

FACTORS ASSOCIATED WITH COMMUNITY VERSUS INSTITUTIONAL LONG TERM
CARE: DIFFERENCES BY RACE AND ETHNICITY

by

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(Under the Direction of Teresa Mauldin and Anne Sweaney)

ABSTRACT

This research explored characteristics of the elderly that are associated with use of long-term care services. Using the 1999 National Long Term Care Survey, logistic regression was employed to examine the relationship of race with the use of formal and informal long-term care. This study also examined the relationship of health insurance with the use of formal and informal long-term care. The Andersen Model on health service utilization was used as the theoretical framework. The findings indicated that race was not associated with the use of long-term care but rather other predisposing, enabling and need variables. Health insurance was found to be associated with the use of long-term care even after controlling for predisposing, enabling and need variables.

INDEX WORDS: Long-term care, Elderly, Activities of Daily Living, Instrumental
Activities of Daily Living, Predisposing, Enabling, Need

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DEDICATION

I would like to dedicate this research to my strongest cheerleader, my husband, Saviour Koshie Anyidoho. I would not have reached this far without his unwavering support, love, encouragement and prayers.

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CHAPTER 1

INTRODUCTION

Formal and informal long-term care services are used everyday by the elderly depending on their predisposing, enabling and need characteristics. According to Andersen (1995), these characteristics provide basic but also important information about recipients of the long-term care services. Predisposing, enabling and need characteristics include race, education, age, gender, marital status, income, health insurance, disability and health status. Previous researchers have cited racial differences in the use of formal and informal care. The purpose of this study is to determine whether the use of formal or informal care is due to race or ethnicity or perhaps any of the above named characteristics. It is also to examine how these characteristics have contributed to the use of long-term care services by the rapidly growing elderly population, focusing on institutional (formal) and community (formal and informal) types of long-term care.

The population of elderly in the U.S. who are 65 years and older grew at a rapid rate from 31.2 million in 1990 to 34.9 million by the year 2000 and represented about 12.4% of the total population. According to the U.S. Census Bureau (2000), by the year 2050 the elderly population is projected to increase to 82 million, representing 20.3% of the total population (thus one in every five Americans will be 65 years and older). In addition, racial and ethnic composition of elderly minorities have been increasing at a rapid rate, from 13% in the 1990's to a projected increase of 25% by 2050 (American Association of Retired Persons, 1995). This presents major challenges in providing long-term care services to a rapidly growing and diverse elderly population (Wallace, Levey-Storms, Kington, & Anderson, 1998). These challenges are even

more critical because population characteristics such as race, ethnicity and attitudes towards health care, affect health behaviors such as the use of long-term care services (Andersen, 1995).

Declining mortality as a result of advancements in medical technology has greatly increased the life expectancy of the elderly. Life expectancy is “the average length of life that a particular group may expect to live” (Mezey, 2001 p. 5). According to the U.S. Census Bureau (2001), the average life expectancy in 1990 was 75.4 years. This increased to 77 years in 1999, and is projected to increase to 78.5 by 2010. Women were found to have longer life expectancies than men, and Whites longer life expectancies than Blacks (U.S. Census Bureau, 2001). In 1997, the expected life expectancy for the population cohort 65 years and over was 17.7 years. Of this group, females had a life expectancy of 19.3 years, and males, 16 years. Except for those in the 85 and older cohort, aging Blacks had a higher mortality and morbidity risk than elderly Whites (Mezey, 2001). Within this age group, the variation of males and females were smaller than the 65-year group. At the same time, the population in the 85 years and older cohort had a life expectancy of 6.3 years. Females of 85 years and over had an average life expectancy of 6.6 years, while the males had 5.4 years. These statistics show that women are expected to live longer than their male counterparts. In addition, Whites overall are expected to live longer than Blacks. A two percent decline in mortality per year could result in increased life expectancy to about 100 years by 2080 with all factors staying equal (Manton, Stallard, & Tolley, 1991). Therefore, declining mortality will cause the total population of the elderly to increase dramatically. Some of the factors that have also contributed to this increase are the quality of care, education, social support, increase in household income, and the availability of good health insurance. Apart from the social support, all these factors tend to apply mostly to White non-Hispanic elderly. As suggested by studies, lower life expectancies of minorities is a function of

limited access to health care and lower socioeconomic status (Pollard & O' Hare, 1999; Wallace et al., 1998).

With an overall increase in the life expectancy of the elderly population, the need for long-term care has become necessary. Long-term care as defined by McCall (2001) “refers to a continuum of medical and social services designed to support the needs of people living with chronic health problems that affect their ability to perform everyday activities” (p. 3). These every day activities, known as, Activities of Daily Living (ADL) include personal tasks such as going to bed, bathing, using the toilet, dressing and eating (Mezey, 2001; Schafer 1999a, 1999b; National Center for Health Statistics [NCHS], 2003). Organizational tasks such as taking medication, preparing meals and grocery shopping are known as Instrumental Activities of Daily Living (IADL) (Schafer, 1999a, 1999b). Long-term care is needed when an individual is physically and cognitively impaired and needs some form of assistance in performing the basic activities of daily living (The Federal Long Term Care Insurance Program, 2002). The conceptual definition of long-term care focuses more on the type of assistance or help received and not on the place where the service was received (Wilson, 1995). According to Andersen (1995), social factors as race and ethnicity may also play a role in the type of long-term care used by the elderly.

Types of Long-term Care for the Elderly

According to McCall (2001), long-term care is categorized into three main types: institutional care, formal community care and informal care. Long-term care in some cases could be a combination of both formal and informal care (Wallace, Abel, Stefanowicz & Pourant, 2001).

Institutional Care: Nursing Home and Assisted Living

Nursing home. A nursing home is defined as “an entity that provides skilled nursing care and rehabilitation services to people with illnesses, injuries or functional disabilities” (The Nursing Home Info, 2003, p.1). Nursing home facilities provide maximum medical and functional assistance for its residents. It requires a 24-hour, seven-days a week supervision by a Registered Nurse (R.N.) or a Licensed Practical Nurse (LPN) (Mitty, 2001).

The number of nursing homes in the nation increased from 16,800 in 1996 to about 18,000 in 1999 (Mitty, 2001; Jones, 2002). Nursing homes currently cater to 1.6 million people with the elderly comprising 90 % of its residents (Jones, 2002). Most nursing home residents are White (88.7%), and female (72%) (Mitty, 2001). About 83% of nursing home residents need help with three or more activities of daily living (Wright, 2001). Nursing homes cost an average of \$52,000 annually (The Federal Long Term Care Insurance Program, 2002). This is expensive as most of the elderly have an average income of \$25,000 (Wright, 2001). However about 60% of nursing home residents are subsidized by Medicaid (Reschovsky, 1998).

Assisted living facilities. Assisted Living Federation of America (ALFA) (2003), defines assisted living service as a “special combination of housing, personalized supportive services and health care designed to meet both the scheduled and unscheduled needs of those who need help with activities of daily living” (p.1). Assisted living offers independence and provides the needed medical assistance in a community-like environment where elderly residents rent an apartment within the assisted living complex. Assisted living is, suitable for elderly people who are unable to live alone and at the same time do not require 24-hour medical care. It is place where the elderly individuals enjoy independence but at the same time receive some form of assistance (Wade & Anthony, 1998).

A typical assisted living resident is White (96.7%) and is a female (78%) in her mid-eighties, (Wright, 2001). About 26.3% of assisted living residents need help with two or more activities of daily living (Schafer, 1999b), with some residents being cognitively impaired (Regnier, Hamilton & Yatabe, 1995; Mezey, 2001). Assisted living facilities are mostly State regulated. In 1998, 75% of all senior housing was assisted living housing with a growth rate between 15% and 20% (Citro & Hermanson, 1999). From 1991 to 1999, assisted living facilities increased by 49.4% to 25, 377 (Wright, 2001). The average cost of assisted living care is about \$26,000 per year. Residents in assisted living facilities primarily pay out of pocket (Citro & Hermanson, 1999; Wright, 2001), while Medicaid supported 7.2% of its residents (Wright, 2001). In a study by Wright (2001), newer residents reported more assets than those who have been in assisted living facilities much longer. With 7.2% receiving Medicaid assistance, 15.8% reported having received financial assistance from family members. According to Wright (2001), the reported annual income for assisted living residents was below \$25,000 per year, which suggested that residents had “spent down” on their assets over their period of stay.

In both nursing homes and assisted living facilities, it could be noted that minority participation was far below ten percent. This supports previous studies that suggest that race and ethnicity are predictors of long-term use, with Blacks and Hispanics being more likely than White non-Hispanics to use informal care than formal care such as nursing homes and assisted living (Burton, Kasper, Shore, Cagney, LaVeist, Cubbin, & German, 1995; Wallace et al., 1998). In the study by Wright (2001), minorities’ participation in institutional long-term care was less than nine percent for nursing homes and less than five percent for assisted living (Wright, 2001).

Community Care: Adult Day Care, Hospice Care and Home Health Care

Adult day care. Adult day care is a community based long-term care with programs that support elderly individuals during the day. The program offers services that range from medical services to rehabilitation therapy (Naleppa, 2001; McCall, 2001). Some of the goals of adult day care is to improve upon the physical and mental well-being of the elderly and provide some relief to caregivers to prevent caregiver burnout (Naleppa, 2001). Adult day care costs an average of about \$1,000 a month depending on the type of programs offered (Naleppa, 2001; McCall, 2001).

Hospice care. Hospice care is provided in hospice residential facilities hospitals, assisted living facilities, nursing homes and also in the adult individual's home. It concentrates on care and pain management but not on curing (Mezey, 2001; National Hospice and Palliative Care Organization [NHPCO], 2003). Hospice care provides medical services, emotional, and spiritual support to individuals with a terminal illness. It also provides support services for family members as well as bereavement services (McCall, 2001; NHPCO, 2003). An average daily cost of hospice care is \$100 for at-home care and \$200 in a private facility (California Registry, 2004). The main source of payment for hospice care is through Medicare Part A (that is hospital insurance), Medicaid and private insurance (Mezey, 2001; McCall, 2001; NHPCO, 2003).

Home health care. Home health care was in existence before Medicare began in 1965, having at that time about 1,400 agencies in operation (Martin, 2001). Home health care programs provide a comprehensive nursing home type of care in the patient's own home (Lee, Kovner, Mezey, & Ko, 2001). It is typically for elderly patients with chronic long term care needs and those recovering from acute hospitalization. Registered or licensed practical nurses and other specialized professionals provide services such as skilled nursing care, physical, occupational,

speech therapist as well as other services provided by social workers (Martin, 2001; McCall, 2001). About half of all home health care programs are Medicare-certified (McCall, 2001). The number of Medicare-certified home health agencies have declined considerably over time due to regulations and legislation regarding Medicare payments such as the enactment of the 1997 Balanced Budget Act that caused the removal of some skilled care services not covered any longer in home health care (McCall, 2001). About 3,000 agencies closed down between 1997 and 1999 (Martin, 2001). The average monthly cost for a four-hour visit, seven days a week is \$1,800 (California Registry, 2004).

Informal Care

Informal care is an unpaid supportive role played by family members, friends or community organizations in caring for disabled elderly individuals. According to McCall (2001), informal care is one of the most important components in the long-term care system, providing about 80% of unprofessional medical and personal care (Glassey & Zimmer, 2001; Mezey, 2001). Since informal care is an unpaid service, it has been quite difficult to acknowledge its economic value. Arno, Levine, and Memmott (1999), estimated the economic value of informal care to be about \$196 billion in 1997. Most of the economic value is borne by the primary caregivers who are mostly female daughters, daughters-in-law, spouses (mostly wives) and in particular, minority cohorts with disabled elderly family member(s). As informal care is uncompensated, most of these caregivers experience physical, psychological and mental stress often referred to as “caregiver burden” (McCall, 2001; Mezey, 2001). The National Institute of Health (1997) has developed resources for enhancing caregivers’ health of Alzheimer’s patients particularly among minority groups.

Purpose of Study

It can be noted from the description of the types of long-term care available that elderly minorities utilize informal care more than institutional long-term care. There are also a large number of disabled non-Hispanic Whites in informal care. Despite the growing number of institutional long-term care facilities and the diverse services provided, informal care is still the backbone of long-term care (80%). This study will use the National Long Term Care Survey (NLTCS, 1999) to examine the use of institutional and informal care and the socioeconomic factors associated with using the different forms of care. It will also examine recent racial and ethnic differences in using long-term care to verify previous research on limited long-term use by disabled elderly minorities. The relevance of this study is to provide the necessary information needed by consumer economists, long-term care housing providers and policy makers, to assist them in making the projections and policies that could shape the long-term care industry.

The study will address two main questions:

- 1a. Is race and ethnicity of the elderly related to the odds of residing in an institution versus the community?
- 1b. Is race and ethnicity still related to the odds of residing in an institution versus the community after income and functional status are controlled?
- 1c. Is health insurance related to the odds of residing in an institution versus the community after all other factors are controlled?
2. Is race and ethnicity related to the use of some formal or only informal care in the community and whether race is still related after controlling for all other factors.

The results of this study will show the proportion of institutional care used in relation to informal care by the growing and diverse elderly population. Recommendations will be made

from the results of the study specifying areas for future research and the future trend of long-term care.

Terms and Terminology

Activities of Daily Living (ADL)

ADL is the standard by which functional ability is evaluated. It is the inability to perform the basic day-to-day tasks such as getting in and out of bed, bathing, using the toilet, dressing eating and walking. The inability to perform one or more of these activities presents a level of disability assessed by the researcher. It also presents the need for or the demand for assistance that is supplied either by family members, friends, or other health care professionals (Mezey, 2001; Schafer, 1999a, 1999b).

Caregiver Burden

Caregiver burden is the negative effects appraised by caregivers as a result of providing care to functionally and cognitively impaired individuals (mostly elderly). Such stress or burden can be physical, emotional and financial as well as overwhelming (Kasper, Steinbach, & Andrews, 1990).

Caregiver Gain

Caregiver gain is the appraised satisfaction and any positive return gained by caregivers from taking care of functionally and cognitively impaired individuals (mostly the elderly). This includes “feeling appreciated and a sense of satisfaction” (Kramer, 2001, pp. 117).

Instrumental Activities of Daily Living (IADL)

IADL is used with activities of daily living (ADL) to measure or evaluate functional ability. It includes the ability to perform household activities such as taking medication,

preparing meals and grocery shopping, managing money and using the telephone (Mezey, 2001; Schafer, 1999a, 1999b).

Shared housing

This type of housing offers long-term living arrangements for two unrelated adults, often an older and younger person, sharing single family or multifamily housing. It provides security, companionship, independence and financial relieve by saving an elderly person about \$2,500 a year on housing costs (Senior Resource, 2003).

Substitution of Services

This refers to the substitution of care that involved the transfer of money and time between family, market and the state (Soldo & Freedman, 1994). An example is the transfer of an elderly from the community to institutions and vice versa.

Supported housing

This type of housing involves supportive services offered by unrelated people from outside the home. This type of housing is sometimes offered by the older person in exchange of errands, taking the older person to the doctor or grocery shopping (Schafer, 1999b). This is also true for shared housing.

Unassisted 60 plus community

This is an age-restricted community that offers no supportive services. This type of housing community is generally preferred by non-Hispanic Whites and other healthy elderly individuals who do not require any form of assistance (Schafer, 1999b).

