

ABSTRACT

Title of Dissertation: UNDERSTANDING THE IMPACT OF LONG-TERM CARE NEED AMONG MEDICARE-ONLY BENEFICIARIES

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The population of adults 65 years of age and older is growing tremendously, and the majority of this population will have some level of long-term services and supports (LTSS) needs. Most older adults will qualify for Medicare insurance, which does not provide coverage for LTSS. The high costs associated with receiving LTSS, which includes supports for activities of daily living, places a financial burden on Medicare-only beneficiaries with limited resources, increasing their likelihood of becoming eligible for Medicaid coverage (i.e., dual-eligible). Given that Medicaid is the primary payer for LTSS, much of the literature on long-term care (LTC) is focused on a Medicaid eligible population. This dissertation explores the experience of Medicare-only beneficiaries with an LTSS need, who are responsible for the costs of their LTSS and may ultimately qualify for Medicaid. The Health and Retirement Study data are used to explore my dissertation objectives. My dissertation examines three areas: (1) the financial burden of Medicare-only beneficiaries with high functional impairment by assessing out-of-pocket costs; (2) spend down to dual-eligible status for Medicare-only beneficiaries with and without a LTC need; and (3) spend down by race and ethnicity with and without a LTC need.

UNDERSTANDING THE IMPACT OF LONG-TERM CARE NEED AMONG
MEDICARE-ONLY BENEFICIARIES

by

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2024

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Acknowledgements

First, I would like to thank Allah (God) for the opportunity to pursue my academic goals.

I would like to thank my advisor, Dr. Jie Chen, for her invaluable insight, expertise, and time throughout my PhD journey.

Next, I would like to thank my family for their endless support and unconditional love as I navigated my studies.

To my father, Dr. Homam Albaroudi, for lending his own experience as a previous PhD student- I am profoundly grateful for your guidance, endless encouragement, and support over the past 6 years. Thank you for being the very best father anyone could ask for.

To my mother, Eiman Albarazi, I owe a debt of gratitude to you for fueling my passion for and interest in long-term services supports by introducing me to the field of gerontology. Your faith in my abilities and encouragement were instrumental in my success, I am lucky to call you my mother.

To my sister, Aalaa Albaroudi, I am thankful for the unwavering support you provided me over the years, through kind words and encouragement. You are my confidant, my sounding board, and very best friend. I am fortunate to have you as a sister.

To my brother, Obaida Albaroudi, I am truly appreciative for your belief in my abilities years before I completed my studies, which have been a source of motivation throughout the years. Thank you for being my best friend, for your endless support, and for the many, many laughs. I love that you are my brother.

To my husband, Salim Chadli, thank you for being by my side as I wrapped up my dissertation while navigating the first year of marriage. Your lightheartedness, emotional support and encouragement was so appreciated. I am grateful to be experiencing life with you.

Finally, thank you to my friends for their support throughout this journey.

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Introduction

Research Objective

By 2050 it is estimated that the U.S. will have 89 million adults 65 and older, which is significantly higher than 40.5 million in 2010 (Dall et al., 2013). An estimated 70 percent of adults 65 and older are predicted to require some long-term services and supports (LTSS) (Henning-Smith & Shippee, 2015). LTSS (which is also referred to as long-term care, LTC) includes both institutional care, such as nursing homes, as well as community-based care such as personal care services. Individuals who need assistance with a minimum of two activities of daily living (ADLs) are commonly determined to meet institutional level of care, and hence require LTSS (Kaye et al., 2010). Roughly 12 million individuals have an LTSS need, many of whom desire to remain in the community as opposed to an institution for their care needs (Chong et al., 2022; Anthony et al., 2019). In 2020, approximately 1.3 million individuals were nursing home users (CDC, 2020). LTSS is in reference to supports made available to persons with health conditions that limit their ability to engage in ADLs (Cherry & Asebedo, 2022). Assistance with ADLs includes support for one or more of the following: bathing, transferring (e.g., from bed to a chair or other place), eating, dressing, walking, and toileting (Edemekong et al., 2023). Several factors increase the likelihood of LTSS need, such as advanced age or having chronic conditions, both of which place an individual at a greater risk of a disability and thus requiring LTSS (Weiner et al., 2013). Persons with lower income throughout their lifespan are most at risk of having a serious LTC need (defined as needing assistance with a minimum of two ADLs or having a severe cognitive impairment) and for a prolonged period, compared to individuals with higher earnings (Johnson et al., 2021). One challenge for beneficiaries with a LTC need is the high costs associated with LTSS (Willink et al., 2019).

Medicare provides coverage for both individuals age 65 and older as well as those with a disability, regardless of age. Enrollees pay for a portion of the services provided via premiums as well as cost sharing (i.e., out-of-pocket, OOP, expenses) (Madden et al., 2021). While the Medicare program includes coverage for a subset of short-term LTSS services—such as limited home health or skilled nursing—its primary objective is to provide coverage for acute- and post-acute care services and to provide financial security from acute health conditions (Wiener et al., 2017; Moon et al., 2015). Approximately 40 million individuals have original Medicare coverage and are responsible for cost sharing, however some beneficiaries have additional coverage to support such costs (Roberts et al., 2021). Original Medicare is comprised of Part A which covers inpatient care, and Part B provides coverage for outpatient services; beneficiaries are subject to cost sharing under both parts (Roberts et al., 2021).

Roughly 80 percent of beneficiaries in original Medicare have additional insurance (Roberts et al., 2021). Separately, just under 30 percent are “near-poor”, meaning they do not qualify for Medicaid supplemental coverage because their income, while low, is not low enough to meet the criteria- and, have a lower likelihood of having additional private coverage (Roberts et al., 2021). Medicare-only beneficiaries with a LTC need are unable to rely on Medicare for supports, as Medicare does not provide coverage for LTSS. Spending on LTSS is a major driver leading to bankruptcy for older Americans, ultimately leading many individuals to rely on Medicaid for LTSS given the absence of adequate financial resources to pay for services (Frank & Moulds, 2019). These beneficiaries become dual-eligible, meaning they qualify and receive healthcare coverage from both Medicare and Medicaid. Further, Medicare-only beneficiaries who have limited income, high OOP expenditures, and who have no additional insurance could be at risk of not accessing necessary care (Roberts et al., 2021).

The objective of my study is to examine the financial burden of Medicare-only beneficiaries who have a LTC need (defined as needing assistance with at least 2 ADLs), with a focus on community-dwelling older adults. This Medicare-only population is of particular interest given that having multiple ADL limitations is associated with high expenditures, and Medicare does not cover the cost of LTSS which are intended to support individuals with high functional impairment (i.e., persons with two or more ADL limitations). We have a growing population of older adults, many of whom will have a LTC need- better understanding the cost experience of this population would allow policymakers and healthcare stewards to better target their efforts to mitigate adverse health and financial outcomes. My dissertation examines three areas: (1) the OOP costs of Medicare-only beneficiaries with a high functional impairment; (2) spend down to dual-eligible status for Medicare-only beneficiaries with and without a LTC need; and (3) spend down by race and ethnicity with and without a LTC need. As typical in the literature, both LTC and LTSS are used interchangeably in this study. Further, in my study, LTC, LTSS, and high functional impairment are all defined in a similar manner (i.e., limitation with 2 or more ADLs).

Chapter 1: Understanding the Out-of-Pocket Costs of Medicare-only Beneficiaries with a High Functional Impairment

1.1 Introduction

Greater than 50 percent of individuals age 65 and older will have a severe disability and require paid long-term care (LTC), either community-based or institutional care (Johnson et al., 2021). The out-of-pocket (OOP) costs related to long-term services and supports (LTSS), which include home health and institutional care, place Medicare beneficiaries at an increased likelihood of becoming eligible for Medicaid (Willink et al., 2019). Enrollees pay for a portion of the services provided via premiums as well as cost sharing (i.e., out-of-pocket expenses) (Madden et al., 2021). Medicare does cover short-term LTSS services (i.e., limited home health or skilled nursing), but its main role is to cover acute- as well as post-acute care (Wiener et al., 2017; Moon et al., 2015). Medicaid is the primary payer for LTSS, and hence persons eligible for Medicaid LTSS often receive services via home- and community-based services (HCBS) or through institutional care (Edwards & Sen, 2019). LTSS expenditures are steep and have a long-term impact on individuals and families, as well as state and federal Medicaid budgets (Willink et al., 2019). Most studies evaluate the healthcare costs of a dual-eligible (or, Medicaid-only) population, while paying little attention to a group of Medicare-only beneficiaries who could be at risk of becoming dually-eligible given the high cost of LTSS.

The objective of this paper is to examine the financial burden of Medicare-only beneficiaries who have high functional impairment (i.e., need assistance with at least 2 activities of daily living or ADLs), with a focus on community-dwelling older adults. Understanding the cost experience would add to the scarce literature on the financial burden of Medicare-only

individuals with several ADL limitations, particularly given this group is higher likelihood of becoming Medicaid eligible. The objective of this study is to explore the health status, which includes chronic conditions and ADL limitations, as well as the financial burden, specifically the OOP costs for home health (HH) care and nursing home (NH) use, among community-based Medicare-only beneficiaries (with and without high functional impairment). The study does not explore the experience of institutionalized beneficiaries, given the movement towards community-based care in the LTC arena. In this study I hypothesize that community-based beneficiaries with high functional impairment will have higher OOP costs than individuals with little to no functional impairment (defined as having limitations with 0 to 1 ADLs). This study will improve our understanding of the experience of Medicare-only beneficiaries with high functional impairment, some of whom are financially vulnerable and may ultimately qualify for Medicaid.

1.2 Literature Review and Conceptual Framework

Roughly half of older adults turning 65 in the US will likely utilize some level of LTSS in their lifetime (Frank & Moulds, 2019). Persons with an LTSS need typically need assistance with ADLs and potentially may require assistance with instrumental activities of daily living (IADL) as well—such as cooking or household chores. In 2011 alone, an estimated 7.7 million individuals age 65 and older received help with ADL needs (Favreault et al., 2015). Approximately 87 percent of persons with a LTC need receive help from informal caregivers (e.g., family member or friend)—however, given a downward trend in births in the past 50 years, we will have fewer unpaid caregivers to provide assistance (Alkema, 2013). As older adults move into advanced age, their LTSS needs increase. The presence of chronic conditions increases the risk of disability, and consequently persons with a disability have a higher

likelihood of needing costly LTSS (Wiener et al., 2013). The number of individuals 85 and older—which research has shown as having the most LTC need—is projected to grow to more than 25 percent by 2030 (Alkema, 2013). For beneficiaries receiving LTSS care in the community, supports may include home health, personal care (e.g., assistance with ADLs), and other services in the home (e.g., assistance with house chores or food prep) (Colello & Talaga, 2015). However, availability of home health differs by geographic location, wherein most (84 percent) home health providers can be found in urban regions (Van Houtven & Dawson, 2020).

Roughly 98 percent of individuals 65 years of age or older receive their health insurance through Medicare, and likely some supplemental insurance as well (Rhee et al., 2019). However, the Medicare program does not meet the LTSS needs of beneficiaries, some of whom have a physical and/or cognitive impairment (Moon et al., 2015). Home health care under Medicare is intended to provide skilled care and limited home health aide services—generally providing coverage for no more than 8 hours daily or 28 hours per week. In 2018, Medicare spending on home health care was \$40 billion (Van Houtven & Dawson, 2020). Beneficiaries may be responsible for OOP payments to receive some services. However, given the limited supports available under the benefit, beneficiaries with skilled care need as well as ADL assistance may need to seek additional help as well, such as through private pay (Van Houtven & Dawson, 2020).

Older Americans prefer receiving LTSS in the community and this has partly driven the move towards community-based services, as well as the establishment of state Medicaid home- and community-based services (HCBS) programs in the 1980s (Gorges et al., 2019). HCBS programs provide LTSS in the community, such as but not limited to personal care services or home delivered meals, to individuals with disabilities as well as those older in age. Another

factor driving this shift towards community-based care are claims of HCBS' cost-effectiveness as compared to institutional care (Gorges et al., 2019). States have turned to HCBS programs as a more affordable option for delivery of LTSS than nursing homes, given that Medicaid spending on beneficiaries in nursing homes is roughly two times that for HCBS beneficiaries (Newcomer et al., 2016). However, short of 33 percent of Medicare beneficiaries with a complex care need (i.e., those who have a minimum of 2 ADL limitations and cognitive impairment) have Medicaid (Moon et al., 2015). While this study is focused on a Medicare-only population not eligible for Medicaid HCBS, the majority of the literature includes information on LTC costs for a population that is eligible for HCBS. Hence, this signifies a lack of research on solely the OOP costs for Medicare-only beneficiaries with high functional impairment, who are at risk of qualifying for Medicaid.

Beneficiaries with an LTSS need commonly have high OOP expenditures for services furnished by Medicare, as well as home-based services which may not be covered by Medicare (Moon et al., 2015). The high OOP costs associated with LTC services position Medicare beneficiaries at a higher risk of also becoming Medicaid eligible (Willink et al., 2019). Total lifetime spending on LTC for a typical 65-year-old is \$138,100, wherein half the amount constitutes OOP spending by the beneficiary (Khatutsky et al., 2017). These costs are prohibitive and place an undue burden on older Americans. For example, homemaker services, which is a type of LTSS, provide support for individuals with Alzheimer's disease and related dementias and costs for such services vary—in 2021, such services cost \$3,200 (for 80 hours/month) in Portland, Oregon (Kim et al., 2023). One study found differences in LTC spending by gender. About 12 percent of older females and 5 percent of males will have LTSS expenditures in excess of \$250,000 prior to passing away (Frank & Moulds, 2019). LTC expenditure is one of the

driving factors resulting in bankruptcy among the elderly in the United States. For older Americans, LTC makes up the greatest source of OOP expenditure (Goda et al., 2011)—and for community-based Medicare beneficiaries with healthcare expenditures from 2006 and 2010, their average OOP expenditures was \$1,193.09 and \$1,151.30 for rural and urban individuals, respectively (Ziller et al., 2015). Ziller et al. (2015) note that Medicare OOP costs rise with increasing age and chronic conditions.

