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Economic Hardship and Medicaid Enrollment in Later Life:

Assessing the Impact of Disability, Health, and Marital Status Shocks

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ECONOMIC HARDSHIP AND MEDICAID ENROLLMENT IN LATER LIFE:
Assessing the Impact of Disability, Health, and Marital Status Shocks

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ACRONYMS

The following acronyms are mentioned in this report.

ADL	Activity of Daily Living
CAMS	Consumption and Activities Mailout Survey
CIND	Cognitive Impairment but Not Dementia
DB	Defined-Benefit
DYNASIM4	Dynamic Simulation of Income Model 4
EBRI	Employee Benefit Research Institute
FPL	Federal Poverty Level
GAO	Government Accountability Office
HRS	Health and Retirement Study
IADL	Instrumental Activity of Daily Living
LTCI	Long-Term Care Insurance
LTSS	Long-Term Services and Supports
MACPAC	Medicaid and CHIP Payment and Access Commission
MCBS	Medicare Current Beneficiary Survey
NHATS	National Health and Aging Trends Study
OOP	Out-Of-Pocket
SCI	Severe Cognitive Impairment
SIPP	Survey of Income and Program Participation
SSI	Supplemental Security Income
TICS	Telephone Interview of Cognitive Status

INTRODUCTION

The adequacy of retirement income is an increasingly important policy issue, as recent trends raise concerns about financial security at older ages. Social Security's full retirement age, which had been 65 since the program started paying benefits in 1940, increased to 66 for those who reached retirement in 2005 and will rise to 67 for those reaching retirement in 2022, cutting payments for all new beneficiaries. Employer-sponsored defined-benefit (DB) pension plans, which guarantee retirees a lifetime stream of cash benefits, have largely been supplanted by defined-contribution retirement plans, such as 401(k) accounts. These defined-contribution plans generate substantial retirement income only if workers choose to make significant contributions to their accounts each pay period, invest the funds prudently, resist the temptation to dip into their accounts before they retire, and manage their funds wisely after they retire. As people live longer, their retirement savings must last longer. But wages for most male workers have stagnated over the past few decades, leaving fewer financial resources that can be set aside for retirement.

Some older adults who enter retirement with adequate resources experience health, marital, and other shocks that undermine their financial security. Widowhood can result in the loss of spousal income from Social Security and employer pensions. High inflation, poor investment returns, and financial fraud can erode savings and capital income. Unexpected home repairs can deplete savings. Health problems, however, may pose the most significant threat to older adults' financial well-being. Medical episodes, chronic health conditions, and accidents become more common as people age and can result in large medical bills, while disability onset can require expensive long-term services and supports (LTSS). Medical and LTSS spending often create economic hardship because third-party reimbursement for these expenses is usually incomplete. Nearly all adults ages 65 and older are covered by Medicare, but beneficiaries often face significant deductibles and copays and the program excludes certain services. Most important, Medicare does not cover typical LTSS expenses. Because paid LTSS is costly and relatively few older adults are covered by private long-term care insurance (LTCI), older adults who need help with everyday activities typically rely on unpaid family caregivers. But when unpaid caregivers are unavailable or LTSS needs exceed what family and friends can provide, older adults with disabilities must turn to paid helpers, either at home or in alternative residential settings. They must generally pay for this care out-of-pocket (OOP), and some may deplete their savings and enroll in Medicaid if these costs exceed their income.

The impact of later life shocks on economic well-being likely varies with financial status. People who did not earn much over their lifetimes are probably more likely to experience economic hardship when they develop health problems or become widowed or divorced because they generally have little wealth. However, impacts may be less apparent for those with the least amount of lifetime earnings because they are more likely to have experienced hardship before disability, health, or marital status shocks occur and often qualify for safety net programs like Medicaid that provide some protection.

This report assesses the financial security of older adults and examines the role that disability, health, and marital shocks play in economic hardship in later life. We review past studies of retirement security and the metrics they have used to measure retirement security. We then use the Urban Institute's Dynamic Simulation of Income Model 4 (DYNASIM4) to project economic well-being after age 65 for adults born between 1941 and 1974. Although we examine several measures of economic hardship, the analysis focuses on one measure, defined as having income, net of out-of-pocket spending on medical care and LTSS, that falls below 100 percent of the federal poverty level (FPL). We also focus on enrollment in Medicaid, which is available only to people with very limited financial resources. We show how economic hardship and Medicaid enrollment vary with the prevalence and duration of serious LTSS needs, the receipt of LTSS, widowhood, and divorce and how these relationships differ across the distribution of lifetime earnings.

Our results show that economic hardship is widespread at older ages. Overall, 69 percent of older adults experience hardship for at least one year after age 65, and 53 percent experience hardship for at least three years. Although economic hardship is concentrated among those with limited lifetime earnings, extended LTSS needs and paid LTSS often creates hardship for older adults with substantial lifetime earnings. Extended receipt of paid LTSS is also an important predictor of Medicaid enrollment for older adults with significant lifetime earnings.

PREVIOUS RESEARCH ON ECONOMIC HARDSHIP AT OLDER AGES

Various measures have been used to assess retirement income security, including whether retirees can meet basic spending needs or maintain their preretirement living standards, are forced to deplete their savings, or have so few financial resources that they qualify for Medicaid. Table 1 summarizes findings from some key earlier studies on income adequacy at older ages.[1]

Financing Spending Needs

The most straightforward measure of retirement security is an assessment of whether older adults have enough retirement resources to meet basic consumption needs. Determining consumption needs and measuring retirement resources is not always straightforward, however. A common needs threshold is the FPL, designed to measure the minimum expenditure needed to get by. The threshold was originally computed as the cost of a minimally adequate diet in 1963, multiplied by three to capture non-food living expenses (Orshansky 1963). The FPL increases with household size, is somewhat lower for households headed by adults ages 65 and older than for those headed by younger adults, and adjusts each year with the change in the consumer price index. The share of older adults with income below the FPL--the official poverty rate--was 9.7 percent in 2018, down from 29.5 percent in 1967 (Semega et al. 2019). Most of that improvement occurred from the late 1960s through the 1980s; the old-age poverty rate has not fallen much since the early 1990s. The poverty rate is much lower for older adults than for children, but old-age poverty rates are higher among certain groups, such as people who are widowed or divorced and people of color (Social Security Administration 2016).

There is a growing consensus, however, that the FPL does not reflect consumption needs well today, because the underlying data used to compute the original thresholds are now quite old and the measure does not capture non-cash income, other financial resources, or geographic differences in living expenses (Blank and Greenberg 2008; Citro and Michael 1995). The FPL may be particularly ill-suited for measuring older adults' needs, because it does not fully capture their spending on health care costs. The Census Bureau now computes a supplemental poverty measure that corrects some of the problems with the official FPL. The supplemental poverty measure indicates that 13.6 percent of adults ages 65 and older were poor in 2018, 40 percent more than under the official poverty rate (Fox 2019). Under this measure, older adults are about as likely to be impoverished as children.

Both the official poverty rate and the supplemental poverty measure gauge the number of people with very limited resources. However, many older people who do not qualify as poor

under these definitions struggle financially. The Gerontology Institute at the University of Massachusetts Boston and Wider Opportunities for Women developed the Elder Economic Security Standard Index, a measure of income that older adults require to maintain their independence in the community and meet their daily cost of living, including affordable and appropriate housing and health care (Gerontology Institute 2012). This index, which is based on basic living expense estimates from multiple government agencies and varies by state, is substantially higher than the census poverty thresholds. Mutchler, Li, and Xu (2016) estimate that 53 percent of older adults living alone and 26 percent of older adults in couple households lack the income needed to meet these basic living expenses.

An important limitation of these studies that compare retirement income to various standards is that they do not account for access to other financial resources that older adults can use to meet their spending needs. Many older adults have amassed significant wealth over their working years that can supplement their income. Wealth holdings at older ages are becoming increasingly common as employers replace traditional defined-benefit pensions, which provide retirees with a steady income stream that lasts until death, with retirement plans that provide workers with retirement savings accounts to which both employees and employers contribute. Relatively few retirees purchase annuities with their account balances; instead, most dip into their savings occasionally to meet regular or unexpected spending needs (Banerjee 2018; Poterba, Venti and Wise 2013; Smith, Soto and Penner 2009). Ignoring these resources overstates the prevalence of economic hardship at older ages.