CHAPTER 2

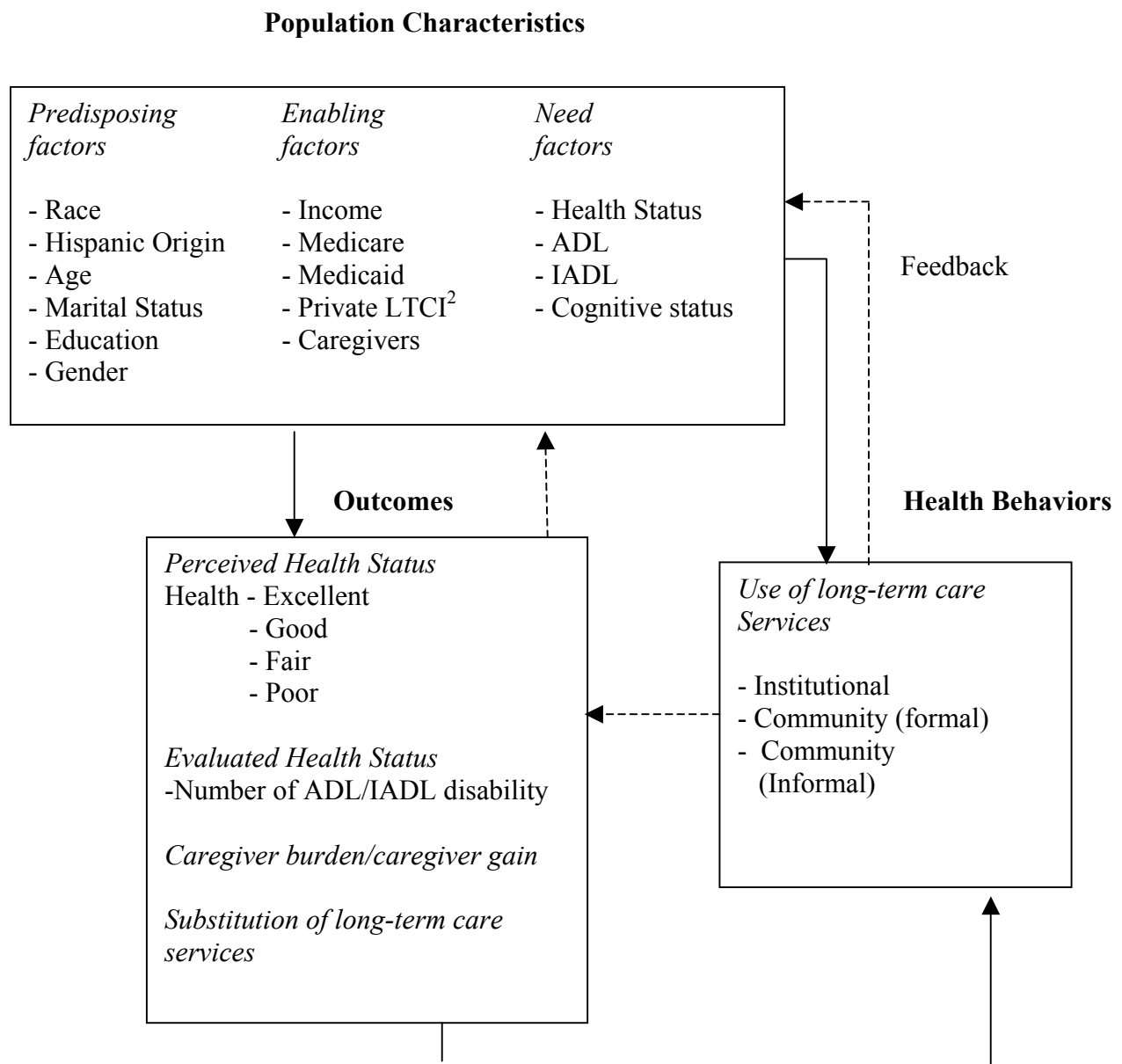
REVIEW OF LITERATURE

Introduction

This study examined various factors that contributed to the provision of long-term care among the elderly. The Andersen Model on health service utilization (Andersen, 1995), will be used as the theoretical framework for this study. The theory for this model was adapted to identify the factors that are associated with using long-term care either in an institution or a community by elderly disabled residents. Various studies and research conducted to explain these factors were reviewed and legislative policies that contribute to long-term care were also examined.

Andersen's Model on Health Service Utilization

According to Andersen (1995), access to and utilization of health care service is a function of predisposing, enabling and need characteristics of an elderly person (Figure 1). The Andersen conceptual framework on health service utilization had been applied to studies of other long-term care and health service utilization (Miller & McFall, 1991; Sudha & Mutran, 1999; Wallace et al., 1998). Studies that applied the Andersen model to the use of long-term care are discussed later in this chapter. The Andersen model was adapted in this study to help understand the effect of predisposing, enabling and need attributes of the elderly on the type of long-term care received using the National Long Term Care Survey (NLTC, 1999). Predisposing characteristics were described as existing characteristics that in one way or the other were not directly responsible for the use of long-term care, but existed prior to use. They included

Figure 1. A Behavioral Model of Health Service Utilization¹

¹Adapted from: Andersen, R. (1995). Revisiting the behavioral model and access to medical care: Does it Matter? *Journal of Health and Social Behavior* 36, 1-10.

²Private Long Term Care Insurance

demographic and social factors such as race, ethnicity, gender, age, marital status, family size, and the level of education (Andersen, 1995; Andersen; Rice, & Kominski, 2001). The enabling characteristic was defined as those factors that provide the resources and the means by which long-term care need is met (Andersen, 1968; Wallace et al., 1998). Enabling characteristics included factors such as income, wealth, and health insurance of the elderly person and personal caregivers (Andersen et al., 2001).

The need characteristic of long-term care utilization was described as being either perceived or evaluated need. According to Andersen (1968), need was one of the main causes for long-term care utilization. Need characteristics of the elderly were found to be the strongest predictor of health service use (Wallace et al., 1998). Need was measured by the number of functional limitations, health status and cognitive impairment of the elderly person. Perceived need, a subjective assessment, was how elderly people assessed their health status, functional limitation and cognitive impairment (Sudha & Mutran, 1999). According to Andersen et al. (2001), perceived need as a social phenomenon could be explained by social characteristics and health beliefs such as knowledge about long-term care. Evaluated need was described as an objective measurement of the status of an elderly persons health, functional status and cognitive impairment (Andersen et al., 2001; Sudha & Mutran, 1999).

The use of personal long-term care services (Figure 1), was described by Andersen et al. (2001), as “the most essential component of the model of access to care” (p. 8). Researchers have conceptualized health behaviors within the long-term care system as formal and informal care utilization (Miller & McFall, 1991; Wallace et al., 1998) or the attitude towards the use of formal care (Sudha & Mutran, 1999).

Outcomes of long-term care utilization such as perceived and evaluated health status (Figure 1), were the effects of changes in enabling and need factors which in turn contributed to the type of long-term care service used (Andersen, 1995). According to Andersen et al. (2001), the feedbacks as shown in Figure 1, were substitutions of one long-term care service for another. For example informal community care could be substituted for institutional care with increased ADL and IADL disabilities that resulted in poor health status of the elderly or increased caregiver burden of the informal caregiver.

Informal and Formal Care

Formal care, as explained in the previous chapter is a type of long-term care where the services of a helper (usually a non-relative) are solicited to provide the needed assistance. In most cases formal caregivers are paid, however, there are times where volunteers from either state or local agencies come in to offer their services. Formal care is mostly administered in institutional settings such as nursing homes and assisted living facilities. There are times where formal care is administered in one's own home. This is normally referred to as home health care (Martin, 2001; McCall, 2001). Non-Hispanic Whites were more likely than non-Hispanic Blacks and Hispanics to receive institutional care (Wallace et al., 1998). Despite the stigma associated with long-term care institutions such as safety at home than at a long term care facility, the number of nursing homes and assisted living facilities have been increasing at a rapid rate over the past decade (Mezey, 2001; Jones, 2002; Wright, 2001). This implies that, the number of elderly seeking the services of paid caregivers has increased (Citro & Hermanson, 1999). Likewise, the graying of the population and the increase in the aging people have helped to cause this trend.

Informal care on one hand is a type of long-term care where family members such as spouse, adult children or friends provide some form of care on a continuous basis for their disabled elderly relative. In most cases informal caregivers are unpaid. According to Gaugler and Kane (2001), informal caregiving can be classified into three categories, such as assisting with activities of daily living (ADLs), assisting with instrumental activities of daily living (IADLs), and providing psychological, social, and spiritual support.

Adult female children were found to play an important role in caregiving, however, labor force participation and the decline in fertility has reduced the number of female children offering some form of caregiving either part-time or full-time (Johnson & Sasso, 2000; Spillman & Pezzin, 2000). Johnson and Sasso (2000) investigated the effect of adult children, between the ages of 53 to 65 in paid employment, and how time was transferred in caring for elderly parents. The results of the study showed a reduction in the number of paid working hours when time was spent in caring for an elderly parent. Adult children were found to support their elderly parents more when their parents were unable to perform more than one ADL and also had poor health status. Thus, the level of need required by the adult parent was related to the number of hours of caregiving.

The study by Spillman and Pezzin (2000) examined the role of spouses and adult children in caregiving and changes in the existence of disability among the elderly over the period of 1984 to 1994. The study found a decrease in the percentage of informal care use among the elderly over the 10-year period while the percent of formal care or institutional care increased. Recipients of informal care from spouses and children also dropped by 6.8% within the 10-year period, while institutional care users for those with spouses and children increased five percent. Spillman & Pezzin (2000) concluded that the level of income played an important role in

determining the type of long-term care received. According to Spillman & Pezzin (2000), elderly people who required intensive personal care preferred the services of a professional helper than reliance on family and friends so long as they can afford the cost of professional services. Given the lower fertility rate among the baby boom generation with a lower proportion of children per family, the study suggested a decline in potential caregivers within the next decade or two (Spillman & Pezzin, 2000).

Predisposing Factors Associated with Long-term Care

Race, Ethnicity and Life Expectancy

The number of elderly minorities has been increasing at a rapid rate and is projected to increase to 25% by 2050 (AARP, 1995). Higher birth rates among non-Whites and immigration have contributed to the higher rate of population increase of the elderly minorities (Briggance & Burke, 2002; U.S. Census Bureau, 2001). In 2000, the elderly population of Whites was 30.9 million with a projected increase of 11.7% to about 34.5 million in 2010. Comparatively, the population of Blacks was 2.9 million in 2000. The number of elderly Blacks is projected to increase at an even faster rate (22.9%) than Whites by 2010. The population of the ethnic minorities is also increasing rapidly. In 2000, the number of the elderly who were of Hispanic origin was slightly over 1.9 million. By the year 2005, the number of elderly of Hispanic origin is projected to increase to about 2.4 million. According to the Resource Center on Aging, University of California, Berkeley (2004), the low proportion of Hispanic elderly was attributed to lower life expectancy and the immigration of the elderly back to their home countries. The population of non-Hispanic Whites and Blacks by the year 2000 was, 29.1 million and 2.8 million respectively. By 2005, the population of non-Hispanic Whites was projected to increase

by 1.72% to 29.6 million while the population of non-Hispanic Blacks is projected to increase by 10.7% to about 3.1 million (U.S. Census Bureau, 2001).

A study by Ladikta & Wolf (1998) found that socioeconomic factors such as education and income had a significant relationship with life expectancy. The lower the level of education, the more likely the elderly person was to become more impaired or inactive and have a shorter life span. Looking at it from a racial and gender perspective, Ladikta, & Wolf (1998) found that non-White males were more likely to be impaired or severely impaired than Whites in the same cohort. At the same time moderately impaired non-White males with expected decline in impairment over time were less likely to die earlier than White males within the same cohort. Non-white females on the other hand were more likely to become moderately or severely impaired and also die earlier than White females.

Ladikta & Wolf (1998) concluded that, non-Hispanic Black and Hispanic males have higher total life expectancies than Whites within their cohort. Non-Hispanic Black and Hispanic females on the other hand, have shorter total life expectancies than Whites within their cohort, however, as the cohort increases in age from 70 to 80 to 90 years the variation in life expectancy between Whites and non-White females was drastically reduced (Ladikta & Wolf, 1998).

In a study by Miniño, Arias, Kochanek, Murphy & Smith (2002) an analysis was conducted on the trends and patterns of deaths and life expectancies of all ages and sexes. A National database compiled by the National Center for Health Statistics and Centers for Disease Control and Prevention was used for the analysis. The results showed a gradual trend of increase in life expectancies over the past decade. The Black population had an increase of 0.3 years life expectancy over the past decade and the White population had an increase of 0.1 years. Miniño et al. (2002), concluded that the highest life expectancy was among the White female population

at 80.0 years and the Black female population was not far behind. The life expectancy of Black females was 74.9 years, followed by White males at 74.8 years, while the Black male population had the lowest life expectancy at 68.2 years.

Educational Attainment Level

According to the Administration on Aging (2003a), the overall educational attainment level among the elderly had increased over time, however there were still some racial and ethnic disparities. In a study by Wallace et al. (1998), Blacks and Hispanic elderly were found to have significant proportions of lower education than Non-Hispanic White elderly. The study found that a less than high school education increased the likelihood of relying on informal care and reduced the use of formal care such as nursing home care (Wallace et al., 1998). According to Schafer (1999c), when factors such as race, gender, location, tenure, income, and net worth were controlled, the level of education had no effect on the type of long-term care used.

Marital Status and Living arrangements

The proportion of married elderly tend to decline with age, however older men (73%) were more likely to be married than older women (41%) (Administration on Aging, 2003b). In 2000, ten percent of the elderly were divorced and separated with 10.9 million being widowed (Administration on Aging, 2003b). According to the American Association of Retired Persons (1995) Blacks were twice as likely as Whites to be divorced or separated, while Asian or Pacific Islander and Hispanic elderly men were as likely as Non-Hispanic Whites to live with their spouses. Most elderly women were widowed and lived alone.

The proportion of elderly living with someone differed by gender. According to the Administration on Aging (2003b), 72% of older men compared to 40% of older women lived with their spouse in 2002. Likewise in 2002, 41% of older women compared to 18% of older

men lived alone, while living with a spouse decreased with age living alone increased with age (According to Administration on Aging, 2003b).

Income and Poverty status

In 2002 the reported median income of the elderly 65 years and older was \$14,251 with 24.7% reporting a median income of less than \$10,000 and 14.8% reported an income of more than \$35,000 (Administration on Aging, 2003b). Gender differences in income distribution have long been documented. Among the elderly in 2002, men had higher median income (\$19,436) than women (\$11,406) (Administration on Aging, 2003b). There were also racial and ethnic differences in income distribution. According to the Administration on Aging (2003b), in 2002, among households headed by the elderly, the median income for non-Hispanic Whites (\$35,219) was higher than non-Hispanic Blacks (\$26,174) and Hispanics (\$25,123) but lower than Asians (\$38,533). According to the American Association of Retired Persons (1995, 1997), because Hispanics had a history of low-paying jobs, they were less likely than non-Hispanic Blacks and Whites to receive Social Security Benefits and more likely to get the minimum benefits available to the elderly. According to the American Association of Retired Persons (1995, 1997), elderly non-Hispanic Blacks tend to have lower incomes than non-Hispanic Whites partly because of low education and in some cases discrimination.

According to the Administration on Aging (2003b), in 2002, about 10.4% of the elderly were below the poverty level. Among this group 8.3% were non-Hispanic Whites, 23.8% were non-Hispanic Blacks and 21.4% were Hispanics. There was also gender disparity in poverty rates among the elderly, with men having a poverty rate of 7.7% and women 12.4%. Employment is one of the factors that affect the poverty rate among Hispanics and non-Hispanic Blacks. According to the American Association of Retired Persons (1995, 1997), due to discrimination

non-Hispanic Black men were “more likely to have experienced periods of unemployment” (p. 3) than non-Hispanic Whites and were also more likely to have lower levels of lifetime labor force participation.

Enabling Factors Associated with Long-term Care

Cost of Long-term Care

How much is long-term care going to cost? According to The Federal Long Term Care Insurance Program (2002), the cost of nursing homes had been increasing at the rate of five percent every year. The average national cost of nursing home and assisted living was \$52,000 and \$25,300 respectively in the year 2000. The cost of home health care was calculated at \$18 an hour, at five-hours a day, five days a week with an annual cost of about \$20,000. The Federal Long Term Cost Insurance Program (2002) projected that, with a five percent increase per year, by 2030 the average cost of care for nursing home, assisted living facilities, and home health care would be about, \$190,000, \$109,000 and \$68,000 respectively.

Medicare, Medicaid and Long-term Care Insurance

Most health insurance does not cover long-term care. Some of the public programs that provide limited assistance in covering long-term cost are Social Service Block Grants, Older Americans Act, and U.S. Department of Veterans Affairs. Since these public programs provide limited assistance, emphasis will not be placed on them but rather on Medicare, Medicaid and private long-term care insurance.

Medicare is a federal health insurance program for the elderly (65 years and older) and non-elderly disabled persons. It is the largest source of public health care financing in the United States (Brown, 2001). Medicare is financed through payroll tax deductions and all contributions are deposited in the Medicare Trust Fund (Brown, 2001). Unlike Medicaid, eligibility for

Medicare is not need-based but rather its eligibility is based on prior employment and contributions into the Social Security Program (Friedland, 2001). According to the Kaiser Family Foundation (2004), the bulk of Medicare beneficiaries for 2001 were mostly the elderly population (89%), 56% female and 84% White. Medicare does not cover most long-term care costs and therefore uses only four percent of its budget on long-term care (Meyer, 1994).

Currently there are three parts to the Medicare program – Hospital Insurance (Medicare Part A), Supplementary Medical Insurance (Medicare Part B), and Medicare Plus Choice (Medicare Part C). Medicare Part A is a compulsory program for all workers. In general, Medicare Part A subsidizes only skilled nursing care in facilities for up to 100 days of residency (Brown, 2000) and limited skilled nursing care in recipients homes (U.S. Office of Personnel Management, 2002). Medicare Part A covers the cost of home health care, skilled nursing care and the cost of short-stay hospitalization. As long-term care in most cases does not require skilled nursing care, a small percentage of Medicare Part A goes into long-term care. Unlike Medicare Part A, Medicare Part B is a voluntary program that covers doctor's charges and other medical expenses such as x-rays, laboratory tests and ambulance services (Friedland, 2001).

Medicare Part B is mainly financed through beneficiary premium payments and through general tax revenues (Brown, 2001; Friedland, 2001). Medicare Part C program, passed by Congress in 1997 is a health care program where enrollees choose from different health insurance plans (Friedland, 2001). Enrollees of Medicare Part C pay monthly premiums that cover Medicare Part B and additional out-of-pocket costs depending upon the type of program they choose (Friedland, 2001). Some of the Medicare Part C programs available are the health maintenance organization (HMOs), preferred provider organization (PPOs), provider-sponsored organization (PSOs), or the medical saving account plans (MSAs) (Friedland, 2001). According

to Brown (2001), enrollees of Medicare Part C program benefit from the prescription drugs coverage.

Medicaid enacted in 1965 is a state administered program managed under federal guidelines (Friedland, 2001). It is a poverty-based healthcare program (Meyer, 1994) that provides health assistance to the very poor, the blind, disabled or members of a single-parent family with dependent children (Brown, 2001; Friedland, 2001). According to Friedland (2001), the largest beneficiaries of Medicaid were children and non-disabled elderly (73%), however, they consumed the smallest proportion of Medicaid expenditure such as in 1997 where the average cost for a child was \$1,157 and \$10,803 for older beneficiaries.