Medicare beneficiaries with limited resources who are not covered by Medicaid are hindered financially to acquire community-based services (Moon et al., 2015). In 2010 alone, Medicare beneficiaries with a complex care need spent 17 percent of their income on OOP costs, as compared to beneficiaries with no complex care needs who spent roughly 7 percent of their income on OOP costs (Moon et al., 2015). The overall costs of receiving LTC are astronomical, placing vulnerable older adults at financial risk. Wiener and colleagues (2017) had projected that roughly 28 percent of older Americans who turn 65 from 2015 to 2019 will accrue LTSS expenditures in excess of \$100,000. In 1988, OOP spending on nursing homes and home health services was an estimated \$15.6 billion, by 2013 that increased to \$47.7 billion (Wiener et al., 2017). Research by Pearson and colleagues (2019) point to challenges that middle-income individuals experience to cover costs of senior housing, such as assisted or independent living community options which support daily living needs. Specifically, this group has enough financial resources to not qualify for a means-tested program (e.g., Medicaid) but fall short in resources to cover continued living in community-based senior housing. Medicare does not cover senior housing or other LTSS options, and strict as well as varied financial eligibility requirements by state for Medicaid limit it as an option for individuals with an LTSS need (Li et al., 2023; Pearson et al., 2019).

Previous literature, which predominantly assessed dual-eligible beneficiaries, found that persons with a LTC need were often frail and had high OOP costs. A study by Newcomer et al. (2016) evaluated differences in LTSS expenditures for a dual-eligible population of California residents receiving LTSS either via HCBS or a nursing facility, the majority of whom were 65 and older. While there exists ambiguity regarding whether spending related to nursing homes is as a result of cost of institutional care or rather the frailty of beneficiaries who opt for nursing care, Newcomer et al. (2016) used propensity score matching to address for possible selection differences between institutional and community-based beneficiaries. Persons with comparable functional and health needs in a nursing facility had high average total monthly expenditures as compared to their community-based counterparts (Newcomer et al., 2016). While the latter examines a dual population and total expenditures, not specific to OOP costs, it does provide evidence that institutional care is more costly than community-based care. Researchers also found that generally advanced age and cognitive impairments were both linked with increased LTSS expenditures (Newcomer et al., 2016). Kane et al. (2013), discussing a dual-eligible population, note that persons residing in a nursing home are frailer and in poorer health than dual-eligible individuals who are community-based. Studies appear to indicate that generally nursing home residents are either more frail or require costlier care than community-based beneficiaries—and most studies assessing community-based beneficiaries examined persons receiving Medicaid HCBS. This study allows for a deeper understanding of Medicare-only community-based beneficiaries with high functional impairment- specifically their health characteristics and cost-experience.

Similar to many other studies in the literature, Gorges et al. (2019) examined use and outcomes of a dual-eligible population with a LTC need based in the community (i.e., utilizing

Medicaid HCBS) and those in an institution. Only one recent study in the literature, to my knowledge, was focused on precisely the OOP costs of Medicare-only beneficiaries for specifically LTSS, and not overall expenditure—as discussed later. Gorges et al. (2019) found that hospitalization rates were alike for HCBS and nursing home residents, despite the fact that nursing home residents are frequently frailer (e.g., advanced age, several chronic conditions, etc.). In examining differences among beneficiaries receiving HCBS, expenditure was higher among White older adults than non-Whites (Gorges et al., 2019). Generally, White older adults depended on nursing homes while non-Whites depended on HCBS. Among the non-White cohort, Asians had the highest reliance on HCBS, then Hispanics, followed by Black individuals (Gorges et al., 2019).

Willink et al. (2019) assessed OOP spending among a Medicare-only population. Given that Medicare does not provide coverage for LTSS, Willink et al. (2019) examined the costs of LTSS by specifically examining the cost of personal care and assistive devices. In their study, more than half of Medicare beneficiaries either utilized LTSS or had an ADL limitation. Roughly 33 percent of Medicare beneficiaries who had either a functional or cognitive limitation also had an annual income that was lower than \$24,000 for one person, yet they did not meet the threshold for Medicaid eligibility (Willink et al., 2019). The OOP expenditures for these individuals as it relates to both LTSS and medical care are catastrophic. For 25 percent of Medicare beneficiaries, at least 20 percent of their income is used for OOP medical costs as well as premiums (Willink et al., 2019). This high OOP spending is linked with a greater likelihood of becoming Medicaid eligible, especially for persons with either a functional or cognitive limitation who utilize LTC.

Community-based Medicare beneficiaries with no LTC need cost Medicare an average of \$5,389 in 2015, on the other hand, persons with any LTC need or a high LTC need used

Medicare benefits totaling \$11,938 and \$15,109, respectively (Willink et al., 2019). Clearly, LTSS need increases overall Medicare program costs. About half of Medicare beneficiaries with a high LTSS need paid less than \$500 for an assistive device in 2015, with a smaller subset spending excess of \$1,000 (Willink et al., 2019). Beneficiaries who noted they utilized paid services (this includes 3.6 percent of individuals with a high LTSS need) spent an estimated \$9,168 yearly to receive this assistance (Willink et al., 2019). As needs increase, Willink et al. (2019) found that dependence on credit cards grows as a mechanism to pay for medical services and LTC.

Medicare covers many individuals age 65 and older as well as those with disabilities who have little resources and several chronic conditions (Madden et al., 2021). Madden et al. (2021) found that among their sample of community-based adults age 65 and older, roughly 7.4 percent of beneficiaries experienced challenges paying medical bills, with some incurring either or both medical debt and receiving communication from a collection agency. Medicare beneficiaries age 65 and older with 4 to 10 chronic conditions had more than two times the likelihood of experiencing challenges with paying medical costs relative to individuals with 0 to 1 chronic conditions. Further, those with 3 to 6 ADL limitations relative to individuals with no limitations had higher odds of delayed care due to costs of services (Madden et al., 2021). Beneficiaries considered at an increased risk of Medicaid eligibility are individuals who both have a high OOP expenditure as well as a physical and/or cognitive limitation (Willink et al., 2016). The evidence in the literature has demonstrated the catastrophic toll OOP spending has on older adults.

Although not the focus of my dissertation, it is critical to mention the ongoing workforce crisis and the challenges it creates in accessing care. Further, most LTSS provided to older adults is by informal caregivers, which include a family member or friend who provide unpaid care

(Chari et al., 2015). A portion of these informal caregivers may reduce their hours of employment to provide unpaid care, which leads to wage loss (Chari et al., 2015). Informal caregivers are critical to many community-based beneficiaries. Roughly 38 million family caregivers spent about 36 billion hours providing care to an adult with ADL limitation in 2021 (Reinhard et al., 2023). Reinhard and colleagues (2023) predicted that the monetary worth of this informal supports was an estimated \$600 billion.

For purposes of this study, I used the Andersen Behavioral Model of Health Care Utilization as a guide to develop my conceptual framework but modified it to fit my study. The Andersen Model was used to determine the various factors impacting use of health services, and the relationships between those factors. The Andersen Model was originally established in the 1960s and served several purposes—one of which was to improve understanding of healthcare service use among families (Andersen, 1995). Overtime the unit of analysis for the model shifted from the family to the individual level. Andersen’s intent was to develop a model that would both “predict” and “explain use” of health services (Andersen, 1995). Over the years the model has been updated to reflect new knowledge, such as inclusion of *healthcare system* or *health status* in updated versions of the model. My research considered some of the factors specifically included in the three components of Phase 4 of the model, which include *predisposing characteristics* (e.g., *demographic characteristics*), *enabling resources* (e.g., *resources*) and *need* (e.g., *assessed health condition*) associated with healthcare service use (Phillips et al., 1998).

1.3 Data

The sample for this study is Medicare-only beneficiaries 65 and older, living in the community. The Health and Retirement Study (HRS) data, which is a nationally representative longitudinal survey, is the sole data source for this research project. The HRS is sponsored by the

National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan. The survey is directed by the Institute for Social Research at the University of Michigan (RAND HRS Longitudinal File 2016 Documentation, 2020). Collection of data for the HRS began in 1992. Every two years a group of persons 50 years of age and older and their partners undergo interviews focused on a range of areas including but not limited to insurance, income and health status. HRS oversamples the following groups: Hispanic individuals, Black individuals, as well as persons residing in Florida (RAND HRS Longitudinal File 2016 Documentation, 2020). Researchers add new groups of respondents to the HRS data every 6 years to account for diminishing respondents (Sonnega et al., 2014).

This is a cross-sectional study that includes cohorts in wave 13 (year 2016), this was the dataset in which I began my work. (HRS has released new waves, but I have chosen to remain with my original dataset. This study may be updated in future years.) The dataset includes information on ADL limitations, health coverage, and race and ethnicity. To conduct my analyses, I used publicly available (de-identified) HRS data. To account for the complex design (e.g., oversampling) of the HRS dataset, a person-level weight variable (available through the HRS dataset) was applied to develop a nationally representative weighted population of 33,665,143 Medicare-only respondents age 65 and older.

1.4 Measurement

The two dependent variables for this analysis are average OOP expenditures for home health and nursing home stay, respectively, in the previous two years. I also examined total average OOP expenditures for both home health and nursing home stay. My primary independent variable is *ADL difficulty* (representing individuals with and without high functional impairment) where individuals with 2 or more ADL limitations were coded as having high

functional impairment (referred to as *ADL difficulty*), and those with less than 2 ADL limitations did not have high functional impairment (referred to as *no ADL difficulty*). The ADL limitations include having any difficulty with one or more of the following: *bathing, dressing, eating, getting in and out of bed, walking across a room and using the toilet*.

First, for *predisposing characteristics* independent variables such as age, sex, marital status, race/ethnicity, and education were considered in my analysis. There is also an *enabling resource*, financial resources (i.e., income and wealth) of older adults, that is guiding my research (Jahangir et al., 2012; Tan, 2009). Given that LTSS need is related to limitations in ADLs, and that LTSS need is further exacerbated by having multiple chronic conditions, the following variables are included in my model as *need* factors: ADL limitations and self-reported chronic conditions (Jahangir et al., 2012; Tan, 2009).

1.5 Methodology

My sample includes community-based, Medicare-only beneficiaries age 65 and older with and without an ADL difficulty. First, this study presents descriptive statistics for this population. Further, the project evaluates the OOP expenditure for LTSS not covered by Medicare. By use of publicly available HRS data, and based on a weighted sample, I assessed the OOP costs for nursing home and home health care services, among Medicare-only beneficiaries 65 years of age and older, with and without high functional impairment (i.e., ADL difficulty).

Multicollinearity can exist in a model when the independent variables are highly correlated (linear relationship is present). To check for multicollinearity in the model, a variance inflation factor (VIF) test was conducted. I ran separate linear regressions for total OOP costs, and separately for home health and nursing home OOP costs, followed by a VIF test. None of the

variables had a VIF value greater than 4, meaning no multicollinearity is present in my independent variables.

To assess the financial burden (OOP costs) of receiving home health services and/or having a nursing home stay among community-based Medicare-only beneficiaries with and without high functional impairment, I used two-part models. Healthcare expenditure data is traditionally positively skewed, non-negative, and heteroscedasticity is present (Chen et al., 2017; Mihaylova et al., 2010). Previous findings have illustrated that two-part models appear to be a preferred approach when assessing data with extra zeros (Mihaylova et al., 2010). To account for the latter and to estimate the OOP costs the study employed a cross-sectional analysis using a two-part model. This model was used to account for data skewness as well as the great share of beneficiaries who did not have OOP costs for home health and nursing home care (i.e., excess zeros). The first part of the model (i.e., the “zero-adjusted” portion) was a binomial model using a logit link function assessing the odds of an individual having any healthcare expenditure. The second part of the model uses a generalized linear model (GLM) with a log link function and gamma distribution and estimates the OOP costs for services, conditional on having some healthcare costs for home health care and nursing home services. A marginal analysis (examining the marginal effects) was also employed to compute changes using dollars (Onukwugha et al., 2015). In analyzing my results across all my research aims, I considered significance at the 1, 5, and 10 percent levels.

1.5.1 Sensitivity Analysis

Individuals reporting limitations with at least two ADLs have a greater likelihood of needing institutional care (Kaye et al., 2010). Fong et al. (2015) used HRS data to assess whether particular ADLs are greater predictors of LTSS utilization and discovered that a bathing

limitation is the strongest predictor for institutional care. Further, having a dressing limitation was found to increase the likelihood of institutional care (Fong et al., 2015). I ran the analysis where community-based respondents reporting limitations with bathing/showering and dressing are considered to have a LTC need- however, due to sample size issues I changed my inclusion criteria to limitations with any two ADLs.

1.6 Results

Using 2016 publicly available HRS data, our sample yielded 6,660 respondents were not living in a nursing home at the time of the interview (for purposes of this study, this group is considered “community-based”), were 65 and older, and Medicare-only. Table 1.1 below illustrates the characteristics of the weighted population (N=33,665,143) in which I ran my analyses on, by ADL difficulty. Among respondents in both groups, the majority are White/Caucasian, female, had ever been married, and with a minimum of 2 chronic conditions. Some differences in respondent characteristics exist by ADL difficulty. Medicare-only beneficiaries with high functional impairment had average income and assets of \$49,449.71 and \$487,006.50, respectively. Those without an ADL difficulty (i.e., little to no functional impairment) had average income and assets of \$76,267.18 and \$662,967.30, respectively. Among respondents with high functional impairment, roughly 24 percent belong to a racial and ethnic minority group, 46 percent of respondents were at an advanced age (i.e., 80 years of age and older) and 61 percent had either graduated from high school or completed some high school. Among individuals with no ADL difficulty, an estimated 17 percent belong to a racial and ethnic minority group, 21 percent were at an advanced age and over half (53%) at a minimum completed some college.