Several recent studies incorporate savings and other economic resources into assessments of older adults' economic well-being. Much of this research concludes that many families are ill-prepared for retirement, especially when out-of-pocket health care spending risks (including LTSS spending) are factored in. Hurd and Rohwedder (2011) estimate that 39 percent of adults ages 66-69 in 2001 to 2007 have inadequate economic resources, including 20 percent of married adults, 45 percent of single adults, and 64 percent of unmarried adults without a high school diploma. VanDerhei (2019), using the Employee Benefit Research Institute (EBRI) Retirement Security Projection Model based on data from the Consumer Expenditure Survey, estimates that 42 percent of adults ages 60-64 are not accumulating enough resources to meet average retirement expenditures, including health care risks. Exploring the somewhat different question of whether families are saving optimally so they can smooth consumption over the life course, Scholz, Seshadri, and Khitatrakun (2006) reach a more optimistic conclusion. They estimate that only 20 percent of households in the Health and Retirement Study (HRS) are saving too little, even when accounting for end-of-life uncertainty and medical shocks. Some families who saved appropriately, however, may end up financially insecure in retirement because they did not earn enough to accumulate significant savings.

Maintaining Preretirement Living Standards

Another common measure of retirement income adequacy is an indicator of whether seniors can live as well in retirement as they did when they were working. The goal of

retirement planning, according to many economists, is to smooth consumption over the life course. The ability to maintain preretirement living standards, however, does not always closely correlate with economic hardship. Retirees with limited financial resources throughout their lives who can match their preretirement consumption levels may be struggling financially, and retirees with substantial financial resources throughout their lives who cannot match their preretirement levels may live quite well.

Older adults generally need less income than they received during their working lives to maintain their preretirement living standards because seniors do not need to save for retirement, do not incur work-related expenses, and generally face lower tax rates than younger adults. Although the precise share of preretirement earnings needed to maintain consumption levels is unclear, 75 percent is a common rule of thumb (Scholz and Seshadri 2009). Cosic et al. (2019) use DYNASIM4 to project the share of 70-year-olds who can replace at least 75 percent of their average annual earnings between ages 50 and 59, in inflation-adjusted dollars. They conclude that 25 percent of late boomers (born between 1956 and 1965), 30 percent of early Gen Xers (born between 1966 and 1975) and 32 percent of Xennials (born between 1976 and 1985) cannot replace at least 75 percent of their preretirement earnings at age 70, compared with 26 percent of pre-boomers (born between 1936 and 1945) and early boomers (born between 1946 and 1955). These estimates include the income that retirees would receive from annuitizing 80 percent of their financial assets, but they do not account for out-of-pocket spending on medical care or LTSS.

Researchers at the Center for Retirement Research at Boston College have created the National Retirement Risk Index, which uses a model based on the Survey of Consumer Finances to measure the share of workers likely to be able to live comfortably in retirement. They classify people as prepared for retirement if they can finance at least 90 percent of their preretirement consumption with their retirement income and by annuitizing their wealth. The analysis recognizes that higher-income retirees will need to replace a smaller share of their preretirement earnings to reach this consumption level than lower-income retirees, because higher-income people save more and pay higher taxes while working than lower-income people. The Boston College researchers' most recent update concludes that 50 percent of working-age households in 2016 were at risk of experiencing a decline in living standards at retirement, including 56 percent of low-income households, 54 percent of middle-income households, and 41 percent of high-income households (Munnell, Hou and Sanzenbacher 2018).

Income and Health Shocks

Some retirees experience economic hardship because they have limited income throughout retirement, as a result of limited earnings--perhaps because of limited education, underlying poor health or disability, or other circumstances prior to retirement--or the failure to save during their working lives. Others experience hardship because of shocks during retirement. Some shocks disrupt income streams, such as investment losses, periods of low

interest rates, financial fraud, and widowhood or divorce that reduce or eliminate spousal income. Other shocks raise spending needs, such as unexpected home maintenance expenses, natural disasters, injuries, and the onset of serious medical problems or LTSS needs. Such shocks can force retirees to dip into and perhaps deplete their savings, and can sometimes make retirees eligible for Medicaid.

These shocks are common (Table 2). About 70 percent of adults develop serious LTSS needs after age 65 (Johnson 2019). Johnson, Mermin, and Uccello (2006) examine the incidence of chronic medical conditions, disability, cognitive impairment, nursing home care, widowhood, and divorce at older ages and their impact on wealth and income in the 1992-2002 waves of the HRS. They find that 71 percent of married adults and 67 percent of single adults experience at least one shock after age 70. The onset of nursing home care and cognitive impairment has the largest impacts on household wealth. Many retirees are concerned about these shocks and their potential financial impact. In a 2014 survey of adults ages 40-70, 57 percent of respondents reported that their chances of ever entering a nursing home was more than one in five (Wiener et al. 2015). In a 2017 online survey, 59 percent of retirees reported that they were very or somewhat concerned about being able to pay for nursing care, 54 percent were concerned about their ability to pay for health care, and 57 percent were concerned that their savings and investments might not keep up with inflation (Greenwald and Associates 2018). Risks vary widely across the older population. Median 2018 annual out-of-pocket spending on health insurance premiums and medical care (excluding LTSS costs) for a 65-year-old woman was $3,400 for a low-risk adult, $3,900 for a medium-risk adult, and $7,600 for a high-risk adult (Guyton et al. 2018).

Relatively few older adults with significant wealth deplete their holdings before they die, and those who spend their savings usually experience significant health shocks (Table 3). Within the first 18 years of retirement, retirees with less than $200,000 in non-housing assets spend about 25 percent of their assets, those with between $200,000 and $500,000 spend about 27 percent of their assets, and those with more than $500,000 spend only 12 percent of their assets (Banerjee 2018). Only 17 percent of households owning a retirement account make any withdrawals between ages 60 and 69, and only 7 percent withdraw more than 10 percent of their balance (Poterba, Venti and Wise 2013). However, 60 percent of account holders withdraw funds at age 71, when tax regulations mandate minimum withdrawals. Health and marital status shocks often lead to wealth declines at older ages (Coile and Milligan 2009; De Nardi, French and Jones 2015), although the size of the impact remains unclear. Nearly two-thirds of older adults whose net worth when they died fell below $50,000 had less than $50,000 in household wealth at age 65 (Poterba, Venti and Wise 2018). Health declines and the loss of a spouse raise the likelihood of having limited wealth at death, but Poterba, Venti, and Wise conclude that the effects were modest.

Medicaid Eligibility

Another indicator of economic hardship is Medicaid enrollment. Because people qualify for Medicaid only if they have virtually no assets, except for a home, and very little income, receipt of Medicaid benefits is a strong indicator of financial vulnerability. Enrollment in Medicaid, which is funded jointly by the federal and state governments, has important fiscal ramifications for public budgets. Total state-financed Medicaid spending accounted for about 30 percent of state budgets in 2018, including federal reimbursements (National Association of State Budget Officers 2018), and the Centers for Medicare & Medicaid Services expects spending to grow 6 percent per year from 2020 to 2027 (Sisko et al. 2019).

Adults ages 65 and older may qualify for Medicaid if they have virtually no assets, except for a home, and very little income. The program's asset test limits Medicaid eligibility to people with no more than $2,000 in countable assets if single and no more than $3,000 in countable assets if married. Countable assets exclude the value of the home and such things as automobiles, household goods, the surrender value of life insurance, and burial funds. Income rules vary by state and are more complicated. Supplemental Security Income (SSI) beneficiaries qualify for Medicaid in all states, but SSI serves only the most impoverished population. A single SSI beneficiary without earnings who does not receive Social Security or other income, like a state supplement could receive no more than $771 in monthly income in 2019 (equivalent to $9,252 per year), well below the FPL. Many states extend Medicaid eligibility to people with income up to 138 percent of the FPL. In addition, older adults may receive Medicaid-financed home and community-based services through state waiver programs. Again, income eligibility varies by state, and the income eligibility threshold ranges up to 300 percent of the maximum SSI benefit.

Many states account for individuals' health care spending when determining Medicaid eligibility by subtracting applicants' out-of-pocket costs for medically necessary services and supplies from their countable income. This adjustment essentially allows people to "spenddown" their income until they qualify for Medicaid. Other states achieve similar outcomes by allowing applicants to assign that portion of their income that exceeds the Medicaid income threshold to a special trust used to help cover service costs. The state receives any funds remaining in these trusts after a Medicaid enrollee's death, up to the amount the state paid in Medicaid benefits.