Medicaid coverage is different across states due to the flexibility for state governments to choose the services to be covered, the scope of benefits covered and how to calculate for income and assets of beneficiaries. Whatever the total amount of coverage comes to, the federal government matches the amount spent by each state on Medicaid (Friedland, 2001; Kaiser Commission on Medicaid and the Uninsured, 2001). According to Friedland (2001), the larger the fiscal capacity of a state, the lesser the federal matching fund and vice versa. Currently the matching fund ranged from 83% for the poorest states to 50% the richest states (Friedland, 2001; Kaiser Family Foundation, 2004). From 1991 to 2001, the national average growth in Medicaid spending was 11% with total national beneficiaries of about 40 million in 2001 (Kaiser Family Foundation, 2004). By 2002, the total federal and state spending on Medicaid was about \$248 billion. Medicaid is the major source of long-term care funding but it requires recipients to “spend down” their non-housing assets to be eligible (Brown, 2000; Reschovsky, 1998; Meyer, 1994; Wallace et al., 1998). Medicaid contributed to about half the total cost of nursing home care in 1999 (Friedland, 2001).

In a study by Meyer (1994), the distribution of Medicaid was examined to determine whether or not Medicaid was stratified on the basis of class, gender and race. Using the 1982 and 1984 National Long Term Care Survey (NLTCs), a sample size of 6,000 functionally impaired elderly who resided in the community was used for the analysis. The dependent variable used in the analysis was Medicaid utilization. The independent variables were age, education, marital status, gender, race and the combination of race and gender. In a descriptive analysis Meyer (1994), found that aging, lower educational status, women, Black and Hispanic in general and specifically Black and Hispanic women were more likely to use Medicaid. Meyer (1994), also used a logistic regression analysis to examine the effects of race and gender on Medicaid use and controlled for income, marital status, age, education and nursing home use. Meyer (1994) found that, education, income, marital status, gender and race were significant predictors of Medicaid use with Blacks and Hispanics being three times as likely as Whites to rely on Medicaid. The study also found that nursing home residents were 6.6 times more likely to rely on Medicaid than community residents. This was because most of the nursing home residents depleted their resources to pay for the high cost of care during their stay, making them eligible for Medicaid assistance.

As Medicare and Medicaid do not cover all long-term care costs incurred, the majority of the elderly had to supplement their long-term care cost with long-term care insurance which, is a private form of insurance. The cost of coverage depends on the age of the insurer at the time of purchase. Private long-term care can be expensive and in addition may have many restrictions within the individual policy (Brown, 2000). Long-term care insurance in most cases does not cover the full cost of long-term care. In 2000, six percent of nursing home costs were financed

by private long-term care insurance, 36% covered by Medicare and Medicaid and 58% of the expenses covered out of pocket (The Federal Long Term Care Program, 2002).

Need Factors Associated with Long-term Care

Functional Ability

According to Dietz, (1997), elderly Blacks and Hispanics were more likely to report functional limitations than non-Hispanic Whites, indicating greater need for support (Dietz, 1997). Mutran, Sudha, Desai, & Long (2001) found that elderly Blacks were admitted to nursing homes at a rate that was one-half or more than that of elderly Whites.

In a study by Cress (1997) the Physical Functional Performance (PFP) was developed to objectively evaluate functional performance among the elderly. The PFP is a continuous-scale based on integrated physiological capacity, physical performance and psychological factors. Using 15 daily activities such as making the bed, getting dressed, cooking breakfast, taking the bus and sweeping and laundry among others, Cress categorized them into five physical domains comprised of “upper and lower body strength, upper body flexibility, lower body strength, balance and coordination and finally endurance” (p. S17). Using 148 elderly people from the community and institutions, the subjects were grouped into three categories: (a) community residents, (b) institutional residents who were independent (or required no assistance in performing daily tasks), and (c) institutional residents with mild limitations. The activities were performed starting from the easiest to the most difficult and also from those tasks that required little strength to the ones that required more strength and stamina. Each score on the PFP reflected a unit measure of weight carried, distance traveled and the speed of the elderly subject under experimentation. The results showed significant differences between the five domains for community residents and institutional residents. Community residents had higher PFP scores

than institutional residents who were independent. Institutional residents who were independent also had higher scores than those with mild limitations. According to Cress (1997), the PFP is an instrument that could effectively evaluate functional impairment and could also track future functional changes in physically able older adults.

In a descriptive study by Schafer (1999a) participants were considered as needing help when they expressed difficulty with ADL or IADL as well as difficulty in using a device to perform any of the ADL tasks. Conclusions were based on results pertaining to the five different age cohorts, 70-74, 75-79, 80-84, 85-89, and 90 and over years. Schafer (1999a) noted that nearly half of the sample had at least one ADL. The number of ADL disabilities increased with age. For the 90 years and over group, 11% of them were impaired in two or three ADLs, while 10% of them were impaired in all six ADLs. The results seemed to be consistent across gender with incidence being more or less prevalent among women than men within their age group.

In another study by Schafer (1999b), the type of long-term care selected reflected the incidence of ADL and IADL impairment among the elderly. The types of long-term care used for the study included: (1) institutionalized care such as assisted living communities; (2) informal community care such as shared housing, supported housing, conventional housing; (3) independent living with no caregiving such as the unassisted 60 plus community. The results from Schafer (1999b) showed that as ADL disabilities increased, there was a higher increase in the selection of community and informal long-term care and a slight increase in institutional care, meaning most elderly people use informal care than institutional care. Schafer (1999b) acknowledged that some of the reasons for choosing assisted living might be, the inability to drive, perception of some future inability to perform some form of strenuous work and the absence of a spouse, most of which were not ADL or IADL related.

Cognitive Impairment

To measure cognitive impairment, one of the most commonly used instruments was the Mini-Mental Status Examination (MMSE) (Folstein, Folstein, & McHugh, 1975). According to Mezey (2001), MMSE is a comprehensive quantitative instrument that captured seven main aspects of orientation, registration, attention, calculation, short-term recall, language capacity and construction (Appendix A).

Crum, Anthony, Bassett, & Folstein (1993) conducted a study to identify and record the distribution and relationship of age and educational attainment level using the MMSE. Their sample of 18,056 adult participants from five metropolitan areas were from a survey conducted by the National Institute of Mental Health Epidemiologic Catchment Area Program between 1980 and 1984. Correlation coefficients were used to identify a relationship between scores across different age and educational level categories, weighted percentiles and weighted quartiles were assigned through a univariate procedure. The distribution of the mean MMSE scores for ages 65 years and older out of 30 possible points was 20.8 for those with four or fewer years of education, 25 for those with five to eight years of education, 26.6 for those with 9 to 12 years of education or high school diploma and finally 27.8 for those with college experience or higher degree. The overall mean score for the elderly with ages of 65 years and older was 25.6. The correlation results proved to be significant for age and years of schooling. MMSE scores were found to decline as age increased and the level of education decreased.

Health and Health Care

Previous studies found that older Blacks were more likely to have higher rates of hypertension, cardiovascular disease, diabetes and arthritis than Whites (Mezey, 2001; Wallace et al., 1998). According to Mezey (2001), Hispanics had higher incidence of untreated

hypertension that has become a major concern for public health officials. Hispanics were also found to have higher incidence of diabetes, liver diseases (Mezey, 2001; Wallace et al., 1998), cancer of the pancreas and uterus (Mezey, 2001). Apart from the persistence of health problems associated with the elderly ethnic minorities, access to health care and the quality of health care received contribute to their health status. Socioeconomic factors such as low income and lack of health insurance have hindered elderly non-Hispanic Blacks and elderly Hispanics from seeking medical assistance (Briggance & Burke, 2002) and getting better quality of health care compared to the non-Hispanic Whites (Briggance & Burke, 2002; Wallace et al., 1998). Hispanics were found to have more difficulty describing their needs and this affected their access to receiving appropriate health care services (Briggance & Burke, 2002; Tucker, Falcon, Bianci, Cacho, & Bermudez, 2000; Wallace et al., 1998).

Watson (2001) also found the inequality in quality of care received by elderly non-Hispanic Blacks despite their high incidence of health care needs. However, Watson's study did not find factors such as low income and lack of health insurance as predictors of such inequality as did Briggance & Burke (2002). According to Watson (2001), significant differences existed in the quality of health care received even after controlling for income and health insurance availability. Some research suggests history, especially among elderly non-Hispanic Blacks, has resulted in distrust in the medical system and also in the medical providers (Mezey, 2001; Watson, 2001). On the other hand, Watson (2001) found that compared to Whites, medical providers did indeed provided different and lower levels of care to minority patients. Blacks also received less of the high technology interventions prescribed for Whites (Watson, 2001).

Population Characteristics and the Use of Long-term Care

In a study by Bradley, McGraw, Curry, Buckser, King, Kasl and Andersen (2002), the use of long-term care was analyzed by adding psychological factors such as attitudes, knowledge and social norms to population characteristics made up of enabling and need factors in a modified Andersen's model. The dependent variable in the study was long-term care use and the independent variables were categorized as psychological, enabling and need factors. Bradley et al. (2002) found that psychological factors contributed to the effect of race on the use of long-term care.

Stinner and Byun (1990) used two assumptions to examine the relationship between predisposing, enabling and need characteristics of the elderly and the need for assistance. The first assumption was that informal support or assistance was dependent on disability (that is, the inability of an elderly family member to perform ADL or IADL). Secondly, disability was hypothesized as having no positive effect on living arrangements, but rather the effect was related to characteristics such as race, income, age, marital status and availability of adult children (Stinner & Byun, 1990). Within the first premise, Stinner and Byun (1990) explained that, providing informal care to disabled elderly parents through co-residence with adult children was one of the major means of meeting the disabled parents' needs.

In the second premise, Stinner and Byun (1990) argued that the decision made by a disabled elderly to live independently with no informal support was mostly dependent on the level of income. That is, the greater the income level of an elderly person, the greater the preference to living independently. Also, racial differences to living independently and co-residing with adult children were also found to be highly probable. According to Stinner and Byun (1990) elderly Blacks were more likely than Whites to co-reside with adult children. It was

also argued that because elderly Whites were mostly in a better financial position than elderly Blacks, they usually preferred independent living to co-residence, but once this socioeconomic difference was controlled, the independence effect was no longer observed (Stinner & Byun, 1990). Age, marital status and the availability of adult children were observed to have a positive effect on the demand for informal help (Stinner & Byun, 1990). According to Stinner and Byun (1990), the older an elderly person became the greater the likelihood to seek informal care. Likewise, widowed disabled elderly were more likely to seek informal care than a married disabled elderly. A disabled elderly person with children was found to be more likely to require informal care than the one with no children (Stinner & Byun, 1990).

Caregiver Gain and Caregiver Burden

Caregiver gain, a predictor of caregiver well-being was found to be “correlated with motivation, better quality of relationships and satisfaction with social activities” (Kramer, 2001, p. 117). Black caregivers were found to be more likely to express greater satisfaction and caregiving rewards than White caregivers (Mezey, 2001).

An earlier study by Miller and McFall (1991) tested the assumption that caregiver’s burden prompted the solicitation of formal helpers to assist with providing care for frail older persons. Using the 1982 and 1984 National Long Term Care Survey the independent variables examined in this study were: the age of the elderly person, race and gender, caregiver’s educational attainment level and caregiver’s relationship to the elder person, per capital income, number of informal helpers, change in informal helpers, personal burden, and interpersonal burden. Additional independent variables used in the study were ADL limitations in 1982, change in ADL, IADL limitations in 1982, change in IADL, chronic conditions in 1984 and hospitalization in 1984 were also some of the independent variables used in the analysis. The

dependent variables were: use of formal helper in 1982, use of formal helpers in 1984. Personal burden was defined as the caregiver's account of personal limitations and actions from providing care. This was based on six items: "worsening health; the inability to afford the cost of care; the need to provide care when personally not well; emotional strains; limitations in social activities and the constant need of attention by the care recipient" (Miller & McFall, 1991, p. 170).

Interpersonal burden was the caregiver's perception of behaviors of the care recipient that caregiver found as being problematic. The interpersonal burden was based on four factors: forgetfulness; lapsing into senility; yelling and becoming upset (Miller, & McFall, 1991).

Using a logistic regression, Miller and McFall (1991) found that after controlling for older person's needs the effect of personal burden declined by 10%. In situations where there was an increase in the older person's needs in addition to high levels of caregiver personal burden and less informal support by other family members, the likelihood of using formal help was greater (Miller & McFall, 1991). However, interpersonal burden, number of helpers and IADLs were found not to be significant. Variables such as race, gender, caregiver's education and caregiver's relationship with the elderly individual were found not to influence changes in formal service used. Elderly individuals with increased ADL and IADL limitations and with higher incomes, were found to be more likely to solicit the services of formal helpers.

A study by Kasper et al. (1990) examined factors that, previous research had identified as predictors of ending caregiving. The dependent variables used for the analysis were (a) caregivers that have ended caregiving within the short-term (8 months), and (b) caregiver's that have ended caregiving within the long-term (2 years) because care recipient's had been institutionalized. The independent variables used for the analysis were care recipient

characteristics, caregiver's characteristics and the main responsibilities or the role of the caregiver.

Using correlation coefficients, univariate logistic regression and multiple logistic regression, Kasper et al. (1990) found significant likelihood of caregivers relinquishing their role within the short-term. Caregivers were more likely to relinquish the role of giving care when (a) care recipient's cognitive impairment got worse, (b) the number of ADL tasks they had to help with increased, and (c) when they were unable to leave the care recipient alone. On the other hand, caregivers were less likely to stop providing care when the recipient was a spouse and when the expressed satisfaction of caregiving was greater than the stress that came with providing care. In the long-term, the results were the same as short-term care with some few additions. The likelihood that caregivers were to end caregiving when the care recipient was 75 years and older and when the caregiver's appraisal on caregiving was expressed as being emotionally hard were found to be significant.

Decision Making

The decision-making of the elderly in choosing a particular long-term care alternative had often been influenced by family members and their children, in particular those who have been serving as family caregivers (Pratt, Jones-Aust, & Pennington, 1993). According to Ryan and Scullion (2000), the two main factors that influence family caregivers decision to send their elderly relatives to nursing homes were health status of the caregivers and their inability to cope anymore. The inability to cope comes in different dimensions, increased ADL disabilities among the elderly, and family caregivers unsuccessful attempt to solicit help from other family members (Ryan & Scullion, 2000). These family caregivers have, in most cases, been stressed out both physically and psychologically. One of the stresses most often experienced by the family

caregivers, was not having sufficient sleep at night when attending to elderly family (Ryan & Scullion, 2000).

Ryan and Scullion (2000) indicated that decisions that were related to health care were often emotion-based and that in the long run ends up producing negative consequences. The guilt experienced by family members for placing their adult relatives in long-term care facilities, influenced their effort to choose among others, the best choice or in other words the right facility. Family members who ultimately placed their elderly relatives in long-term care facilities due to the factors described above often faced psychological distress such as guilt (Dellasega & Mastrain, 1995). Ryan and Scullion (2000) concluded that decisions in choosing a particular long-term care facility by family members had to be based on reason and not on emotional circumstances.

Substitution of Services

The transfer of the elderly from the community to institutions and vice versa is known as the substitution of services. This is part of the outcome of health behaviors as a result of changes in population characteristics explained by the Andersen model (Figure 1). According to Soldo and Friedman (1994), the substitution of services referred to substitution of care that involved the transfer of money and time between family, market and the state (Soldo & Freedman, 1994). The market as defined by Soldo and Freedman (1994) referred to the provision of formal care by the private sector where price was the determining factor. Table 1 shows (a) substitution across different sectors such as the substitution of formal care for informal care, and (b) substitution within a (family) sector such as the substitution of an adult child's time for direct payment to secure the services of a formal care provider (nursing home). Two types of substitutions were

identified, (1) the substitution of paid providers (formal caregivers) for family care or informal caregivers and (2) the substitution of financial for time transfers (Soldo & Freedman, 1994).

According to Soldo and Freedman (1994), substitution of formal care (paid providers) for informal care (family care) was mainly dependent upon demographic trends and policies by federal, state and local agencies. In the context of demographic trends, the supply of informal caregivers primarily adult female children, had declined over the century due to low fertility rates and increased labor force participation of women (Johnson & Sasso 2000; Soldo & Freedman, 1994; Spillman & Pezzin 2000). According to Soldo & Freedman (1994), policies that subsidized home care programs could reduce the price of formal care and could motivate informal caregivers (family members) to substitute formal care for family care.

Table 1

Long-term Care: Substitution of Time and Finances Within and Across Sectors

Currency of Transfer	Sectors		
	Family	Market	State
Types of long-term care service provided	Informal care (spouse, children and friends)	Formal care (nursing homes, assisted living providers)	Local area programs
Financing of long-term care	Direct payment; formal care providers	Long-term care insurance; home equity conversion	Medicare; Medicaid

Adapted from "Care for the elderly: Division of labor among the family, market, and state" by Soldo, B. J., & Freedman, V. A., 1994. In L.G Martin & S. H. Preston (Eds.), *Demography of Aging* (pp. 195-216). Washington, DC: National Academy Press.

Within the framework where formal care was substituted for informal care, the underlying assumption was that informal care and formal care were two distinct goods (or

services). The demand for these services was measured by the hours of help per day or the number of tasks within which these services were provided (Soldo & Freedman, 1994). Since the price of informal care cannot be directly quantified (Arno et al., 1999; McCall, 2001), it was measured as a proxy by the value of informal caregivers time in the market.