Table 1.1 Characteristics of respondents and data, Wave 13 (Year 2016)

	ADL Difficulty¹ (N= 2,557,599)	No ADL Difficulty (N= 31,107,544)
Variable	Count (%)	Count (%)
Race/Ethnicity		
White/Caucasian <i>[Reference Category]</i>	1,942,890 (76%)	25,954,656 (83%)
Black/African American	352,442 (14%)	2,392,882 (8%)
Hispanic	209,603 (8%)	1,955,638 (6%)
Non-Hispanic other race, or multiple race	52,664 (2%)	804,368 (3%)
Age (mean; SD)	(78.79; 9.30)	(73.82; 7.16)
65 to 70 years of age <i>[Reference Category]</i>	629,858 (25%)	12,669,574 (41%)
71 to 79 years of age	758,140 (30 %)	11,938,145 (38%)
80 years of age and older	1,169,601 (46%)	6,499,825 (21%)
Sex		
Male <i>[Reference Category]</i>	1,002,477 (39%)	14,202,287 (46%)
Female	1,555,122 (61%)	16,905,257 (54%)
Marital Status (ever married)		
Yes <i>[Reference Category]</i>	2,478,762 (97%)	29,910,736 (96%)
No	78,837 (3%)	1,196,808 (4%)
Education		
High-school (HS) graduate or some HS <i>[Reference Category]</i>	1,557,472 (61%)	14,540,192 (47 %)
Some college and above	1,000,127 (39%)	16,567,352 (53%)
Chronic Condition (mean; SD)²	(3.64; 1.48)	(2.44; 1.40)
0 to 1 <i>[Reference Category]</i>	171,666 (7%)	8,298,013 (27%)
2 to 8	2,385,933 (93%)	22,809,531 (73%)
Financial Resources (\$) ³		
Income (R+S), mean and SD	\$49,449.71 (83461.16)	\$76,267.18 (119452.6)
Wealth (includes 2 nd home), mean and SD	\$487,006.5 (1346233)	\$662,967.3 (1289121)
Source: 2016 HRS Data		
Notes:		
This data is weighted; standard deviation (SD); respondent (R); and spouse (S).		

¹ Respondents with an ADL difficulty include individuals with high functional impairment, meaning they have a minimum of two activities of daily living difficulties.

²For chronic conditions, the HRS data includes a question whether a doctor has ever notified a respondent that they have ever had one or more of the following: (1) *high blood pressure or hypertension*; (2) *diabetes or high blood sugar*; (3) *cancer or a malignant tumor of any kind except skin cancer*; (4) *chronic lung disease except asthma such as chronic bronchitis or emphysema*; (5) *heart attack, coronary heart disease, angina, congestive heart failure, or other heart problems*; (6) *stroke or transient ischemic attack (TIA)*; (7) *emotional, nervous, or psychiatric problems*; and (8) *arthritis or rheumatism*.

³ Income and wealth were considered using HRS' *total wealth* and *total household income (includes respondent and spouse)* variables. *Total wealth* is a sum of the following subtracted by all debt: SUM(value of primary residence; value of secondary residence; net value of real estate not primary residence; net value of vehicles; net value of business; net value of IRA and Keogh accounts; net value of stocks, mutual funds, and investment trusts; value of checking, savings, or money market accounts; value of CS, government savings bonds, and T-bills; net value of bonds and bond funds; net value of all other savings) – SUM(value of all mortgages/land contracts, primary residence; value of other home loans, primary residence; value of other debt; value of all mortgages/land contracts, secondary residence). *Total household income* reflects the sum of the following for a respondent and their spouse: earnings; pensions and annuities; SSI and social security disability; social security retirement; unemployment and workers compensation; other government transfers; household capital income; and other income.

Home health care and nursing home utilization and spending varied by ADL difficulty, as demonstrated in Table 1.2. Among individuals with an ADL difficulty, 33 and 15 percent of respondents used home health and nursing home care, respectively. The extent to which individuals who used either home health or nursing home services were also responsible for OOP spending varied. Roughly 13 percent (or, 108,256 of 834,455 respondents) and 32 percent (or, 118,906 of 371,663 respondents) with home health and nursing home use, respectively, were responsible for OOP costs. Average OOP spending for home health services for the 13 percent of respondents was \$5,133.73, and for the 32 percent of respondents with nursing home OOP spending the average was \$6,365.56. Eight percent of respondents with no ADL difficulty used

home health care services in the previous two years, and 3 percent had a nursing home stay. For those with home health care use, 12 percent were responsible for OOP costs (average of \$2,339.93) while 31 percent of respondents who had a nursing home stay had an OOP cost (average of \$3,080.24).

Table 1.2. Utilization and out-of-pocket spending, Wave 13 (Year 2016)

	ADL Difficulty¹ (N= 2,557,599)	No ADL Difficulty (N= 31,107,544)
Variable	Count (%)	Count (%)
HH Care Use, Prev. 2 years²		
No [<i>Reference Category</i>]	1,723,044 (67%)	28,681,884 (92%)
Yes	834,555 (33%)	2,425,660 (8%)
NH Stay, Prev. 2 years³		
No [<i>Reference Category</i>]	2,185,936 (85%)	30,260,592 (97%)
Yes	371,663 (15%)	846,952 (3%)
HH OOP Costs, Prev. 2 years		
No [<i>Reference Category</i>]	2,449,343 (96%)	30,817,244 (99%)
Yes	108,256 (4%)	290,300 (1%)
NH OOP Costs, Prev. 2 years		
No [<i>Reference Category</i>]	2,438,693 (95%)	30,846,418 (99%)
Yes	118,906 (5%)	261,126 (1%)
Average OOP Spending, Prev. 2 years – Subset of population⁴		
HH mean (SD)	\$5,133.73 (12839.62)	\$2,339.93 (7044.21)
NH mean (SD)	\$6,365.56 (8520.71)	\$3,080.24 (6241.38)
Source: 2016 HRS Data		
Notes:		
This data is weighted; standard deviation (SD); respondent (R); and spouse (S).		
¹ Respondents with an ADL difficulty include individuals with high functional impairment, meaning they have a minimum of two activities of daily living difficulties.		
² Home health (HH)		
³ Nursing home (NH)		
⁴ This includes respondents with HH and/or NH expenditure.		

Table 1.3 includes the findings for total (average home health and nursing home) OOP costs. For beneficiaries with high functional impairment (i.e., ADL difficulty), they had greater

odds (1.244, $p < .01$) of having OOP spending in the previous two years, which could be home health and/or nursing home expenditures, relative to individuals with no ADL difficulty. For individuals with any OOP expenditures, an ADL difficulty is linked with a 0.915 unit ($p < .01$) increase in OOP spending as compared to individuals with no ADL difficulty. Medicare-only beneficiaries 80 years of age and older, as compared to individuals 65 to 70 years of age, have higher odds (1.632, $p < .01$) of having home health and/or nursing home expenditures. Among those with OOP spending, those who are 80 years or older have a 1.767 unit ($p < .01$) increase in spending relative to those 65 to 70 years of age. Beneficiaries with some college education relative to those with a high-school degree or some high school have a lower odd (0.401, $p < .10$) of having OOP expenditures—however, among those with positive OOP spending, individuals with some college education have a 0.655 unit ($p < .05$) increase in spending relative to their counterparts.

The results of the two-part model for the average OOP expenditures for home health and nursing home care in the previous two years are included in Tables 1.4 and 1.5, respectively. My primary variable of interest, ADL difficulty, was statistically significant in part one of the model for home health OOP expenditures. Community-based Medicare-only respondents with an ADL difficulty had higher odds (1.170, $p < .01$) of having home health expenditures in the previous two years as compared to those with no ADL difficulty. Conditional on having positive home health expenditure, having an ADL difficulty is associated with a 0.681 unit increase in OOP costs relative to no ADL difficulty—this was not statistically significant. Being advanced in age (80 years or older), relative to those 65 to 70 years of age, is also a significant predictor of having OOP costs (1.188, $p < .05$) and for those expenditures to be higher (1.863, $p < .05$).

Respondents with high functional impairment (i.e., ADL difficulty) had higher odds (1.193, $p < .01$) of having nursing home OOP costs in the previous two years, and of those with positive expenditures, an LTSS need was linked with a 0.830 unit ($p < .05$) increase in expenditures relative to their counterparts with no ADL difficulty. Community-based Medicare-only beneficiaries 65 and older with 2 to 8 chronic conditions had greater odds of having positive OOP nursing home costs (1.437, $p < .05$) as well as higher expenditures (1.215, $p < .05$) as compared to individuals with less than 2 chronic conditions.

Table 1.3. Results of the two-part model for total (average home health and nursing home) out-of-pocket costs in the previous two years, Wave 13 (Year 2016)

	Logit¹	GLM²
Variable	Coefficient ³ (Standard Error)	Coefficient ³ (Standard Error)
ADL Difficulty [Reference Category: No ADL difficulties]		
ADL difficulty	1.244*** (0.197)	0.915*** (0.234)
Race/Ethnicity [Reference Category: White/Caucasian]		
Black/African American	-0.092 (0.244)	0.724** (0.369)
Hispanic	-0.366 (0.454)	0.171 (0.503)
Non-Hispanic other race, or multiple race	-0.702 (0.763)	0.823* (0.437)
Age [Reference Category: 65 to 70 years of age]		
71 to 79 years of age	0.659* (0.386)	0.836 (0.516)
80 years of age and older	1.632*** (0.380)	1.767*** (0.462)
Sex [Reference Category: Male]		
Female	-0.058 (0.182)	0.928*** (0.295)
Marital Status [Reference Category: Ever married]		

Never married	0.064 (0.524)	-0.096 (0.724)
Education [Reference Category: High-school graduate or some HS]		
Some college and above	0.401* (0.214)	0.655** (0.250)
Chronic Condition [Reference Category: 0 to 1 chronic conditions]		
2 to 8	1.143*** (0.378)	-0.153 (0.461)
Financial Resources [Reference Category: Lower than median]		
Income (R+S), Greater than median	-0.287 (0.302)	0.322 (0.300)
Wealth (includes 2 nd home), Greater than median	-0.143 (0.242)	-0.049 (0.267)
Source: ¹ The logit model is part one of the two-part model. ² The generalized linear model (GLM) with a gamma family and log link function is part two of the two-part model. ³ ***p-value<.01, **p-value <.05, *p-value<.1		

Table 1.4. Results of the two-part model for average home health out-of-pocket costs in the previous two years, Wave 13 (Year 2016)

	Logit¹	GLM²
Variable	Coefficient ³ (Standard Error)	Coefficient ³ (Standard Error)
ADL Difficulty [Reference Category: No ADL difficulties]		
ADL difficulty	1.170*** (0.256)	0.681 (0.527)
Race/Ethnicity [Reference Category: White/Caucasian]		
Black/African American	-0.170 (0.350)	1.418** (0.526)
Hispanic	-0.209 (0.651)	1.129 (0.863)

Non-Hispanic other race, or multiple race	--	--
Age [Reference Category: 65 to 70 years of age]		
71 to 79 years of age	0.158 (0.467)	0.717 (0.605)
80 years of age and older	1.188** (0.437)	1.863** (0.635)
Sex [Reference Category: Male]		
Female	-0.335 (0.256)	1.387** (0.508)
Marital Status [Reference Category: Ever married]		
Never married	0.312 (0.632)	0.348 (0.611)
Education [Reference Category: High-school graduate or some HS]		
Some college and above	0.502* (0.291)	1.144*** (0.347)
Chronic Condition [Reference Category: 0 to 1 chronic conditions]		
2 to 8	0.876* (0.478)	-0.525 (0.445)
Financial Resources [Reference Category: Lower than median]		
Income (R+S), Greater than median	-0.372 (0.439)	0.504 (0.407)
Wealth (includes 2 nd home), Greater than median	-0.012 (0.320)	0.395 (0.256)
Source: ¹ The logit model is part one of the two-part model. ² The generalized linear model (GLM) with a gamma family and log link function is part two of the two-part model. ³ ***p-value<.01, **p-value <.05, *p-value<.1		

Table 1.5. Results of the two-part model for average nursing home out-of-pocket costs in the previous two years, Wave 13 (Year 2016)

	Logit¹	GLM²
Variable	Coefficient ³ (Standard Error)	Coefficient ³ (Standard Error)
ADL Difficulty <i>[Reference Category: No ADL difficulties]</i>		
ADL difficulty	1.193*** (0.239)	0.830** (0.309)
Race/Ethnicity <i>[Reference Category: White/Caucasian]</i>		
Black/African American	-0.066 (0.280)	0.217 (0.357)
Hispanic	-0.506 (0.481)	0.004 (0.792)
Non-Hispanic other race, or multiple race	0.154 (0.787)	0.610** (0.268)
Age [Reference Category: 65 to 70 years of age]		
71 to 79 years of age	1.718*** (0.546)	0.167 (0.822)
80 years of age and older	2.839*** (0.576)	0.682 (0.937)
Sex [Reference Category: Male]		
Female	0.256 (0.262)	0.393 (0.310)
Marital Status <i>[Reference Category: Ever married]</i>		
Never married	-0.075 (0.703)	-0.289 (0.935)
Education [Reference Category: High-school graduate or some HS]		
Some college and above	0.157 (0.307)	0.205 (0.383)
Chronic Condition <i>[Reference Category: 0 to 1 chronic conditions]</i>		

2 to 8	1.437** (0.545)	1.215** (0.416)
Financial Resources <i>[Reference Category: Lower than median]</i>		
Income (R+S), Greater than median	-0.018 (0.271)	-0.001 (0.326)
Wealth (includes 2 nd home), Greater than median	-0.174 (0.264)	-0.087 (0.335)
Source: ¹ The logit model is part one of the two-part model. ² The generalized linear model (GLM) with a gamma family and log link function is part two of the two-part model. ³ ***p-value<.01, **p-value <.05, *p-value<.1		

This study also examined the marginal effects of a GLM model for both home health and nursing home OOP costs. While not statistically significant, the results indicate that respondents with an ADL difficulty have \$2,137.22 higher home health OOP costs as compared to those without an ADL difficulty. Respondents with an ADL difficulty relative to those with no difficulty have nursing home OOP costs that are \$3,547.80 higher (p<.05). For individuals at an advanced age, as compared to those between 65 to 70 years of age, the evidence was statistically significant (p<.05) that home health OOP costs were \$3,893.13 higher.