A relatively small share of the population moves onto Medicaid at older ages (Table 4). Weiner et al. (2013) estimate that over 12 years about 10 percent of older adults spend enough of their wealth to qualify for Medicaid; Lee, Kim, and Tanenbaum (2006) estimate that about 16 percent of adults ages 70 and older enroll in Medicaid over ten years; and Spillman and Waidmann (2014, 2015) estimate that about 5 percent of older adults transition to Medicaid over four years. Most Medicaid recipients have few financial resources (GAO 2014). Some studies find that nursing home care often precipitates Medicaid coverage (Borella, De Nardi and French 2017; Keohane, Trivedi and Mor 2017; Spillman and Waidmann 2014, 2015). However,

Weiner et al. (2013) find that one-half of older adults who deplete most of their wealth and qualify for Medicaid did not receive any paid LTSS.

Despite concern that some older adults game the system by transferring wealth to their children to qualify for Medicaid, there is little evidence that this practice is widespread, especially after the 2005 Deficit Reduction Act tightened Medicaid eligibility rules (Baird, Hurd and Rohwedder 2016). Using data before 2005, Waidmann and Liu (2006) find that 44 percent of nursing home residents who qualified for Medicaid when they were admitted had transferred assets to their children, but the median transfer was only $5,000; Lee, Kim, and Tanenbaum (2006) find that 13 percent of Medicaid-covered nursing home entrants transferred wealth, and the mean transfer was only about $4,000. Using data after 2005, Baird, Hurd, and Rohwedder (2016) find no statistically significant relationship between the self-reported likelihood of entering a nursing home and wealth transfers to children.

METHODS

We assess the financial security of older adults and examine the role that disability, health, and marital shocks play in economic hardship in later life by simulating income, wealth, and out-of-pocket spending on medical care and LTSS after age 65. Our sample consists of adults born between 1941 and 1974 who survive to age 65. The analysis measures how the likelihood of economic hardship varies with lifetime earnings, LTSS needs and use, chronic medical conditions, widowhood, divorce, lifetime earnings, and other personal characteristics (age, gender, and race and Hispanic origin). We also examine how the relationship between economic hardship and disability, health, and marital status shocks differ by quintile of lifetime earnings.[2] The analysis estimates the share of adults who ever experience economic hardship after age 65. To gauge the prevalence of more persistent economic hardship, we also estimate the share who experience these outcomes for extended periods.

We classify adults as needing LTSS if they need help with two or more activities of daily living (ADLs) or have severe cognitive impairment (SCI); this definition is similar to that found in the Health Insurance Portability and Accountability Act of 1996. For LTSS use, the analysis identifies older adults who receive any nursing home care and any paid LTSS. We also measure how the prevalence of economic hardship varies with the duration of LTSS need and paid LTSS receipt (less than two years, 2-4 years, or five or more years) and the duration of nursing home care (less than two years or two or more years). Medical conditions considered in the analysis include diagnoses of cancer, diabetes, heart disease, chronic lung disease, and stroke. These disability, care, and health measures reflect only the condition of a given individual, not the condition of his or her spouse, even though spousal disability and health problems can also create economic hardship.

Defining Economic Hardship

We simulate multiple measures of economic hardship after age 65 that are similar to metrics used in the literature. One set of measures defines economic hardship as having income that falls below either 100 percent or 200 percent of the FPL, and another set defines hardship as having income minus out-of-pocket spending on medical care and LTSS that falls below those thresholds. In 2018, the FPL for adults ages 65 and older was $12,043 for single adults and $15,178 for married couples; 200 percent of the FPL was $24,086 for single older adults and $30,356 for older couples. Income includes Social Security benefits, defined-benefit pensions, earnings, interest, dividends, rent, SSI, other government benefits, and withdrawals from tax-deferred retirement accounts. Our out-of-pocket spending measure includes premiums for Medicare and other health insurance (including Medigap), Medicare copays and deductibles, and spending on paid home care, nursing home care, other residential care, and medical services and equipment not covered by Medicare or other insurance. An alternative measure defines economic hardship as having income that fails to replace at least 75 percent of

preretirement earnings, which is computed as the average of annual earnings received from ages 50-59.[3] Most of the analysis, however, defines economic hardship as having income minus out-of-pocket health care spending that falls below 100 percent of the FPL.

In addition, we compute the share of older adults who enroll in Medicaid after age 65, among those who were not enrolled in the program at age 65. Medicaid enrollment is a reliable indicator of economic hardship because people qualify only if they have very low income (after covering health care costs) and few assets. In addition, Medicaid enrollment has important implications for federal and state policy, especially given the pressures that Medicaid spending creates for many state budgets (MACPAC 2019).

DATA

Our data come from DYNASIM4. The model starts with a nationally representative population based on the 2004 and 2008 panels of the Survey of Income and Program Participation (SIPP). It "ages" the population year-by-year, simulating demographic and economic events using transition probabilities and rule-based algorithms. The model's aging rules include socioeconomic differences--such as those measured by education, lifetime earnings, marital status, and race and Hispanic origin--when projecting health and mortality, using rich longitudinal data. DYNASIM4 projections capture compositional change in the population for the next seven decades. Many outcomes are calibrated to the intermediate assumptions of the 2019 Social Security trustees report (Board of Trustees, Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds 2019), typically on an age-sex basis, with the underlying behavioral equations driving differences by other characteristics--such as education--within age-sex groups.

Health and Disability Models

DYNASIM4's underlying equations for health status and disability, which are based on HRS data, model the progression of these outcomes after age 50 and recognizes that these processes are dynamic; people develop limitations, but sometimes recover. Disability onset can be either sudden or gradual. How rapidly disability progresses affects the ability to work or care for oneself and thus meet financial needs. Projected health and disability transitions vary by whether the condition existed in the past and the duration of any on-going condition. Outcomes projected include self-reported health status, limitations with ADLs and instrumental activities of daily living (IADLs), cognitive status, and counts of chronic conditions, with stroke modeled separately from other conditions because of its close association with cognitive decline (Sposato et al. 2015; Sun, Tan and Yu 2014). Projections from the historical period are calibrated to estimates from the Medicare Current Beneficiary Survey (MCBS) and National Health and Aging Trends Study (NHATS).

The cognitive impairment projections in DYNASIM4 use HRS data through 2014.[4] We use data from the Telephone Interview of Cognitive Status (TICS) when available, as well as proxy and exit interviews so that we can incorporate information from people who cannot take the cognitive test or have recently died, who are especially likely to be cognitively impaired.[5] We model cognitive status as transitions between three states: good cognition, cognitive impairment but not dementia (CIND), and dementia. We use a TICS score of less than 8 to identify dementia and scores between 8 and 13 to identify CIND.

We integrate this empirical model into DYNASIM4 to generate forecasts of cognitive status, and any trends in projected status are driven by changes in the composition of the population over time, such as population aging and the increased educational attainment of

older adults. We assume that future disability rates depend on *relative* age (time to death) rather than *absolute* age (time since birth), which implies that healthy life expectancy increases with total life expectancy. Historical disability differentials across socioeconomic status groups are assumed to persist, but not to grow. We calibrate mortality to the intermediate assumptions adopted by the Social Security trustees. Mortality differentials are expected to continue growing for the next 15 years and then remain at that level indefinitely.

The final model development stage is to calibrate the micro-dynamic equations to match age-specific NHATS data from 2015 to projections for the year 2015. This effort entails searching for sources of discrepancies between the estimates and reconciling them to maintain as much consistency as practical.

The model projects cognitive and functional status every year from 2007 through 2090. Starting our projections in the past enables us to test how well the model performs relative to historic estimates, serving as an important validity test for the econometric specification. Because of this long projection horizon and the annual projections, DYNASIM4 can easily describe both cross-sectional outcomes (such as the number of people impaired, incidence and prevalence rates, and annual costs) and longitudinal outcomes (such as the share of older adults ever impaired, the duration of impairment, average age at impairment, and lifetime costs, among others).

Spending for Health Care and Long-Term Services and Supports

Health care spending in DYNASIM4, which projects both acute care and LTSS, depends on health status, disability, and technological change, among other factors. The models also capture how income and out-of-pocket cost burdens affect health care spending (Hatfield et al. 2018). Those with more income tend to be healthier, which reduces their spending. Because they are also less burdened by health care costs, they are more likely to purchase higher-quality services and discretionary services and are less likely to skip necessary ones. Those with greater health problems are more likely to opt for more comprehensive coverage. This phenomenon, known as adverse selection, raises costs and drives many of those in better health to seek lower-cost alternatives. The model generates Part B, Medigap, and Medicare Advantage premiums endogenously, depending on the distribution of health and disability status, income, and services use within the population.