Soldo and Freedman (1994), measured formal care by the value paid out-of-pocket. Given this assumption, they hypothesized that the demand for formal care increased when the price of informal care increased. The price of informal care in this hypothesis was measured in terms of caregiver burden or wages forgone. Soldo and Freedman (1994) tested the model by taking into consideration: (1) the simultaneous roles played by adult children, distant relatives or friends and paid (formal) care providers; and, (2) the needs of the elderly assessed by the number of ADL for which care was needed. The results showed that adult children were likely to reduce their involvement in caring for their disabled parent when, the number of ADL increased from one to two ADLs. However, as the number of ADLs increased from three to four and from five to six, adult children were likely to slightly increase their involvement in caring for their disabled parents. The likelihood of paid providers to be involved in caring for an elderly individual increased as the number of ADLs increased. Distant relatives and friends were also more likely to increase their involvement when the number of ADLs increased. Among all three care providers, adult children were found to be more likely to be involved as ADLs increased, followed by distant relatives and friends and the least likely to be involved were paid providers.

The assumptions used in the substitution of financial for time transfers were based on the altruism model and the exchange model (Soldo & Freedman, 1994). The altruism model within the concept of long-term care is when adult children remit money to their parents mainly because they care about their parent's well-being. The exchange model is mainly due to expectation of

bequest or inheritance, thus any such expectation motivates financial transfer from children to the elderly parent (Soldo & Freedman, 1994). In a case where state subsidized long-term care, Soldo and Freedman (1994) explained that there would be no change in parents' net utility within the altruism model of financial transfer because the out-of-pocket cost of long-term care made by adult children would be replaced by the state subsidies. On the other hand, financial transfers from adult children to their parents would continue within the context of the exchange model and this would enhance the well-being of the elderly parent. Soldo and Freedman (1994) predicted that financial transfer and time transfer are negatively related. Thus, the higher the value of the child's time, the more likely was financial transfer to be made. In conclusion, Soldo and Freedman (1994) found that the transfer of finances made by adult children not only depended on the need and financial resources of the parent, but also on the cost of substitutes in the market, preferences and the child's budget constraint.

Public Policy and Long-term Care

The provision of long-term care over the years have been shaped through public policies from services provided to policies on costs associated with providing those services. In 1976 the federal government initiated and passed the Dependent Care Tax Credit that allowed caregivers to deduct a certain amount used specifically for caring for dependents from previous year's taxes (Varner & Drago, 2000). Then in 1981 another tax credit, The Dependent Care Assistance Plan, was passed. This tax credit was eligible to caregivers that spent at least eight hours per day caring for an elderly person and also spent 51% of their resources on long-term care expenses (Varner & Drago, 2000). Caregivers in this case who qualified for the Dependent Care Assistance Plan were allowed to deduct up to \$5,000 of the long-term care related expenses from their taxes (Varner & Drago, 2000). The Family and Medical Leave Act enacted in 1993 was

applicable to organizations with 50 or more employees (U.S. Department of Labor, 2004). In this policy, employees who have worked for a total of 12 months with at least 1,250 hours are allowed to take 12 weeks of unpaid leave with their guaranteed benefits for family and medical reasons (U.S. Department of Labor, 2004). Though employees are guaranteed their job back upon returning, this policy is underutilized mainly because it is an unpaid leave (Varner & Drago, 2000).

Policies such as the Balanced Budget Act of 1997 were primarily applicable to professional or formal caregiver organizations that provided some form of skilled long-term care. The Balanced Budget Act, when enacted, affected a number of home health care services such as the adult day cares facilities. The Balanced Budget Act reduced the amount reimbursed by the government to care providers such as the home health care, which over the years provided some form of skilled care services. Following this policy change, 3,000 home health care organizations closed down between 1997 and 1999.

Medicare, a social insurance program has gone through some changes since it's enactment by Congress in 1965 (Brown, 2001; Friedland, 2001) and it is still under a critical eye with political parties having their own opinion as to the range of coverage and the overall cost to taxpayers. According to Black and Kominski (2001), aging and increased life expectancy of the U.S. population were the most significant threats of the Medicare program. Low fertility rates in the U.S. have decreased the dependency ratio that is calculated by the number of contributing workers per beneficiary. A decreased dependency ratio according to Black & Kominski (2001) suggested an increased burden on taxpayers that are made to bear the cost of funding the Medicare program. Policy changes in Medicare had resulted in the addition of the Medicare Plus

Choice program which increased the service range covered and at the same time reduced the cost to tax payers by requiring beneficiaries to pay extra premiums.

Medicaid on the other hand is a public assistance program with considerable latitude and flexibility given to the states within which to operate and administer the program (Brown, 2001; Friedland, 2001). According to Wallace et al. (2001), poverty programs such as Medicaid were the most vulnerable when it came to budget cuts. The overall increase or decrease in the services covered by the Medicaid program could be difficult to assess since it is administered by states and each state has its own policies on coverage and calculation of cost (Friedland, 2001). Also, the program is matched by the federal government that made up the difference in cost incurred by the states. Overall, national Medicaid spending increased by 11% between 1991 and 2001 (Kaiser Family Foundation, 2004).

Table 2

Projection of National Long Term Care Expenditures for the elderly in billions of 2000 dollars^a

Payer	2000	2010	(% change)	2020	(% change)
Medicare	29.4	39.8	(+ 35.4%)	50.6	(+ 27.1%)
Medicaid	43.3	66.9	(- 54.5%)	75.4	(+ 12.7%)
Private LTCI ^b	5.0	16.7	(+ 234%)	36.2	(+ 116.8%)
Out of Pocket	42.8	35.5	(- 17.1%)	42.9	(+ 20.8%)
Other Payer	2.6	1.8	(- 30.7%)	2.2	(- 18.2%)
Total	123.1	160.7	(+ 30.5%)	207.3	(+ 29.0%)

Note: Values in parenthesis are percentage change from previous year.

^aAdapted From Projections of expenditures for long-term care services for the elderly (Congressional Budget Office Memorandum, 1999)

^bPrivate Long-term Care Insurance

Table 2 shows the future projections of long-term care expenditure with the out of pocket expenditures projected to drop by \$7.3 billion between 2000 and 2010. However, between 2010 and 2020 the out of pocket cost is projected to increase by \$7.4 billion (that is a percentage increase of 20.8%). The projections in Table 2 imply that public policy will not, in the long-run, alleviate some of the burden borne by individuals in paying for long-term care. At the same time, private long-term care insurance is projected to increase astronomically by 116.8%. Thus increases in out of pocket expenditures and expensive long-term care insurance will be borne by the elderly who are going to require long-term care services in the future.

Summary of Literature Review

Informal support is known to be prevalent among African Americans, Hispanics and other ethnic minorities (Stinner & Bynum, 2001). Some researchers suggested this to be part of the culture of the minority where in most cases the minority elderly see this as the responsibility of their adult children (Dietz, 1997; Harris, 1998; Wong, Kitayama, & Soldo, 1999). This was not to imply that informal support was exclusively for the elderly minority, it was suggested as a common form of caregiving also among Whites. On the other hand, informal caregiving is a predominant form of elderly care among the ethnic minorities. Elderly Whites were more likely to have difficulties in performing ADL's or IADL and as such they solicit assistance to meet their needs which in most cases were in the form of formal care. This was less likely to be the case for elderly of other racial groups (Shadden & Warnick, 1994).

Future changes in demographic and socioeconomic status of minorities will affect their reliance on family members for informal support (Sudha & Mutran, 1999). Despite the increase in institutional long-term care, there has been minimal utilization of its services by elderly African American and Hispanics. Yet these elderly minority groups are more likely to report

functional limitations and poor health status than non-Hispanic Whites (Briggance & Burke, 2002; Dietz, 1997; Tucker et al., 2000; Wallace et al., 1998).

Based on the literature review, all the predisposing, enabling and need factors mentioned above have in one way or the other contributed to the use of informal and formal long-term care. A summary of the major studies are shown in Appendix B. As need variables were the most essential characteristics when it came to the use of long-term care (Andersen et al., 2001), predisposing variables such as education and marital status have contributed to enabling variables such as income, health insurance and living with someone. This in turn translated to using, for example, informal care because of low income or the availability of family and relatives. Elderly minorities relied very much on informal care and also preferred to stay in the community rather than being in an institutional setting (Dietz, 1997; Harris, 1998; Shadden & Warnick, 1994; Stinner & Bynum, 2001; Wong et al., 1999). The question of whether race still remains a factor when all predisposing, enabling and need characteristics are collectively taken into consideration still remains to be answered when determining the use of institutional care or community care. Based on the literature review, the contribution of health insurance (Medicare and Medicaid) and private long-term care insurance to long-term care have been dealt with extensively. However, in determining the use of institutional care, the question of whether health insurance is a factor when predisposing, enabling and need characteristics are collectively taken into consideration also remains to be answered. In the following chapters these questions will be answered through descriptive and statistical analysis using the predisposing, enabling and need variables from the 1999 National Long Term Care Survey (NLTC).

CHAPTER 3

METHODOLOGY

In this chapter, the data set for the analysis, that is the 1999 National Long Term Care Survey (NLTCS) will be reviewed, describing what the dataset entails, the method of data collection and the variables used in the study. The variables were re-coded to fit the logistic regression analysis used for the study. From the literature review it was clear that each variable or characteristic contributed one way or the other to using institutional care or community care and formal or informal care within the community. To explore the relationship between race, ethnicity and the use of a particular long-term care, researchers have used one or two variables in their study (Briggance & Burke, 2002; Dietz, 1997; Tucker et al., 2000; Wallace et al., 1998). The purpose of this study is to add more insight into research about race, ethnicity and long-term care utilization by examining the existence of a relationship between race, ethnicity and the odds of using or not using a particular long-term care when all things are equal. As described later in this chapter, the ethnicity analysis was descriptive in nature and not included in the final model due to missing values. This study is very unique from other studies because in this case, all predisposing, enabling and need variables associated with long-term care were identified and controlled using logistic regression analysis.

Data

The 1999 National Long Term Care Survey (NLTCS), a national representative sample of Medicare enrolled individuals who are 65 years and older, was used for the analyses. The NLTCS, a longitudinal survey, was first conducted in 1982, then in 1984 and there after every

five years. NTLCS is sponsored by the National Institute on Aging and conducted by the U.S. Census Bureau and is administered by the Center for Demographic Studies at Duke University.

The focus of the NLTCS was to collect information on the prevalence of functional disability of 90 days or more (chronic disability), the type and amount of care received, the financial status of impaired individuals and their families, health care costs and the characteristics of impaired individuals not receiving care. Each wave of the survey interviewed individuals who had turned 65 years old within the five years span from the previous wave who had become functionally impaired or were institutionalized. In addition, surviving individuals from the previous waves were interviewed. The purpose of each wave was to record changes in functional disability, physical and mental health, living arrangements, insurance coverage, family support systems (caregivers) and demographic changes.

The 1999 NLTCS had a total of 19,907 observations. Included in the total observations was a supplemental sample which comprised of 600 over-sampled individuals who were 95 years and older. Also included was a sub-sample of 1,545 individuals who were non-institutionalized and unimpaired and otherwise would have been excluded from a detailed interview. These persons were noted as the healthy component.

Of the total 19,907 observations, 11,002 individuals residing in the community but with no ADL or IADL limitation were excluded from the analyses since they did not require any long-term care. Also excluded from the analysis were 2,722 individuals who could not be reached for either a screener or a detailed interview for reasons including deceased, not at home, outside the country, in the Armed Forces, in correctional facilities or refused to be interviewed. This left a total sample size of 6,183 for the analysis (NLTCS User Guide, 1999), 1,036 in institutions and 5,147 in the community. Institutionalized elderly individuals were those in nursing,

convalescent, or rest homes, assisted living facilities with substantial nursing care, or some other institution which had either a health care professional, or a registered nurse, or a licensed practical nurse on duty (NLTCS User Guide, 1999). Individuals who were institutionalized or impaired during the 1994 interview were given a detailed interview.

Data Collection

A face-to face computer assisted personal interview was the mode of data collection used by field staffers from the U.S. Census Bureau for the 1999 NLTCS. To effectively screen out unqualified subjects and capture the focus group for the survey, questionnaires were subdivided into five categories: (1) The Screener Survey; (2) The Control Card Survey; (3) The Institutional Survey; (4) The Community Survey; and (5) The Caregiver Survey.

The Screener questionnaire was used to assess whether an individual was qualified to receive a detailed interview. To receive a detailed interview, an individual must be institutionalized, disabled, or must have participated in a detailed interview during the previous wave(s) of the survey. Individuals who were living in the community with no disability were not scheduled for further interview (NLTCS User Guide, 1999). The Control Card stratified community residents from institutional residents. Apart from obtaining information about the individual's residence, it also obtained information about the individual's family and household (NLTCS User Guide, 1999).

The Institutional survey was a detailed interview that obtained information from individuals who were institutionalized. Some of the information obtained was personal information such as health and cognitive status, activities of daily living, health insurance, income and assets, and other information about the individual's family. Apart from the cognitive part of the questionnaire which was answered only by the elderly individual, the rest of the

personal information was obtained from a proxy which was either a knowledgeable staff or family member. Questions on activities of daily living on the other hand were obtained from either a nursing assistant or from a knowledgeable staff member (NLTCS User Guide, 1999).

The community survey was a detailed interview that asked for information on health and cognitive status, nutrition, activities of daily living, instrumental activities of daily living, helpers, medical providers and health insurance of elderly individuals living in the community. It also obtained information on income and assets, housing and neighborhood and on family members (NLTCS User Guide, 1999).

The caregivers' survey was also a detailed interview obtained from unpaid caregivers of community residents. The survey obtained information on the kind of help given to elderly individuals by caregivers, the amount of help given, the caregiver's experience and living situation, and information on assistance received by the caregiver from others. It also collected information on the caregiver's work situation and general information about the caregiver (NLTCS User Guide, 1999).

Hypotheses and Variables

- 1a. There is a relationship between race, ethnicity and the odds of residing in an institution versus the community.
- 1b. There is no relationship between race, ethnicity and the odds of residing in an institution versus the community after income and functional status are controlled.
- 1c. There is no relationship between health insurance and the odds of residing in an institution versus the community even after all other factors are controlled.

From the sample of 6,183 elderly people, 2,431 (39.3%) did not give any information about their ethnicity (Question 7, Appendix C). To avoid biased conclusions, a separate

descriptive analysis on the 3,752 respondents was conducted. If the response to question 7 (Appendix C) on ethnicity was “Yes”, respondents were noted as being Hispanic of any race (4.8%) and “No” as non-Hispanic. Among the non-Hispanics, those who stated their race in question 8 (Appendix C) as Whites were categorized as non-Hispanic Whites (86.5%), Blacks as non-Hispanic Blacks (7.1%) and, Other as non-Hispanic of Other race (1.6%).

The dependent variables for “1a, 1b, and 1c” were dichotomous: 1=Yes (Institutional Care) and 0=No (Community Care). The independent variable for hypothesis “1a” was race, which was categorized as: White, Black, and Other (such as Asians, Pacific Islanders and American Indians among others). In hypothesis “1b” the independent variables were race, income and functional status (such as ADL disabilities). In hypothesis “1c” the independent variables were health insurance, race, age, gender, marital status, education, income, homeownership, functional status and cognitive status.

The second hypotheses states that:

- 2a. There is a relationship between race, ethnicity and the odds of using some formal care or only informal care within the community
- 2b. There is no relationship between race and the odds of using some formal care or only informal care within the community after controlling for all other factors.

In hypotheses “2a and 2b”, the dependent variables were 1=Some formal care and 2=Informal care only. The independent variable(s) for “2a” was race and for “2b” were race, age, gender, marital status, education, income, homeownership, functional status and cognitive status.

Re-coding of Variables for Statistical Analysis

Out of the 5,147 community residents, only 2,947 received some form of care. The analysis for the baseline model and the full model was based on the 2,947 respondents with a

racial composition of 88.8% White, 9.1% Black and 2.1% of other race. Among residents in the community, 21.3% used only formal care, 72.1% used only informal care and 6.6% used both formal and informal care. Those that used formal care only and both formal care and informal care were categorized as using some formal care=1 and those that used only informal care=0. Formal care only and both formal and informal care were combined into one variable in this analysis because they both involved paid services.

Table 3 provides a list of all variables and their re-coded range of responses. Race on the other hand was recoded into three responses – White, Black and Other. The Other races were a combination of races identified in responses ‘3’, ‘4’ and, ‘5’ in question 6 (Appendix C). The variable race and Hispanic origin were combined to create an ethnicity variable that identified all the Hispanics irrespective of race and the Non-Hispanics by race. Respondents who answered as being of a Spanish or Hispanic origin (Question 7, Appendix C) were coded as zero. Those that were not of a Spanish or Hispanic origin and stated their race as White, Black or Other were coded as Non-Hispanic White=1, Non-Hispanic Black=2, and Non-Hispanic Other=3 (Table 3).

The age of respondents was grouped into three categories: 1=65-74 years, 2=75 to 84 years and 0=85 years and older. In the case of education, some respondents did not know their level of education while some also refused to answer the question 4 (Appendix C). These two responses were categorized under one group together with those who responded to questions 31 through 34 as having ‘less than high school’. Responses 35 through 39 to question 4 were categorized as ‘high school’ and finally answers to any response from 40 through to 47 in question 4 were categorized as ‘some college or higher’ (Table 3). Marital status was recoded into three categories: 0=Divorced, separated and never married, 1=Married and 2=Widowed. Cognitive status was based on studies done by Crum et al., (1993).