1.7 Discussion

Given the lack of research on the financial burden (OOP costs) of accessing LTSS (i.e., home health care and nursing home services) among Medicare-only beneficiaries, this analysis explored whether community-based beneficiaries with high functional impairment (i.e., ADL difficulty) will have higher OOP costs for home health care and separately a nursing home stay(s) as compared to individuals with little or no functional impairment (i.e., no ADL difficulty). Results of the analysis validated the hypothesis, revealing that community-based Medicare-only beneficiaries with an ADL difficulty had increased odds of having both or any home health or nursing home OOP expenditures in the previous two years, as compared with

those beneficiaries with no ADL difficulty. Further, among the population of beneficiaries with positive healthcare expenditure, having an ADL difficulty was linked with higher OOP spending for total spending (average home health and/or nursing home supports) relative to individuals with no ADL difficulty.

The literature points to increased functional impairment as individuals advance in age. This was demonstrated in my findings, specifically that among respondents with an ADL difficulty, short of half the population were 80 years of age and older, while less than a quarter of those with no ADL difficulty were at an advanced age, as expected. Among community-based Medicare-only beneficiaries with an ADL difficulty who had OOP expenditures, the average OOP spending for any home health services and nursing home stay in the previous two years was \$5,133.73 and \$6,365.56, respectively. This demonstrates that for individuals with comparable functional impairment, individuals who use institutional care have higher OOP expenditures compared to home health care use. Further, Medicare-only beneficiaries with high functional impairment, on average, had less income and assets, while their counterparts had higher average income and assets. Separately, some individuals may have used home health and nursing home services in the previous two years but did not report OOP costs. This is either because they failed to report it, or because their costs were covered by Medicare and they did not need to pay OOP for additional services.

These findings, coupled with research discussed earlier by Madden and colleagues (2021) related to the link between ADL limitations and delayed care given healthcare costs, suggests that individuals with an ADL difficulty experience more financial burden relative to those with no ADL difficulty, and this could have implications on healthcare access. Further, my findings indicate that individuals with high functional impairment appear to have more modest income

and assets relative to their counterparts. The literature points to the link between high healthcare costs and older adults' risk of medical debt and dependence on credit. Challenges with paying healthcare costs can be further exacerbated as the count of chronic conditions increases, which also increases the likelihood of a disability and necessitating LTSS (Madden et al., 2021; Wiener et al., 2013). Findings from this analysis point to a greater probability of both having OOP nursing home costs and higher spending for community-based Medicare-only beneficiaries with 2 to 8 chronic conditions as compared to those with less than 2 chronic conditions. Finally, as noted earlier, the literature indicates that the majority of individuals rely on informal caregivers to provide them with supports. It is possible that if individuals do not have access to informal caregivers that OOP expenditures would be even greater. This could be a focus of future work.

1.8 Limitations

The data collected from the interviews are self-reported and hence is a limitation in my study. For example, respondents may misreport their ADL limitations or insurance coverage. In terms of determining place of residence for respondents, I assume that persons who indicated they are living in the community during the time of the interview are considered community-based individuals. Finally, HRS includes data on the range of insurance coverage that a beneficiary may be eligible for (e.g., VA, private insurance, employment plan, medigap, etc.)—if I were to narrow my sample to exclude the range of coverage, I would have no sample available to run my analysis. As a result, in establishing my Medicare-only population, I only excluded persons with Medicaid and LTC insurance. Further, for education I combined respondents who completed some high school with high school graduates. The financial experience of both groups may be different and is not captured in my analysis. Lastly, this was a cross-sectional analysis which allows us to assess the experience of the population at a point in time.

1.9 Conclusion

Given the growing population of older adults, many of whom will require some level of LTSS, we must ensure that beneficiaries are aware of the high cost of accessing LTSS—whether it is home health or nursing home services for a period of time—in the community. As documented in the literature, high healthcare costs place a financial burden on older adults, in some instances leading beneficiaries to delay accessing healthcare services given costs. Understanding the health status and financial challenges of Medicare-only beneficiaries with high functional impairment can help inform the development of person-centered healthcare delivery services that will potentially prevent further health deterioration, which may ultimately delay (or, prevent) spend down to Medicaid. Further, determining the financial burden of LTSS on a community-based Medicare-only population will help inform financial planning for future older adults. The financial information could also be used by policymakers (and stakeholders) to advocate for LTC reform to prevent further strain on our Medicaid budgets, given that high OOP costs are linked with a greater likelihood of beneficiaries becoming dual-eligible.

Chapter 2: Understanding the Impact of Long-Term Services and Supports Needs of Community-based Medicare-only Beneficiaries on Spend Down to Medicaid

2.1 Introduction

More than 15 million Americans 50 years of age or older are covered by Medicaid, some of whom require long-term services and supports (LTSS) (Tavares et al., 2023). By 2040, Medicaid expenditure on long-term care (LTC) is estimated to be in excess of \$200 billion, up from more than \$100 billion in 2015 (Frank & Moulds, 2019). Research reveals that spend down to Medicaid is experienced by a substantial number of Medicare beneficiaries with age, and is not an uncommon occurrence (Wiener et al., 2013). Regardless of insurance status (i.e., dual-eligible or non-dual), persons with a LTC need have a greater number of health conditions than persons with no LTC need (Kane et al., 2013). Medicare-only beneficiaries with a LTC need are frail and experience financial burdens accessing necessary supports, the objective of this paper is to examine whether these factors lead to a greater risk of spend down to Medicaid. In this study I expect to find that among community-based beneficiaries, individuals with an LTSS need will spend down at a quicker rate than those with no LTC need.

2.2 Literature Review and Conceptual Framework

LTSS costs are excessive, ranging from excess of \$48,000 for community-based services or assisted living services to greater than \$89,000 for institutional care (Edwards & Sen, 2019). A 2022 report by Super and De Cervens shared that the median yearly cost of a home health aide is \$54,912, which is higher than the median income (\$47,357) of individuals 65 and older. Some beneficiaries fund LTSS through OOP spending as discussed earlier. In 2012 alone, OOP spending made up 16.8 percent (or, \$54.5 billion) of overall LTSS spending (Colello & Talaga, 2015). This constitutes both payments made for LTC services, as well as cost sharing for

services covered by an alternative source (e.g., co-payment for a short-term SNF stay covered by Medicare). Many Americans are unprepared for the costs of LTSS, which is a great risk to their financial well-being in retirement (Super & De Cervens, 2022). Roughly 26 percent of persons 65 to 69 years of age are able to cover the costs of care for five years or longer (Super & De Cervens, 2022). LTSS costs increase on a yearly basis and have been exacerbated by COVID-19 coupled with ongoing workforce shortages. According to Willink et al. (2019) the exorbitant amount spent on LTC services leads to instant and lasting cost consequences for the Medicaid budget at both the state and federal level.

Medicaid is the principal payer for LTC in the U.S. for community-based services as well as institutional care (Edwards & Sen, 2019). Medicaid is managed by each state but jointly funded by federal and state dollars (Gruber & McGarry, 2023). For beneficiaries to qualify for Medicaid they must meet categorical (e.g., age 65+, disabled) and financial (i.e., resources and income) benchmarks (Colello, 2017). For example, older adults must meet both income and asset limits to qualify for Medicaid. Typically, persons who are aged, blind, and disabled who qualify for Supplemental Security Income also qualify for Medicaid in their state, with a few exceptions (Colello, 2017). These exceptions are referred to as 209(b) states given their restrictive Medicaid eligibility criteria (Colello, 2017). There are multiple Medicaid eligibility pathways for older adults, which differ by state. States can make available more generous Medicaid eligibility pathways by setting their own eligibility criteria for their Medicaid programs, which can be over the federal poverty level (Hest et al., 2022; Dawson & Cutler, 2020). In some instances, an individual's income may be beyond the Medicaid threshold for eligibility. However, certain eligibility pathways may provide a mechanism for those individuals to qualify for Medicaid coverage- either by setting higher income limits or allowing for a spend

down mechanism. For example, Medicare beneficiaries can qualify for Medicaid if they spend down their income by accruing high healthcare expenditures (ASPE, 2019). Specifically, the medically needy pathway permits Medicare beneficiaries to spend down their income to a medically needy income limit and within a set period of time (1 to 6 months), both of which are established by the state, to qualify for Medicaid. Not much has changed since the 1990s in terms of LTC financing. Medicaid was viewed as the country's main "safety net" for LTC—in 1998, \$150 billion was spent on LTC, of which Medicaid covered 40 percent of the costs (Feder et al., 2000). In 2020, Medicaid covered 42.1 percent of LTC costs (Sun & Webb, 2023).

Roughly 7.4 million individuals have a LTC insurance policy (Dawson & Cutler, 2020). Private LTC insurance is not common among older adults in the US, with only 11 percent of persons opting for this coverage (Frank & Moulds, 2019). LTC insurance is generally unaffordable and accessing it can be further complicated for those with preexisting conditions (Super & De Cervens, 2022). Based on an analysis of 2018 Health and Retirement Study (HRS) data, among adults 65 and older either residing in the community or an institution, approximately 40 percent of individuals with a minimum of three ADL difficulties have an income that is lower than the median (Gruber & McGarry, 2023). This finding indicates that older adults with a LTC need have limited resources to afford a LTC policy. Premiums for LTC insurance differ by geographic region as well as the age and health of individuals (Super & De Cervens, 2022). Costs that would have typically been covered by LTC insurance may now transition to Medicaid programs, particularly given the liquidation of these insurance plans over the years (Esworthy et al., 2020)

Much of the literature on spend down to Medicaid is dated (Wiener et al., 2013). A study by Temkin-Greener et al. (1993) found that 27 percent of nursing home residents who were

admitted as private-pay spent down to Medicaid. Wiener et al. (2013) point to several studies from the 1980s and 1990s such as one in Michigan in 1984 of nursing facilities that reported 27 percent of nursing home residents became Medicaid eligible. Another study from 1985 using National Nursing Home Survey data found that a subset (or, one-third) of persons discharged from a nursing home ultimately spent down (Wiener et al., 2013). Rarely have studies focused on community-based older adults—one study, published in 1990, did find that the number of community-dwelling disabled older Americans who spent down was higher than that of nursing home residents (Wiener et al., 2013).

Wiener et al. (2013) assessed spend down using HRS and Medicare data. They found that among the non-Medicaid population age 50 or older, 10 percent spent down to Medicaid, and short of half of the latter group did not utilize LTC services. Meanwhile, the remaining individuals either used personal care services and/or were institutionalized (i.e., nursing home). Roughly 20 percent of individuals who utilized LTC services and became Medicaid eligible, given spend down, were community-based making use of personal care services (Wiener et al., 2013). Persons who opted for LTSS spent down at a quicker rate than those who did not utilize LTC services (Wiener et al., 2013).

Across the population of non-Medicaid eligible beneficiaries at the start of the study, 5.6 percent who had no LTC use spent down to Medicaid, along with 21.2 percent of personal care service consumers, 23.4 percent of nursing home residents, and 31.7 percent of beneficiaries who utilized both of the latter LTC services (Wiener et al., 2013). For beneficiaries who only used paid personal care services or just a nursing home, both respectively took an average of 6.3 years to spend down (Wiener et al., 2013). On the other hand, those who used both had a reported

average spend down time of 6.9 years. Finally, for beneficiaries not utilizing a service, the average spend down time was just above 7 years (Wiener et al., 2013).

Tavares and colleagues (2023) assessed HRS data for adults age 50 and older over a 16-year timeframe (waves 1998 to 2014) to identify which factors are linked with an increased likelihood of Medicaid use. Surprisingly, the study findings indicated no real difference at the study's initial assessment in the physical limitations—defined as number of ADLs and instrumental activities of daily living (IADL) in the study—as well as the count of chronic conditions and even cognitive impairment between individuals who did and did not use Medicaid over the study period. However, as these functional limitations and health conditions deteriorated gradually with time, they were significantly linked to Medicaid use during the timeframe of the study (Tavares et al., 2023).

One study found that beneficiaries who became newly eligible for Medicaid often had higher use of healthcare services as compared to their counterparts (Keohane et al., 2017). Adults 85 and older have high health care spending and whom are at most risk for LTSS (Gruber & McGarry, 2023). Over 40 percent of the Medicaid budget is allocated to LTSS, and this is estimated to grow as the population of adults 80 and over increases in the coming years (Esworthy et al., 2020). Another study found that persons identified to be *underinsured* have a greater likelihood of becoming Medicaid eligible, according to a study by Willink et al. (2016) utilizing HRS data. The rate of Medicaid eligibility for persons identified to be *underinsured* as well as having a physical and/or cognitive limitation was nearly double that of persons who did not meet that criteria (Willink et al., 2016).

The characteristics of beneficiaries who spend down differ from the non-spend down group. Specifically, they often have limited resources, are of an ethnic or racial minority group,

single, and have low educational attainment (Wiener et al., 2013). Another study found that persons who obtained Medicaid coverage were often female, belong to a minority group, are widowed, and have at baseline a low-income (Willink et al., 2016). Findings related to limited resources (i.e., income and assets) is counter to the notion that persons who spend down are largely middle-class Americans (Wiener et al., 2013). Persons who spend down are also often female, and have poor health (including cognitive impairments, chronic disease, etc.) and greater numbers of ADL and IADL limitations as opposed to non-Medicaid individuals who have not spent down (Wiener et al., 2013). Specifically, persons who spend down have greater rates of diabetes, heart issues, lung disease, among other chronic conditions.

For this study, the conceptual model is informed by the literature coupled with the Andersen Behavioral Model of Health Care Utilization. The Andersen model is commonly utilized to identify factors that affect utilization of healthcare services and has evolved to include new phases of the model which incorporate different factors- such as *enabling resources* and *need*. According to the literature, there are several factors that impact spend down, including an individuals' income and asset levels, and use of LTSS. My conceptual model includes some of those key factors in an updated version of the Andersen Model. Specifically, studies have pointed to the link between ADL limitations and use of LTSS. As discussed in chapter 1, ADL limitations are included in my conceptual model as a *need* factor (Jahangir et al., 2012; Tan, 2009). Separately, spend down is related to depletion of income and assets, which are considered *enabling resources* in my model (Jahangir et al., 2012; Tan, 2009).

2.3 Data

The sample for this study is Medicare-only beneficiaries 65 and older, living in the community. Similar to chapter 1, I used the Health and Retirement Study data, which is a

nationally representative longitudinal survey. For more information on the dataset, please refer to chapter 1. This study includes cohorts in wave 10 (year 2010) through wave 15 (2020).

