and new social networks. The reactionary realm indicates receptiveness without engagement. A state of disengagement but adjacency to the community describes the observatory realm. Addressing all of these realms is necessary to accommodate the social spectrum and empower participant choice.
Figure 65: Example of privacy gradient within an ADS center spa area (Diaz Moore et al, 2006)
ADS facilities arranged according to a privacy gradient will empower participant choice and help cue a breadth of expected (positive) social interactions and spontaneous, independent activity. Offering different levels of privacy also makes redirection of agitated participants to an appropriate sensory level more probable.

The figures left and below illustrate dementia day programs that employ privacy gradients. The upper plan is the Elbschlossresidenz dementia day room by Feddersenarchitekten. The kitchen, dining, and outdoor dining functions are the most public and the most transparent in the diagram at left. The living room is a semi-public area. The semi-private area, and provides space for more intimate conversation. The most opaque is the private bathroom. The lower figure and photos are of a Day-care Centre in France by Dehan + Spinga Architects. In this plan, the outdoor area is the most public, the living areas semi-public, the therapy areas are semi-private, and the bathing areas are the most private.
Spaces should be offered in a range of intimacy levels; each level of decreasing size should feel like a refuge from the level higher. In other words, moving from public to private along the gradient is from high and open public spaces to lower and more enclosed private spaces, or from the participatory to the observatory realm (as in Figure 62). Refuge qualities include: decreased brightness, lower ceiling height, and a view to beyond (previous activity space or outdoors) (Augustin, 11). The diagram (Figure 68) on the following page illustrates the spectrum of qualities in each of the privacy conditions and suggest appropriate ADS program spaces for each gradient condition.
Figure 70: Principles of privacy (Bachman)
Guideline 3 - Intuitive Circulation

Circulation is envisioned as a meaningful journey between and around functional spaces, rather than simply creating a “wandering loop”. Intuitive circulation empowers the participant through visual and spatial cues to choose his or her respective destination. All areas where participants can freely enter within the Adult Day Service facility should be arranged along a path of intuitive circulation. The path is free to take any shape, provided it is not overly complex between destinations and is punctuated with opportunities for rest, sensory stimulation, social interaction or solitude, and exercise. Views to the outdoors, daylight, and volumetric landmarks aid in orientation.

According to the Alzheimer’s Association, 6 in 10 persons suffering from Alzheimer’s/dementia will wander. Hope et al. report that in 40% of people with dementia, all waking time, apart from mealtimes, was spent constantly walking. A 10-year longitudinal study found that people who wander sit on average for no more than 15 minutes at a time (Hope et al., 2001). Individuals have been recorded wandering 60km a day (unpublished data, as reported by Hope et al, 2001). Wanderers become frustrated when the constraints of their facility—such as locked doors or lack of meaningful destinations—become apparent. Facilities with corridor designs have been associated with higher degrees of restlessness, lack of coordination, and reduced vitality and identity (Elmstahl et al., 1997). Despite these staggering figures, no clear best practice solution for “wandering paths” has yet emerged (Calkins, ideasinstitute.org). Calkins suggests this is because the proposed “solution” of wandering paths was an attempt to solve an undefined problem.
Was the goal to redirect behavior, encourage walking in circles, or discourage the violation of residents entering the personal space of others? (Calkins, ideasinstitute.org)

Circulation in an ADS facility should enable freedom of participant movement and choice, rather than create a wandering loop for the sake of wandering. For most participants, wayfinding capacity is reduced to what is immediately and visually accessible; many participants have a “sequential style of wayfinding,” proceeding from one reference point to another (Passini et al., 2000, 697, 707). For this reason, circulation routes should be simple but not as monotonous as a typical institutional corridor. Netten (1989) linked heightened orientation in communal facilities to short corridors and simple decision points. In other words, participants circulate along a direct route and never have to choose from more than two destinations. This allowed participants to “travel only short distances without prompts and did not force residents to choose between spaces they did not use” (Netten, 1989). In order to encourage choice in activity participation, participants must be able to preview major spaces and functions. Landmarks that can be distinguished by form, function, and meaning should be designed as reference points (Passini et al., 2000, 697). Circulation routes should provide for a “variety of experiences” including wandering (Passini et al., 2000). These experiences include social interactions and chances for solitude. Images at left from Feddersenarchitekten are good examples of circulation routes that provide rich experiences. Highlights include natural daylight, niches to rest and socialize, and use of orientating features such as artwork, the courtyard, and a colored accent wall.
When forming the circulation paths, Christopher Alexander offers some process guidance in *A Pattern Language*. He first diagrams “goals” and outlines paths to get there; these paths become the main circulation routes. Goals in ADS facilities are the main Zones of Activity, such as The Restuarant, The Gym, or The Garden. Along the way, the person walking identifies intermediate goals. These intermediate goals are places of rest or other landmarks—such as a window seat overlooking street life, a niche housing sculpture, or a stairway landing with a bench for resting—that enrich the overall journey as places to stay, not just pass through (Alexander, 1977, 586-591).
Create a map of landmarks/reference points (teal dots in Figure 72); ensure that at least one other reference is visible from each. Restrict the definition of reference points to that which is distinguishable by form, function, and meaning (Passini et al., 1998). For example, a red wall would not be a strong enough reference point because it does not have a memorable function or meaning, but a stairway connecting two participant-accessible levels would be.

Each adjacent area in the dementia day room below (Figure 73) is distinguished by a landmark and provides a view to the outdoors for additional orientation. Meaningful reference points are outlined below and include a therapeutic kitchen (blue), fireplace (red), aquarium (teal), and library bookshelves (yellow). Each is effective at providing sensory cues to the function of the space.

![Figure 75: Landmark mapping (Bachman)](image1)

![Figure 76: Successful landmarks by Feddersenarchiteken (Feddersen & Ludtke, 2009)](image2)
Successful examples of landmarks and reference points include: entrances, destination (activity) zones, stairs, elevators, sculpture, landmarks outside the building, and features inside the building such as a fountain (Passini et al., 1998). Spatial landmarks—such as the kitchen—tend to be more memorable than objects—such as the grandfather clock (Diaz Moore et al., 2006, 118).
Circulation should allow visual preview into activity zones. This is illustrated at left and can be accomplished by an open plan, half wall, Dutch doors, French glass doors, glass enclosures, or vision panels into an activity zone. Adjacent seating encourages preview.

Paths of movement should be adjacent to, but should not move through or be otherwise disruptive to activity zones (Diaz Moore et al., 2006, 118). Additionally, the use of corridors should be minimized; limit distance between landmarks/reference points or places of rest to 50’ (Green et al., 1975, as referenced by Diaz Moore et al., 2006, 118).