In our models of LTSS utilization, families choose whether to seek paid care. Decisions about different types of paid care--home care, nursing home, and residential care--are made jointly. Prices for paid care in DYNASIM4 are based on the state-specific median for each service type (Genworth 2019), with small adjustments based on income, LTCI coverage, and disability severity.[6] We model Medicaid eligibility using program rules for all 50 states. Medicaid participation among eligible adults is higher among those with greater economic and disability needs. We base prices for Medicaid-covered services on recent published data (Hansen Hunter 2018). Because Medicaid is the payer of last resort under current law, DYNASIM4 checks

whether people have other forms of coverage, such as private LTCI, before assigning Medicaid coverage. If a person holds a private plan that remains in force, we assume that the insurance pays up to the plan's daily maximum for as long as the policyholder is eligible. (People are assigned plans based on their availability when purchased). People are also assigned to care from the U.S. Department of Veterans Affairs using simple MCBS-based models and care under the Older Americans Act from simple look-up tables based on published reports.

RESULTS

The risk of health problems and marital dissolution is widespread at older ages (Table 5). DYNASIM4 projects that 57 percent of adults who survive to age 65 develop serious LTSS needs after that age. Nineteen percent experience such needs for less than two years, 15 percent experience such needs for at least two years but less than five years, and 23 percent experience such needs for five or more years. In addition, 56 percent receive some paid LTSS after reaching age 65, but paid care does not generally last for an extended time; 34 percent of older adults receive paid LTSS that lasts less than two years, and only 9 percent receive five or more years of paid LTSS. Nursing home entry is less common. Only 37 percent of older adults ever receive nursing home care, and only 9 percent receive care for two or more years. In addition, 37 percent of older adults surviving to age 65 are widowed and 19 percent are divorced for some period.

Consistent with well-documented differences in health and disability by socioeconomic status (e.g., Williams et al. 2010), older adults with limited lifetime earnings face a greater risk of serious LTSS need than those with more earnings, and they generally experience such need for a longer time. Sixty-five percent of older adults in the bottom quintile of lifetime earnings develop serious LTSS needs, compared with 57 percent of those in the second earnings quintile. Moreover, 31 percent of older adults in the bottom lifetime earnings quintile experience serious LTSS needs for at least five years, compared with 24 percent of those in the second earnings quintile. Patterns are similar for the receipt of paid LTSS; 63 percent of older adults in the bottom earnings quintile receive some paid LTSS, compared with 55 percent of those in the second earnings quintile. This difference likely reflects the greater need among those with limited earnings and their higher rates of Medicaid coverage. However, additional lifetime earnings do not reduce the probability of developing serious LTSS needs or receiving paid LTSS much. Serious LTSS need and receipt of paid LTSS do not differ much by lifetime earnings for people in the top 80 percent of the earnings distribution. About one-half of those in the middle and highest quintiles of the lifetime earnings distribution develop serious LTSS needs after age 65, and about one-fifth will experience these needs for at least five years. Nursing home care and the prevalence of chronic conditions do not vary much by lifetime earnings, and older adults with little lifetime earnings are somewhat *less* likely to become widowed than those with more earnings, because people with very low earnings are less likely to be married and thus at-risk of becoming widowed. The incidence of divorce declines as lifetime earnings increase.

The risk of health and marital status shocks increases rapidly with age (Table 6). Only 6 percent of adults ages 66-75 have serious LTSS needs, compared with 39 percent of those ages 86-95 and 66 percent of those ages 96 and older. The early onset of serious LTSS need is much more common among those with limited lifetime earnings than those with more. Compared with adults ages 76-85, those ages 86-95 are about three times as likely to reside in a nursing home, and those ages 96 and older are more than six times as likely. Widowhood is more than three times as prevalent at ages 86-95 as at ages 66-75.

Our prevalence estimates for health problems and paid LTSS use consider only outcomes for a given individual. These estimates do not include spousal disabilities or paid LTSS use by spouses, which can also lead to economic hardship. Although our analysis does not incorporate spousal outcomes, factoring them in significantly raises our prevalence estimates. Among adults ages 86-95, for example, 39 percent have serious LTSS needs, and other 14 percent do not have serious LTSS needs but have a spouse with such needs.

Economic Hardship Rates and Medicaid Eligibility at Older Ages

Fifteen percent of older adults have family income that falls below 100 percent of the FPL (with annual income in 2018 less than $12,043 if single and less than $15,178 if married) for at least one year after age 65, 10 percent have family income that falls below that level for at least three years, and 9 percent have family income that falls below that level for at least five years (Table 7). Rates of economic hardship are much higher when we set the threshold at 200 percent of the FPL. Under that definition, economic hardship hits 42 percent of older adults for at least one year, 34 percent for at least three years, and 30 percent for at least five years. Under both definitions, economic hardship at older ages is much more common for those with limited lifetime earnings than those with higher earnings. For example, 41 percent of older adults in the bottom lifetime earnings quintile have family income below 100 percent of the FPL for at least three years, compared with only 2 percent of those in the middle lifetime earnings quintile and 0.3 percent of those in the top quintile.

Estimated economic hardship rates are much higher when our measure accounts for health care spending, especially among older adults with substantial lifetime earnings. Family income minus out-of-pocket health care spending falls below 100 percent of the FPL at least once after age 65 for 69 percent of older adults, and it falls below 200 percent of the FPL at least once for 82 percent of older adults. For many older adults, health care costs that consume much of their family income persist for many years. When out-of-pocket health care spending is subtracted from family income, net income falls below 100 percent of the FPL for three or more years for 53 percent of older adults and for five or more years for 42 percent of older adults. Although health care spending that leaves older adults impoverished is most prevalent among those with limited lifetime earnings, it remains widespread among those with substantial lifetime earnings. Defining economic hardship as having family income net of out-of-pocket health care spending that falls below 100 percent of the FPL, we find that among those in the middle quintile of lifetime earnings, 55 percent experience hardship for three or more years and 43 percent experience hardship for five or more years. Among those in the top quintile of lifetime earnings, 29 percent experience hardship for three or more years and 18 percent experience hardship for five or more years. (Rates of economic hardship for older adults with substantial lifetime earnings are even higher when we include older adults whose income net of out-of-pocket health care spending falls below 200 percent of the FPL.)

Defining economic hardship as the inability to replace at least 75 percent of preretirement earnings generates overall hardship rates that are similar to those based on income net of health care spending, but the relationship between hardship and lifetime earnings is quite different. Under the replacement rate measure, 62 percent of older adults experience at least one year of economic hardship after age 65 and 45 percent experience at least five years of hardship. However, this measure indicates that economic hardship is less common among older adults with limited lifetime earnings than among those with substantial lifetime earnings. Because the Social Security benefit formula is progressive, Social Security benefits replace a substantial share of annual earnings for retirees who did not earn much over their careers. A higher replacement rate is more difficult to achieve for workers with substantial lifetime earnings. The relatively high replacement rates for low earners and the relatively low replacement rates for high earners underscore the limitations of the replacement rate measure as an indicator of economic hardship.

A significant minority of older adults enroll in Medicaid. Among those not enrolled in Medicaid at age 65, 29 percent are subsequently enrolled for at least one year, 22 percent are enrolled for at least three years, and 18 percent are enrolled for at least five years. Although older adults with limited lifetime earnings are much more likely to enroll in Medicaid than those with more earnings, many older adults with substantial lifetime earnings eventually enroll, including 25 percent of older adults in the middle quintile of lifetime earnings, 16 percent of those in the fourth quintile, and 9 percent of those in the top quintile. More than one in ten (13 percent) of older adults in the middle quintile of lifetime earnings who were not enrolled in Medicaid at age 65 are eventually enrolled in the program for five or more years.

The rest of the analysis defines economic hardship as having income minus out-of-pocket health care spending that falls below 100 percent of the FPL. Older adults whose income falls below the FPL after they cover medical care and LTSS costs generally have difficulty financing the bare essentials and most often dip into their savings to cover their expenses, risking depleting their wealth, especially if their financial struggles persist. This measure provides a stricter measure of economic hardship than comparing net income to 200 percent of the FPL. The other measures we considered are less reliable indicators of economic hardship. Metrics that ignore health care spending can miss people struggling financially, and people with substantial preretirement earnings may not be struggling even if they cannot replace 75 percent of their preretirement earnings.