2.4 Measurement & Methodology

Persons newly qualified for Medicaid are often individuals who are high utilizers of healthcare services (Keohane et al., 2017). In this study I am defining spend down as transition from Medicare-only to dual-eligible status, rather than measuring spend down of assets or medical spending to qualify for Medicaid. The study by RTI, similarly, defined spend down as transition to Medicaid rather than a measure of resource reduction (Weiner et al., 2013). Other studies looking at transition to Medicaid coverage take a similar approach, by assessing change in insurance coverage. For example, Temkin-Greener et al. (1993) assessed spend down by assessing the insurance coverage—private pay or Medicaid—of beneficiaries. Another study by Keohane et al. (2017) tracked the likelihood of Medicaid use based on utilization of healthcare services by Medicare beneficiaries by examining when a Medicare beneficiary enrolled in Medicaid. As a result, I am using transition to dual-eligible status, similar to RTI and other studies.

My groups of interest for this paper includes community-based Medicare-only beneficiaries age 65 and older with and without a LTC need (defined as having limitations with 2 or more ADLs). As discussed in chapter 1, the Medicare-only population only excluded persons with Medicaid and LTC insurance. No other coverage was excluded, given that any additional exclusion criteria would result in limited to no sample for my analysis. The study includes waves 10 (2010) through wave 15 (2020) of the HRS dataset. Specifically, to track one group of respondents over time, only those respondents who were part of the Wave 10 survey were included in the analysis (i.e., “entered” my model at wave 10). Given that respondents entered

the analysis at Wave 10, the survival analysis was applied beginning at wave 11 and they were tracked through wave 15. Separately, my “other” race and ethnicity group was not included in the analysis, given a small sample that often resulted in no reportable results.

The results include descriptive statistics for my populations of interest, as well as the results of the survival analysis where I assessed the length of time (determined by any insurance change between waves) it takes a Medicare-only beneficiary to transition to dual-eligible status. (This is commonly referred to as the “event”.) I ran separate models for each group as demonstrated in the results.

Given that my analysis includes censored data, survival analysis is the most appropriate model (Bewick et al., 2004). Data are censored for respondents in my sample who for example do not experience the “event”, are lost during follow-up, or die. I ran two types of models for my survival analysis, nonparametric and semiparametric models. A non-parametric Kaplan-Meier survival curve was produced for both groups of interest, which demonstrates the survival rate—which would be survival from becoming dual-eligible—between each wave. This type of method does not make an assumption about a presence of a link between my covariates of interest and survival, nor the shape of the distribution (Schober & Vetter, 2018). The survival curves allow me to observe the percentage of respondents who did not transition to dual-eligible status (i.e., survived), by wave. For my semiparametric analysis, I employed a Cox Proportional Hazard Model, which supposes that covariates have a link with the hazard function (Schober & Vetter, 2018). The model evaluates the hazard ratios, or the risk an event will happen, for every predictor variable.

My covariates for the Cox model include *predisposing characteristics* such as age, sex, marital status, race/ethnicity (*Black/African American, Hispanic, or White/Caucasian*), and

education. I also included *enabling resources*, such as binary variables indicating whether respondents' incomes and assets are above or below the median (Jahangir et al., 2012; Tan, 2009). Further, to account for the impact of chronic conditions on LTSS need, self-reported chronic conditions are included in my models as a *need* factor (Jahangir et al., 2012; Tan, 2009). I ran two different Cox models to test different covariates and tested the proportional-hazards assumption of my Cox models.

2.5 Results

Table 2.1 below illustrates the characteristics of my sample. Some of the beneficiaries are dual-eligible in the sample, but immediately “fail” (i.e., are dual-eligible) at the start of the analysis (as described above). Across both LTSS and no LTSS need groups, most of the sample was non-Hispanic White, female, and have been married. Further, across both groups, a majority of the beneficiaries had 2 or more chronic conditions and were 71 years of age or older. Among the LTSS need group, more than half the population had an income or asset level that was greater than the median. For beneficiaries with no LTSS need, a little over half had assets that were greater than the median.

Table 2.1. Characteristics of respondents and data at Wave 10 (Year 2010)

	LTSS Need¹ (N=400)	No LTSS Need² (N=5,599)
Variable	Count (%)	Count (%)
Race/Ethnicity		
White/Caucasian [<i>Reference Category</i>]	273 (68%)	4,552 (81%)
Black/African American	77 (19%)	678 (12%)
Hispanic	50 (13%)	369 (7%)
Age		
65 to 70 years of age [<i>Reference Category</i>]	39 (10%)	1,065 (19%)
71 to 79 years of age	169 (42%)	2,923(52%)
80 years of age and older	192 (48%)	1,611 (29%)

Sex		
Male <i>[Reference Category]</i>	147 (37%)	2,477 (44%)
Female	253 (63%)	3,122 (56%)
Marital Status		
Ever married <i>[Reference Category]</i>	388 (97%)	5,474 (98%)
Never married	12 (3%)	125 (2%)
Education		
High-school (HS) graduate or some HS <i>[Reference Category]</i>	282 (71%)	3,222 (58%)
Some college and above	118 (30%)	2,377 (42%)
Chronic Condition		
0 to 1 <i>[Reference Category]</i>	30 (8%)	1,387 (25%)
2 to 8	370 (93%)	4,212 (75%)
HH Care Use, Prev. 2 years²		
No <i>[Reference Category]</i>	253 (63%)	5,109 (91%)
Yes	147 (37%)	490 (9%)
Median Income		
Lower than median <i>[Reference Category]</i>	181 (45%)	2,867 (51%)
Greater than median	219 (55%)	2,732 (49%)
Median Assets		
Lower than median <i>[Reference Category]</i>	170 (43%)	2,712 (48%)
Greater than median	230 (58%)	2,887 (52%)
Source: HRS Data		
Notes:		
¹ Respondents with a long-term services and supports (LTSS) need include individuals with a minimum of two activities of daily living difficulties.		
² Respondents with no LTSS need include individuals with less than two activities of daily living difficulties.		
³ Home health (HH)		

For my non-parametric analysis, my Kaplan-Meier survival curves (Figures 2.1 and 2.2) demonstrate survival curves for community-based beneficiaries with and without a LTC need. Specifically, approximately 73 percent of the respondents with an LTSS need did not experience the event (i.e., transition to dual-eligible status) and survived by wave 15. For individuals with no LTSS need, about 89 percent survived by wave 15, meaning they remained Medicare-only.

For both groups, some respondents immediately failed at wave 11 (the beginning of our study), meaning they were dual-eligible and hence were censored.

Figure 2.1. Group: No LTSS Need

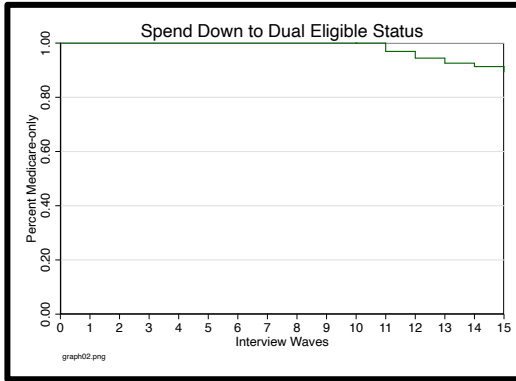


Figure 2.2. Group: LTSS Need

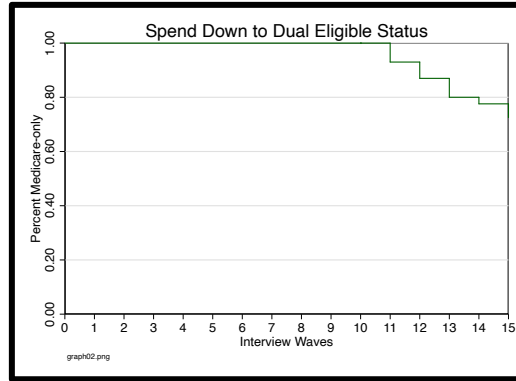


Table 2.2 includes the results of two models I ran for each group, with the primary difference being the addition of the financial resources variables in model 2. In Model 1, the hazard ratios (HR) for race and ethnicity for the LTSS need group indicate that Black/African American (HR= 1.82, $p<.1$) and Hispanic (HR=3.52, $p<.01$) respondents are at a greater risk of experiencing the event (transition to dual-eligible status), as compared to White respondents. Education was also statistically significant, indicating that higher levels of educational attainment is associated with a lower risk (HR=.543, $p<.1$) of becoming dual-eligible. In Model 2, I found that having income (HR=.448, $p<.05$) or assets (HR=.353, $p<.01$) higher than the median results in individuals having a lower hazard of the event (spend down to dual-eligible status).

For beneficiaries with no LTSS need, my findings show that across both models Black/African American (HR= 4.17, $p<.01$; 3.11, $p<.01$) and Hispanic (HR= 4.45, $p<.01$; 3.25, $p<.01$) respondents have a greater likelihood of transitioning to dual-eligible status than White respondents. Similarly, having never been married (HR= 1.89, $p<.05$; 1.65, $p<.05$) and having

used home health care (HR= 1.59, $p<.01$; 1.53, $p<.01$) in the previous two years increases an individual's risk of spend down to Medicaid, in both models. On the other hand, females (HR= .692, $p<.01$; .572, $p<.01$), those respondents with some college and beyond (HR= .528, $p<.01$; .754, $p<.1$), as well as individuals whose income and assets (HR= .407, $p<.01$; HR= .446, $p<.01$) are above the median, have a lower likelihood of experiencing the event. Separately, based on my test of the proportional-hazards assumption for my models, there was no evidence that the proportional-hazards assumption was violated.

Table 2.2 Cox Proportional Hazard Model Results

	LTSS Need ¹ (N=400)		No LTSS Need ² (N=5,599)	
Variable	Model 1 Hazard Ratios (95% CI)	Model 2 Hazard Ratios (95% CI)	Model 1 Hazard Ratios (95% CI)	Model 2 Hazard Ratios (95% CI)
Race/Ethnicity [Reference Category: White/Caucasian]				
Black/African American	1.82* (.976-3.40)	1.28 (.684-2.40)	4.17*** (3.364-5.185)	3.11*** (2.49-3.88)
Hispanic	3.52*** (1.94-6.38)	2.56*** (1.39 – 4.73)	4.45*** (3.458-5.731)	3.25*** (2.51-4.20)
Age [Reference Category: 65 to 70 years of age]				
71 to 79 years of age	.670 (.270-1.65)	.618 (.249 – 1.53)	.841 (.615-1.15)	.788 (.576-1.07)
80 years of age and older	.566 (.224-1.43)	.601 (.236 -1.52)	.900 (.644-1.25)	.756 (.540-1.06)
Sex [Reference Category: Male]				
Female	.937 (.545-1.60)	.815 (.470 – 1.41)	.692*** (.574-.834)	.572*** (.473-.691)
Marital Status [Reference Category: Ever married]				
Never married	.372 (.050-2.72)	.326 (.043 – 2.42)	1.89** (1.20-2.98)	1.65** (1.04-2.60)
Education [Reference Category: High-school graduate or some HS]				

Some college and above	.543* (.272-1.08)	.635 (.317 – 1.27)	.528*** (.426-.654)	.754* (.606-.940)
<i>Chronic Condition [Reference Category: 0 to 1 chronic conditions]</i>				
2 to 8	.718 (.282-1.82)	.804 (.313 – 2.06)	1.04 (.826-1.32)	.982 (.774-1.24)
<i>HH Care Use, Prev. 2 years³ [Reference Category: No]</i>				
Yes	1.44 (.870-2.41)	1.46 (.875 – 2.43)	1.59*** (1.22-2.09)	1.53*** (1.17-2.01)
<i>Median Income [Reference Category: lower than median]</i>				
Greater than median	--	.448** (.250 - .801)	--	.407*** (.318-.521)
<i>Median Assets [Reference Category: lower than median]</i>				
Greater than median	--	.353*** (.195 - .639)	--	.446*** (.350-.567)
Source: HRS Data Notes: Long-term services and supports (LTSS); Confidence interval (CI) ¹ Respondents with an LTSS need include individuals with a minimum of two activities of daily living difficulties. ² Respondents with no LTSS need include individuals with less than two activities of daily living difficulties. ³ Home health (HH) ***p-value<.01, **p-value <.05, *p-value<.1				

2.6 Discussion

The survival rate for my Kaplan-Meier curves by LTSS need confirmed my study hypothesis- over a quarter of Medicare-only beneficiaries with a LTC need transitioned to dual-eligible status, and about 11 percent of individuals with no LTC need obtained Medicaid coverage. This also aligns with the literature, wherein individuals with more ADL limitations are at a greater risk of spend down (Wiener et al., 2013). Separately, my Cox models allowed me to draw findings on the risk of transitioning to dual-eligible status within each group of interest

(those with and without a LTC need). Findings from my Cox analysis supplement my overall findings from the survival curves, by identifying specific predictors that increase the hazard of becoming Medicaid eligible within each group.

The results of the Cox analysis among only beneficiaries without a LTC need indicated that individuals who used home health services in the previous two years, as compared to beneficiaries without a LTC need who did not, are at a greater hazard of transitioning to dual-eligible status. This could suggest that use of services depletes the financial resources of older adults and aligns with work by Wiener and colleagues (2013) who found that individuals who use LTC services spend down more quickly than those beneficiaries who have no LTSS use. For my population of beneficiaries with an LTSS need, the analysis indicated that they also have a higher likelihood of transitioning to dual-eligible status with the use of home health services, however it was not statistically significant. It could be that the sample was not large enough to make an inference about statistical differences.

Several studies in the literature identified common predictors of Medicaid eligibility, they include low educational attainment, belonging to a racial and ethnic minority group, being single, and a female (Willink et al, 2016; Wiener et al., 2013). I found similar findings in my analysis, where both individuals with and without an LTSS need who have some college and beyond had a lower likelihood of transitioning to dual-eligible status- this was significant at either the 1 or 10 percent level. One potential driver for this difference by educational attainment is that the latter group may have more financial resources.