Information clutter should also be minimized on circulation routes—restrict public announcements to one location. Graphic information should be treated as supplemental to architecture. It should be consistent and systematically located. Signs should be simple, directional arrows in close proximity to their destination, and spatially separated from other messages (Passini et al., 1998).
Guideline 4 - Transformable Spaces

Transformable spaces are such that different group sizes and activities can be accommodated both individually and in combination. For example three adjacent rooms/spaces may serve the purpose of conversation for a small group of 2-3, a game room for 5, and an office for 4, respectively. However, once a week the three spaces need to transform into one large space for group singing. Visual access by staff is ideally maintained in both the individual and combined room scenarios. Each room/space has its own distinctive character, while not being completely separated from the other.

When developing a program, the activities that are most therapeutically beneficial (smaller groups—intimate interactions, Diaz Moore et al, 127), not strictly private, and occur most often should be accommodated by (transformable) individual rooms/spaces. The transformation of the smaller spaces into single, more voluminous ones can accommodate larger assemblies that happen less often.

In ADS centers, 3-4 smaller activity spaces should be placed adjacent to one another in order to enable transformable principles. When possible, these spaces should be oriented along windows, with access to natural light and the outdoors.

Most ADS facility typologies in the United States can be classified as either one large, open room or a series of small, closed spaces arranged along a double-loaded corridor. The open room space that is not divided or differentiated is the most common typology.
This leads to over- and uniform stimulation for many participants. Diaz Moore notes that this typology brings an “unrelenting social obligation” and “encourages withdrawal.” (2000, 155, as quoted in Diaz Moore et al., 26). Though visual monitoring of the entire space is possible, open rooms are associated with a loss of privacy, choice, and capacity to sustain two concurrent activities. Minimal environmental cueing makes it difficult for participants to understand the purpose of the place (Diaz Moore et al., 30). In the subdivided typology, participants are often grouped by cognitive ability and assigned to a room, reducing participant choice within an overall maze-like organization of space. This is believed to lead to “disorientation and disconnection from others while simultaneously enforcing a controlled milieu” (2000, 155, as quoted in Diaz Moore et al., 26). The interior space of this typology is often dark, confusing, and monotonous. Finally, this typology is inflexible. Census, service delivery, and program organization are subject to change, often making it difficult to find an appropriate “fit” for group size within the static, individual room structure.

Adjacent, flexible spaces enable ambulation due to intuitive wayfinding, thereby empowering participant choice. Diaz Moore et al. suggest a “mix of several large public and smaller spaces with varying degrees of separation” (Diaz Moore et al., 26). Participants can be separated by choice, according to varying levels of interest in an activity, their tolerance for stimulation, and functional ability (Diaz Moore et al., 26). The goal is for participants to achieve a fit between their needs and desires and the program offerings (Diaz Moore et al., 32).
Establish adjacent, transformable spaces delineated by flexible boundaries. These boundaries can be repositioned to constrict or expand the space and achieve varying levels of privacy. Examples of flexible boundaries include movable walls, sliding partitions, barn or pocket doors, curtains, and folding furniture.
Figures 93 illustrates interconnected spaces by Sergi Bastidas, B&B Architecture Studio. This example would successfully accomplish Guideline 1 with the addition of flexible boundaries. Feddersenarchitekten has achieved this in the Elbschlossresidenzdementia day room by using movable panels (Figures 94-95), shown in white [left image] and folded [right image]) and curtain partitions which can be pulled along a ceiling-mounted track to subdivide the space.

Figure 96: Interconnected, yet distinct program spaces (Cuito, 2000)

Figure 97: Interconnected, yet distinct program spaces (Feddersen & Ludtke, 2009)

Figure 98: Movable wall along track can subdivide the dementia day room (Feddersen & Ludtke, 2009)
Guideline 5 - Access to the Outdoors

Secure, year-round, and unrestricted access to the outdoors in the form of gardens, courtyards, patios, or winter gardens should be available to all participants at all times. These outdoor spaces are most effective when planned as extensions of interior program space and should be introduced with a transitional gradient. Restorative views, places of rest, and aspects of multi-sensory stimulation, seen in Figures 96-97, should be included in outdoor space design. Unrestricted outdoor access should be visually and physically accessible from all ADS public and semi-public activity spaces.

Most ADS facilities do not provide an appropriately stimulating or restorative outdoor space. Some do not have outdoor space at all or do not allow participants access at will. However, research strongly supports the integration of outdoor restorative spaces into ADS facility programs. Many studies/publications are descriptive or preference-based, and conducted in the context of people suffering from dementia or living in long-term care environments (Calkins, 2009, 151). Unrestricted access to the outdoors has become a given in most published design guidelines associated with dementia or long-term care—Regnier, Weisman, and Brawley all include outdoor environment recommendations. Reduced agitation and increased autonomy have been linked to outdoor usage (Day et al., 2000, 409). Specifically, research confirms a decrease in violent episodes in dementia residents over time living in facilities with outdoor environments and an increase in violent episodes in facilities without outdoor access (Mooney & Nicell, 1992). Time outdoors has also been linked to modest improvements
in sleep and reductions in stress—as evidenced by lower serum cortisol levels (Calkins, 2009, 151). Residents who typically have low tolerance for other residents, aren’t helpful in group activities, and have a high frequency of hospital visits, have shown statistically significant reductions in blood pressure and heart rate when outdoors (Calkins, 2009, 151).

Outdoor environments offer chances for both multi-sensory stimulation and physical activity. Physical activity has been shown to enhance self-efficacy in older persons. Kono et al. stated “it is likely that elders who go outdoors more often may maintain a stable health status because of higher levels of self-efficacy” and “it seems likely that getting elders to go outdoors more often can have beneficial therapeutic effects in itself” (Kono et al., 2004). Kane et al., includes outdoor access and activity in the “meaningful activity” domain in quality of life (QOL) measures for nursing home residents (Kane et al., 2003).

Research on the specific qualities of desirable outdoor environments is less specific. Mooney and Nicell (1992) found that residents walked outdoors more often in facilities that offer therapeutic gardens. Outdoor usage in assisted living facilities has been linked to accessibility, aesthetics, and the provision of shade, seating, plants/flowers, and views (Rodiek, 2005). Despite being a small space, the outdoor courtyard in the Nurnberg residences by Feddersenarchiteken (Figure 98) has all of the qualities linked to outdoor usage in assisted living facilities.
The outdoor environment should be visually and physically accessible to all public and semi-public program areas. Windows should be installed low enough to visually connect the inside and outside for wheelchair-bound participants (Figure 101). Other accessible garden features include: no thresholds over 1/4”, the inclusion of roll-under and raised planters that provide seating, such as pictures in Figures 101-103. Places of rest under shade should be provided every 30’-0”. See Figures 99-100 at left for specific dimensions.
The experience of the outdoor environment can be greatly enriched if thought of as an extension of the interior program space. This is especially effective for dining, wellness and rehabilitation, and areas of social interaction.

Planning outdoor dining immediately adjacent to the indoor dining area can offer participants the option to eat outdoors on nice days, as seen in Dehan + Spinga’s Day-care Centre with Therapeutic Garden in Le Creusot, France (Figure 105).