Economic Hardship, Medicaid Enrollment, and Disability, Health, and Marital Shocks

Older adults with serious LTSS needs, those who receive paid LTSS, and those who become widowed and divorced are especially likely to experience economic hardship and enroll in Medicaid (Table 8). Defining economic hardship as income net of health care spending that falls below the FPL, we find that 39 percent of those who never need LTSS after age 65

experience economic hardship for three or more years. Economic hardship is more common among those with serious LTSS needs lasting three or more years for 51 percent of those with serious LTSS needs that last less than two years, 62 percent of those with 2-4 years of serious needs, and 74 percent of those with five or more years of serious needs. Similarly, 84 percent of those who receive paid LTSS for five or more years and 83 percent of those who receive two or more years of nursing home care experience economic hardship for at least three years, compared with only 38 percent of those who never receive paid LTSS. In addition, 60 percent of widows and 63 percent of divorced adults experience at least three years of economic hardship. Rates of economic hardship increase with age at death and the number of chronic medical conditions, and they are relatively high for women and people of color, especially Hispanics.

Patterns are similar for Medicaid enrollment. Among adults not enrolled in Medicaid at age 65, 62 percent of those with serious LTSS needs for five or more years and 22 percent of those with serious LTSS needs that last less than two years eventually enroll in the program, compared with only 12 percent of those who never develop serious LTSS needs. Similarly, 77 percent of those who receive two or more years of nursing home care, 35 percent of those who receive less than two years of nursing home care, and 82 percent of those who receiver five or more years of any type of paid LTSS eventually enroll in Medicaid, compared with only 11 percent of those who never receive any paid LTSS. Overall, 78 percent of older adults who enroll in Medicaid after age 65 have serious LTSS needs, and 59 percent receive some nursing home care (numbers not reported in the table).

Table 9 shows how economic hardship varies with serious LTSS needs and lifetime earnings quintile. The likelihood of ever experiencing hardship for people in the bottom earnings quintile does not differ much between those with and without LTSS needs. Among adults in the bottom fifth of the lifetime earnings distribution, 86 percent of those with at least five years of serious LTSS needs experience economic hardship at least once, compared with 80 percent of those who never have serious LTSS needs. Serious LTSS needs are better predictors of *persistent* economic hardship for those in the bottom earnings quintile. Seventy-five percent of those with at least five years of serious LTSS needs experience hardship for at least five years, compared with only 57 percent of those who never develop serious LTSS needs.

Economic hardship among older adults with more significant lifetime earnings varies substantially with serious LTSS needs. Among older adults in the middle earnings quintile, 88 percent of those with at least five years of serious LTSS needs experience economic hardship at least once, compared with 62 percent of those who never develop LTSS needs, and 64 percent of those with at least five years of serious LTSS needs experience hardship for at least five years, compared with 30 percent of those who never develop serious LTSS needs. Among those in the top earnings quintile, those with serious LTSS needs for at least five years are more than twice as likely as those who never develop serious LTSS needs to ever experience economic hardship (81 percent versus 28 percent) and six times as likely to experience hardship for at least five years (43 percent versus 7 percent).

Medicaid enrollment is closely related with serious LTSS needs throughout the lifetime earnings distribution, especially among those in the top 80 percent of the distribution (Table 10). Older adults with substantial lifetime earnings are much less likely than those with less earnings to enroll in Medicaid when they develop serious LTSS needs, but developing needs significantly increases the chances that they enroll. Among older adults in the bottom earnings quintile who are not enrolled in Medicaid at age 65, those with serious LTSS needs for at least five years are about twice as likely to eventually enroll in the program as those who never develop serious LTSS needs (83 percent versus 39 percent). In the middle earnings quintile, those who develop serious LTSS needs for at least five years are nine times as likely to eventually enroll in Medicaid as those who never develop serious LTSS needs (63 percent versus 7 percent). In the top earnings quintile, those with serious LTSS needs for at least five years are 15 times as likely to eventually enroll in Medicaid as those who never develop serious LTSS needs (31 percent versus 2 percent). Older adults who develop serious LTSS needs account for 77 percent of Medicaid enrollees in the bottom lifetime earnings quintile, 79 percent in the second quintile, 87 percent in the middle quintile, 91 percent in the fourth quintile, and 90 percent in the top quintile (numbers not shown in the table). Serious LTSS need is a relatively weak predictor of Medicaid enrollment for older adults with limited lifetime earnings because their limited financial resources often qualifies them for benefits even without receiving paid LTSS and spending down some of their wealth.

Receipt of paid LTSS, which includes Medicaid-financed care, is also closely related with economic hardship for those in the top 80 percent of the lifetime earnings distribution (Table 11). The likelihood of ever experiencing economic hardship does not vary much with paid LTSS for those in the bottom lifetime earnings quintile, although those in the bottom quintile who receive paid LTSS are more likely than others to experience hardship for multiple years. For older adults who earned more over their lifetimes, receipt of paid LTSS is a strong predictor of economic hardship. In the middle earnings quintile, the share who ever experience economic hardship is 33 percentage points higher for those who receive at least five years of paid LTSS or at least two years of nursing home care than for those who never receive paid LTSS (94 percent versus 61 percent). In the top earnings quintile, the share who ever experience economic hardship is 69 percentage points higher for those who receive at least five years of paid LTSS than for those who never receive paid LTSS to experience hardship (95 percent versus 26 percent) and also 69 percentage points higher for those who receive at least two years of nursing home care. In the second, third, fourth, and top earnings quintiles, between 94 and 95 percent of older adults who spend at least two years in a nursing home experience economic hardship, because nursing home care is quite expensive. In the bottom quintile, 87 percent of long-term nursing home residents experience economic hardship, a somewhat smaller share because many older adults with limited lifetime earnings already qualify for Medicaid.

Receipt of paid LTSS is strongly related to Medicaid eligibility throughout the earnings distribution (Table 12). Among older adults who are not enrolled in Medicaid at age 65 in the bottom lifetime earnings quintile, those who receive at least five years of paid LTSS are almost three times as likely as those who never receive paid LTSS to eventually qualify for Medicaid (94 percent versus 33 percent). In the middle earnings quintile, those who receive at least five

years of paid LTSS are about 15 times as likely as those who never receive paid LTSS to eventually enroll in Medicaid (87 percent versus 6 percent), and in the top earnings quintile those who receive some paid LTSS are 53 times as likely as those who never receive paid LTSS to eventually enroll in the program (53 percent versus 1 percent). Older adults who ever receive paid LTSS account for 67 percent of Medicaid enrollees in the bottom lifetime earnings quintile, 84 percent in the second quintile, 94 percent in the middle quintile, 97 percent in the fourth quintile, and 99 percent in the top quintile (numbers not shown in the table). Older adults who ever reside in a nursing home account for 47 percent of Medicaid beneficiaries in the bottom lifetime earnings quintile, 57 percent in the second quintile, 70 percent in the middle quintile, 75 percent in the fourth quintile, and 79 percent in the top quintile (numbers not shown in the table). Unlike people with limited lifetime earnings, those with relatively high lifetime earnings cannot generally qualify for Medicaid unless they pay for LTSS and spend a substantial portion of their savings.

CONCLUSIONS

Economic hardship is widespread at older ages. Although Social Security benefits and Medicare coverage are nearly universal among older adults and many amass significant savings through workplace retirement plans and other vehicles, many older adults struggle financially. We estimate that annual income falls below the FPL, after out-of-pocket spending on medical care and LTSS are subtracted, at least once after age 65 for 69 percent of older adults. Fifty-three percent experience this economic hardship for at least three years, and 42 percent experience it for at least five years. Although economic hardship is concentrated among those who earned little during their lifetimes, it persists throughout the earnings distribution. Over two-fifths (43 percent) of older adults in the middle quintile of the lifetime earnings distribution experience five or more years of economic hardship. Among the top fifth of lifetime earners, 29 percent experience economic hardship for at least three years and 18 percent experience hardship for at least five years.

Serious LTSS needs create economic hardship for many middle-class older adults because paid LTSS is expensive and third-party reimbursement is rare for people with too many financial resources to qualify for Medicaid. Medicare does not cover typical LTSS expenses and private LTCI is rare. In the middle of the lifetime earnings distribution, 88 percent of those with at least five years of serious LTSS needs experience economic hardship at least once, compared with 62 percent of those who never develop LTSS needs, and 64 percent of those with at least five years of serious LTSS needs experience hardship for at least five years, compared with 31 percent of those who never develop serious LTSS needs. Additional lifetime earnings do not provide much protection against financial hardship for people who develop serious LTSS needs. About one-half of those in the middle and top of the lifetime earnings distribution develop serious LTSS needs after age 65, and about one-fifth experience these needs for at least five years. Our estimates likely understate the role of serious LTSS needs in economic hardship at older ages because they ignore spousal disability, which can create additional financial stress.

