The Impact of the Partnership Long-term Care Insurance Program on Private Coverage and Medicaid Expenditures

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Abstract

We examine the impact of U.S. states' adoption of the partnership long-term care (LTC) insurance program on households' purchases of private coverage. This program increases benefits of privately insuring via a higher asset threshold for Medicaid eligibility for LTC coverage, and targets middle-class households. We find the program generates few new purchases of LTC insurance, and those it generates are almost entirely by wealthy individuals, as predicted by Medicaid crowd-out. Further analysis suggests that awareness levels of the program, along with bequest intentions, also effectively predict response rates, but Medicaid crowd-out persists. We provide an estimate of expected Medicaid savings/costs.

1. Introduction

For most U.S. states, long-term care (LTC) comprises the largest portion of Medicaid expenditures, and LTC expenses in general now comprise more than one percent of U.S. GDP. In addition, it is estimated that about 70 percent of Americans that turn age 65 will require use of long-term care at some point in their lives (Stevenson et al., 2010). Despite the size of these expenses and the likelihood of incurring them in some form, little more than ten percent of Americans have LTC insurance. This presents two key concerns for state governments and the federal government: 1) rising Medicaid costs, and 2) welfare losses due to under-insurance (presumably due to systematic under-estimation of the likelihood of needing LTC). Further, the failure of the Community Living Assistance Services and Support Act (CLASS Act) in 2011 has left the U.S. federal government in a precarious situation of rising long-term care costs and no clear strategy for addressing them.

An innovative way U.S. state governments have tried to address LTC issues is through the Partnership Long-term Care Insurance Program (PLTC or partnership program). This program was supported by the Robert Wood Johnson Foundation (RWJF) in 1988 and initially rolled out in four states in the early/mid 1990's: Connecticut, California, New York, and Indiana. The basic premise of the program was to offer individuals who purchase LTC insurance greater Medicaid asset protection. It was hoped that this would increase LTC insurance purchases, particularly among the middle class (who have assets to protect but have some risk of needing Medicaid), and potentially reduce Medicaid expenditures. In 2005, Congress passed the Deficit Reduction Act, which allowed the remaining states to adopt the partnership program. By 2010, thirty-three more states (beyond the initial four) had adopted.

In this paper, we use data spanning these recent state adoptions of the partnership program to measure the impact of adopting the program on LTC purchasing. We measure the program's overall effect, and then determine whether it varies across individual wealth levels. This analysis helps determine whether the PLTC is hitting its targeted audience and helps illustrate how responses to an increase in the benefits of LTC insurance vary across demographic groups. Motivated by the literature, we then test for differential responses along two other key dimensions: intent to bequest and program awareness. This added analysis allows us to both test for the presence of additional determinants of response rates to the program besides wealth, and to assess whether variation along these dimensions may be the underlying driver of

heterogeneous responses along wealth levels. Finally, in light of our empirical findings, we assess the likely impact of the program on Medicaid expenditures.

Assessing the effects of the partnership program is important, given many states recently have adopted the program, and others are considering adopting it. Ideally, the program will have a significant impact on LTC purchases and concurrently reduce costs to Medicaid. However, as has been found with tax subsidies (Courtemanche and He 2009, Goda 2011), it may be that there is little, or modest, impact on purchasing behavior, and net costs to state budgets. If the latter holds true for the partnership program, states may want to consider ways to improve the program's performance, or else consider alternative ways to increase LTC purchasing and/or reduce Medicaid expenditures. As mentioned above, the failure of the Community Living Assistance Services and Support Act (CLASS Act) in 2011 has left the U.S. federal government in need of viable strategy for addressing rising long-term care costs. A thorough understanding of the impact of the partnership program can be crucial in assessing how to move policy forward, and the aggressiveness needed for potential new programs.