The health, wellness, and rehabilitative areas should functionally overlap with accessible outdoorspace. The use of flexible boundaries as described in Guideline 4 should be used when climatically appropriate. An outdoor fitness equipment circuit (Figures 106-107) can become a continuation of an interior exercise area. Outdoor surface conditions—such as gravel, grass, stone, etc.—are opportunities for therapeutic challenge. This condition is pictured in SmithGroup’s National Armed Forces Physical Rehabilitation Center below (Figure 108).
Seating arrangements should be provided for 2-5 people, in addition to space for individuals; a modified privacy gradient should be adopted—see Guideline 2. The diagram below (Figure 111) by Diaz Moore et al. summarizes crucial issues in ADS outdoor access, including the provision of social spaces.

Figure 112: Outdoor seating arrangements (personal photo from site visit)

Figure 113: Outdoor seating arrangements (personal photo from site visit)

Figure 114: Critical issues in ADS outdoor access (Diaz Moore et al., 2006)
The outdoor environment should also be safe and secure, designed especially around the physiological aspects of aging and special considerations relating to dementia. Transitional gradients should be established to help older people adjust to sunlight and temperature changes—see diagram at left for specific suggestions. The photos below are successful transitional outdoor areas at the TLC Cody Day Center in Denver, Colorado and Life Enrichment Center in Kings Mountain, North Carolina.
Fences or landscaped garden walls securing the outdoor area should be at least 8’-0” high to prevent elopement, but ideally will visually “dissolve” to prevent anxiety. This can be accomplished by a fence with climbing greenery instead of an imposing exposed brick boundary. It is also possible to minimize the need for walls or fencing of any kind when outdoor spaces are formed as internal courtyards or located between wings of the facility. The difficulty of discerning the fence in Figure 115 of the Life Enrichment Center’s Kings Mountain garden at left is indicative of its success, and represents a lesson learned from an earlier facility’s use of brick. Layers of natural boundaries—such as shrubbery—can also limit elopement without the feeling of entrapment. All landscape should be non-toxic, as people with dementia have been anecdotally reported to eat plantings.

Outdoor environments should be viewed as an opportunity for multi-sensory stimulation. Outdoor usage has been linked to the provision of views (Rodiek, 2005) and so special care should be taken to consider what a participant will see from various vantage points. Best sound practices include the use of outdoor speakers to provide music; wind chimes can also provide auditory stimulation—such as the one hanging from the trellis in Figure 116 of the Alois Alzheimer’s Center near Cincinnati, Ohio. The inclusion of specific items to touch, for example, water at a hand level (Figure 117) or rough stone can provide tactile stimulation. To stimulate taste, edible plantings can be grown by participants and used in meals or tea. Finally, include plantings that smell good offer olfactory stimulation.
Guideline 6 - Daylighting without Glare

A facility employing one or more daylighting principles such as east-west axial orientation, windows placed for maximum solar gains and courtyards may be more energy efficient than traditional ADS facilities and contribute to better health, sleep, and behavior outcomes. Special care, however, must be taken to introduce daylight without glare, to which the elderly are particularly sensitive. Strategies for reducing glare can be employed at the architectural design level, including lowering contrast between the window frame and adjacent walls, daylight enhancing shades, raising ambient light levels and the specification of appropriate materials.

North of the equator, buildings are optimally aligned on an east-west orientation with the majority of glazing—and in an ADS facility, participant-centric program space—on the south facade for maximum solar exposure. Rooms where participants will spend more time should take daylit precedence, such as activity rooms, over more private, less frequently used rooms, such as the personal care areas. Windows are the obvious choice for the introduction of natural light; clerestories are especially effective because they provide an indirect light that is not conducive to glare. Working in conjunction with the privacy gradient—see Guideline 2—smaller rooms can borrow daylight from adjacent larger or taller daylit rooms. Strategies for this include the use of transom windows, as seen in Figure 119, or half walls.

Figure 121: Skylights at The Life Enrichment Center in Kings Mountain, North Carolina (personal photo from site visit).

Figure 122: The transom windows in the room above are useful for borrowing daylight from adjacent rooms (www.elledecor.com)
Daylight helps regulate circadian rhythms that affect mood and comfort. Exposure to daylight is especially important for dementia participants suffering from sundowning. Less overall light in long term care facilities has been associated with higher agitation levels (Sloan et al., 1998). Increasing bright ambient light (~2500 lux) in shared facility areas has been associated with significant improvements in sleep and a 47-55% reduction in disruptive behaviors (Sloan et al., 2005; LaGarce, 2004).

Site-permitting, align the building’s main axis east-west (Figure 120) and maximize the amount of glazed program space on the south facade (if in northern hemisphere). This will maximize solar exposure in winter, when the sun’s angle is lower in the sky and minimize in summer, when the sun’s angle is higher. According to Sun, Wind, & Light, “...elongating the building’s proportions to face winter sun, the size of east and west facades is usually reduced, which helps lower unwanted solar gain in summer, when the sun rises further east and sets further west than it does in winter.” (Brown & DeKay, 2001).

Augustin suggests that windows should occupy 20-30% of the exterior wall for maximum healing benefits (Augustin, 2009). Daylit room depths can only be 2.5 times the height of the window for illumination and an even distribution of light. In order to increase the amount of reflected light into the room, the surface the light initially hits should be light in color (Brown & DeKay, 2001). However, in order to avoid glare in elder facilities, shiny materials should not be used and the floor should be avoided as a surface to reflect light.
Low contrast between the window frame and adjacent wall will also reduce glare. To do this, minimize and splay mullions, the adjacent wall, jambs, sills and heads. Window edge reveals should be 9-12” deep, at an angle of 60 degrees to the plane of the window. If a window is in a thin wall, the window can be projected out from the wall (Figure 121).

Louvers in overhangs can shade a space but still reflect daylight inside. Louvers should be tightly spaced near the building to shade the high sun and more loosely spaced farther from the building (Figure 122). Light colors that reflect light but not heat should be chosen. The angle of the louvers can ideally be adjusted according to the seasonal angle of the sun.
NEEDS ASSESSMENT

In order to successfully apply the Guidelines from the previous chapter to a project proposal, an ADS’s specific market needs must be determined. First, a needs analysis is described to determine the number of registrants required to support a desired census. Though an independent market analysis by an experienced market research firm is highly recommended before opening an Adult Day Services Center—and is usually required by lending institutions to secure a loan—for the purposes of this study, secondary market research using demographic and geographic data was used to determine ADS feasibility. Then, in subsequent chapters, the program and site considerations will build upon this needs assessment by analyzing the project’s context.