Although many middle-income older adults have savings they can use to supplement their incomes and help make ends meet, they run the risk of depleting their wealth if out-of-pocket health care costs persist, which could force them to turn to Medicaid. We project that 25 percent of older adults in the middle lifetime earnings quintile enroll in Medicaid after age 65. Nearly nine in ten of these older middle-class Medicaid enrollees have serious LTSS needs.

TABLES

TABLE 1. Selected Studies of the Adequacy of Retirement Resources			
Study	**Data and Sample**	**Adequacy Measure**	**Share with Inadequate Resources**
Cosic et al. (2019)	DYNASIM4, incorporating data from the HRS, SIPP, and other sources; adults born between 1936 and 1985.	Capacity to replace 75% of preretirement earnings at age 70, using retirement income and annuitizing financial wealth. Does not address health care spending.	26% of pre-boomers (born between 1936 and 1945), 26% of early boomers (1946-1955), 25% of late boomers (1956-1965), 30% of early Gen Xers (1966-1975), and 32% of Xennials (1976-1985), if scheduled Social Security benefits are paid. 38% of early Gen Xers and 40% of Xennials if Social Security revenues are not raised.
Hurd and Rohwedder (2011)	Model based on HRS, including data from the companion Consumption and Activities Mailout Survey; adults ages 66-69 in 2001-2007.	Capacity to follow an optimal life-cycle consumption path, including longevity risk and OOP medical spending risks.	39%, including 20% of married adults, 45% of single adults, and 64% of unmarried adults without a high school diploma.
Munnell, Hou and Sanzenbacher (2018)	Model based on Survey of Consumer Finances.	Capacity to finance at least 90% of preretirement consumption, using retirement income and annuitizing wealth. Does not addresses health care spending.	50% of households in 2016, including 56% at ages 30-39, 52% at ages 40-49, 44% at ages 50-59, 56% of low-income households, 54% of middle-income households, and 41% of high-income households.
Mutchler, Li and Xu (2016)	American Community Survey, 2010-2014, and estimates of basic living expenses from various government agencies; non-institutionalized adults ages 65 and older.	Capacity to finance basic living needs.	53% of older adults living alone and 26% of older adults in couple households.
Scholz, Seshadri and Khitatrakun (2006)	HRS.	Whether households save optimally, based on demographic and other characteristics, accounting for end-of-life uncertainty and medical shocks.	20% of households, and they tend to have limited income and education.
VanDerhei (2019)	EBRI Retirement Security Projection Model, which incorporates data from the Consumer Expenditure Survey; household heads ages 35-64.	Whether household has sufficient resources to meet average retirement expenditures, including health care risks.	42% of adults ages 60-64 in 2019. (Estimates do not vary much by age.)
SOURCE: Authors' review of the literature.			

TABLE 2. Selected Studies of Retirement Shocks			
Study	**Data and Sample**	**Risk Measures**	**Key Findings**
Johnson (2019)	HRS, 1995-2014; adults ages 65 and older.	Probability of developing serious need for LTSS and receiving paid LTSS.	70% develop serious LTSS needs after age 65; 48% receive some paid LTSS over their lifetime.
Greenwald and Associates (2018)	2017 online survey of adults ages 45-80.	Reported concern about ability to handle various financial risks, including LTSS, health care, major home repairs, fraud, home foreclosure, and investment losses.	Among retirees, 59% said they were concerned (very or somewhat) about being able to pay for nursing care, 54% were concerned about their ability to pay for health care, and 57% were concerned that their savings and investments might not keep up with inflation.
Guyton et al. (2018)	Mercer-Vanguard health care cost model.	OOP spending on medical care (excluding LTSS) and health insurance premiums.	Median annual 2018 costs for a 65-year-old woman is $3,400 for low-risk adults, $3,900 for medium-risk adults, and $7,600 for high-risk adults.
Johnson, Mermin and Uccello (2006)	HRS, 1992-2002.	The incidence of chronic medical conditions, disability, cognitive impairment, nursing home care, widowhood and divorce after age 50 and impact on wealth and income.	71% of married adults and 67% of single adults experience at least 1 shock after age 70. Onset of nursing home care and cognitive impairment have largest impacts on household wealth.
SOURCE: Authors' review of the literature.			

TABLE 3. Selected Studies of Wealth Decumulation			
Study	**Data and Sample**	**Measures**	**Key Findings**
Banerjee (2018)	HRS and Consumption and Activities Mail Survey (CAMS), 1992-2014; retirees ages 50 and older.	Change in non-housing wealth.	Wealth decumulation is very gradual for most retirees, and for about one-third wealth increases in retirement. Within the first 18 years of retirement, retirees with less than $200,000 in non-housing assets spenddown about one-quarter of their assets, those with between $200,000 and $500,000 spenddown 27% of their assets, and those with more than $500,000 spenddown 12% of their assets.
Browning et al. (2016)	HRS and CAMS, 2000; adults ages 65-70.	Household spending shortfall relative to financial resources.	Retirees with median wealth have a consumption gap of about 8% on average. Consumption gaps average 53% for retirees with more wealth.
Coile and Milligan (2009)	HRS, 1992-2002.	Wealth.	Wealth declines with age. Widowhood and health shocks are associated with a decline in home ownership, and widowhood, health shocks and onset of limitations with ADLs are associated with declines in financial wealth.
De Nardi, French and Jones (2015)	HRS, 1993-2010; adults ages 70 and older.	Wealth.	Wealth declines sharply after the death of a spouse, primarily because of high medical expenses.
Feiveson and Sabelhaus (2019	Survey of Consumer Finances, 1995-2016.	Wealth.	Capital gains account for much of the increase in wealth over the life course.
Poterba, Venti and Wise (2013)	SIPP, 1997-2010.	Withdrawal behavior of households with retirement accounts.	Only 17% of households owning a retirement account make any withdrawals between ages 60 and 69, and only 7% withdraw more than 10% of their balance. However, 60% of account holders withdraw funds at age 71, when tax regulations mandate minimum withdrawals.
Poterba, Venti and Wise (2018)	HRS, 1992-2012; adults ages 65 and older who died by 2012.	Having limited household wealth at death.	Nearly two-thirds of adults whose net worth fell below $50,000 at death had less than $50,000 at age 65. Health declines and the loss of a spouse raised the likelihood of low wealth, but the effects were modest.
SOURCE: Authors' review of the literature.			

TABLE 4. Selected Studies of Medicaid Eligibility and Wealth Transfers			
Study	**Data and Sample**	**Measures**	**Key Findings**
Baird, Hurd and Rohwedder (2016)	HRS, 1998-2008; unpartnered adults ages 65 and older with surviving children.	Transfer of financial resources to children.	Before 2005, older adults who reported being likely to enter a nursing home were more likely that others to transfer assets. This relationship was not statistically significant after 2005, when Medicaid eligibility rules tightened.
Bassett (2004)	HRS, 1993; adults ages 70 and older.	Transfer of financial resources to children.	Older adults who reported that they were likely to enter a nursing home were more likely than others to transfer assets.
Borella, De Nardi and French (2017)	HRS, 1996-2012; focusing on adults born before 1924.	Self or proxy report of Medicaid receipt.	Medicaid receipt is high among those in the bottom tercile of permanent income. In the top 2 terciles, Medicaid receipt is related to long nursing home stays. As many as 10% of single adults ages 95 and older in the top income tercile receive Medicaid.
GAO (2005)	HRS, 2002; adults ages 65 and older.	Wealth transfers.	22% of older households (with head or spouse ages 65 or older) transferred cash in previous 2 years. Median transfer for those with non-housing resources worth at least $51,500 was only $4,000.
GAO (2014)	294 approved Medicaid applications in 3 states in 2012.	Wealth.	41% of approved applicants had less than $2,500 in resources; 14% had more than $100,000.
Johnson (2016)	HRS, 1992-2012.	Self or proxy report of Medicaid-financed nursing home care.	Older adults with extended nursing home stays and those who received Medicaid-financing nursing home care had substantially less wealth than those who did not enter a nursing home many years before they began receiving care.
Keohane, Trivedi and Mor (2017)	Medicare Master Beneficiary Summary File linked to part A inpatient and skilled nursing facility claims and to residential history from Minimum Data Set, 2008-2010; traditional Medicare beneficiaries without Medicaid and without nursing home or hospital care in the prior year.	Medicaid enrollment.	Medicare beneficiaries who received care in a skilled nursing facility during the past year were 35 times more likely to enroll in Medicaid than those who received no health care services, and those who received nursing home care were 95 times more likely. Because long-term care is rare, only 32% of new Medicaid enrollees received skilled nursing facility services and 14% received nursing home services.