Table 3

Variables Measured by Type and Range of Response

Variable	Variable Type	Question Number(s) (Appendix C)	Re-coded Range of Response
Dependent Variables			
Institutional Care	Dichotomous	1-3	0=No; 1=Yes
Community Care with formal or informal care	Dichotomous	16-18	0= Informal Care 1=Formal Care
Independent Variables			
PREDISPOSING			
Race	Categorical	6	0=White (Baseline) 1= Black 2=Other
Race/Ethnicity	Categorical	7	0=Hispanic (any race) (Baseline) 1=Non-Hispanic White 2=Non-Hispanic Black 3=Non-Hispanic Other
Age	Categorical	8	0=85 and older (Baseline) 1=65-74 2=75-84
Gender	Dichotomous		0=Female (Baseline) 1=Male
Marital Status	Categorical	5	0=Divorced, Separated, Never married (Baseline) 1=Married 2=Widowed
Education	Categorical	4	0=<High School (Baseline) 1=High School 2=Some College or higher

Table 3 continued

Variable	Variable Type	Question Number(s) (Appendix C)	Re-coded Range of Response
ENABLING			
Income	Categorical	22-23	0=>\$50,000 (Baseline) 1=<\$10,000 2=\$10,000-\$20,000 3=\$20,000-\$50,000
Health Insurance	Dichotomous	24-30	0=Yes (Baseline) 1=No
Home Ownership	Dichotomous		0=Yes (Baseline) 1=No
Living Arrangements	Dichotomous		0=Live with someone (Baseline) 1=Live alone
Number of children	Continuous		0 - Infinity
NEED			
Functional Status	Categorical	11-15	0=5-6 ADL (Baseline) 1=No Disability 2=1-2 ADL 3=3-4 ADL
Cognitive Status	Categorical	1-11 (Appendix A)	0=Normal (Baseline) 1=Severe impairment 2=Mild to Moderate impairment
Health Status	Categorical	19-21	0=Excellent (Baseline) 1=Good 2=Fair 3=Poor

To determine the baseline for normal mental functioning respondents were assumed to have at least 8th grade level of education. According to Crum et al., (1993), education and age were directly related to the cognitive status of an individual. The average MMSE score for 65 years and older with at least 8th grade level of education, was calculated to be 24.8 out of 30 possible points (Crum, et al., 1993).

Statistical Analysis

First a descriptive analysis was provided on the independent variables showing their sample sizes, means, and standard deviations in relation to the total sample size of 6,183 (Table 4). A second chi-square descriptive analysis was conducted to identify the difference between elderly people who utilized institutional care versus community care (Table 8). Pearson correlation coefficients were calculated to identify the variables that were highly correlated to assess whether they might contribute to a multicollinearity problem. Pearson correlation coefficients ranged from -1 to 1 and highly correlated variables that had 0.7 or higher were not be used in the analysis (Kerlinger & Lee, 2000), In this study race and ethnicity were found to be highly correlated with a correlation coefficient of 0.76. Therefore, ethnicity variable was excluded from the statistical analyses.

In the analysis undertaken in this study the dependent variable was dichotomous (0=No, 1=Yes), predicting the probability of using institutional care versus not using institutional care (that is, in this case, using Community care). Ordinary Least Squares (OLS) becomes problematic in this situation for the following three reasons. First, the error term is heteroskedastic. This is when the variance of the dependent variable is not the same with each independent variable introduced into the analysis. A non-constant error term (ϵ) is therefore a violation of the OLS assumption. Second, since the dependent variable is not continuous but

dichotomous, the OLS assumption is again violated because the error term is not normally distributed. Third, unlike OLS where predicted values could take on values greater than one or less than zero, with a dichotomous dependent variable, predicted values always lie between zero and one (DeMaris, 1995; Menard, 1995). Therefore, logistic regression was used in this study to examine the odds of using institutional care versus community care. The logistic regression was utilized to determine which characteristics were related to an elderly person's likelihood of using a particular long-term care. Hypothesis 2a and 2b also used logistic regression with dichotomous dependent variables and a combination of continuous and categorical independent variables (Table 8).

The model takes the form:

$$\log [p/(1-p)] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots \sum \beta_k X_k$$

Where:

p = the probability of using institutional care,

$1-p$ = the probability of not using institutional care (hypothesis 1a, 1b and 1c) or the probability of not using some formal care (hypothesis 2a, 2b),

α = the intercept (that is the value of $\log [p/(1-p)]$ when the independent variable is zero,

$\beta_1 X_1 + \beta_2 X_2 + \dots \sum \beta_k X_k$ = independent variables introduced in the analysis such as race and other predisposing, enabling and need variables.

Test of hypotheses

With a dichotomous dependent variable and a categorical independent variable, a logistic regression was conducted on hypothesis 1a to determine whether there was an association between institutional care, community care and race. As suggested by previous studies, Blacks were more likely to report functional disabilities (Briggance, and Burke, 2002; Dietz, 1997;

Tucker et al., 2000; Wallace et al., 1998), and were found to have less income than Whites and other racial group (Administration on Aging, 2003b). Thus, in hypothesis 1b, logistic regression was conducted and in this case income and ADL were controlled. This was to verify whether when income and ADL were held constant there was still an association between institutional care, community care and race.

In the study by Meyer (1994), to examine the relationship between gender, race and the use of Medicaid among the elderly after controlling for nursing home use, community residents were less likely than nursing home residents to use Medicaid. Women were found to be more likely than men to use Medicaid. Also, Black and Hispanic elderly were more likely than White elderly to use Medicaid (Meyer, 1994). Therefore, a logistic regression was also conducted on hypothesis 1c, to examine a relationship between community care, institutional care and health insurance after the predisposing, enabling and need characteristics were taken into consideration. The essence of this analysis was to determine whether all things being equal, having health insurance would still be a predictor for determining the odds of being in institutional care versus community care.

Hypotheses 2a and 2b, just like the first set of hypotheses, used logistic regression to find the likelihood of using some formal care or only informal community care by race. The analysis of 2b went on further to establish the relationship between only informal community care, some formal community care and race after predisposing, enabling and need characteristics were taken into consideration. The use of some form of formal care involved resources such as income, and in this analysis the effect of income was controlled among other factors.

CHAPTER 4

RESULTS

This chapter is divided into two parts, (a) descriptive analysis, and (b) logistic regression analyses. The descriptive analyses present analysis first of the entire sample, second of the race and ethnicity by the predisposing, enabling and need factors, and third of the community residents versus residents in institutions also by the predisposing, enabling and need characteristics. The logistic regression presents results of the three hypotheses. The descriptive analyses used the chi-square frequency procedure to estimate the proportion of the elderly that fall under each categorical predisposing, enabling, and need characteristics.

Descriptive Analysis of the Sample

The descriptive analysis involved the sample of 6,183 elderly persons living in the community and institutions. The study used 16 variables that represented the predisposing, enabling and need characteristics that in one way or the other contributed to the likelihood of being in an institution versus the community (Table 4 and 5). The elderly in this sample were primarily White (90%) and a few were Black (8%) and a very small proportion (2%) was of other races such as Asians, Pacific Islanders and American Indians (Table 4). Out of the 3,752 respondents that responded to question 7 (Appendix C) on Spanish/Hispanic origin, 4.8% were Hispanics, 86.5% were non-Hispanic Whites, and 7.1% were non-Hispanic Blacks (Table 4).

The mean age of the total sample of 6,183 elderly persons was 80.13 years (standard deviation of 8.42 years) where a little over a quarter (27.3%) were within the ages of 85 years and older. Twenty five percent were between the ages of 65 and 74 years and just over a quarter (27.3%) were 75 to 84 years old.

Table 4

Descriptive Information of the Sample

Variable	n	%	Mean	Standard Deviation
PREDISPOSING				
Race				
White	5567	90.0		
Black	491	8.0		
Other	125	2.0		
Ethnicity				
Hispanic (any race)	181	4.8		
Non-Hispanic White	3244	86.5		
Non-Hispanic Black/Other	327	8.7		
Age			80.13	(8.42)
65-74	1154	25.1		
75-84	2940	47.6		
85 and older	1690	27.3		
Gender				
Male	2036	39.93		
Female	4147	60.07		
Marital Status				
Married	2364	38.2		
Widowed	3101	50.2		
Others ^a	718	11.6		
Education				
Less than high school	1596	25.9		
High school	2645	42.9		
Some college or higher	1927	31.2		
ENABLING				
Income				
\$10,000 or less	1347	21.79	20,048.16	(24,341.80)
\$10,000 - \$20,000	2155	34.85		
\$20,000 - \$50,000	1681	27.19		
\$50,000 or more	735	11.89		
Don't know/Refused to answer	265	4.29		
Number of children			2.36	(2.05)

Table 4 continued

Variable	n	%	Mean	Standard Deviation
Health Insurance				
Some form of health insurance	5529	89.4		
No health insurance	654	10.6		
Living Arrangements				
Live with someone	1301	25.3		
Live alone	3842	74.7		
Homeownership				
Own a home	3690	60.5		
Does not own a home	2405	39.5		
NEED				
Functional Ability				
No ADL disability	2629	42.5		
1-2 ADL	1267	20.5		
3-4 ADL	951	15.4		
5-6 ADL	1336	21.6		
Cognitive Impairment				
Normal mental functioning	1895	30.7		
Mild to moderate impairment	564	9.1		
Severe cognitive impairment	3724	60.2		
Number of Medical Conditions			2.08	(1.58)
Perceived Health Status				
Excellent	940	18.3		
Good	1997	38.9		
Fair	1411	27.5		
Poor	687	13.4		

Note: ^aDivorced/Separated/Never married

More than half (67.1%) were females and half of them (50.2%) were widowed and slightly over a third (38.2%) were married. Almost three quarters (74.7%) lived alone and only one out of four (25.3%) lived with someone that included spouses, relative and non-relatives. The average number of children per elderly person was 2.4 (standard deviation of 2.1).

Less than half (42.9%) had high school education and about one out of four (25.9%) had less than high school education (Table 4). The average annual income was \$ 20,048.16 (Standard deviation of \$24,341.80) and slightly over half (56%) had an annual income of \$20,000 or less. More than half (60.5%) owned their own home. One out of five (20.5%) had 1-2 ADL disability and about one out of five (21.65%) had 5-6 ADL disabilities, whereas 42.5% had no ADL disability. More than half (60.2) were severely cognitively impaired, while about one out of three (30.7%) had normal mental capability. Each elderly individual had an average of two medical conditions that included diabetes, heart attack, stroke and others in question 19-20 (Appendix C). Though less than half (40.9%) perceived their health to be fair and poor, 37.2% had at least three ADL disabilities. About one out of ten (10.6%) had no health insurance (Table 4).

Race and Ethnicity

From the sample of 6,183 elderly people, 2,431 (39.3%) did not give any information about their ethnicity. A separate descriptive analysis was done on the 3,752 respondents (Table 5) that gave information about their ethnic origin. To avoid biased conclusions, due to extreme differences in sample sizes and the fact that ethnicity and race were highly correlated (0.76), the ethnicity variable was excluded from the logistic regression analysis. If the response to question 7 (Appendix C) was “Yes”, respondents were noted as being Hispanic of any race (4.8%) and “No” as non-Hispanic. Among the non-Hispanics, those who stated their race in question 8 as Whites were categorized under non-Hispanic Whites (86.5%), Blacks as non-Hispanic Blacks

(7.1%) and, Other as non-Hispanic of Other race (1.6%). Due to the large number of missing values, the ethnicity variable was dropped from the logistic regression.

More than three out of every four Hispanic elderly (79.0%) lived in the community compared to non-Hispanic Whites (72.8%) and non-Hispanic Blacks (67.4%). While about half of the non-Hispanics of other races were men (53.3%), the majority of the non-Hispanic Whites (68.3%), non-Hispanic Blacks (68.2%) and Hispanic elderly (64.1%) were females (Table 5). Among the ethnic minorities, more Hispanic elderly (43.6%) were found to be married compared to non-Hispanic Blacks (22.5%). This is consistent to the findings by the American Association of Retired Persons (1995, 1997) and the Administration on Aging (2003b) where non-Hispanic Black elderly were less likely to be married than non-Hispanic Whites.

About one out of four non-Hispanic Whites (24.2%) had less a than high school education compared to slightly more than half of Hispanics and non-Hispanic Blacks. The proportion of non-Hispanic Whites (39.0%) and non-Hispanic Blacks (37.2%) with at least some high school education was similar. However, much disparity was found in the proportion of non-Hispanic Blacks (9.4%) with some college or higher education compared to non-Hispanic Whites (39%). The study found very little racial and ethnic disparity among those with an annual income of \$50,000 or more compared to those who earned \$10,000 or less (Table 5). More than half of the elderly Hispanics (50.8%) and non-Hispanic Blacks (54.7%) were found to have an annual income of \$10,000 or less compared to non-Hispanic Whites (29.2%). More than half of all the elderly had some form of health insurance, however, among those that did not have health insurance, 24% were non-Hispanic Blacks compared to less than 15% of other racial and ethnic groups.

Table 5

Descriptive Statistics by Race and Ethnicity

Variables	Hispanic		Non-Hispanics					
	(any race)		Whites		Blacks	Other		
	n	(%)	n	(%)	n (%)	n (%)		
	181	(4.8)	3244	(86.5)	267	(7.1)	60	(1.6)
Type of Long-term Care*								
Institution	38	(21.0)	884	(27.2)	87	(32.6)	9	(15.0)
Community	143	(79.0)	2360	(72.8)	180	(67.4)	51	(85.0)
Gender*								
Male	65	(31.7)	1029	(31.7)	85	(31.8)	32	(53.3)
Female	116	(64.1)	2215	(68.3)	182	(68.3)	28	(46.7)
Marital Status***								
Married	79	(43.6)	1228	(37.8)	60	(22.5)	32	(53.3)
Widowed	70	(38.7)	1608	(49.6)	162	(60.7)	23	(38.4)
Others ^a	32	(17.7)	408	(12.6)	45	(16.8)	5	(8.3)
Education***								
Less than high school	99	(55.0)	859	(24.5)	142	(53.4)	23	(39.0)
High school	52	(28.9)	1460	(39.0)	99	(37.2)	15	(25.4)
Some college or higher	29	(16.1)	917	(23.0)	25	(9.4)	21	(35.6)
Income***								
\$10,000 or less	92	(50.8)	948	(29.2)	146	(54.7)	28	(46.7)
\$10,000 - \$20,000	37	(20.4)	884	(27.3)	42	(15.7)	14	(23.3)
\$20,000 - \$50,000	18	(9.9)	442	(13.6)	14	(5.3)	7	(11.7)
\$50,000 or more	11	(6.1)	197	(6.1)	15	(5.6)	2	(3.3)
Don't know or refused to answer	23	(12.7)	773	(23.8)	50	(18.7)	9	(15.0)
Health Insurance***								
Some form of insurance	162	(89.5)	2824	(87.1)	203	(76.0)	56	(93.3)
No health insurance	19	(10.5)	420	(12.9)	64	(24.0)	4	(6.7)
Living Arrangement***								
Live with someone	56	(39.2)	555	(23.5)	72	(40.2)	27	(52.9)
Live alone	87	(60.8)	1805	(76.5)	107	(59.8)	24	(47.1)
Homeownership**								
Own a home	96	(53.0)	1768	(54.8)	110	(41.7)	33	(55.0)
Does not own a home	85	(47.0)	1457	(45.2)	154	(58.3)	27	(45.0)

Table 5 continued

Variables	Hispanic (any race) n (%)	Non-Hispanics		
		Whites n (%)	Blacks n (%)	Other n (%)
	181 (4.8)	3244 (86.5)	267 (7.1)	60 (1.6)
Functional Ability*				
No ADL disability	68 (37.6)	1193 (36.8)	80 (30.0)	28 (46.7)
1-2 ADL	33 (18.3)	629 (19.4)	49 (18.4)	13 (21.7)
3-4 ADL	31 (17.1)	529 (16.3)	34 (12.7)	9 (15.0)
5-6 ADL	49 (27.0)	893 (27.3)	104 (39.0)	10 (16.6)
Cognitive Impairment***				
Normal	119 (65.8)	2011 (62.0)	193 (72.3)	36 (60.0)
Mild to moderate	16 (8.8)	274 (8.5)	35 (13.1)	6 (10.0)
Severe	46 (25.4)	959 (29.5)	39 (14.6)	18 (30.0)

Note: ^aDivorced/Separated/Never married.

* Chi-square statistically significant $p < 0.01$

** Chi-square statistically significant $p < 0.001$

*** Chi-square statistically significant $p < 0.0001$

Homeownership among non-Hispanic Whites (54.8%) and non-Hispanic elderly of Other races (55%) were very similar, followed by Hispanic elderly (53.0%). The study found that less than half of non-Hispanic Blacks (41.7%) owned their homes.

More non-Hispanic Blacks (39%) were found to have 5-6 ADL disabilities compared to Hispanics (27%) and non-Hispanic Whites (27.3). The group with the least ADL disabilities was non-Hispanic elderly of Other races, followed by elderly Hispanics. The majority of non-Hispanic Blacks (70.0%) were found to have at least one ADL disability, followed by non-Hispanic Whites (63.2%), and by Hispanics (62.4%). About 72% of non-Hispanic Blacks were found to be of normal cognitive function compared to elderly Hispanics (65.8%), non-Hispanic Whites (62.0%) and non-Hispanic elderly of Other races (60.0%).