The number of adults living in the market must be evaluated against an ability to pay and need for services. Market analysis indicates that participants of ADS spend between 25-50% of their disposable income on the services (Diaz Moore et al., 2006). Using an average daily rate of $61.71 (MetLife 2010 survey), and assuming an 3-day per week attendance, an average participant would spend $185/week, $740/month, and $8880/year. Assuming that this figure can represent no more than 40% of a participant’s annual disposable income (approximate average of acceptable range), that disposable income must be $8880/0.4 = $22,000. Taking into account a 15% federal tax rate, the gross income must be $22,000 x 1.15 = $25,530. Most likely, those that can afford more expensive care—such as assisted living—will purchase it. Seniors grossing over $37,760/year may choose against using ADS (Diaz Moore et al., 2006). For all these reasons, Diaz Moore et al. suggest that those most
likely to choose ADS are in the $22,000--$38,000 income bracket (2006).

Not all age- and income-qualified seniors need Adult Day Services. Of those that meet these qualifications, between 20-30% have a level of ADL dependency that would be appropriately met by ADS (Diaz Moore et al., 2006). Taking all of these factors into account, a way to conservatively estimate demand is to assume that 20% of the population segment age 75+ is potentially in need of adult day services.

However, all of these estimates may be adjusted based on the proposed services offered and reimbursements available. This thesis is proposing that a major programmatic focus be on therapy and rehabilitation which is expected to be covered by Medicare and home and community-based waivers. Therefore, the figures presented above are extremely conservative estimates, as the expected average age of participants would be younger and therefore the market demand higher.

Finally, since not all participants attend daily, a suggested 2:1 ratio of enrollees to daily census should be sought out (Diaz Moore et al., 2006). The following program narrative will establish a targeted census of 100 registrants; in order to reach this goal, a market need/demand of at least 200 must be established for the proposed site to accommodate the future growth goals. A subsequent chapter will demonstrate that the proposed site in Greenville, South Carolina meets this needs criteria.
The program for this thesis proposal was generated from patterns identified in Keith Diaz Moore et al.’s Designing a Better Day, benchmarking from site visits to ADS centers in North Carolina, Georgia, Ohio, Colorado, Oklahoma, California, and Germany, published guidelines from the PACE program, visits to Chicago’s Mather Cafe+, and interviews with industry leaders, including: Adam Griff with SarahCare, Rich Rosen with PerkinsEastman, and Joyce Polhamus with SmithGroup. These experts agree that there is a trend towards larger ADS centers of 100-200 participants. These larger centers can offer a broader range of services because their funding streams and participant populations are diversified. An entry census of 60 with a target participant population of 100 was chosen for this proposal so that the proposed therapy services could be financially justified. Sizing of individual programmatic areas within the proposed facility are first introduced in the following narratives and programmatic principles, and then are summarized in the space list at the end of this section.

Programmatic organizing principles, as determined by industry experts and published best practices include: providing a range of dining experiences, treating the personal care areas as a spa, and placing therapy and fitness on display. The following narrative explores the experiential qualities, space requirements, adjacencies, and specific participant needs relative to each of these principles.
According to Keith Diaz Moore et al., “…it is important to consider the hierarchy between dining and social interaction in that there are certain times when dining is the primary rationale (e.g., lunch) and other times when food is simply utilized as an effective prompt for socialization (e.g. meeting for coffee). Both of these social-dining experience should be provided for in an adult day setting” (2006). A restaurant-like, public main dining room, a therapeutic kitchen, and a community coffeeshop in the ADS center should be included to stimulate various levels of nutritional, social, and skill-based needs.

Main Dining Room

The amount of space and staff required for serving a homemade, nutritious, and appealing lunch for 60-100 participants necessitates that Main Dining be designated as public program. As such the planning of the main dining room(s) should aim for a “restaurant” experience during meals, and should offer participants a range of seating choices, as in Figure 124. An attitude of service is essential to achieve the restaurant “feel”--for example, participants should be escorted to their seat, given a choice of entrees, and served individually on dishes sans trays. The restaurant should be day lit, cheerful, and lively, but also should provide more private areas for those participants especially susceptible to agitation or requiring special attention during meals. A pleasant view to the outdoors while dining is ideal (Figure 123). Dining is an excellent opportunity for community integration, such as special meals planned for school groups, participants to invite family or guests, or open houses to make potential clients comfortable at the ADS center.
Rich Rosen, with Perkins Eastman New York, identifies a benchmark of 25 SF per participant for the main dining/multipurpose area; PACE guidelines recommend 18-25 SF per participant (Sloane et al.) The allocation of space depends on whether or not separate activity space is being provided. If it is, as in this proposal, then dining may be minimized. Additionally, a restaurant-style dining option can accommodate participant reservations across the span of two hours, thereby reducing both the institutional feel and the need for the dining space to be large enough to seat everyone simultaneously. The main dining room, besides serving lunch, may accommodate overflow breakfast from the therapeutic kitchen, large activity programs to happen monthly, and discretionary daily use by participants. The main dining area should be primarily adjacent to the main kitchen and provide a pass-through window or server station. Toilets within direct sight line are also an important adjacency for this often incontinent population. Adjacency or views to the outdoors is ideal. The dining room should be designed to address the following features and issues:

- **Lighting** should come from multiple directions, be compromised mainly of daylight, be at least 500 lux with even illumination and minimal glare (PACE Guidelines, Sloane et al.)
- **Effort** should be taken to dampen ambient sound. Hearing impairments are common; seating should not be for more than 8, as participating in conversation will become difficult.
Furniture should vary to maximize participant choice and accommodate various eating ability levels, should be sturdy enough to support the frail—all chairs should have arms—and height-adjustable to accommodate wheelchairs, and tables should not block foot access (Figure 126) (PACE Guidelines, Sloane et al.)

- Separate (away from dining table) but easily accessible storage should be provided for walkers, wheelchairs, and other equipment during dining so as not to clutter the main paths of circulation

- High contrast between table, plate, and food is desired to stimulate appetite and maximize participant independence

- A separate, more private dining room may be planned for participants requiring special feeding or especially prone to agitation.

Therapeutic Kitchen  
According to Keith Diaz Moore et al., “‘Home keeping’—washing dishes, sweeping, cooking, and baking—are central to the identity of many individuals [...] Within adult day service settings, such activities afford these participants a sense of continuity and a high degree of likely success” (2006). Daily, kitchen-centered activities that occur throughout life become so innate in our routines, their provision and encouragement at an ADS center can be quite comforting for many participants. Planning for a therapeutic kitchen can offer participants a safe environment to continue their home keeping skills and a semi-public space to interact socially. This kitchen should be open to participants to prepare their own drinks, have a snack, or participate in a planned cooking
activity—such as baking cookies—with staff. Occupational therapy can also use the kitchen for rehabilitation. The space should feel warm and inviting with more private, cozy nooks nearby for more intimate interactions. The kitchen should be welcoming and feel relaxed and informal.

The therapeutic kitchen should accommodate up to 12 participants and staff in about 400 square feet. Two staff should be able to visually monitor up to 12 participants while in the therapeutic kitchen. Primary adjacencies include the nurse work (medication storage) area, occupational therapy, and toilets. Secondary adjacencies may be the main dining room, porch, and laundry room.