TABLE 4 (*continued*)			
Study	**Data and Sample**	**Measures**	**Key Findings**
Lee, Kim and Tanenbaum (2006)	HRS, 1993-2004; respondents ages 70 and older living in the community and not receiving Medicaid in 1993 who transition to Medicaid by 2004.	Self-reported Medicaid enrollment.	16% eventually enrolled in Medicaid, and 18% of them transferred wealth to family members; the average transfer amount was $8,507. 15% of community-residing elders entered a nursing home over 10 years, and 26% of them were covered by Medicaid. Of these, 13% transferred wealth, with mean amount of $4,112.
Spillman and Waidmann (2014, 2015)	National Long-Term Care Survey, 2004; matched to Medicaid and Medicare claims; Medicare beneficiaries ages 65 and older, not on Medicaid and not residing in institutions.	Full Medicaid enrollment.	About 5% transition to Medicaid over 4 years; enrollees are disproportionately older adults, nursing home residents, women, cognitively impaired, in fair or poor health, and lower-income.
Waidmann and Liu (2006)	HRS, 1995-2004.	Asset transfer and nursing home enrollment.	Only 19% of nursing home residents who qualified for Medicaid before admission had transferred assets, and the median transfer was $7,200. 44% who qualified for Medicaid at the time of admission transferred assets, and the median transfer was $5,000.
Wiener et al. (2013)	HRS, 1996-2008; merged to Medicare records; adults ages 50 and older.	Self-reported Medicaid enrollment.	About 10% of adults spent down to Medicaid over 12 years; about half of those spending down did not receive LTSS.
Willink et al. (2019)	NHATS, 2011-2017; Medicare beneficiaries ages 65 and older who were not receiving Medicaid at baseline (2011).	Self-reported Medicaid enrollment.	Annual Medicaid entry rates were 2.4-4.8%. A total of 11.4% of original sample entered over the 6-year period. Those with less education, lower incomes, worse health, and more disabilities and those unmarried at baseline were more likely to enter Medicaid, as were women and African Americans.
SOURCE: Authors' review of the literature.			

TABLE 5. Demographic Characteristics, Mean Age at Death, and Prevalence of Health Problems, LTSS Use, Widowhood, and Divorce after Age 65: By Lifetime Earnings						
	Lifetime Earnings Quintile					
	All	Bottom	Second	Third	Fourth	Top
Serious LTSS needs (%)						
Any duration	57	65	57	54	53	55
Less than 2 years	19	18	19	19	18	19
2-4 years	15	16	14	14	15	16
5 or more years	23	31	24	21	19	20
Paid LTSS (%)						
Any duration	56	63	55	53	54	56
Less than 2 years	34	33	33	33	34	35
2-4 years	14	18	14	12	13	14
5 or more years	9	13	9	8	7	7
Nursing home care (%)						
Any duration	39	38	37	38	40	43
Less than 2 years	28	25	25	27	30	33
2 or more years	11	13	12	11	10	10
Widowed (%)	37	32	37	39	39	38
Divorced (%)	19	22	22	20	17	15
Race and ethnicity (%)						
Non-Hispanic White	68	39	61	73	80	84
Non-Hispanic Black	11	16	14	10	8	6
Non-Hispanic other	7	10	8	7	6	6
Hispanic	14	35	17	10	6	4
Male (%)	48	42	44	48	52	55
Mean age at death	85.4	83.6	84.0	84.8	86.1	88.1

SOURCE: DYNASIM4, ID974.

NOTES: The sample is restricted to adults born between 1941 and 1974 who survive to age 66. It includes adults living in institutions. The analysis classifies adults as having serious LTSS needs if they require help with 2 or more ADLs or have SCI. Chronic medical conditions include diagnoses of cancer, diabetes, heart disease, chronic lung disease, and stroke.

TABLE 6. Prevalence of Health Problems, LTSS Use, Widowhood, and Divorce at Older Ages: By Age and Lifetime Earnings						
	Lifetime Earnings Quintile					
	All	Bottom	Second	Third	Fourth	Top
Serious LTSS needs						
Ages 66-75	6	11	7	5	3	3
Ages 76-85	17	28	21	17	13	11
Ages 86-95	39	53	45	39	35	32
Ages 96+	66	78	72	65	64	61
Paid LTSS						
Ages 66-75	6	14	7	5	4	3
Ages 76-85	17	26	20	17	14	12
Ages 86-95	39	53	44	39	35	32
Ages 96+	67	75	71	66	66	65
Nursing home care						
Ages 66-75	2	3	3	2	1	1
Ages 76-85	6	9	9	7	5	4
Ages 86-95	22	25	27	23	20	18
Ages 96+	45	49	51	43	45	41
Widowed						
Ages 66-75	12	13	15	13	11	8
Ages 76-85	24	23	28	27	23	19
Ages 86-95	40	36	44	44	42	37
Ages 96+	51	45	51	51	53	51
Divorced						
Ages 66-75	17	20	20	18	15	14
Ages 76-85	16	18	18	17	15	13
Ages 86-95	14	16	15	15	13	12
Ages 96+	12	12	13	13	11	11

SOURCE: DYNASIM4, ID974.

NOTES: The sample is restricted to adults born between 1941 and 1974 who survive to age 66. It includes adults living in institutions. The analysis classifies adults as having serious LTSS needs if they require help with 2 or more ADLs or have SCI. Chronic medical conditions include diagnoses of cancer, diabetes, heart disease, chronic lung disease, and stroke.

TABLE 7. Percentage of Adults Who Ever Experience Economic Hardship or Enroll in Medicaid after Age 65: By Hardship Measure Frequency of Hardship, and Lifetime Earnings						
	Lifetime Earnings Quintile					
	All	Bottom	Second	Third	Fourth	Top
Family income below 100% of the FPL						
At least 1 year	15	50	15	6	3	2
At least 3 years	10	41	9	2	1	0.3
At least 5 years	9	37	7	2	0.4	0.2
Family income below 200% of the FPL						
At least 1 year	42	84	64	40	20	8
At least 3 years	34	77	54	29	11	3
At least 5 years	30	71	47	24	9	2
Family income minus OOP spending below 100% of the FPL						
At least 1 year	69	83	81	73	62	49
At least 3 years	53	73	67	55	40	29
At least 5 years	42	66	57	43	28	18
Family income minus OOP spending below 200% of the FPL						
At least 1 year	82	92	90	86	77	64
At least 3 years	70	86	84	75	62	45
At least 5 years	61	80	76	67	51	35
Unable to replace 75% of preretirement earnings						
At least 1 year	62	40	54	65	70	80
At least 3 years	52	33	44	54	58	67
At least 5 years	45	29	38	46	50	60
Medicaid enrollment						
At least 1 year	29	60	39	25	16	9
At least 3 years	22	52	29	18	10	5
At least 5 years	18	46	22	13	7	3

SOURCE: DYNASIM4, ID974.

NOTES: The sample is restricted to adults born between 1941 and 1974 who survive to age 66. It includes adults living in institutions. Estimates of Medicaid enrollment are restricted to adults who are not enrolled at age 65. OOP spending includes expenditures on insurance premiums and provider payments for medical care and LTSS. In 2018, the FPL was $12,043 for a single adult ages 65 and older ($15,178 for a married couple headed by an adult age 65 or older); and 200% of the FPL was $24,086 ($30,356). The replacement rate is defined as annual income after age 65 from Social Security, DB pensions, earnings, interest, dividends, rent, SSI, other government benefits, and withdrawals from tax-deferred retirement accounts divided by average annual earnings from ages 50-59.