Community versus Institutionalized Residents

Among Blacks in the sample of this study, 9.1% were in institutions such as nursing homes and assisted living facilities, while 7.7% lived in the community (Table 6). The majority of institutionalized residents were Whites (89.9%). Among the institutionalized residents, more than half (56%) were the oldest old (85 years and older) whereas half (50%) of the community residents were between the ages of 75 to 84 years (Table 6). The majority of residents in institutions were widowed (70%) and only a few of them were married (12.5%) compared to slightly less than half of the community residents (43.4%), while about half of the community residents were widowed (46.2%). The majority of community residents (44.3%) had a high school education, while the majority of institutionalized residents had less than a high school education (47.3). About one out of five of the elderly in the community (20.3%) and about one of three in institutions (29.1%) either did not know how much income they earned in a year or refused to answer the question on income – question 22 (Appendix C). More than half (66.0%) of the elderly in the community had income of less than \$20,000 compared to 32% of those in institutions. Few community residents (1.6%) compared to residents in institutions (17.9%) were in the higher income bracket (Table 6). Just a few of the elderly in institutions (6.6%) still owned their own home compared to almost three quarters of community residents (73.3%).

As the number of ADL disabilities increased so did the proportion of institutionalized residents with disabilities. However, the opposite occurred among community residents. More than half of elderly in institutions (69.2%) had 5-6 ADL disabilities, the majority of community residents (50.5%) had no functional disability (Table 6). In both residential settings, the majority of institutionalized residents (86.4%) and community residents (54.9%) had severe cognitive impairment.

Table 6

Descriptive Analysis of Institutionalized and Community Residents

Variables	Institutionalized n (%)	Community Residents n (%)
PREDISPOSING		
Race*		
White	932 (89.9)	4635 (90.1)
Black	94 (9.1)	397 (7.7)
Other	10 (1.0)	115 (2.2)
Age**		
65-74	90 (8.7)	1464 (28.4)
75-84	366 (35.3)	2574 (50.0)
85 and older	580 (56.0)	1109 (21.6)
Gender**		
Men	231 (22.3)	1805 (35.1)
Women	805 (77.7)	3342 (64.9)
Marital Status**		
Married	130 (12.5)	2234 (43.4)
Widowed	725 (70.0)	2376 (46.2)
Divorced, separated, never married	181 (17.5)	537 (10.4)
Education**		
Less than high school	485 (47.3)	1442 (28.1)
High school	370 (36.1)	2275 (44.3)
Some college or higher	170 (16.6)	1426 (27.7)
ENABLING		
Income**		
\$10,000 or less	311 (20.0)	1844 (35.8)
\$10,000 - \$20,000	125 (12.1)	1556 (30.2)
\$20,000 - \$50,000	113 (10.9)	622 (12.1)
\$50,000 or more	185 (17.9)	80 (1.6)
Don't know or refused to answer	302 (29.1)	1045 (20.3)
Health Insurance**		
Some form of health insurance	542 (52.3)	4987 (96.9)
No health insurance	494 (46.7)	160 (3.1)

Table 6 continued

Variables	Institutionalized n (%)	Community Residents n (%)
NEED		
Functional Ability**		
No ADL disability	30 (2.9)	2599 (50.5)
1-2 ADL	70 (6.8)	1197 (23.3)
3-4 ADL	219 (21.1)	732 (14.2)
5-6 ADL	717 (69.2)	679 (12.0)
Cognitive Impairment**		
Normal mental functioning	78 (7.5)	1817 (35.3)
Mild to moderate impairment	63 (6.1)	501 (9.7)
Severe cognitive impairment	895 (86.4)	2829 (55.0)
Health Status		
Excellent	--	940 (18.3)
Good	--	1997 (38.9)
Fair	--	1411 (27.5)
Poor	--	687 (13.4)

Note: *Chi-square statistically significant, $p < 0.05$

**Chi-square statistically significant, $p < 0.0001$

Almost all community residents (96.9%) were covered by at least one of the following: Medicaid, CHUMPUS, or some other private health insurance whereas just about half of institutionalized residents (52.3%) had some form of health insurance. Among community residents, though more than half (57.2%) perceived their health as good or excellent, almost all had some form of health insurance (96.9%). There was no information about IADL and perceived health on institutionalized residents.

These chi-square frequencies show not only the proportion of the elderly in institutions versus the community by their various characteristics but also whether each characteristic was significant in predicting the likelihood of being in either an institution or the community. They also suggest that, further multivariate analysis is needed to find how each category relates to the other when comparing institutionalized residents with community residents. The multivariate

analysis described next was to find out whether these characteristics when put together continue to be significant in predicting the likelihood and the odds of being in either an institution or the community.

Test of Hypotheses

In model one (hypothesis 1a), that is the baseline model, the likelihood of being Black was associated with residing in an institution as versus the community. The hypothesis was tested at $p < 0.05$. The overall likelihood chi-square value for the model one was 10.1548 at $p < 0.01$. Therefore, the model was found to be statistically significant and hypothesis 1a was supported. The results of the baseline model (Table 7) implied that the odds of Blacks residing in institutions were 0.43 times that of Whites (at $p < 0.01$). Others races were found to be 1.18 times as likely as Whites to reside in institutions.

Taking functional status and income into consideration, model two controlled for these enabling and need variables (income and functional status) to determine if race was still related to the odds of residing in an institution versus living in the community (Table 7). The effect of being Black became statistically insignificant after controlling for income and functional status. As such, part of the explanation for residing in institutional care was associated with enabling and need characteristics of the elderly such as income and ADL disabilities.

The results in model two indicated that as the number of functional disabilities increased, elderly people became more likely to reside in institutions. Elderly people with no disabilities were 0.01 times as likely to reside in institutions than in the community compared to those with 5-6 ADL disabilities. All else held constant persons with 1-2 ADL disabilities had a likelihood of residing in institutions that was only 0.05 of persons with 5-6 ADL disabilities. Those who had 3-4 disabilities were 0.26 times as likely to reside in institutions than in the community compared

to persons with 5-6 ADL disabilities. Persons with annual incomes of \$10,000 or less were 0.05 times as likely to reside in institutions than in the community compared to persons with annual income of \$50,000 or more. Those with incomes between \$10,000 and \$20,000 were 0.035 times as likely to reside in institutions than in the community compared with persons with annual income of \$50,000. All else held constant, persons with income between \$20,000 and \$50,000 had a likelihood of residing in institutional care that was only 0.08 that of persons with annual income of \$50,000 or more. Therefore when factors prevalent among elderly Blacks such as low-income and high numbers of ADL disabilities were taken into consideration, the effect of race on residing in an institution as compared to the community became insignificant.

In model three (hypothesis 1c), the assumption was that health insurance was not related to the type of long-term care used even after controlling for the predisposing, enabling and need characteristics of the elderly. The independent variable was dichotomized as 0=no health insurance and 1=some health insurance. Using logistic regression analysis with a significance at $p=0.05$, the overall likelihood chi-square value of the model was 3558.64 at $p<0.0001$. This implied that the model was significant and the null hypothesis was rejected.

The results of model three presented in Table 7 showed that health insurance was significant in determining the likelihood of residing in an institution versus the community even after controlling for other factors. The health insurance as explained in Chapter 3 was either one or a combination of Medicaid, CHAMPUS or CHAMPVA (military health insurance), and private health insurance. The results indicated that elderly with none of the forms of health insurance were more likely to be receiving care in institutions as compared to those with some form of this health insurance. The odds of elderly people with no health insurance to reside in institutions were 22.4 (significant at $p<0.0001$)

Table 7

Logistic Regression Analysis of Residing in Institutions versus Living in the Community

Variables	Model One		Model Two		Model Three	
	Standard Coefficients	Odd Ratio Estimates	Standard Coefficients	Odd Ratio Estimates	Standard Coefficients	Odd Ratio Estimates
Race (Baseline = White)						
Black	0.3883*	0.433	0.1447	0.944	-0.3431	0.485
Other	-0.6132*	1.178	-0.3469	0.577	-0.0381	0.658
Income (Baseline = \$50,000 or more)						
\$10,000 or less			-0.7415****	0.051	-0.9706****	0.036
\$10,000 - \$20,000			-1.1147****	0.035	-0.9258****	0.037
\$20,000 - \$50,000			-0.2918*	0.080	0.1511	0.109
Functional Status (Baseline = 5-6 ADL)						
No ADL disability			-2.4429****	0.009	-2.3851****	0.012
1-2 ADL disabilities			-0.6705****	0.054	-0.4661***	0.080
3-4 ADL disabilities			-0.8741****	0.255	0.7873****	0.279
Health Insurance (Baseline = Some health insurance)						
No health insurance					1.5541****	22.379
Home Ownership (Baseline=Own a home)						
Does not own a home					1.4521****	18.251
Age (Baseline = 85 years and older)						
65-74 years					-0.4475***	0.423
75-84 years					0.0355	0.686

Table 7 continued

Variables	Model One		Model Two		Model Three	
	Standard Coefficients	Odd Ratio Estimates	Standard Coefficients	Odd Ratio Estimates	Standard Coefficients	Odd Ratio Estimates
Gender (Baseline = Female)						
Male					0.0398	1.083
Education (Baseline = Less than H.S. ^a)						
High School					0.0563	0.818
Some College or higher					-0.2117**	0.659
Marital Status (Baseline = Divorced, Separated, Never Married)						
Married					-0.4131***	0.513
Widowed					0.1593	0.910
Cognitive Status (Baseline = Normal)						
Severe cognitive impairment					0.3237**	1.993
Mild and Moderate impairment					0.0425	1.505

Note: ^aLess than High School

*Chi-square statistically significant, $p < 0.01$

**Chi-square statistically significant, $p < 0.05$

***Chi-square statistically significant, $p < 0.001$

****Chi-square statistically significant, $p < 0.0001$

Among the predisposing variables persons whose age was 65-74 years of age were 0.42 times as likely to reside in institutional care than receive care in the community compared to elderly aged 85 years and older (Table 7). Married elderly people were found to be 0.51 as likely as the divorced, separated or never married people to be in institutional care than in the community. Those with some college or higher were found to be 0.66 as likely to be receiving care in institutions than in the community compared to those with less than high school education (Table 7).

In the case of the enabling variables, all else held constant elderly people with annual incomes of less than \$20,000 had a likelihood of residing in institutional care was only 0.04 of persons with annual income of \$50,000 or more. Those who did not own their own home were found to be 18.25 times as likely to be institutionalized than live in the community compared to those who owned their own home. Those with no ADL disabilities were 0.01 times as likely to reside in an institution than in the community compared to those with 5-6 ADL disabilities. Persons with 1-2 ADL disabilities were found to be 0.08 times as likely to be in institutional care than in community care compared to those with 5-6 ADL disabilities. All else held constant, persons with 3-4 ADL disabilities had a likelihood of being in institutional care that was only 0.28 of persons with 5-6 ADL disabilities.

Elderly people with severe cognitive impairment were found to be 1.99 times as likely to reside in institutional care than in community care compared to people with normal mental functioning. Race and gender were found not to be significant predictors in determining the likelihood of residing in an institution versus the community when other factors were controlled.

In the baseline model (that is model four in Table 8) of the second hypothesis the assumption was that race was a predictor of determining the use of either some form of formal

care within the community or only informal care within the community. In the full model the predisposing, enabling and need factors were controlled to determine whether there was still a difference between race and the use of formal or informal care within the community. As explained in Chapter 3, the dependent variable for this hypothesis was dichotomous where only informal community care=0 and some formal community care=1. Informal community care was basically care received from a spouse, adult children, relatives and friends, and formal community care was care received from home health care and other helping organizations – (Appendix C, question 17). The independent variable was race categorized as White, Black, and Other with the Whites as the baseline for the analysis.

Out of the 5,147 community residents, only 2,947 were receiving some form of care. The analysis for the baseline model and the full model was based on the 2,947 respondents with a racial composition of 88.8% White, 9.1% Black and 2.1% of other race. Among residents in the community, 21.3% used only formal care, 72.1% used only informal care and 6.6% used both formal and informal care. Those that used formal care only and both formal care and informal care were categorized as using some formal care=1 and those that used only informal care=0. Formal care only and both formal and informal care were combined into one variable in this analysis because, using some form of formal care involved resources such as income, and in this analysis the effect of income was controlled among other factors.

Table 8 included results of the models four and five. Model four, tested race only and the model five tested race, controlling for the predisposing, enabling and need variables. Model four had a likelihood chi-square of 7.5911 at $p < 0.1$ and model five had a likelihood chi-square of 518.8238 at $p < 0.0001$. Though both models were significant the full model was a better fit making the likelihood of characteristics other than race alone more appropriate.

Table 8

Logistic Regression Analysis on only Informal Care Use within the Community by Race,
Controlling for Predisposing, Enabling and Need Variables.

Variable	Model	Four	Model	Five
	Standard Coefficients	Odd Ratio Estimates	Standard Coefficients	Odd Ratio Estimates
PREDISPOSING				
Race (Baseline = White)				
Black	-0.1882*	0.718	-0.0569	0.863
Other	0.0450	0.906	0.0329	0.884
Age (Baseline = 85 years and older)				
65 - 74 years			0.2194**	1.473
75 - 84 years			-0.0516	1.123
Gender (Baseline = Female)				
Male			0.0730	1.517
Marital Status (Baseline = Divorced, Separated, Never Married)				
Married			0.8576***	4.331
Widowed			-0.2494***	1.432
Education (Baseline = Less than High School)				
High School			-0.0919	0.866
Some College or higher			0.0400	0.988
ENABLING				
Income (Baseline = \$50,000 or more)				
\$10,000 or less			0.1601*	2.119
\$10,000 - 20,000			0.0569	1.911
\$20,000 - 50,000			0.0460	1.892
Health Insurance (Baseline = Some Health Insurance)				
No Health Insurance			0.1655	1.392
Home Ownership (Baseline = Own a home)				
Does not own a home			0.3202***	0.527

Table 8 continued

Variable	Model	Four	Model	Five
	Standard Coefficients	Odd Ratio Estimates	Standard Coefficients	Odd Ratio Estimates
Living Arrangement (Baseline = Live with someone) Live Alone			0.8965***	0.408
NEED Functional Status (Baseline = 5-6 ADL Disabilities) No ADL Disability			0.3529***	2.173
1-2 ADL Disability			0.3529*	1.760
3-4 ADL Disability			-0.0695	1.426
Cognitive Status (Baseline = Normal Mental Functioning) Severe Cognitive Impairment			0.0284	1.072
Mild to Moderate Impairment			0.0125	1.055

Note: *Statistically Significant, $p < 0.1$

**Statistically Significant, $p < 0.01$

***Statistically Significant, $p < 0.0001$

In the baseline model, the odds of Blacks using only informal care versus formal care within the community was 0.72 times as likely as Whites. In this model, being Black was significant while Other races were not in determining the likelihood of using only informal care versus some form of formal care. In the full model, race was no longer significant after controlling for the predisposing, enabling and need variables. Among the predisposing variables those, whose age was 65-74 years of age were 1.47 times as likely as 85 years and older to use only informal community care. The odds of using only informal community care among married persons were 4.33 times as likely as the divorced, the separated or the never married. Persons who were widowed were 1.43 times as likely to be using only informal community care than formal community care compared to persons who were divorced, separated or never married (Table 8).

Among the enabling variables, those with annual incomes of \$10,000 or less were 2.12 times as likely to use only informal community care than formal community care compared to those with annual incomes of \$50,000 or more. Those who were not homeowners were 0.53 times as likely as homeowners to use only informal care. Those that lived alone were 0.41 times as likely as those that lived with someone to use informal care. Among the need variables, persons with no ADL disabilities were 2.17 times as likely to use only informal community care than formal community care compared to persons with 5-6 ADL disabilities. All else held constant, persons with 1-2 ADL disabilities had a likelihood of using only informal community care that was 1.76 of persons with 5-6 ADL disabilities. Factors such as race, gender, education, health insurance and cognitive status were not significant in estimating the odds of using informal care versus formal care within the community.

CHAPTER 5

SUMMARY AND IMPLICATIONS

This study investigated (a) the relationship of race, ethnicity, health insurance and the likelihood of residing in an institution versus living in the community, and (b) the relationship of race, ethnicity and the use of some formal care versus only informal care within the community. In the first set of analyses, three models were developed (Table 7). In model one, race was found to be related to the odds of residing in an institution versus living in the community. When income and functional status were controlled the relationship of race and the odds of being in an institution versus the community became insignificant. In the third model the relationship of having some form of health insurance and the odds of being in an institution versus the community was found to be highly significant.

As mentioned in earlier chapters, about 40% of respondents did not respond to questions relating to their ethnic status. Also, results from the Pearson's correlation coefficient found race and ethnicity were found to be highly correlated (0.76). Therefore to avoid biased conclusions, the ethnicity variable was excluded from the logistic regression analyses and included only in the descriptive analysis.

From the descriptive analysis of Hispanics versus non-Hispanics and institutionalized residents versus community residents, it can be suggested that each predisposing, enabling and need characteristic is a significant factor associated with long-term care (at $p < 0.05$). Unlike residents in institutions the majority of community residents were found to be married, have at least a high school education, to own their own home, to be more functionally capable, and to be of normal cognitive functioning.