Participants arriving at different times in the morning will likely be offered a light breakfast—such as an English muffin and fruit—in the kitchen. Other expected activities include: making coffee, getting a snack, baking with staff, folding clothes, current events conversations, and reading the newspaper. Additionally, some participants may desire to make their own lunch instead of being served in the main dining room. If enough staff are available, the independent lunch preparation may be centered in the therapeutic kitchen. The therapeutic kitchen should be designed to address the following issues and features:

- **Visual accessibility**: Staff should be able to visually monitor all participants while in the therapeutic kitchen.
o **Visual cueing:** Since those with dementia have difficulty understanding or remembering what they cannot see, kitchen activities should be visually cued. For example, a frosted glass cabinet allows the participant to see where the coffee mugs are stored. Props—such as a coffeepot—should be provided (Diaz Moore et al., 2006).

o **Olfactory:** Smells from the therapeutic kitchen (such as from baking bread) should be accessible from the rest of the center, as they can stimulate appetite and cue appropriate behavior (Diaz Moore et al., 2006).

o **Safety:** Consideration should be given to what is to be accessible and what is to be secured. For example, ovens and ranges should not be able to be turned on without a staff key, or should be located within a secure area, such as in Figure 128. Consider alternatives such as electric tea kettles for independent participant use. Knives should not be accessible unless under staff supervision.

o **Accessibility:** A variety of work surfaces at different heights will encourage participants of various mobilities to participate in kitchen-centered activities. Sturdy chairs should be provided at a table where kitchen work, such as stirring or folding, can be performed.

o **Social interaction:** Semi-private areas should be provided for more intimate social interactions.

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Figure 131: Diagram therapeutic kitchen (Bachman)
Mather Cafe + / Community Coffeeshop

The Chicago-based Mather Cafe+ is an ideal model for incorporating a community-based coffeeshop into an ADS facility. Committed to providing a continuum of living and care, anyone from the community can come to the Mather Cafe+ to purchase a home-cooked meal or use the Internet cafe, but the programs are tailored those 55+. Mather offers educational classes—ranging from wellness lectures, to digital photography, to learning how to use the Internet—and a range of exercise and fitness programs. Intergenerational relationships are formed naturally, and as the younger and older crowds mix, the negative stereotypes associated with aging are broken down. Characteristics of the physical space include:

- Open plan, with the exercise area centrally located
- Large, open multi-use space accommodates group fitness programs and wellness lectures
- A check-in/hospitality desk is adjacent to the main entry. Staff stationed here greet guests and handle the administrative duties associated with classes and activities.
- Classes, food, Internet access & fitness are on display—visually accessible from the multiple vantage points from within the facility
- Vibrant hues—orange, green, yellow, & blue—correspond to programmatic areas
- Lightweight, stackable furniture is easily stored or set up in the fitness area depending on the activity; a large curtain can be pulled to subdivide the space
- Dining tables resemble shadowboxes and display items to stimulate conversation
Personal Care as Spa

Personal care areas should be designed as a spa (Figure 131) and include space for toileting, bathing, dressing, grooming, and hair and nail care. With the exception of hair and nail care, these areas are the sites of the most private activities that occur in an ADS center and unfortunately are often the most lacking thoughtful design. Special care should be taken to ensure privacy, dignity, comfort, and safety.

Hair and nail care offer an opportunity for social and community interaction within a salon-like environment. While these functions can be accommodated in-house by a visiting cosmologist, ADS facilities in an urban setting can use the services of a nearby salon or provide one that is open to the community.
Though staff report liking the bathing facilities close to the main activity areas (PACE Guidelines, Sloane et al.), this program does not suggest this. If bathing is to be a spa experience, it can be isolated from other activities in order to feel more private and relaxing. Also, bathing always requires a 1:1 caregiver to participant ratio and therefore will always be supervised, regardless of its proximity to other activities.

**Toilet Rooms**  Every effort should be taken to reduce the institutional character of the accessible toilet rooms. Consider adding color, ambient lighting, and interesting materials to enrich the experience. Toilets should be ADA accessible, providing a 5’ turning radius, and average 60-70 SF. Plan 1 toilet for every 12 participants (as per Rich Rosen, Perkins Eastman, NYC benchmarking); Diaz Moore et al. suggest 1 toilet for every 6 participants (2006). Toilets should be distributed throughout the facility, rather than located in a central area. Since those with dementia often cannot remember beyond what they can see, it is important to provide direct sightlines to the toilets. Also, the flushing and sink mechanisms should be intuitively familiar. For example, automatic devices would be confusing to a participant. A separate toilet should be planned for the staff. All toilet rooms should be individual an unisex.
Participants often require assistance with toileting; adequate space should be planned for both participant and staff activities. This includes movement to toilet, removal of clothing, transferring, clean-up, transferring, redressing, and handwashing, exit (Diaz Moore et al., 2006). Toilet areas should be designed to address the following issues and features:

- **Contrast** between the toilet, floor, and wall is essential to maximize functional independence when toileting.
- **Grab bars** should be thoughtfully planned, keeping in mind that participant needs vary. Examples include pull-out or down grab bars, typical wall-mounted, or those on either side of the toilet.
- **Doors** should be wider than minimum ADA requirements; 40” sliding doors are desirable (PACE Guidelines, Sloane et al.)

**Bathing/Grooming/Dressing Rooms**  The bathing area should literally be a warm (heat lamps and radiant floor heating), soothing environment that feels as familiar as possible, without compromising safety (anti-slip flooring). Aim for a spa/restorative experience while in the bathing space. Participants will demonstrate different bathing preferences, therefore, accommodate a variety of bathing options, such as a (threshold-less) roll-in shower and whirlpool tub.
About 100 SF per individual bathing room should be allocated. The room should have a dry zone for dressing and storage close at hand for personal items, such as lotion, clothing, or a favorite cologne (Figure 133). Toilets should be located within the bathing room or immediately adjacent. At least one bathing room in the ADC facility should have a mechanical lift to ensure staff safety.

Figure 136: Zones within a bathing suite (Diaz Moore et al., 2006)
Therapy + Fitness on Display

The therapy + fitness area—which includes physical therapy, occupational therapy, and an indoor and outdoor fitness circuit—should be open, bright, inviting, and lively. However, more private areas should be designated for exams and individual therapies. Daylighting should flood the space, but with subdivision and dimming options. The space should be ‘on display’ to the rest of the facility to encourage fitness participation and positive social reinforcement. In addition to being planned along the privacy gradient (Guideline 4), Joyce Polhamus and Sonia Johansen at SmithGroup, San Francisco suggest a wellness center design that incorporates, “visual access to the outdoors, good visual cues and signage, predictability, flexibility to evolve over time, controlled sound levels, appropriate lighting, convenient parking, and easy access” (2010).