This study builds on a wide base of prior work analyzing the effects of government policies designed to alter long-term care insurance purchasing incentives. In 1996, Congress passed the Health Insurance Portability and Accountability Act (HIPAA) which allowed for federal tax deductions on expenses for LTC insurance. Courtemanche and He (2009) analyzed the effect of this tax subsidy and found it did increase uptake of LTC insurance by individuals, but the effect was modest. They also found that the program actually represented a net loss to the federal government budget. Since HIPAA, many states have allowed for state tax deductions on expenses for LTC insurance. Goda (2011) analyzed the effects of these subsidies and found these also increased the uptake of LTC insurance by individuals, but also represented a net loss to state governments. Prior work on the partnership program (e.g., McCall et al. 1998, Meiners 2009, RWJF 2007, U.S. GAO 2005 & 2007, Stone-Axelrad 2005, Wiener et al. 2000) has sought to assess purchase rates and its effect on Medicaid expenditures. However, these studies are severely limited in their ability to identify the actual effect of adopting the program. This is because data only recently has been available (due to a recent wave of state adoptions of the program) that allows researchers to assess individual purchasing behavior before and after program adoption.

We find that adoption of the partnership program has, at best, a modest impact on LTC

insurance purchasing. Our results indicate that adoption of the program increases LTC insurance purchases by a little more than 1 percentage point for the group of potential customers (aged 50 to 69). This modest effect persists even when we allow for differential impacts according to the amount of time the program has been in place (i.e., allowing for smaller effects when first adopted but larger ones after two or three years). However, we do find a much more notable effect when we allow for differential responses across wealth levels. In particular, we find that individuals with high asset levels (80th percentile) do respond to the program (increasing their likelihood of purchase by five percentage points), but individuals below the 80th percentile show virtually no response.

As Brown and Finkelstein (2008) note, Medicaid crowd-out is a likely cause for the differential responses we find along wealth levels. However, we consider two other plausible drivers of an individual's response to his/her state's adoption of PLTC: intent to bequest and program awareness. While there are many variables that might predict LTC insurance purchase overall, these two are particularly relevant toward explaining differential responses in LTC insurance purchase behavior to introduction of the partnership program. Specifically, since the partnership program can increase permanently sheltered assets, individuals' response to this feature may differ depending on their intent to ultimately bequest assets; and, as the availability and features of the partnership program are not universally known and understood, it is natural to expect that variation in awareness levels can explain differences in response. Beyond any direct effect these variables may have on response rates to the program, to the extent that these variables are correlated with wealth, they may help explain differential responses according to wealth, in addition to Medicaid crowd-out. Our data allow us to capture variation along these two dimensions via variables such as a measure of the importance of leaving a bequest (intent to bequest), and work experience and Internet activity (awareness).

Our supplemental analysis shows bequest motives are quite predictive of response to the program. In particular, both the middle class and (most strongly) the wealthy respond to the program more when there are weaker bequest motives. This finding is consistent with the idea that those who have greater bequest motives tend to self insure more (Lockwood, 2011), and thus may be relatively less responsive to a policy change designed to increase the benefits from purchasing LTC insurance. Our results concerning program awareness are also quite strong. Specifically, we only see response to the program among those who actively use the Internet, and

the response is markedly stronger among those who have worked in the financial sector. This suggests that being active on the web is predictive of individuals being aware of the program's existence[2] (which is necessary for them to respond), and working in the financial sector is predictive of being more aware of the program's benefits, which results in higher response rates[3]. Lastly, while bequest intent and awareness levels appear to be important determinants of differential response rates to the program, neither helps explain heterogeneous responses along wealth levels. Thus, it appears that Medicaid crowd-out is the primary driver of the differences we find along wealth levels, and bequest intent and awareness levels serve as additional factors that determine how individuals will respond to the program.

Using our primary results, we then estimate the program's effect on Medicaid expenditures. Here, we find that there are likely no cost savings to Medicaid from the partnership program, and quite possibly cost increases. However, to the extent that governments can encourage individuals with lower assets (e.g., at least down to the 60th percentile) to respond to the program in similar ways to those with higher assets, savings may be possible.