There were ethnic differences in the individual factors related to long-term care. Just like non-Hispanic Blacks, more than half of elderly Hispanics were found to have less than high school education, with an annual income of less than \$10,000, and be less likely to own their own home than non-Hispanic Whites. On the other hand, the majority of elderly Hispanics similar to non-Hispanic elderly of Other races, were found to be married, and living in the community more than in institutions but different from the majority of non-Hispanic Whites and Blacks who were found to be non-married and living in the communities.

In the logistic regression analysis, Hypothesis 1a (Model One) was supported in that race, when considered alone was related to the odds of residing in an institution rather than the community. However when other factors such as income and ADL disabilities were considered in Hypothesis 1b (Model Two), race was no longer related to the likelihood of residing in an institution rather than the community. Thus, it would not be accurate to state that an elderly person is in the community because that person is Black. Rather it would be accurate to state that an elderly person may be in a nursing home for instance because that person is very disabled with severe cognitive impairment.

Using the Andersen model on health service utilization and a different dataset (1987 National Medical Care Expenditure Survey), Wallace et al. (2001) found race to be associated with nursing home use as well as income and ADL disabilities. Though the relationship of race was not consistent between these two studies, it can be suggested that income and ADL disabilities have consistent and significant relationships with long-term care.

Hypothesis 1c (Model Three) was supported, health insurance was associated with the likelihood of residing in an institution rather than the community even after taking all other factors into consideration. Likewise, elderly people between 65 and 74 years, who were married,

had some college or higher education, were not homeowners, had severe cognitive impairment irrespective of their functional status, were found to be associated with the likelihood of residing in an institution rather than the community. When Medicaid use was used in this case as the dependent variable, Meyer (1994) found that, education, marital status, gender and race were significant factors of Medicaid use. Meyer (1994) also found that nursing home residents were more likely to rely on Medicaid which also depends on the length of stay. From the findings in both studies, the importance of health insurance and its relationship to long-term care cannot be overemphasized.

In this study, race was found to be associated with the likelihood of using some formal care versus only informal care in the community (Baseline Model). Miller and McFall (1991), using a previous data set (1982 and 1998 NLTC community surveys), the Andersen model, a logistic regression and the use of formal helpers as the dependent variable, had similar findings to this study. Miller and McFall (1991), found that age, lower incomes and ADL disabilities were associated with the use of formal helpers within the community after predisposing, enabling, and need variables were controlled. However, in this study, age, marital status, lower income, homeownership, living with someone and ADL disabilities were found to be associated with the use of only informal care within the community after controlling predisposing enabling and need characteristics of the elderly. Thus it would be appropriate to state that elderly people who are receiving only informal care in the community are more likely to be married, have less income, and have less than three ADL disabilities.

Limitations of Research Design

The NLTC, a national representative survey, is a very comprehensive dataset with detailed information on disability, health, health providers, caregivers and income among elderly

of 65 years and older who were disabled or live in institutions. However, the NTLCS has some limitations. Maturation of survey instrument is a threat to internal validity. The first NLTCS conducted in 1982 was followed by a second wave of survey in 1984 and later waves were done five years apart. Tracking changes and functional developments of the elderly may not be accurate or conclusive over the five-year gap between surveys because elderly people may have been in and out of institutions several times and may not recount the number of times due to their inability to remember. Another maturation threat is the high mortality rate among the elderly that creates gaps when tracking changes in enabling and need characteristics. Thus tracking changes in ADLs for instance, between two survey periods, may result in a smaller sample size because some of the elderly especially those who are 85 years and older (27.3%) may have died and therefore may not be available to be surveyed during the later survey period.

Instrumentation was also another threat to the design. Institutional residents were in some cases not asked the same questions as community residents making the comparison among residents theoretically impossible. Questions such on perceived health and IADL were given to only the community residents and not to institutional residents. These two variables, among others are very important factors associated with long-term care (Bogardus, Towel, Williams, Desai, & Inouye, 2001; Schafer, 1999a, 1999b) however, due to instrumentation threats, as described above, could not be used in the multivariate analysis.

From the NLTCS, about 40% of the total sample did not respond to the question on Hispanic origin. Therefore, a complete multivariate analysis that represented the total sample size could not be performed. According to the Resource Center on Aging, University of California, Berkeley (2004), though Hispanics speak a common language of Spanish they are different by nationalities, in behavior and in culture. Apart from the question that asked

respondents whether they were Hispanic or not, there were no follow up questions. The survey instrument had no information about the nationalities of those that responded as Hispanic, as well as no information on whether the Hispanics were U.S-born or foreign-born. There was also no information to measure culture therefore, cultural differences could not be analyzed.

As far as external validity was concerned, this study is a national representative of all Medicare eligible elderly and represented all elderly that were 65 years and older. The only elderly group excluded was those that were not eligible for Medicaid and eligible persons that were not available to be surveyed (NTLCS User Guide, 1999).

The length of the Mini-Mental State Examination that was used to measure cognitive functioning in the 1999 survey was a complex and lengthy instrument. Though related to age and education, the instrument might lead to fatigue and in the end produce results that may not reflect an accurate cognitive functioning. The Short Portable Mental Status Questionnaire that was used in the 1982, 1984-1995 surveys was much shorter and simpler. The overall survey instrument is very long and might lead to fatigue just like the Mini-Mental State Examination.

The NLTCS did not provide more information on geographical factors therefore; this study was unable to ascertain how far away family caregivers such as children live from their older relatives. Such information may be useful in analyzing the likelihood of an elderly person to live in the community rather than in an institution or to receive some formal care rather than informal care in the community.

Implications for Policy Makers and other Interest Groups

The results of this study could be beneficial to policy makers, insurance organizations, other special interest groups and for the elderly population as well. The federal government has in recent time redesigned the policy of Medicare by expanding the Medicare Prescription

Program attempting to make it affordable for the elderly. One of the factors that federal, state and local governments pay an increasing amount of attention to, is the financing of long-term care. Policies such as the Balanced Budget Act of 1997, curtailed payments to home health care providers limiting the number of professional home health providers and also reduced choice plans available to beneficiaries who constitute about 68% of all home health care clientele (Andersen & Davidson, 2001; Martin, 2001). Though one of the main purposes of the Balanced Budget Act of 1997 was to expand Medicare beneficiaries options of private sector health plan through the Medicare Plus Choice program. This program reduced public subsidies that provide health care for the very poor. (Black & Kominski, 2001; Gelberg & Arangua, 2001). The program reduced reimbursement to long-term care providers by one percent in 2000 and by two percent in 2001 (Gelberg & Arangua, 2001). The Medicare Plus Choice program gave elderly beneficiaries the opportunity to choose between managed healthcare plans (such as HMOs and PPOs) offered by employers in the private sector and traditional Medicare (Black and Kominski, 2001).

As described in earlier chapters, Medicare, Medicaid and health insurance do not cover the majority of the long-term care expenditures. About 58% of nursing home costs and 63% of home health care were paid out of pocket in 2000 (The Federal Long Term Care Insurance Program, 2002). It was not surprising that 46.7% of residents receiving long-term care in institutions in this study had no health insurance that paid for their formal care expenditures. This is partly because people just do not plan that far ahead.

New medical technologies and high quality services provided by formal long-term care providers and home health care providers are unlikely to reduce increasing long-term care costs (Rice & Kominski, 2001). The most important issue is ways to make long-term care affordable

to the elderly and at the same time less of a burden to taxpayers. One way to reduce the long-term cost burden on the elderly and also on taxpayers will be to expand the private long-term care insurance system. Long-term insurance premiums are currently expensive and one way to reduce the cost for future generations will be earlier enrollment by making it available to the younger generation. The majority of young people will be seen as lower risk beneficiaries. With maturation time at 65 years, premiums will be affordable and benefits could cover a wide range of services.

Another way will be to create a long-term care trust fund, where younger people will be encouraged to contribute to this trust fund which could only be used to pay for long-term care expenses when they reach the age of 65 years. In this case, just like the 401K-plan which is optional, the long-term care insurance contribution should be optional and made available to all working persons. Though one of the problems with insurance policies is the forfeiture of all rights to benefits anytime a contribution is stopped, such contributions should be exponential and contributors should not face the risk of forfeiting their benefits should they stop contributing at any time. Some of the questions that could arise from instituting such a trust fund are (a) who should be responsible for managing the trust fund? Should it be the state, federal government or a public trust? (b) should it be linked to the stock market as in the case of the 401K, where contributions increase over time but have to succumb to the volatility of the market? In any case, such questions should be addressed by the local, state and federal policy makers.

Directions for Future Research

This study did not use the caregiver survey from the 1999 NLTCs because the focus was on community residents versus institutionalized residents. Though extensive research has been conducted on caregiver networks and caregiver burden, future research could be conducted to

examine the relationship of caregiver's predisposing, enabling and need characteristics and the likelihood of elderly recipient's use of long-term care. The purpose will be to examine how changes in caregiver's predisposing, enabling and need characteristics affect that of the elderly recipient use of long-term care services, as this was not addressed in this study.

Future NLTCS instruments could include more information on race and ethnicity by providing other follow-up questions that could make analyses on race and especially ethnicity easier and more conclusive. It may be necessary to include information about culture as well, which adds to ethnicity and goes a long way to add to making meaningful conclusions about racial and ethnic differences. The NLTCS could in the future include information about decision-making and preferences. As suggested from previous studies (Pratt, Jones-Aust, & Pennington, 1993; Ryan & Scullion, 2000) decisions to either live in the community or in institutions are usually influenced by adult children. Since these suggestions were not based on statistical evidence but from observations, the NLTCS did not provide any information that would make it possible to statistically test these observations and make conclusive associations with long-term care.

Future research on long-term care will continue long into the future providing changes and additions to factors associated with long-term care for the elderly. The importance of private long-term care insurance cannot be overemphasized. The descriptive analysis (Table 6) revealed that 46.7% of institutionalized residents did not have health insurance. This goes to show that health insurance does not take care of long-term needs but having long-term care insurance does. Results of the multivariate analysis suggests that even after controlling for related factors, the relationship of health insurance and long-term care was still significant (Table 7). Therefore, it is necessary for working families to plan earlier in life by researching and buying the best private

long-term care insurance. Long-term care insurance with comprehensive plans could help alleviate the most of the cost burden on care recipients.

Conclusion

At the descriptive level, race, ethnicity, age, gender, marital status, education, income, health insurance, functional ability and cognitive status were all factors that were independently associated with long-term care. When all factors were controlled, the logistic regression analysis showed different results from the descriptive analysis. As explained in earlier chapters, the logistic regression analyses excluded the ethnicity variable due to missing values. In Model Three (Table 7), elderly people between 65 and 74 years, who were married, had some college or higher education, had annual incomes of less than \$20,000, and had zero or at least 1-2 ADL disabilities, were found to be less likely to reside in an institution rather than the community. Whereas, those with 3-4 ADL disabilities, had no health insurance, did not own a home and were severely cognitively impaired were more likely to reside in an institution rather than the community.

In Model Five (Table 8), where all factors were controlled in determining the use of informal care within the community, elderly people between 65 and 74 years, who were married, had an annual income of \$10,000 or less, and had zero or 1-2 ADL disabilities, were found to be more likely to use informal care. Whereas, those who were widowed, and were not homeowners were found to be less likely to use informal care.

In conclusion, though race was independently associated with the use of long-term care (Model One and Model Four), after all other factors were controlled (Model Three and Model Five), race was no longer associated with the use of long-term care. Changes in the significance of these factors depended on the type of long-term care analyzed. However, the factors that were

significant in Model Three and Model Five were, being less than 75 years old, married, having an annual income of \$10,000 or less, not a homeowner and having zero or 1-2 ADL disabilities. It can be concluded that race is not a significant factor irrespective of the type of long-term care used, but rather younger aged elderly people who are married, have less income, with limited or no ADL disability who are not homeowners are associated with the use of long-term care.

In determining factors associated with the use of long-term care, preference is a significant factor to be analyzed (Wallace et al., 1998). Sudha & Mutran (1999), found elderly minorities dislike of institutionalized care increased their preference of informal care. In this study however, as important as variables such as attitudes towards and preferences for a particular long-term care use were, they could not be analyzed because they were not available from the NLTCs. Therefore, the Andersen Model that looks more into characteristics rather than attitudes and preferences, makes the results and conclusions of this study an important addition to the extensive research on long-term care. The Andersen Model provided the blueprint by which all the factors associated with community and institutional long-term care were discussed and analyzed. Results from the analysis thus show how a change in a one or a combination of predisposing, enabling and need characteristics (Figure 1) affects the likelihood of using a particular long-term care service.

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APPENDICES

APPENDIX A

The Mini-Mental Status Examination Questionnaire

	Score Points
<i>Orientation</i>	
1. What is the correct	
Date?	_____ 1
Month?	_____ 1
Year?	_____ 1
Day of the week?	_____ 1
Season?	_____ 1
2. Where are we	
State?	_____ 1
County?	_____ 1
City?	_____ 1
Name of building?	_____ 1
Floor?	_____ 1
<i>Registration</i>	
3. Ask subject to repeat three words - objects	
conceptually unrelated. Repeat answers until	
patient registers all three	_____ 3
<i>Attention and Calculation</i>	

4. Start with 100 and ask subject to count backwards
by subtracting 7 from each answer. Alternatively
patient is asked to spell “world” backwards _____ 5

Short-term recall

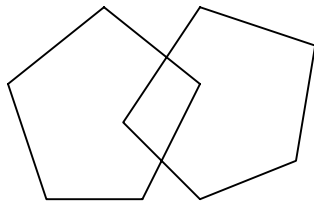
5. Ask subject to repeat the 3 words from
question 3. One point for each correct answer _____ 3

Language

6. Point to a pencil and a wristwatch.
Ask subject to name them as you point _____ 2
7. Ask subject to repeat “no ifs ands or ifs buts” _____ 1
8. Ask subject to follow a 3-step command:
“ Take this paper in your right hand. Fold paper
in half. Put paper on the floor” This is to test
patient’s comprehension of spoken language,
so do not repeat. _____ 3
9. Have subject to read and obey the following:
“Close your eyes” _____ 1
10. Have subject to write a complete sentence of
his or her own choice. (Sentence should contain
a subject and an object. Ignore spelling, punctuation
and other errors) _____ 1

Construction

11. Give the subject of copy of the diagram and
direct subject to draw it. (Each pentagon must
have 5 sides and the intersecting side must form
a quadrangle) _____ 1



Total _____ 30

Questionnaire adapted from: Crum, R. M., Anthony, J. C., Bassett, S. S., Folstein, M. F. (1993).

Population-based norms for the mini-mental state examination by age and educational level.

JAMA: The Journal of the American Medical Association, 269 (18), 2386-2391.

APPENDIX B

Summary of Major Studies from Literature Review

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Arno, Levine, & Memmott		<p>Datasets:</p> <p>1. Survey on Income and Program Participation (SIPP) N=19100</p> <p>2. The National Survey of Families and Households (NSFH). N=13017</p> <p>Method of Analysis: Mathematical Estimation.</p>	Cost (or Economic value) of informal caregiving	Number of caregivers, number of caregiving hours per week, market wage rate of caregiving	<p>The economic value of caregiving in 1997 was estimated to be \$196 billion</p> <p>The estimated economic value was equivalent to approximately 18% of total national health care spending.</p>
Bogardus, Towle, Williams, Desai, & Inouye		<p>Hospitalized medical patients aged 70 and older. N=525</p> <p>Data sources:</p> <p>1. Patient interview</p> <p>2. Medical record</p> <p>Method of Analysis: Univariate Descriptive statistics</p>	Lack of functional status documentation	Functional Status (ADL & IADL), cognitive status, (MMSE), depression, age, gender, race, education and length of hospital admission.	<p>With the exception of walking, medical records contain little or no documentation of functional status.</p> <p>Shorter lengths of stay was found to be associated with non-documentation.</p> <p>Lack of documentation does not suggest lack of functional disabilities.</p>

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Bradley, McGraw, Curry, Buckser, King, Kasl & Andersen	Andersen Model on Health service utilization	12 focus groups with mean (n=8). Total sample size, n=96. Ages range from 50-85. Groups were stratified by race with 5 groups of African Americans and 7 groups of Whites elders from Connecticut. Methodology: Qualitative Analysis	Use of long-term care	Psychological factors - Attitudes, Knowledge, Social Norms, Perceived Control Enabling factors - Availability of Support, Financial Resources, Need Factors - Degree of disability, duration of disability	Provide more insight to the predisposing factors. Psychological factors may in part mediate the effect of race/ethnicity on the use of long-term care services.
Burton, Kasper, Shore, Cagney, Kathleen, LaVeist, Cubbin, & German	Caregiving networks	1989 NLTCs A sample of community based residents. N=3793 Methods of analysis: 1. OLS 2. Logistic regression	Size of total caregiving network Number of unpaid caregivers Any unpaid caregiver other than immediate family	Race, age, gender, education, Medicaid coverage & Poverty level. Marital status, living alone, & whether children lived nearby. ADL, IADL, cognitive status.	No racial differences in the size of caregiving network Functional disability, impaired cognitive status, greater age, and greater poverty were predictors of the size of caregiving network. Older disabled blacks were more likely than whites to have at least one caregiver who was not an immediate family.