PACE center guidelines recommend at least 600 SF of space for the physical therapy department; this number should be expanded if a general exercise/fitness area is included. A combined figure of 1000SF is adopted, assuming the ADS center will seek to serve large numbers of outpatients. Certain functions—such as the toilets and whirlpool (bathing)—can be shared with the overall facility. All private office space for therapy staff members envisioned in this program to be centrally located with other staff office areas, as therapy is not envisioned to be confined exclusively to this area. The occupational therapy department, since it is not solely rehabilitating based on returning to one’s vocation, is distributed throughout the facility, with its primary therapies taking place in the physical therapy department, the therapeutic kitchen, and in the activity rooms located on the
second floor. The exercise circuit should be located in the most public area of The Gym zone and extends into an outdoor area, which may be seamlessly accessed on days of favorable weather.

The therapy and fitness space should include treatment mats, parallel bars, stairs, hot and cold packs, ultrasound machines, equipment storage, body bands, weights, and balls, stationary bikes, and a sink with adjacent storage. The space should be primarily adjacent to the therapeutic kitchen for shared occupational therapy programs. The spa area, with whirlpool tubs are an important secondary adjacency, as therapists could make use of the warm water to ease tired, sore muscles. The ADS living room can double as a waiting area if the therapy and fitness functions are open to non-ADS participants from the community.
## Project Space List Summary

<table>
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<tr>
<th>Zone/Area</th>
<th>Spaces/Rs</th>
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<th>NSF/EA</th>
<th>SF</th>
<th>Notes</th>
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<td>Storage/Coat closet</td>
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<td>200</td>
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<td>Individual storage/hanging space for each participant</td>
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<td>The Restaurant</td>
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<tr>
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<td>Entertainment</td>
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Figure 141: Project program
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<tr>
<td></td>
<td>Bathing + dressing</td>
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<td>The Salon</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(optional hair + nail care (can overlap with community resources))</td>
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<td>700</td>
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<tr>
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<td></td>
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<td>1 for every 12 participants</td>
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<td></td>
<td>Program Director</td>
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<tr>
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<td>Admin</td>
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<td>17082</td>
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Figure 142: Project program, continued
SITE CONSIDERATIONS

In conjunction with the Areas of Focus for Adult Day Centers (Chapter 6) and the program requirements identified in Chapter 7, the following site selection criteria were identified: the site selected must demonstrate adequate need, accessibility and the potential for community connections, established infrastructure—including streets, utilities, and zoning—is in place to support the ADS center, and there is adequate lot size and visibility. An available lot in downtown Greenville, South Carolina, was identified and analyzed for feasibility according to these considerations.

First, a radial boundary needs to be estimated in order to determine the number of potential clients. Keith Diaz Moore et al. identify 15 to 20 minutes as a suitable transit time (2006), though this figure was higher for nearly every center visited. PACE guidelines allow for up to a 45-minute travel time to the ADS center (Guide to PACE Site Selection and Center Development). Visual analysis of Greenville city data (city-data.com) suggests that up to 30 minutes would fit with accepted regional drive-time patterns. Next, an age qualifier must be estimated. The national average age of an ADS participant is 76, so a conservative estimate of market size are those 75+ in the identified transit area (Diaz Moore et al., 2006).

According to the City of Greenville map (Figure 140), most of the city proper lies within 5 miles and 20 minutes of the proposed site, represented by an orange dot with concentric mile incremental circles. However, nearly half of this 5-mile radius area lies outside of the...
Figure 144: 5-mile radius of site, with major highways in orange (underlay map: City of Greenville Dept. of Planning)
city in Greenville County. Therefore, needs-analysis takes into account potential clients at both the city and county level. According to the above criteria and US Census Data, the need for Greenville County and the City of Greenville are as follows:

- The population 75+ is 5,075 for the City of Greenville
- 20% of this is 1,015, which is the % of people potentially in need of ADS
- There appear to be a maximum of 3 ADS serving the city; estimating an enrollment of 100 each, there is still an unmet need in the City of Greenville

- The population 75+ is 23,803 for Greenville County
- 20% of this is 4,760, which is the % of people potentially in need of ADS
- There are 6 ADS listed in the area; estimating an enrollment of 100 each, there is still a vast unmet need in Greenville County

Since the estimated need must be at least 200, and the actual need is in the thousands, it can therefore be conservatively concluded that there is more than adequate need in the service area of the proposed site.

Visual, vehicular, and pedestrian accessibility is a primary driver in the selection of any site. An urban site is ideally located along a prominent view corridor and connects to a wide variety of community places through established public transit, such as a light rail or
bus system, and well-known and maintained roads. A site within walking distance from community amenities, such as grocery stores, restaurants, entertainment, and green space, should be given selection priority. Upon arrival at the site, staff, visitors, and participants must be able to transition smoothly from their means of transit to activities within the center.

Proposed Site The proposed site is currently an empty corner lot, bordered by Rhett, Augusta, and Main Streets. Due to the fragility of participants and their likely difficulty with climbing stairs, the proposed site should be able to accommodate the majority of participant-centric program space on the ground level. The lot must also allow for adequate parking, drop-off area, and green space. Finally, the site should allow for the projected census growth to 100 participants. Even with proper zoning setbacks in place, it offers almost 81,000 SF of space. This is more than adequate for a 15,000SF parking lot, a proposed 17,000SF facility, and 2,000SF of green space, even if it is all accommodated on one level.
The proposed site is located within four miles of two highways—I-85 and 385 (Figure 144), and located along Augusta Street, which is a main artery into the city. Its location on the corner of primary and secondary roads ensures convenient access and visibility (see Figure 145). Public transit is established in this area; the site is near two bus stops and a free trolley that runs hourly on Main Street. Finally, pedestrians will find easy access to the center along Main Street, where traffic calming has been implemented and sidewalks are wide, smooth, and shaded. The lot is of adequate size to accommodate parking for all staff and visitors and drop-off/loading space for participants.

**Community Connections**

Identified as an area of focus in Chapter 6, connection to the community is a vital site characteristic. In a national survey of PACE center staffers, many identified access to senior and community resources as a positive feature of their center. Relevant community resources near the site include: medical facilities, senior living communities, libraries, churches, restaurants and retail (Figure 147, next page).
Figure 149: Street character near site (personal photo)

Figure 150: Community resources (Bachman)
The location of the proposed site is optimal for connecting to the community, without sacrificing convenience. Located in downtown Greenville’s Central Business District and West End Historic District, the area is compromised of a mix of office, service, retail, entertainment, cultural, government, civic and residential uses. The typology map (Figure 153, next page) shows the site in relation to these functions. The site is within walking distance to most of these functions, including Falls Park—a beautiful green space featuring an iconic bridge and waterfall that has become symbolic of downtown Greenville, pictured on the next page.
Figure 153: Falls Park (personal photo)

Figure 154: Surrounding neighborhood (photos: Derrick Simpson)

Figure 155: Surrounding neighborhood (photos: Derrick Simpson)

Figure 156: Neighborhood typology (Bachman)
The proposed site’s location on Main Street confers an ADS center the option of leasing part of its building in order to provide extra income while the census builds. Then, the ADS center can move into the previously leased space as it needs to expand. Alternatively, an ADS center may be able to locate a tenant that is mutually beneficial to both parties. For example, the proposed site is an optimal location for a salon. The salon could offer hair, nail, skin, and massage spa services to both ADS participants and the community at large. In this case, a community partnership is formed simply by the adjacency of the service, which could provide intergenerational mixing naturally, without the need to add programmed activities in hopes of meeting this need. Weekend party or business event rentals may also be a source of extra income for an ADS center. The proposed site’s location in a mixed-use area greatly increases a center’s chance being able to provide this type of service.