Among both individuals with and without an LTSS need, Black/African American and Hispanic beneficiaries had a higher risk of spend down to Medicaid as compared to non-Hispanic White older adults. Across both models and groups of interest, it was statistically significant at

the 1 percent level for Hispanic respondents. For Black/African American individuals, among those with an LTSS need, only model 1 was statistically significant ($p < .1$)—for those with no LTSS need, for both models, it was statistically significant at the 1 percent level. For beneficiaries with no LTSS need, those who were never married had a higher hazard of becoming dual-eligible ($p < .05$). This aligns with other research that indicates individuals who are single have fewer resources. Females with no LTC need had a lower likelihood ($p < .01$) of experiencing the event, which is contrary to the literature that females often become Medicaid eligible. It is possible that this group of females is more healthy and could explain why the result was not significant for females with a LTC need.

The analysis demonstrated that beneficiaries with an income or asset greater than the median have a lower risk ($p < .01$ or $p < .05$) of transitioning to dual-eligible status across both groups of interest. Several reports demonstrated that individuals who have limited means are more likely to obtain Medicaid coverage (Willink et al, 2016; Wiener et al., 2013), and that individuals who are lower income are more likely to have a serious LTSS need (i.e., 2 or more ADL limitations) (Johnson et al., 2021).

Although not statistically significant, results for individuals with and without an LTSS need who are more advanced in age (i.e., 71 and older) in comparison to those 65 to 70 years of age appear to have a lower hazard of transitioning to dual-eligible status. This does not align with other studies in the literature that advanced age is a greater predictor of Medicaid use (Tavares et al., 2023). Given that this analysis examines individuals who are community-based, its possible that individuals who are advanced in age and continue to live in the community are less frail than those adults 65 to 70 years of age who have a greater risk of spend down. Separately, the results of both groups (individuals with and without a LTC need) also indicate that (generally)

individuals with 2 to 8 chronic conditions are less likely to spend down as compared with those individuals with 0 to 1 chronic condition, although this was insignificant. This was an unexpected result and may not be explained.

2.7 Limitations

In chapter 1 I discuss several limitations to using HRS, those apply here as well. Other limitations specific to this analysis include survey frequency and the definition for spend down. The HRS data includes OOP costs related to a number of categories (e.g., HH care, NH costs, prescription drug costs), however it does not include all qualifying expenditure data (e.g., all LTSS costs) to track spend down, hence it is not possible to determine spend down of financial resources as defined by the medically needy pathway. Further, under the medically needy pathway and as discussed earlier, each state sets its own medically needy income limit which a beneficiary must spend down to, and it has to be done within a set period of time. Aside from not having the necessary expenditure data to track spend down under this pathway by state, the HRS data is also limited because the survey is conducted every two years- I would be unable to track whether an individual spent down within their state's spend down period. Given that the data is not sufficient to track spend down, in this study I considered an individual to have spent down to Medicaid if they transitioned from Medicare to dual-eligible status, similar to other studies in the literature assessing transition to Medicaid coverage. Further, because a beneficiary may transition to dual-eligible status during a non-interview year, I am delayed in my ability to determine the exact time in which a respondent transitions to Medicaid. Future studies assessing spend down may consider measuring depletion of resources (i.e., income and assets) overtime by using another dataset or appending data to HRS, while also considering state specific rules for Medicaid spend down.

Separately, another limitation is that some “Medicare-only” beneficiaries likely qualify for Medicaid but have not enrolled. The extent to which Medicare beneficiaries enroll in Medicaid when they become eligible varies- although a group of beneficiaries will utilize Medicaid immediately, others may choose to enroll at a later period (Keohane et al., 2017). A substantial portion of Medicare beneficiaries that qualify for monetary support for Medicare costs are not using such assistance. Some reasons for this include the absence of knowledge about the financial assistance programs as well as challenges with accessing the services (Keohane et al., 2017).

2.8 Conclusion

This study found that 73 percent of individuals with an LTSS need during my study period did not transition to dual eligible status while over a quarter did become dual eligible. Among those respondents with no LTSS need, roughly 89 percent did not transition to dual-eligible status and only 11 percent obtained Medicaid coverage. Concern over a growing population of older adults may result in considerations to make Medicaid eligibility more restrictive. However, if LTSS is not delivered in a timely manner, it will be detrimental to the health of older adults as well as future use of services (Hest et al., 2022). Further, any initial savings may be offset by a rise in avoidable hospitalizations and emergency utilization, as well as growth in nursing facility stays (Hest et al., 2022). Older adults are unable to rely on LTC insurance either because so few policies exist, premiums are high, or as a result of underwriting. Policymakers have looked to LTC insurance as a means to generate savings for Medicaid—however, Wiener et al.’s (2013) study demonstrated that persons spending down actually have more limited resources than anticipated, hence they would likely need significant subsidies to afford LTC insurance. We have to identify other mechanisms to address the growing number of

older adults with a LTC need, some of whom are Medicare-only with limited resources at risk of spend down.

Policymakers at the federal and state level may consider one or more of the following mechanisms to implement change at a system level, this includes expansion of Medicare, establishment of innovative approaches to cover LTSS, state-based solutions, or at a more micro level but just as critical is greater reliance on telehealth. First, consideration can be given to relying on Medicare for some LTSS, by offering LTSS via Medicare Advantage plans through supplemental benefits (Dawson & Cutler, 2020). Particularly given that Medicare expenditures are three times higher for individuals who require assistance with two or more ADL limitations. Although there are apprehensions about the increasing costs of Medicare, providing coverage for LTC under Medicare could decrease and defer the need for Medicaid (Dawson & Cutler, 2020). Second, some suggestions by stakeholders include social security credit for informal caregivers who left the workforce to provide care or establishing public-private programs to support catastrophic LTSS costs by relying on payroll taxes (Super & De Cervens, 2022). Third, states could be more proactive with identifying mechanisms to fund LTSS separate from Medicaid. For example, Washington state established a public program to finance LTC for its residents (Esworthy et al., 2020). Finally, another consideration to address budgetary implications of LTC costs includes greater reliance on telehealth (Super & De Cervens, 2022). Leveraging telehealth to support older adults in the community could mean less reliance on direct care workers.

Chapter 3: Assessing the Risk of Spend Down by Race and Ethnicity

3.1 Introduction

Racial and ethnic disparities in access to healthcare services, financing of care, healthcare delivery, among other factors exist even prior to the need for long-term services and supports (LTSS) presenting itself (Gay et al., 2019). One study found that belonging to a racial and ethnic minority group increases the risk of Medicaid use (Tavares et al., 2023). Separately, differences in socioeconomic status, particularly income and wealth, between racial and ethnic groups also effects the health of individuals throughout their life (Super & De Cervens, 2022). Separate from differences by race and ethnicity, the steep costs of LTSS care impact older adults with limited resources. For those Medicare-only beneficiaries without add-on coverage, such as private insurance, cost sharing obligations would impact their income (Roberts et al., 2021). This is separate from LTSS care costs, which Medicare does not cover.

The focus of aim 3 is to assess the risk of spend down on a more granular level, assessing differences by race and ethnicity with and without an LTSS need. I expect to find that racial and ethnic minority groups will spend down at a quicker rate than their White counterparts.

3.2 Literature Review and Conceptual Framework

Persons who require assistance with at least two activities of daily living (ADLs) are often identified as meeting the eligibility threshold for nursing facility level of care—assuming this population’s needs are unmet, they are at jeopardy of admission into a nursing home (Kaye et al., 2010). Studies have demonstrated that anywhere between 20 to 40 percent of older adults nationwide have an unmet ADL need (Lin & Liu, 2023). The association between unmet long-term care (LTC) need among dual-eligible community-based beneficiaries and adverse outcomes (e.g., falls) has been present for years. Previous findings demonstrate differences by race and

ethnicity as it relates to unmet healthcare needs. Several factors (e.g., low income, lack of health insurance, etc.) lead to obstacles in obtaining care for older adults belonging to a racial or ethnic minority group, who have a higher chance of having unmet needs as compared to white persons. However, studies on unmet need are mostly focused on a dual population. For this analysis unmet LTC need will be evaluated by determining whether a beneficiary who has a difficulty with at least one ADL limitation receives assistance for the ADL. If a beneficiary does not receive assistance for at least one ADL difficulty, the beneficiary is considered to have an unmet LTC need.

A recent study by Chong and colleagues (2022) assessing unmet need of Medicaid home- and community-based services (HCBS) beneficiaries found that individuals who had an unmet need continuously experienced adverse health outcomes as compared to individuals whose needs were met. If LTSS needs are not met, individuals are at risk of prescription errors, falls, toileting challenges, and even unfulfilled medical visits, for example (Chong et al., 2022). Medicaid HCBS may not meet all the needs of an individual, requiring them to rely on informal caregivers. More than 2 million community-based Medicare beneficiaries experience an adverse outcome as a result of lack of adequate assistance with personal care needs or household chores (Berridge & Mor, 2018). A survey in 1999 of a population of community-dwelling dual-eligible beneficiaries across six states found that 58 percent of individuals with a LTC need were found to have unmet needs leading to adverse outcomes—such as falls, difficulty bathing, or soiling one’s clothes, among others (Komisar et al., 2005). Beneficiaries were determined to have an unmet need if they had lack of assistance for at least one ADL but required assistance to meet their ADL need—or, if the beneficiary received some assistance but required additional help. While unmet

needs were reported across all states in the study, areas where there was wide availability of formal paid help had less occurrences of unmet needs (Komisar et al., 2005).

It is well documented that overall older adults in the U.S. experience negative consequences when needs are left unmet. Wolff et al. (2019) found that a little over one in five older adults with either a mobility or self-care limitation noted suffering an adverse outcome as a result of lack of assistance. Research points to the negative health outcomes of unmet need and is a particular worry for older Americans (Weaver & Roberto, 2022). A study examining Medicare beneficiaries (some of whom also qualify for Medicaid) who require help with their ADLs found that beneficiaries who are Black and Hispanic had increased rates of having an unmet LTC need relative to their White counterparts (Lin & Liu, 2023). Research has demonstrated that older Black adults as opposed to White older adults are at a greater risk of experiencing unmet or undermet need (Berridge & Mor, 2018). For ADL needs, such as bathing and dressing, White individuals are more likely to have their needs met (Berridge & Mor, 2018). Li et al. (2023) analyzed Health and Retirement Study data between 2008 and 2018, looking at a community-based population with self-care, mobility and household activity difficulties but received no help. As compared to White individuals in this population, both Hispanic and Black adults had a higher incidence of having a difficulty without receiving needed assistance.

Racial and ethnic disparities exist at many different levels. Some studies point to lower life expectancy for Black as compared to White individuals on average, while Hispanic persons have marginally higher life expectancy than White persons (Cherry & Asebedo, 2022). The percent of Hispanic adults 65 and older are estimated to reach 22 percent by 2060. As compared to White older adults, Hispanic individuals have comparable or enhanced health notwithstanding their lower income (Lin & Liu, 2023). As compared to Whites, African Americans often have a

disability at a younger age and note more difficulties with ADLs and instrumental activities of daily living (IADLs). Unlike White individuals, African Americans had healthcare access challenges given lower incomes, less health coverage, and a lower likelihood of having a regular source of care (Wallace et al., 1998). For example, the median net worth of households among older Black adults was \$56,700 as compared to \$255,000 for their White counterparts, in 2013 (Gay et al., 2019). The Latino population also experiences similar challenges to African Americans, in addition to a language barrier. Research has found that older Black adults and older Hispanic adults are at greater risk of either undermet or unmet needs versus their older White counterparts (Rhee et al., 2019).

One study found that older Black adults have a lower likelihood of utilizing nursing homes as compared to older White adults, and instead opt for either paid community-based services, assistance from informal caregivers (i.e., family or friends), or receive no help (Wallace et al., 1998). On the other hand, a more recent study found that African Americans are less likely to remain in the community and have a higher likelihood to require LTC services with advancing age (Gay et al., 2019). Hispanic beneficiaries have a decreased likelihood of relying on formal caregiving networks. Community-based Black and Hispanic adults with functional challenges received almost 50 percent more informal care relative to White adults (Li et al., 2023). Black individuals often have a greater informal caregiving community to rely on relative to White Americans (Lin & Liu, 2023). While many depend on informal caregivers for assistance with ADLs, some will use formal personal care services which may cost roughly \$48,000 to \$50,000 annually (Gay et al., 2019). One study identified key indicators that were associated with a greater likelihood of Medicaid use- this included older age, belonging to a racial and ethnic minority group (i.e., Black or Hispanic), lower educational attainment, not married, poor or fair

self-reported health, and lower resources (e.g., wealth) (Tavares et al., 2023).

Racial and ethnic differences in wealth further complicates LTC coverage. For example, the median household wealth of Hispanic and Black individuals is roughly one-eighth that of their White counterparts. This is driven by decades long disparities in income as well as family inheritance (Super & De Cervens, 2022). Further, variances in the financial resources of racial and ethnic groups impacts the well-being of individuals (Super & De Cervens, 2022). Cultural beliefs and lived experiences effect the need for LTC insurance- one study found that White individuals have a higher likelihood of having a LTC policy as compared to other racial and ethnic groups (Cherry & Asebedo, 2022). Gender differences also exist. One study found that females as compared to males had a greater likelihood of having an income that is lower than the FPL, in turn increasing their risk of Medicaid utilization (Tavares et al., 2023). A study by Cherry and Asebedo (2022) found that males have a lower probability of having LTC insurance in contrast to females- this finding differs from the other literature. Women often have higher life expectancy, a greater need for LTSS, less resources to support their care, a lower likelihood of having a LTC insurance policy, and often require care for a longer period of time as compared to men (Super & De Cervens, 2022). Married women typically care for their male spouse but are widowed when they require LTSS assistance. This results in greater reliance on other informal caregivers or paid help.

Medicare beneficiaries with other private coverage have a greater likelihood of being White, while Hispanic and Black Medicare beneficiaries are more likely to have additional public insurance, such as Medicaid (Toseef et al., 2020). For Medicare beneficiaries without additional coverage—this includes Medigap, employer-sponsored, or Medicaid—cost sharing can take up a significant share of an individual’s income (Roberts et al., 2021). Unlike traditional Medicare,

beneficiaries in Medicare Advantage (MA) plans which have become increasingly more popular provide beneficiaries with access to additional services—such as meals or dental care—through supplemental benefits offered by MA plans (Meyers & Johnston, 2021). However, while supplemental benefits provide more services to Medicare beneficiaries, it does not address the LTSS need of older adults, and accompanying costs.