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Cress	Integration of physiological capacity, physical performance, and psychological factors.	148 older adults from 3 different living status situations: 1. Community dwellers (n=78) 2. LTC residents who were independent (n=31) 3. LTC residents with mild physical limitations (n=39)	Physical Functional Performance (PFP)	1. Five physical domains: (a) Upper body strength, (b) Upper body flexibility, (c) Lower body strength, (d) Balance and coordination, (e) Endurance 2. Strength training, endurance training, combined strength and endurance training.	Significant differences between the five domains for community residents and institutional residents Higher PFP scores for community residents than institutional residents who were independent Institutional residents who were independent also scored higher on the PFP than those with mild limitations
Crum, Anthony, Bassett, & Folstein	Mini-Mental State Examination (MMSE)	Data from the National Institute of Mental Health ECA Program. n=18056 adults from five communities in the U.S. Method: Bivariate correlations and weighted univariate percentiles	MMSE scores	Age and education	MMSE scores were found to decline with increasing age, and increase with increasing levels of education.

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Meyer	Class-based and feminist theories	1982 and 1984 NLTCS. n=4512 Methods of analysis 1. Chi-square 2. Logistic regression analysis	Medicaid Use	Nursing home use, age, education, income, marital status, gender and race	Nursing home residents are more likely than community residents to rely on Medicaid. Education Income, marital status, gender and race are also significant predictors of Medicaid use. Therefore, women, Blacks, and Hispanics have greater propensity to rely on Medicaid
Miller and McFall	Andersen's model on health service utilization	1982-1984 NLTCS and Informal Care Survey (ICS). 1982 NLTCS (N=940 community dwellers) 1984 NLTCS (N=644 community dwellers) ICS sample N=1617 Method of Analysis: 1. Descriptive: Means and Standard Deviation. 2. Logistic Regression.	Use of formal helpers (1=yes)	Race, elder's age, elder's sex, relationship to care recipient, caregiver's educational level. Per capita income, number of informal helpers, change in informal helpers, ADL limitations, change in ADL, IADL limitations, change in IADL, chronic conditions, hospitalization.	Most frail elderly persons did not use formal services in either 1982 or 1984. Two thirds of the elderly in 1982 were more likely to use formal services in 1984. Age was associated with the use of formal helpers. As need variables were controlled, elderly persons with higher incomes were more likely to add informal helpers. An increase in ADL increased the odds of using formal help by 1.1 times. The odds of using formal help with an increase in IADL was 1.36. Hospitalized persons were 2.3 times more likely to use formal helpers.

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Mutran, Sudha, Desai, & Long	Consumer Satisfaction	<p>357 seniors (143 African Americans and 214 Whites) sampled from the 1994 Domiciliary Care Project of North Carolina. Respondents were all residents of adult care homes from rural and urban areas.</p> <p>Method of analysis: 1. Descriptive (Mean & SE) 2. Multiple regression</p>	<p>Feeling of being at home in the Adult care home.</p> <p>Satisfaction with staff.</p> <p>General satisfaction with home.</p>	<p>Intrapersonal: Gender, age, education, level of dependency, satisfaction with health, feels “at home”, satisfaction with staff.</p> <p>Interpersonal: residents was part of decision making, frequent family contact</p> <p>Organizational: Type of home, rate of payment, % of private rooms, % of staff employed within 6 months, % of African American residents</p>	<p>Ethnicity and dependency related to satisfaction with care.</p> <p>African American residents felt more at home when their level of dependency and satisfaction with health increased, and when they were part of decision making process prior to entering home.</p> <p>African Americans were more likely to be satisfied with staff when they were more dependent, satisfied with health, participated in decision making, resided in family care homes.</p> <p>Among White residents, women, residents of younger age, and those with frequent family contact were more likely to fell at home. White residents with increased satisfaction with their health were more satisfied with staff.</p>

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Schafer, a		<p>1993 Assets and Health Dynamics Among the Oldest-Old (AHEAD) survey. Elderly person of at least 70 years of age (N=8222).</p> <p>Method of Analysis Descriptive (percentages)</p>	Elderly population	Age, race, gender, marital status, region, Education, occupation, income, net worth, ADL, health conditions, cognitive status.	<p>Majority of elderly (38.3%) were females (58%) and were aged 70 to 74 years.</p> <p>The proportions of females increased with age.</p> <p>About 40% were widowed and more than half were still married.</p> <p>Younger elderly had higher educational attainment level and therefore, were more likely to have managerial occupations.</p> <p>The net worth worth had bimodal distribution. One-fifth had net worth under \$25,000 and another one-fifth had net worth between \$200,000 and \$100,000.</p> <p>As age increased so did difficulties ADL and IADL. Although majority were covered under Medicare, very few had long-term care insurance.</p>

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Schafer, b		1993 Assets and Health Dynamics Among the Oldest-Old (AHEAD) survey. N=8222 Method of Analysis Descriptive	Living arrangements: Assisted Communities, unassisted 60 plus communities, shared housing, supported housing and conventional housng.	ADL, IADL, age, need for assistance, role of children, marital status, race/ethnicity, and income.	<p>Elderly persons who were 85 years and older favored assisted communities than conventional housing. It was more so when there were no children living within 10 miles.</p> <p>Shared housing was favored by elderly with difficulties in performing IADL and ADL activities and no resident children. This alternative is also shared favored by Non-Hispanic Blacks and Non-Hispanic other minorities.</p> <p>Supported housing was preferred by elderly with difficulties with ADL and IADL.</p> <p>Gender, education, income, and net worth were found to have little to do with the selection of any one type of living arrangement.</p>

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Spillman & Pezzin		<p>1984 NLTCS (N=5798)</p> <p>1994 NLTCS (N=3643)</p> <p>Sample was limited to individuals who received help with one or more ADL or IADL activities</p> <p>Method of analysis 1. Weighted estimates 2. Generalized variance function (calculated standard errors).</p>	<p>Prevalence of chronic disability</p> <p>Prevalence of informal care</p> <p>Potential and active caregivers.</p>	<p>ADL, IADL, caregivers (spouses and children).</p> <p>Demographic factors (age, relationship to elderly, marital status, race, living arrangement) and distance from care recipient.</p>	<p>Prevalence of chronic disability decreased by 3% from 1984 to 1994. This decline was primarily among the least disabled.</p> <p>Increased level of disability resulted in declined proportion of informal care users and increased proportion of formal or institutional care users.</p> <p>Declining informal care and increasing formal care was prevalent among those with spouses or children.</p> <p>Children caregivers far outnumbered spouses as active caregivers, reflecting high rates of widowhood among the elderly as well as multiple siblings sharing caregiving responsibilities.</p>

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Stinner and Byun	Privacy Model, Assistance Model, and Characteristics Model	1976 and 1981 National Longitudinal Survey of Mature Men. Total sample consist of 2623 men between the ages of 65-75 Method of analysis 1. Descriptive - Chi-square - Eta 2. Multivariate Logistic Regression	Living arrangements (living with older adults or not)	Disability, race, marital status, number of children, income,	Age, race, marital status and disability status are significantly related to co-residence living arrangements. Disabled men are more likely to live with adult relatives than non-disabled men. Unlike the bivariate analysis, the multivariate analysis showed a significant effect of living with children on living arrangements. Thus race, marital status, age and living children have significant effects on living arrangements

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Ryan & Scullion		10 family carers from 4 nursing homes in Northern Ireland. Method of Analysis: Qualitative	Placement of older relative in a nursing home.	Health status and inability to cope Family and health care professional's decision-making and significance of admission route Thoughts and feelings of family carers about placements.	Majority of family caregivers were women who showed greater emotional over-involvement than men. Decision to place older relatives in nursing homes, often a measure of last resort and was found to be difficult for family caregivers. It was a result of deteriorating personal health and the health of the elderly relative. Family caregivers were found to distant themselves from the decision to place older relative in nursing homes. They justified such decisions as collective agreements with health care professional and not a sole decision. Many caregivers were found to experience feelings of guilt, loneliness and regret with the decision to place older relatives in nursing homes. However, some were found to be more relieved and satisfied that their relative were better cared for in the nursing homes.

Authors	Theory	Methods & Sample	Dependent Variable(s)	Independent Variable(s)	Results
Sudha & Mutran,	Andersen Model on Health service utilization	537 older adults of 65 years and older (283= African Americans 254 = Whites) and 492 caregivers both from North Carolina. Linear Structural Equation Model (LISREL) was used for the analysis.	Preference of Family Care Dislikes of Rest Homes Unwillingness to use a Rest Home	Ethnicity, age, gender, education, marital Status Annual income, Medicaid, number of children, number of kin. Family and Community support (Family, friends, church, and paid help). Burden of Care Health status, ADL/IADL.	1. Ethnic differences in attitudes towards rest homes. 2. Unwillingness to consider rest home placement is predicted by dislike of rest homes and preference of family care. Thus, choices for the preference of family care by minorities are driven by dislike of rest homes and not by favor of family care.

APPENDIX C

Questionnaire from the 1999 National Long Term Survey used for the Statistical Analysis

1. Is ...'s residence located in an Assisted Living Community?
 1. Yes
 2. No

2. Does the assisted living community provide any of the following services to ...?
 1. Preparation of meals
 2. Housekeeping
 3. Help with eating
 4. Help with moving
 5. Substantial nursing care of any kind
 1. Yes
 2. No

3. Is a Registered Nurse, Licensed Practical Nurse, nurse's aid, physician, psychiatrist, or other health professional on duty every day at this address?
 1. Yes
 2. No

4. What is the highest level of regular school ... has completed or the highest degree ... has received?
 1. Less than 1st grade
 2. 1st, 2nd, 3rd, or 4th grade
 3. 5th or 6th grade
 4. 7th or 8th grade
 5. 9th grade
 6. 10th grade
 7. 11th grade
 8. 12th grade, no diploma
 9. High School Graduate - Diploma or Equivalent (example, GED)
 10. Some College but no degree
 11. Diploma or certificate from a vocational technical, trade or business school beyond the High School level
 12. Associate Degree in college - Occupational/vocational
 13. Associate Degree in college - Academic
 14. Bachelors Degree (example, BA, AB, BS)
 15. Master's Degree (example, MA, MS, MEng, MEd, MSW, MBA)
 16. Professional School Degree (example, MD, DDS, DVM, LLB, JD)
 17. Doctorate Degree (example, PhD, EdD)

5. Is ... currently married, widowed, divorced, separated, or has ... never been married?
 1. Married
 2. Widowed
 3. Divorced
 4. Separated
 5. Never Married

6. What is ...'s race?
 1. White
 2. Black
 3. American Indian, Aleut, Eskimo
 4. Asian, or Pacific Islander (Japanese, Chinese, Filipino, Korean, Asian Indian, Vietnamese, Hawaiian, Guamanian, Samoan, other Asian)
 5. Other

7. Is ... of Spanish/ Hispanic Origin?
 1. Yes
 2. No

8. How old is ... as of today
1 - 120 years

9. What is [Namexx]'s relationship to you?
 1. Sample person
 2. Spouse
 3. Son / Daughter
 4. Son-in-law / Daughter-in-law
 5. Parent
 6. Parent-in-law
 7. Brother / Sister
 8. Brother-in-law / Sister-in-law
 9. Grandchild
 10. Other relatives
 11. Employee
 12. Other non-relative
 13. Ex-spouse

10. Are ...'s living quarter's owned or bought by someone in ...'s household?
 1. Yes
 2. No

- 11a. During the past week, that is, since last [current week day], did any person help ... eat?
 1. Yes

- 2. No
- 3. Did not eat at all
- Don't know, Refuse to answer

- b. Did someone feed ...?
 - 1. Yes
 - 2. No
- c. Did someone help ... cut meat or butter bread?
 - 1. Yes
 - 2. No
- d. Did ... use special utensils or special dishes to help ... eat?
 - 1. Yes
 - 2. No
- 12a. Since last [current week day] did ... get out of bed at all for any reason whatsoever?
 - 1. Yes
 - 2. No
 - Don't know, Refuse to answer
- b. Did any person help ... get in or out of bed?
 - 1. Yes
 - 2. No
- c. Did someone actually lift ... in or out of bed?
 - 1. Yes
 - 2. No
- d. Did ... also use special equipment like a wheelchair, railing, walker, or cane to help ... get out of bed?
 - 1. Yes
 - 2. No
- 13a. Since last [current week day] did ... dressed at all?
 - 1. Yes
 - 2. No
 - Don't know, Refuse to answer
- b. Did any person usually help ... get dressed?
 - 1. Yes
 - 2. No
- c. Did someone put on all ...'s clothes for ...?

1. Yes
 2. No
- d. Did ... wear special clothing or use special equipment to help ... dress?
1. Yes
 2. No
- e. Did someone help change ...'s pajamas or gown?
1. Yes
 2. No
- 14a. Since last [current week day] was ... able to take a bath?
1. Yes
 2. No
- b. Did any person help ... take a bath or shower?
1. Yes
 2. No
- c. Did someone bathe ...?
1. Yes
 2. No
- d. Did someone help ... get in or out of the tub or shower?
1. Yes
 2. No
- e. Did ... use special equipment like shower seat, tub stool or grab bar to help ... bathe?
1. Yes
 2. No
- f. During the past week, did ... have a bed bath?
1. Yes
 2. No
- 15a. Since last [current week day] did ... use toilet at all?
1. Yes
 2. No
- Don't know, Refused to answer
- b. Did any person help .. to get to the bathroom or use the toilet
1. Yes
 2. No

- c. Did someone help ... to get on or off the toilet, arrange ...'s clothes, or clean...?
 - 1. Yes
 - 2. No

- d. Did ... take care of ...'s toilet need by using any special equipment like a bedpan, portable toilet, commode, or special underwear?
 - 1. Yes
 - 2. No

- 16. Are there any helpers listed in the person roster?
 - 1. Yes
 - 2. No

- 17. You mentioned that [helper] helps ... Is [helper] a relative, friend, someone hired to help ..., someone from helping organization, or someone else? If 'relative', how is [helper] related to ... ?
 - 1. Spouse
 - 2. Father
 - 3. Mother
 - 4. Son
 - 5. Daughter
 - 6. Brother
 - 7. Sister
 - 8. Son-in-law
 - 9. Daughter-in-law
 - 10. Other male relative
 - 11. Other female relative
 - 12. Male friend
 - 13. Female friend
 - 14. Someone hired
 - 15. Someone from helping organization
 - 16. Someone else

- 18. Is [helper] paid to help?
 - 1. Yes
 - 2. No

- 19. Does ... now have the following:
 - a. Rheumatism or arthritis?
 - 1. Yes

- 2. No
 - b. Diabetes?
 - 1. Yes
 - 2. No
 - c. Cancer?
 - 1. Yes
 - 2. No
 - d. Arteriosclerosis or hardening of the arteries?
 - 1. Yes
 - 2. No
20. Has ... had any of the following in the last 12 months?
- a. A heart attack?
 - 1. Yes
 - 2. No
 - b. Any heart problem?
 - 1. Yes
 - 2. No
 - c. Hypertension or high blood pressure?
 - 1. Yes
 - 2. No
 - d. A stroke?
 - 1. Yes
 - 2. No
 - e. Circulation trouble in ... arms or legs?
 - 1. Yes
 - 2. No
 - f. Emphysema?
 - 1. Yes
 - 2. No
21. Compared to other persons the same age, would you say that ...'s health is excellent, good, fair, or poor?
- 1. Yes
 - 2. No

22. Which category on this card represents the total combined income before deductions during [previous month] for ... [and spouse]. Include money from jobs, net income from rent, Social Security payments and other money income received by ... [and spouse]
1. Under \$300
 2. \$300-\$500
 3. \$600-\$899
 4. \$900-\$1199
 5. \$1200-\$1499
 6. \$1500-\$1999
 7. \$2000-\$2499
 8. \$2500-\$2999
 9. \$3000-\$3499
 10. \$3500-\$3999
 11. \$4000-\$4999
 12. \$5000-\$5999
 13. \$6000-\$6999
 14. \$7000-\$7999
 15. \$8000-\$9999
 16. \$10000 or more
23. Which category on this card represents the total combined income before deductions during the last 12 months for ... [and all members of ... family who live with ...]. Include money from jobs, net income from rent, Social Security payments and other money income received by ... [and all members of ... family who live with ...]
1. Under \$3000
 2. \$3000-\$3999
 3. \$4000-\$4999
 4. \$5000-\$5999
 5. \$6000-\$6999
 6. \$7000-\$7999
 7. \$8000-\$8999
 8. \$9000-\$9999
 9. \$10000-\$11999
 10. \$12000-\$14999
 11. \$15000-\$19999
 12. \$20000-\$24999
 13. \$25000-\$29999
 14. \$30000-\$39999
 15. \$40000-\$49999
 16. \$50000-\$59999
 17. \$60000-\$69999
 18. \$70000-\$79999
 19. \$80000-\$99999
 20. \$100000 or more

Don't know, Refused to answer

24. Is ... now covered by Medicare?
 1. Yes
 2. No
25. Is ... now covered by Medicare HMO?
 1. Yes
 2. No
26. During the last 12 months, has ... received health care which has been or will be paid for by Medicaid?
 1. Yes
 2. No
27. Did Medicaid pay for ...'s room, board and nursing care?
 1. Yes
 2. No
28. Is ... covered by any public assistance programs, other than Medicaid, that pays for health or long-term care?
 1. Yes
 2. No
29. Is ... now covered by CHAMPUS or CHAMPVA, or some other military health care?
 1. Yes
 2. No
30. Is ... now covered by a private health care insurance plan which pays any part of a hospital, doctor's, surgeon's or long-term care bill?
 1. Yes
 2. No