One factor driving the success of a center’s connection to the community is visibility. The Mather Cafe+ Model identifies the prominent location of their sign (Figure 155) as a requirement in the consideration of a new cafe. This visibility is not only helpful for wayfinding, but attracts new clients, and establishes a street presence. The proposed site is optimally located for both visibility and convenience. A corner lot, bordered by Main, Augusta, and Rhett Streets, the center can be safely entered on the slower-moving Rhett Street, seen from the highly traveled Augusta Street, and pedestrian- and neighborhood-friendly on Main Street.
The parti concept for the ADS facility (Figure 157) initially envisioned the space as a transparent container placing the most public programmatic functions on display—both within the facility and to the community at large. Opacity was increased with privacy; volumes were then articulated by function and finally the arrangement of volumes was determined by circulation along a serpentine path. Further programmatic development led to the additions of the community coffee shop and salon. While separate entrances are designated for these community-accessible spaces and the ADS facility (Figure 158), interaction between the two is encouraged without sacrificing participant safety. A transitional porch + courtyard, located along the serpentine circulation spine, connects the two programs.
The separation of community and ADS facility entrances within overall building orientation is supported by the site’s connection to primary and secondary roads. The community entrances are located on the pedestrian-friendly South Main Street while the ADS facility is entered on the less-heavily trafficked Rhett Street, where parking, a drop-off lane, and service entrances are provided. This orientation draws the maximum amount of community members, while allowing for ADS ease of entry and safety of the participants.
Organizational Concepts

The facility design was first envisioned by creating a bubble diagram to match programmatic SF requirements and color coding the diagram according to privacy conditions (Figure 163). Zones of Activity were then determined using the adjacencies laid out in the bubble diagram. A circulation path emerged from the relationship between the Zones of Activity (grey dashed path in Figure 164). Further project development led to the circulation path being manifested as a sweeping serpentine, which connects the public program—the salon and coffeeshop—to the ADS facility proper (Figures 165 & 166).
The first level of the ADS facility consists of entrance and check-in, participant areas, and back of house functions. Participant program areas are those related to dining and living, exercise and therapy, and personal care. The first level also includes the coffee shop and salon community-oriented programs. Zones of Activity shown in the Figures at left provide an overview of the zone’s relationships to one another and will be discussed in detail in the Guidelines in Practice section.

The ADS facility’s second level is dedicated to participant entertainment and staff functions. The entertainment area is divided only by flexible boundaries and able to accommodate varying numbers of group sizes, according to activity. The staff area is located centrally, away from participants in order to maximize staff’s ability to visually monitor the space while minimizing participant distractions. Leasable space is also located on the second floor above the salon. This space is built out during construction and generates income for the ADS facility as rented as office space while the facility builds its census.
Figure 171: Plan, Level 1 (Bachman)
Figure 172: Plan, Level 2 (Bachman)
Figure 173: Section 1 (Bachman)

Figure 174: Section 2 (Bachman)
Guidelines in Practice

**Access to the Outdoors** The experience of the outdoor environment can be greatly enriched if implemented as an extension of interior program space. This is especially effective for dining, wellness and rehabilitation, and areas of social interaction. The diagram below denotes areas where this extension occurs.

Figure 175: Interior courtyard, inclusion of therapeutic surfaces extends the indoor therapy program space (Bachman)

Figure 176: Deck with outdoor dining as extension of The Restaurant (Bachman)

Figure 177: Diagram of green spaces (Bachman)
Providing access to the outdoors is also an opportunity to encourage community involvement. In the rendering below, a shared porch and courtyard linking the community coffee shop and the ADS facility invite intergenerational interactions. In order to be fully accessible, this shared outdoor area is planned according to a transitional gradient—from fully protected to fully exposed—in order to allow the body to adjust to light and temperature.
Zones of Activity

Most ADS facilities have a single, multi-purpose room where all of the day’s activities--from dining, to crafts, to group exercise, to social interactions--take place. However, this constant change in function makes it difficult for participants with cognitive impairments to understand the space and respond appropriately. In order to better orient participants, programmatic functions are grouped into Zones of Activity. For example, the main dining functions are grouped into The Restaurant (Figure 179, next page) which is connected to The Therapeutic Kitchen via breakfast bar. The Living Room flows into The Kitchen and The Library and is arranged in seating arrangements of 4-6 to encourage small-group social interaction. The Gym, which encompasses fitness, physical, and occupational therapies is adjacent to The Living Room in order to maximize visual access and socially reinforce health and wellness by placing it on display. In addition, The Gym makes use of seating arrangements in The Living Room for participant waiting.
Figure 182: The Restaurant (Bachman)
The Library provides a transition between the more public Living Room and the Spa. The Spa is the most private zone, and is where personal care services occur. Participants scheduled for bathing services can wait comfortably in The Library and view the courtyard while they await their turn. The Spa connects to the more publically-oriented Salon which provides hair and nail care services (Figure 182). The Porch and Garden are shared between the ADS facility and the publicly-accessible Coffeeshop (Figure 180). On the second level, The Entertainment Zone is planned as one large space that can be divided by flexible boundaries in order to accommodate a myriad of group sizes and activities (Figure 181).
Privacy Gradient  
Rooms flow in a hierarchy of public to private space that includes public, semi-public, semi-private, and private. Public areas, such as The Restaurant, are largest in size, designed for groups of 12 or more, and can create an enlarged sense of community. Semi-public and semi-private spaces are largely defined by the size of the group they support. Figure 184 shows the range of group sizes accommodated by The Living Room and The Library, which support groups of 4-6 and 1-2, respectively. Participants have a choice whether and when to insert themselves, allowing self-regulation of social interactions and levels of stimulation. ADS facilities arranged according to this privacy gradient will empower participant choice and help cue a breadth of expected positive social interactions and spontaneous, independent activity. Offering different levels of privcacy also makes redirection of agitated participants to an appropriate sensory level more probable.