The extent to which beneficiaries have supplemental coverage varies. For some beneficiaries, depending on informal caregivers for assistance is an option. However, relying on family caregivers will become increasingly more difficult. In 2030 the estimated number of caregivers available for individuals 80 years of age or older will be a little over four, which has declined from 2010 where more than seven possible family caregivers were available for each individual (Super & De Cervens, 2022). However, the budgetary implications of caregiving impacts both the physical and mental health of caregivers (Mage et al., 2024). Roughly half of Latino caregivers' income is used to provide care, while generally caregivers use about one fourth of their income (Mage et al., 2024). Caregivers are crucial to the LTC infrastructure as they have a vital role in providing support for ADLs and in some instances IADLs. More broadly, across the country, there are challenges related to recruitment and retainment of the direct care workforce (i.e., home health aides, personal care aides, etc.), who are instrumental in the delivery of LTC services. The consequence of insufficient resources available to assist beneficiaries is increased Medicare spending (Wolff et al., 2019).

Similar to chapter 2 of my dissertation, I used the Andersen Behavioral Model of Health Care Utilization coupled with the literature to inform my conceptual model. Please refer to chapter 2 for additional information on my conceptual framework.

3.3 Data

For this study, I used the same data as chapter 2- this study includes cohorts in wave 10 (year 2010) through wave 15 (2020). The dataset includes information on ADL limitations, health coverage, as well as race and ethnicity. Please refer to chapter 2 for additional information.

3.4 Measurement & Methodology

This paper builds off chapter 2 by continuing to assess time to spend down, defined as transitioning from Medicare-only to dual-eligible status. For this analysis, I used the same non-parametric (Kaplan-Meier) and parametric (Cox Proportional Hazard Model) methods as chapter 2 (for additional information, please refer to chapter 2). Additionally, similar to chapter 2, respondents enter the analysis at wave 10 and are tracked from wave 11 through wave 15.

This analysis is different in several ways. In this study I include the entire population of Medicare-only, community-based individuals, with and without LTC need, who are 65 and older as my sample. I explore spend down by race and ethnicity for individuals with and without a LTC need (my interaction term) as a predictor in my Cox model. Further, I control for the impact of unmet need, defined as having a limitation with 1 or more ADL but not receiving help for at least one ADL, on risk to spend down. Additionally, given that the literature points to the impact of additional coverage in mitigating expenses for Medicare-only beneficiaries, I also adjusted for private insurance. Specifically, private insurance includes any coverage through the private market, which encompasses insurance through an employer, individual insurance marketplace, medigap, a trade association or a union (RAND HRS Longitudinal File 2016 Documentation, 2020). Given the differences in sample size for the *marital status* variable, I ran two models, with and without the binary variable. I also tested the proportional-hazards assumption for each

model. After running my survival analysis using my interaction term, I applied the margins command to identify the predicted hazard ratios of becoming dual-eligible, by each race and ethnicity and ADL difficulty combinations included in my interaction term.

I also explored differences in survival (defined as remaining Medicare-only and not transitioning to dual-eligible status) within each group—those with and without an LTSS need. Specifically, I generated Kaplan-Meier curves by LTC need, for each race and ethnicity. I also ran a log-rank test to assess whether the survival rates between individuals with and without an LTSS need, by race and ethnicity, are statistically different.

3.4.1 Sensitivity Analysis

I initially attempted to run my analysis by LTC need and no LTC need, for each race and ethnicity, while adjusting for different types of insurance coverage and unmet need. The chi squared test for several models was insignificant, and when insurance coverage was included as a covariate, no output was generated given that the variable was perfectly correlated with my event variable. Further, I also attempted to include a group that was Medicare-only with LTC insurance but no private insurance, however the model's chi squared test was insignificant, my sample size was small, and no respondents appeared to experience the event. This is unsurprising given that the literature repeatedly demonstrated that the number of LTC policies has decreased over the years. Further, having a LTC policy provides some level of income and asset protection for a beneficiary. Ultimately, to increase my sample size while still drawing some conclusions by race and ethnicity, I combined my two groups (with and without LTC need) and included an interaction for race and ethnicity and LTC need, while adjusting for specifically private insurance and unmet need (among other covariates).

3.5 Results

Table 3.1 below provides an overview of the sample in this study. The majority of individuals were White/Caucasian, female, have a LTC need, and are 71 years of age or older. The percent of respondents who had an ADL limitation but didn't receive assistance (i.e., unmet LTC need) was high at 75 percent. Over half of the population did not have supplemental private insurance, and more than 50 percent had income or assets that were greater than the median. Further, 92 percent of the sample had 2 or more chronic conditions. (Similar to Aim 2, a small percent of the sample is dual-eligible at Wave 10 and are captured below. However, in the analysis they are censored immediately.)

Table 3.1. Characteristics and data of respondents with and without an LTSS need at Wave 10 (Year 2010)

	N=876
Variable	Count (%)
Race/Ethnicity	
White/Caucasian [<i>Reference Category</i>]	651 (74%)
Black/African American	141 (16%)
Hispanic	84 (10%)
LTC Need¹	
Yes [<i>Reference Category</i>]	504 (58%)
No	372 (42%)
Unmet LTC Need²	
No [<i>Reference Category</i>]	221 (25%)
Yes	655 (75%)
Age	
65 to 70 years of age [<i>Reference Category</i>]	85 (10%)
71 to 79 years of age	373 (43%)
80 years of age and older	418 (48%)
Sex	
Male [<i>Reference Category</i>]	335 (38%)
Female	541 (62%)
Marital Status	

Ever married [<i>Reference Category</i>]	851 (97%)
Never married	25 (3%)
Education	
High-school (HS) graduate or some HS [<i>Reference Category</i>]	596 (68%)
Some college and above	280 (32%)
Chronic Condition	
0 to 1 [<i>Reference Category</i>]	71 (8%)
2 to 8	805 (92%)
HH Care Use, Prev. 2 years³	
No [<i>Reference Category</i>]	608 (69%)
Yes	268 (31%)
Private Insurance	
No [<i>Reference Category</i>]	503 (57%)
Yes	373 (43%)
Median Income	
Lower than median [<i>Reference Category</i>]	391 (45%)
Greater than median	485 (55%)
Median Assets	
Lower than median [<i>Reference Category</i>]	367 (42%)
Greater than median	509 (58%)
Source: HRS Data Notes: ¹ Individuals with a long-term care (LTC) need have limitations with ≥ 2 activities of daily living (ADLs) ² Respondents who have an unmet LTC need have at least one or more ADL difficulty but receive no help for their ADL limitation(s). ³ Home health (HH)	

Table 3.2 (below) breaks down sample characteristics by race and ethnicity. Over half of older adults, for each racial and ethnic group, had difficulties with two or more ADLs, and at least 70 percent of individuals across all groups had a difficulty with one or more ADL limitation but did not receive help (i.e., unmet need). Further, for all race and ethnicity groups, the majority of respondents were female, age 71 or older, have 2 to 8 chronic conditions, no home health care use in the past two years, have been married, and have a high school degree or finished some

high school. Differences by group were related to supplemental insurance coverage and financial resources. Specifically, White/Caucasian older adults were equally as likely to have private insurance and not have private insurance. The majority of Black/African American (75%) and Hispanic (87%) respondents did not report having private insurance. Most of the latter two groups also had income or assets that were less than the median, while a greater percentage of White/Caucasian respondents had income and assets that were greater than the median.

Table 3.2. Characteristics and data of respondents with and without an LTSS need at Wave 10, by race and ethnicity (Year 2010)

	White/Caucasian N=651	Black/African American N=141	Hispanic N=84
Variable	Count (%)	Count (%)	Count (%)
LTC Need¹			
Yes [<i>Reference Category</i>]	349 (54%)	91 (65%)	64 (76%)
No	302 (46%)	50 (35%)	20 (24%)
Unmet LTC Need²			
No [<i>Reference Category</i>]	165 (25%)	31 (22%)	25 (30%)
Yes	486 (75%)	110 (78%)	59 (70%)
Age			
65 to 70 years of age [<i>Reference Category</i>]	63 (10%)	13 (9%)	9 (11%)
71 to 79 years of age	258 (40%)	70 (50%)	45 (54%)
80 years of age and older	330 (51%)	58 (41%)	30 (36%)
Sex			
Male [<i>Reference Category</i>]	267 (41%)	34 (24%)	34 (40%)
Female	384 (59%)	107 (76%)	50 (60%)
Marital Status			
Ever married [<i>Reference Category</i>]	640 (98%)	130 (92%)	81 (96%)
Never married	11 (2%)	11 (8%)	3 (4%)
Education			
High-school (HS) graduate or some HS [<i>Reference Category</i>]	415 (64%)	108 (77%)	73 (87%)
Some college and above	236 (36%)	33 (23%)	11 (13%)
Chronic Condition			

0 to 1 [<i>Reference Category</i>]	53 (8%)	7 (5%)	11 (13%)
2 to 8	598 (92%)	134 (95%)	73 (87%)
HH Care Use, Prev. 2 years³			
No [<i>Reference Category</i>]	459 (71%)	90 (64%)	59 (70%)
Yes	192 (29%)	51 (36%)	25 (30%)
Private Insurance			
No [<i>Reference Category</i>]	324 (50%)	106 (75%)	73 (87%)
Yes	327 (50%)	35 (25%)	11 (13%)
Median Income			
Lower than median [<i>Reference Category</i>]	250 (38%)	81 (57%)	60 (71%)
Greater than median	401 (62%)	60 (43%)	24 (29%)
Median Assets			
Lower than median [<i>Reference Category</i>]	217 (33%)	98 (70%)	52 (62%)
Greater than median	434 (67%)	43 (30%)	32 (38%)
Source: HRS Data			
Notes:			
¹ Individuals with a long-term care (LTC) need have limitations with ≥ 2 activities of daily living (ADLs)			
² Respondents who have an unmet LTC need have at least one or more ADL difficulty but receive no help for their ADL limitation(s).			
³ Home health (HH)			

The Kaplan-Meier curves (Figure 3.1) for respondents with a LTC need indicate that 82 percent of White/Caucasian individuals remain Medicare-only by wave 15, as compared to 70 and 39 percent of Black/African American and Hispanic individuals, respectively. For respondents with no LTC need, 93 percent of White/Caucasian respondents, 81 percent of Black/African American individuals, and 62 of Hispanic respondents survived (i.e., remained Medicare-only) by wave 15 (Figure 3.2). The results of the log-rank test by LTC need indicated that the survivor functions are statistically different between individuals with and without an LTSS need, by race and ethnicity.

Figure 3.1. Beneficiaries with an LTSS Need, by Race and Ethnicity

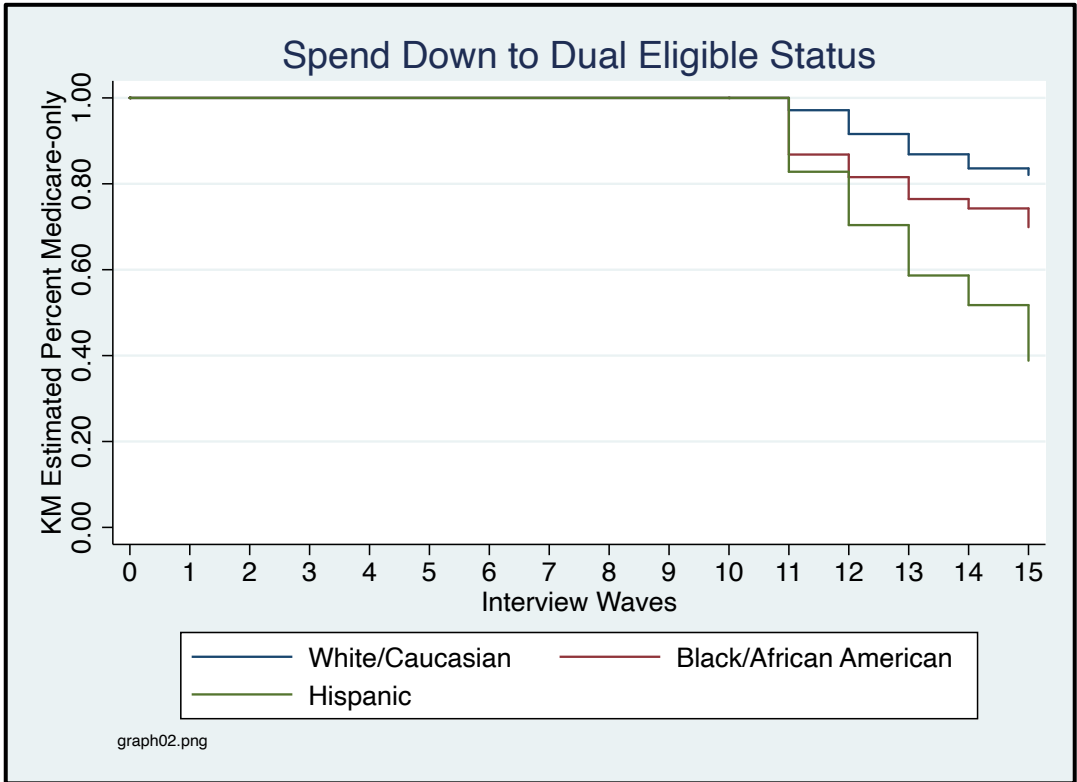
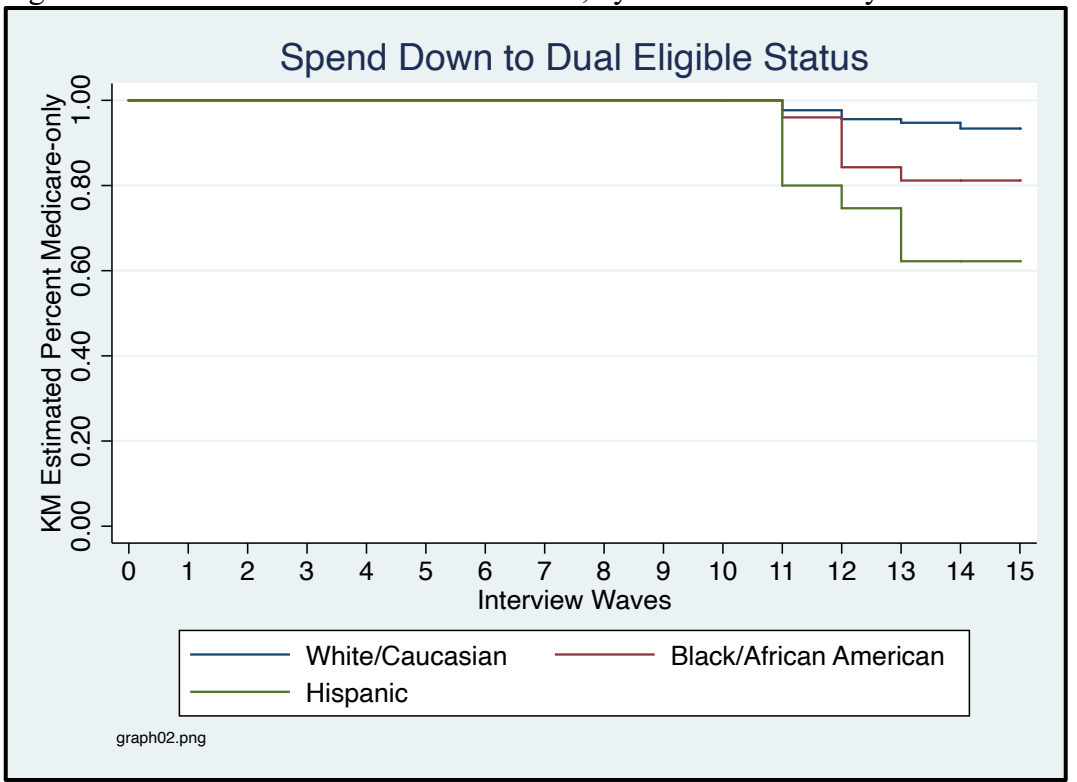