TABLE 8. Percentage of Adults Who Ever Experience Economic Hardship or Enroll in Medicaid after Age 65: By Serious LTSS Needs, Paid LTSS, and Demographic Characteristics						
	Income Minus OOP Spending Falls below 100% of FPL			Medicaid Enrollment		
	Ever	3 or More Years	5 or More Years	Ever	3 or More Years	5 or More Years
All	69	53	42	29	22	18
Serious LTSS needs						
None	56	39	29	12	7	6
Less than 2 years	70	51	41	22	14	10
2-4 years	81	62	48	38	28	18
5 or more years	86	74	63	62	54	46
Paid LTSS						
None	56	38	29	11	6	5
Less than 2 years	73	54	44	28	18	13
2-4 years	90	73	57	59	48	36
5 or more years	92	84	76	82	79	73
Less than 2 years of nursing home care	76	58	46	35	24	17
2 or more years of nursing home care	93	83	71	77	73	62
Marital status						
Widowed	76	60	48	31	24	18
Divorced	78	63	52	38	31	25
Age at death						
66-75	45	22	11	17	11	7
76-85	66	50	40	26	20	16
86-95	75	59	49	32	24	19
96+	82	67	56	40	33	25
Race and Hispanic origin						
Non-Hispanic White	67	49	38	23	17	13
Non-Hispanic Black	70	55	45	46	37	30
Non-Hispanic other	70	52	42	38	31	24
Hispanic	79	67	58	42	34	28
Gender						
Men	66	49	38	24	18	14
Women	72	56	46	34	27	21

SOURCE: DYNASIM4, ID974.

NOTES: The sample is restricted to adults born between 1941 and 1974 who survive to age 66. OOP spending includes expenditures on insurance premiums and provider payments for medical care and LTSS. In 2018, the FPL was $12,043 for a single adult ages 65 and older ($15,178 for a married couple headed by an adult age 65 or older). Estimates of Medicaid enrollment are restricted to adults who are not enrolled at age 65. The analysis classifies adults as having serious LTSS needs if they require help with 2 or more ADLs or have SCI.

TABLE 9. Percentage of Adults Who Ever Experience Economic Hardship after Age 65: By Duration of Serious LTSS Needs and Lifetime Earnings					
	Quintile of Lifetime Earnings				
	Bottom	Second	Third	Fourth	Top
Any hardship					
All	83	81	73	62	49
Serious LTSS needs					
None	80	73	62	45	28
Less than 2 years	82	82	76	64	48
2-4 years	86	87	85	79	69
5 or more years	86	89	88	86	81
3 or more years of hardship					
All	73	67	55	40	29
Serious LTSS needs					
None	66	56	42	25	13
Less than 2 years	73	69	55	38	23
2-4 years	77	76	67	55	39
5 or more years	79	82	76	68	62
5 or more years of hardship					
All	66	57	43	28	18
Serious LTSS needs					
None	57	44	30	17	7
Less than 2 years	66	59	43	26	14
2-4 years	70	65	52	37	20
5 or more years	75	74	64	53	43

SOURCE: DYNASIM4, ID974.

NOTES: The sample is restricted to adults born between 1941 and 1974 who survive to age 66. Economic hardship is defined as having income minus OOP health care spending that falls below 100% of the FPL. OOP spending includes expenditures on insurance premiums and provider payments for medical care and LTSS. In 2018, the FPL was $12,043 for a single adult ages 65 and older ($15,178 for a married couple headed by an adult age 65 or older). The analysis classifies adults as having serious LTSS needs if they require help with 2 or more ADLs or have SCI.

TABLE 10. Percentage of Adults Who Ever Enroll in Medicaid after Age 65: By Duration of Serious LTSS Needs and Lifetime Earnings					
	Quintile of Lifetime Earnings				
	Bottom	Second	Third	Fourth	Top
Any coverage					
All	60	39	25	16	9
Serious LTSS needs					
None	39	17	7	3	2
Less than 2 years	52	32	18	9	4
2-4 years	71	55	38	23	10
5 or more years	83	75	63	50	31
3 or more years of hardship					
All	52	29	18	10	5
Serious LTSS needs					
None	29	10	3	1	<1
Less than 2 years	42	19	8	3	1
2-4 years	63	40	24	12	4
5 or more years	79	67	54	39	21
5 or more years of hardship					
All	46	22	13	7	3
Serious LTSS needs					
None	24	7	2	1	<1
Less than 2 years	35	13	4	1	<1
2-4 years	50	22	11	4	1
5 or more years	74	57	44	28	14

SOURCE: DYNASIM4, ID974.

NOTES: The sample is restricted to adults born between 1941 and 1974 who survive to age 66 and are not enrolled in Medicaid at age 65. The analysis classifies adults as having serious LTSS needs if they require help with 2 or more ADLs or have SCI.

TABLE 11. Percentage of Adults Who Ever Experience Economic Hardship after Age 65: By Duration of Paid LTSS and Lifetime Earnings					
	Quintile of Lifetime Earnings				
	Bottom	Second	Third	Fourth	Top
Any hardship					
All	83	81	73	62	49
Paid LTSS					
None	80	73	61	43	26
Less than 2 years	84	84	79	69	53
2-4 years	87	91	93	92	89
5 or more years	85	94	94	96	95
Less than 2 years of nursing home care	85	86	81	73	61
2 or more years of nursing home care	87	94	94	95	95
3 or more years of hardship					
All	73	67	55	40	29
Paid LTSS					
None	66	56	41	24	12
Less than 2 years	76	72	60	42	26
2-4 years	79	80	78	68	61
5 or more years	78	88	86	87	85
Less than 2 years of nursing home care	77	75	65	49	36
2 or more years of nursing home care	81	87	86	81	80
5 or more years of hardship					
All	66	57	43	28	18
Paid LTSS					
None	56	45	30	16	6
Less than 2 years	70	63	47	30	16
2-4 years	74	69	62	46	32
5 or more years	75	82	78	74	71
Less than 2 years of nursing home care	71	65	51	35	21
2 or more years of nursing home care	76	80	75	64	58

SOURCE: DYNASIM4, ID974.

NOTES: The sample is restricted to adults born between 1941 and 1974 who survive to age 66. Economic hardship is defined as having income minus OOP health care spending that falls below 100% of the FPL. OOP spending includes expenditures on insurance premiums and provider payments for medical care and LTSS. In 2018, the FPL was $12,043 for a single adult ages 65 and older ($15,178 for a married couple headed by an adult age 65 or older).

TABLE 12. Percentage of Adults Who Ever Enroll in Medicaid after Age 65: By Duration of Paid LTSS and Lifetime Earnings					
	Quintile of Lifetime Earnings				
	Bottom	Second	Third	Fourth	Top
Any coverage					
All	60	39	25	16	9
Paid LTSS					
None	33	16	6	3	1
Less than 2 years	63	42	23	13	6
2-4 years	87	78	65	41	21
5 or more years	95	91	87	75	53
Less than 2 years of nursing home care	70	50	34	21	11
2 or more years of nursing home care	94	92	82	67	43
3 or more years of coverage					
All	52	29	18	10	5
Paid LTSS					
None	23	9	2	1	<1
Less than 2 years	53	26	11	5	2
2-4 years	83	68	51	27	11
5 or more years	94	90	84	70	45
Less than 2 years of nursing home care	62	36	21	11	5
2 or more years of nursing home care	93	89	77	60	36
5 or more years of coverage					
All	46	22	13	7	3
Paid LTSS					
None	18	7	2	<1	<1
Less than 2 years	44	16	5	2	1
2-4 years	74	50	32	14	4
5 or more years	93	86	78	58	34
Less than 2 years of nursing home care	54	24	12	5	2
2 or more years of nursing home care	86	79	66	46	25

SOURCE: DYNASIM4, ID974.

NOTES: The sample is restricted to adults born between 1941 and 1974 who survive to age 66 and are not enrolled in Medicaid at age 65. The analysis classifies adults as having serious LTSS needs if they require help with 2 or more ADLs or have SCI.

NOTES

1. Bajtelsmit and Rappaport (2018) carefully review the literature on retirement income adequacy.

2. Lifetime earnings are measured by summing inflation-adjusted earnings over a worker's entire career. During years in which a worker is married, we incorporate the average of each spouse's earnings into the measure.

3. Our estimated replacement rate accounts for marital status. For married retirees, we divide retirement income by 1.26, the household size adjustment factor that is incorporated into the FPL. For workers who are married during their 50s, we sum the earnings of each spouse and divide the total by 1.26 in each year they are married.

4. For an overview on measures of cognitive impairment in the HRS, see Fisher et al. (2017).

5. We classify respondents as cognitively impaired if their proxies report that they have a poor memory, experience hallucinations, get lost, or wander. We also tested the sensitivity of this measure to including those whose proxies report that they cannot be left alone. We use the same classification for exit interviews, but we also classify respondents as cognitively impaired if they were impaired in an earlier HRS wave or if they were nearly severely cognitively impaired in an earlier wave and their proxy reported several IADL limitations.

6. We assume that a small share of people with private long-term care insurance or higher incomes will purchase more expensive (presumably higher quality) care, while some people with lower incomes will purchase less expensive care.

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