Figure 186 on the following page illustrates the privacy gradient applied to the first level plan. In general, the most public spaces, which are the most transparent, are located along the serpentine circulation spine and closest to the periphery of the building. As the roof form rises above, the spaces below are increasingly public, uniting architectural form and programmatic function. This relationship is illustrated in Figure 185.
Figure 188: Privacy Gradient (Bachman)
Intuitive Circulation  Circulation is envisioned as a meaningful journey between and around functional spaces in the ADS facility. The serpentine circulation path connects program areas, empowering the participant through visual and spatial cues to choose his or her respective destination. Landmark mapping (Figure 187) ensures the route is not overly complex between destinations. Landmarks, identified as teal dots in plan, are: the deck, the stairs, the kitchen, the library, a water feature leading to the spa, the sliding partition entry to the gym, and the porch. From each of these respective landmarks, 2-3 others are visible. This provides a participant with choices for moving throughout the space without overwhelming him. This supports the “sequential style of wayfinding” in which a participant proceeds from one visual reference, or landmark, to another (see Guideline 3).

Daylight and views to the outdoors also provide orientation cues along the circulation route, such as in the interior courtyard (Figure 188). This figure also shows opportunities for rest, sensory stimulation, and social interaction that should punctuate the circulation path in any ADS facility.
Transformable Spaces

Transformable spaces are such that different group sizes and activities can be accommodated both individually and in combination. On both levels 1 and 2, adjacent spaces can be transformed into larger ones through the use of flexible boundaries. These boundaries can be repositioned to constrict or expand the space and achieve varying levels of privacy. On the first level, partition doors can expand The Gym into the The Living Room space in the event of large group exercise sessions. This occasional spilling of fitness activities into a social realm supports the architectural focus of health and wellness on display. Also on level 1, the fitness area can expand into the outdoor fitness circuit through the use of rotating glass doors. On the second level, the Entertainment Zone, which includes a movie room, a craft room, and a game room, is planned to be inherently flexible through partition walls, which can be pulled to subdivide or opened to expand the space. When fully opened The Entertainment Zone becomes the ideal location for parties and community events.
Daylighting Without Glare  Daylight is desirable in an ADS facility because it aids in orientation, helps regulate circadian rhythms, and is associated with significant improvements in sleep and a reduction in disruptive behaviors. Special care is taken to introduce daylight without glare, to which the elderly are particularly sensitive. The serpentine circulation spine which is formally expressed as the sweeping roof is the primary strategy for introducing daylight. As seen in Figure 191, a large expanse of clerestory glazing welcomes northern light into The Restaurant below without direct heat gain or glare. Each segment of the roof rises higer than the last, allowing for additional clerestory windows. The deck, which is oriented toward the southwest, is shielded by louvers that prevent glare but still reflect sunlight inward.
Vegetation in the courtyards works to filter the harsh effects of direct light (Figure 194), creating a pleasant dappled effect on the interior. Finally, a fritting pattern, the density of which opens up with the privacy gradient, has been applied to The Gym’s glass curtain wall to shield the direct morning sun without sacrificing daylight (Figure 195).
Conclusion

It is hoped that this project will help to stimulate the dialog between those who provide Adult Day Services and those who design the spaces in which they are delivered. In order for progress to be made the ADS industry must work to more clearly define itself as a provider of preventative/wellness care, chronic disease management, and rehabilitative therapeutic services. In addition, more research is needed that specifically examines the environmental design of ADS facilities. With ADS identity more concretely established and the research canon strengthened, healthcare architects will be able to more actively participate in casting a vision for this new type of integrated service delivery. As it is impossible to create an environment that is specifically tailored to each participant’s individual needs, environmental design should instead allow each person to self-regulate to the maximum extent of his or her functional abilities. This practice elevates respect for the dignity of the individual beyond a level that most current ADS centers do not. Empowering the individual participant through intuitive wayfinding, opportunities to choose social interaction or privacy, facility security that does not compromise access to the outdoors or community interactions, appropriate sensory stimulation, and access to a full spectrum of health and wellness services is the outcome of a new typology for Adult Day Services centers. This will not only reduce healthcare costs, but will provide needed services and improve the quality of life for seniors.
Figure 198: Board 1 (Bachman)
Figure 199: Board 2 (Bachman)
ACCESS TO THE OUTDOORS

Secure, year-round, and unrestricted access to the outdoors in the form of a garden, courtyard, patio, or winter garden should be available to all participants at all times. Transitional gradients ease adjustments to sunlight and temperature.

The experience of the outdoors environment is greatly enriched if implemented as an extension of interior program space. This is especially effective for dining, wellness and rehabilitation, and areas of social interaction.

Access to the outdoors becomes an opportunity for interaction with the community—a shared porch and courtyard connects the community coffee shop and ADS program space.

Figure 200: Board 3 (Bachman)
Figure 201: Board 4 (Bachman)
ZONES OF ACTIVITY

Similar programmatic functions and qualities are grouped into Activity zones of recognizable name and character. These zones become participant destinations.

PRIVACY GRADIENT

Rooms flow in a hierarchy of public to private space that includes public, semi-public, semi-private, and private. Participants have a choice at which point to insert themselves, allowing self-regulation of social interaction and levels of stimulation.

A hierarchical arrangement according to a privacy gradient will empower participants choice and help cue a breadth of expected positive social interactions and spontaneous, independent activity. Offering different levels of privacy also makes redirection of agitated participants an appropriate sensory level more probable.
Figure 203: Board 6 (Bachman)
INTUITIVE CIRCULATION

Circulation is planned as a meaningful journey between and around functional spaces. Intuitive circulation empowers the participant through the principle of preview to choose his or her respective destination. The path should also provide opportunities for rest, sensory stimulation, social interaction or solitude, and exercise. Views to the outdoors and landmarks aid in orientation. Landmarks should be mapped to ensure that at least one other reference is visible from each. Landmarks are ideally defined by form, function, and meaning.

TRANSFORMABLE SPACES

Adjacent, flexible spaces can constrain or expand for a variety of activities. The activities that are most therapeutically beneficial (smaller groups), are most often private, and occur most often should be accommodated by the transformable individual rooms or spaces. Transformations of these smaller spaces into a single, more voluminous ones can accommodate larger assemblies that happen less often. Examples of flexible boundaries include movable walls, sliding partitions, barn or pocket doors, curtains, and folding furniture.
DAYLIGHTING WITHOUT GLARE

Daylight helps regulate circadian rhythms that affect mood and comfort. Increasing bright ambient light in shared facility areas has been associated with significant improvements in sleep and reduction in disruptive behavior. North of the equator daylighting can be maximized along an east-west orientation with the majority of glazing on the south facade to harness solar gains.

Special care, however, must be taken to reduce glare, to which the elderly are particularly sensitive. Strategies for this include clerestory windows, as enabled by the serpentine curve shown below, and the introduction of sunscreening, such as the frit pattern on the Gym’s glass curtain wall.

Figure 205: Board 8 (Bachman)
Figure 206: Final Presentation Model (Bachman)
APPENDIX

Project Pari Model 1

Project Pari Model 2

Project Pari Model 3

Project Pari Model 4

Project Pari Model 5
Project Pari Model 6

Project Pari Model 7
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