Figure 3.2. Beneficiaries with no LTSS Need, by Race and Ethnicity



The same variables were significant in both of my Cox models, with very similar outputs. I also tested the proportional-hazards assumption of both of my Cox models and based on the results, there was no indication that the proportional-hazards assumption was violated. Table 3.3 (below) includes the results of my models. Given the similar outputs, I discuss only the results of model 2. The hazard ratios of my interaction term from the Cox model indicate that White individuals with no LTC need have a lower likelihood (HR=.53, $P<.1$) of transitioning to dual-eligible status, as compared to White beneficiaries with a LTC need. Hispanic respondents with a LTC need had a higher risk (HR=2.04, $p<.05$) of spend down than White individuals with a LTC need. While the results for the Black/African American respondents was not statistically significant, the findings do illustrate that individuals in this group with a LTC need have a greater risk (HR=1.18) of experiencing the event. Home health care use in the previous two years was also a significant predictor of transitioning to dual-eligible status (HR=1.42, $p<.1$).

The findings demonstrate that beneficiaries between 71 and 79 years of age (HR=.479, $p<.05$) and 80 and older (HR=.348, $p<.01$) have a lower hazard of the event. Further, individuals with more financial resources—income (HR=.521, $p<.05$) and assets (HR=.310, $p<.01$) higher than the median—also have a lower likelihood of experiencing the event. Other predictors that were also statistically significant and decreased the likelihood of experiencing the event include having an unmet need (not receiving assistance for an ADL limitation), HR=.685 ($p<.1$), and having private insurance (HR=.601, $p<.05$) to supplement an individual’s Medicare coverage.

Table 3.3. Cox Proportional Hazard Model Results

Variable	Model 1 (95% CI) N=876	Model 2 (95% CI) N=876
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Interaction Term		
Race/Ethnicity x LTC Need [Reference Category: White/Caucasian x LTC Need]¹		
White/Caucasian x No LTC need	.530* (.280-1.00)	.530* (.280-1.00)
Black/African American x LTC need	1.14 (.663-1.98)	1.18 (.682-2.06)
Black/African American x No LTC need	.804 (.367-1.76)	.831 (.378-1.82)
Hispanic x LTC need	2.03** (1.18-3.48)	2.04** (1.19-3.49)
Hispanic x No LTC need	1.51 (.659-3.48)	1.54 (.672-3.57)
Age [Reference Category: 65 to 70 years of age]		
71 to 79 years of age	.479** (.249-.922)	.479** (.249-.922)
80 years of age and older	.345*** (.174-.680)	.348*** (.176-.688)
Sex [Reference Category: Male]		
Female	.789 (.525-1.18)	.786 (.523-1.18)
Unmet LTC Need [Reference Category: No]²		
Yes	.689* (.461-1.03)	.685* (.458-1.02)
Education [Reference Category: High-school graduate or some HS]		
Some college and above	.668 (.394-1.13)	.669 (.395-1.13)
Chronic Condition [Reference Category: 0 to 1 chronic conditions]		
2 to 8	.832 (.438-1.58)	.822 (.432-1.56)
HH Care Use, Prev. 2 years³ [Reference Category: No]		
Yes	1.43* (.972-2.11)	1.42* (.965-2.10)
Private Insurance [Reference Category: No]		
Yes	.606* (.367-.985)	.601** (.367-.985)

Median Income [Reference Category: lower than median]		
Greater than median	.527** (.332-.836)	.521** (.328-.827)
Median Assets [Reference Category: lower than median]		
Greater than median	.308*** (.188-.504)	.310*** (.189-.507)
Marital Status [Reference Category: Ever married]		
Never married	--	.693 (.249-1.92)
Source: HRS Data Notes: Confidence interval (CI) ¹ Individuals with a long-term care (LTC) need have limitations with ≥ 2 activities of daily living (ADLs); Respondents with no LTC need include individuals with less than two ADL difficulties. ² Respondents who have an unmet LTC need have at least one or more ADL difficulty but receive no help for their ADL limitation(s). ³ Home health (HH) ***p-value<.01, **p-value<.05, *p-value<.1		

Based on the margins output, the predicted hazard ratio of experiencing the event (transitioning to dual eligible status) was .086 for non-Hispanic White beneficiaries with a LTC need, .169 for Black/African American individuals with a LTC need, and .358 for Hispanic respondents with a LTC need, all of which were statistically significant.

3.6 Discussion

Several studies point to differences in the financial resources of African American and Hispanic individuals, as compared to White adults (Super & De Cervens, 2022; Gay et al. 2019). Some of the potential driving factors are income inequality that exists in the US leading to limited resources for marginalized populations, hence lack of ability to obtain assistance with ADLs which is not covered by Medicare. My Kaplan-Meier survival curves demonstrate that a smaller percentage of White/Caucasian community-based individuals with an LTSS need transitioned to dual-eligible status by wave 15, while individuals who are Black/African

American or Hispanic had a lower survival rate (i.e., remained Medicare-only) by wave 15. I saw a similar pattern when examining survival for individuals with no LTSS need by race and ethnicity.

The Cox analysis found that individuals belonging to a racial and ethnic minority group had a higher risk of experiencing the event, which provides evidence for my hypothesis. However, it is important to note that for Black/African Americans respondents, this was not statistically significant- unlike Hispanic respondents. Separately, having private insurance and income as well as assets greater than the median appear to provide beneficiaries with some level of financial security, as those individuals were less likely to transition to dual eligible status compared to their counterparts. This is supported by findings in the literature that for example supplemental coverage helps mitigate cost sharing responsibilities, which have significant impact on the income of older Americans (Roberts et al., 2021).

Among individuals with and without an unmet LTC need, my findings suggest that those with an unmet need have lower risk of transitioning to dual-eligible status. This was significant at the 10 percent level. This finding was surprising given that several studies in the literature indicate that unmet need is linked with a greater risk of nursing home admission and adverse outcomes (Weaver & Roberto, 2022; Chong et al., 2022; Wolff et al. 2019; Berridge & Mor, 2018; Kaye et al., 2010; Komisar et al., 2005), both of which would increase spending. One possible explanation for this finding is that lack of support for ADL limitations could indicate that an individual is spending less (i.e., not paying for a direct care worker), unlike those who receive supports. This is supported by my other finding that individuals who used home health services in the previous two years had a greater hazard of transitioning to dual-eligible status. Future studies could explore the composition of the unmet need population, their reliance on

informal caregivers, and the types of ADL limitations they have. For example, one study by Fong and colleagues (2015) used HRS data to assess whether particular ADLs are greater predictors of LTSS utilization and discovered that a bathing limitation is the strongest predictor for institutional care. Further, having a dressing limitation was found to increase the likelihood of institutional care (Fong et al., 2015).

3.7 Limitations

Limitations discussed in chapters 1 and 2 apply here as well. One *enabling resource* that is not included in my model is language. Studies in the literature note that language is a barrier to accessing healthcare services, specifically for Spanish speaking populations. The HRS dataset has a variable titled “English usually spoken in home”, however, I do not believe this variable would capture language barriers given that some respondents may be fluent in English and another language, regardless of the language they speak at home. As a result, language is not included in my model, but future studies should utilize alternative data to capture this crucial data element—especially given grown diversity in the US population.

3.8 Conclusion

As the population in the U.S. becomes increasingly more diverse, existing disparities may be exacerbated. More attention must be placed on differences among racial and ethnic minority groups. Unmet LTC needs increases cost of care, and there is evidence demonstrating that persons belonging to racial and ethnic minority groups have limited resources as compared to their White counterparts, which results in healthcare access challenges. The literature also points to differences by race and ethnicity as it relates to reliance on informal caregivers, wherein individuals who belong to racial and ethnic minority groups have a greater informal caregiving community. Increasing the overall health of the population to deter or delay the onset of physical

limitations and other health conditions is one way to address challenges related to the financing and delivery of LTSS. However, financial indicators have a greater effect on Medicaid use (Tavares et al., 2023). Mitigating the risk of Medicaid use can be better addressed by decreasing poverty levels among the older population. Underlying some of this challenge is the income difference linked to racial and ethnic minority groups and females that further exacerbates this problem (Tavares et al., 2023).

In chapter 2 I suggest *system level* changes to address the overall risk of spend down. This paper points to some key indicators that either increase the risk of spend down or provide some protection from spend down- such as having private coverage. Policymakers and healthcare providers should consider targeted efforts at the *individual level* (coupled with *system level* changes) to ameliorate access challenges related to assistance with ADLs and the underlying problems driving racial and ethnic disparities. Practices that address social determinants of health, including education or income, may assist in decreasing LTC differences among White and Black individuals (Lin & Liu, 2023). Particularly given that limited access to work opportunities and quality education have an adverse impact on the health of individuals (Thornton et. al., 2016). Interventions to address these social determinants would need to occur prior to an individual advancing to older age, to support their well-being and financial security. One other proposed approach to address the inadequate assistance received by older adults is to work with aging services to improve their assessment of care needs to deliver necessary services (Weaver & Roberto, 2022). Receiving necessary, timely help for an individual's ADL limitations is critical to avoid adverse outcomes. Separately, there should be a concerted effort by financial planners and individuals to financially prepare for the costs of LTSS and to be actively engaged in improving their overall health (Super & De Cervens, 2022). Preparing for the high costs of

LTSS would necessitate that an individual has an adequate income to support such a need.

Additionally, care planning should be incorporated into different facets of life planning, such as estate, financial and retirement preparation (Frechman et al., 2022).

Dissertation Conclusion

Many studies have found that adults age 65 and older are likely to require some level of LTC supports, some of whom will rely on Medicaid to cover the high costs. Medicare-only beneficiaries are responsible for cost sharing, which coupled with paying for LTSS care, can be detrimental to the financial well-being of older adults. My findings indicate that among Medicare-only beneficiaries age 65 and older, having high functional impairment increases the odds of having OOP expenditures. Further, over a quarter of individuals with an LTSS need transition to dual-eligible status at the end of my study. For Medicare-only beneficiaries with no LTSS need, 11 percent had become dual-eligible at the conclusion of the study. My analysis pointed to differences by race and ethnicity, by LTSS need, in transition time to dual-eligible status- wherein individuals who belong to racial and ethnic minority groups have a greater likelihood of becoming dual-eligible. Further, my study indicates that supplemental coverage, such as private insurance, could delay spend down to Medicaid.

Receipt of LTSS is associated with high healthcare expenditures—and for some older adults with limited resources this results in financial hardship. Policymakers and other stakeholders can work to bring forward solutions at both the *system* and *individual* level to help deter or delay the need for Medicaid, while ensuring that beneficiaries have no unmet need (which can be detrimental to the health and wellbeing of older adults). One program that policymakers can focus their efforts on is the Program of All-Inclusive Care for the Elderly (PACE)—which provides medical and non-medical supports in the community for PACE participants who have a nursing facility level of care need. Unlike Medicaid home- and community-based services, PACE programs are available to private pay, Medicare-only and dual-eligible beneficiaries. However, most PACE participants are dual-eligible given that

Medicare-only beneficiaries are both responsible for a monthly fee and high Part D prescription drug costs (McNabney et al., 2022). There have been several legislative attempts to make PACE more affordable for Medicare-only beneficiaries. Federal policymakers may consider changes to the Medicare program to include LTSS or work to support better access to programs such as PACE. Some other potential interventions include state driven initiatives to finance LTC and working with community-based organizations (e.g., area agencies on aging) to better meet the needs of older adults in the community.

My findings add to the literature by describing the cost experience and financial burden of Medicare-only beneficiaries with an LTSS need. These costs are linked with a greater likelihood of spending down to Medicaid. As our population of Medicare eligible beneficiaries continues to grow, we must work to change our current approach to supporting the LTSS needs of beneficiaries to deter or delay the need for Medicaid services. Ultimately, Medicaid does serve as an important safety net for a subpopulation of Medicare-only beneficiaries with high need and little financial resources. As Tavares and colleagues (2023) discuss, modifications to Medicaid in terms of changes to benefits available or more strict criteria for eligibility would be a disadvantage to older Americans who are most susceptible to an adverse event.

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