These results have several implications. First, they indicate that the partnership program has a rather modest impact on LTC insurance purchasing – apparently smaller than the impact of the heretofore-utilized tax subsidies. There does seem to be an effect for wealthier individuals, but this likely isn't the group for whom governments intended to mitigate under-estimation of the risk of LTC, and increased purchases by this group are unlikely to help reduce Medicaid expenses, as our supplemental analysis illustrates. Second, our additional analysis suggests that awareness levels are an important determinant of program response rates; consequently, efforts to increase awareness among the middle class may be fruitful toward the aim of increasing uptake of LTC insurance. Further, our Medicaid spending analysis indicates that, if such efforts are successful in generating a response by the middle class (e.g., 40th to 70th percentile in assets) that is comparable to that of the upper class, notable savings are possible.

The rest of the paper is organized as follows. In Section 2 we discuss key features and facts about LTC insurance and the LTC insurance market, as well as details about the partnership

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[2] Note that the secretary of Health and Human Services launched a website in 2006 to educate individuals about the financial risk of long term care and to increase public awareness of the partnership program. See more details under Section 2.4.

[3] As we discuss in more detail in the Results section, we recognize that these variables may be correlated with other individual-level characteristics that predict LTC insurance purchase. However, such characteristics are captured through our individual-level fixed effects. Therefore, we need only assume that these variables are uncorrelated with other variables (besides wealth) that affect individuals' response to the partnership program.

program. In Section 3 we discuss theoretical impacts of the partnership program on LTC insurance purchasing and Medicaid expenditures. In Section 4 we describe our data. In Section 5 we describe our empirical model and present our results. In Section 6 we analyze the partnership program's impact on Medicaid expenses in light of our findings. Section 7 provides conclusions.

2. Long-Term Care Insurance

2.1. What is Long-Term Care?

Long-term care can be defined as a variety of types of custodial care that help meet both the medical and non-medical needs of disabled people and people with chronic illnesses. Long-term care includes non-skilled care, such as assisting with normal daily tasks including eating, bathing and dressing. It also includes skilled care, which involves providing a level of medical care for multiple chronic conditions. Long-term care can be provided at home, in the community, in assisted living residences or in nursing homes. Community care is usually less expensive compared to institutional care, which requires more intensive long-term care.

As of 2005, about 10 million people of all ages need long-term care nationwide (Feder 2005). The majority of them live in a community and about three-quarters rely solely on family and friends to provide the care they need. About 1.6 million live in nursing homes and the majority of nursing home residents are comprised of an elderly population.

Long-term care expenditures account for over 8.5 percent of total health expenditures for all ages, or roughly 1.2 percent of the GDP (Congressional Budget Office 2004). Nursing home costs account for about 70 percent of long-term care expenditures. The cost of long-term care has been rising over the years. According to the most recent annual MetLife Market Survey of Nursing Home and Home Care Costs (MetLife 2008), the average daily rate nationwide for a private room with a single occupant in a nursing home climbed to $212 dollars a day in 2008. The rate for a semi-private room rose to $191 dollars a day. For those people living in assisted living communities, the average monthly rate was about $3,000 dollars.

The probability that an individual will need to rely on nursing home care is quite substantial. Based on a study by Kemper and Muraugh (1991), 43 percent of all Americans that turn age 65 will enter a nursing home at some time during their lifetimes. Of these, 55 percent will stay at least a year and 21 percent will stay at least 5 years, with the average stay lasting 2.5 years. Brown and Finkelstein (2009) reviewed a number of studies about nursing home

utilization and found that the probability that a 65 year old individual will enter a nursing home at some point in his life ranges from between 35 to nearly 50 percent. More recently, Stevenson et al. (2010) find that 70 percent of all Americans that turn age 65 will need long-term care at some time during their lifetimes.

2.2. Who Pays for Long-Term Care?

The federal and state governments are the dominant purchasers of long-term care services through Medicare and Medicaid. Medicare is the national insurance program for the elderly population. Medicare pays some nursing home costs for beneficiaries who require skilled nursing or rehabilitation services, but its coverage of nursing home care is quite limited[4]. Medicaid serves as the secondary funding source for long-term care services. To qualify for Medicaid, individuals have to meet the state's income and functional eligibility criteria. To meet Medicaid's income eligibility, most states require that a person's monthly income not exceed 300 percent of the federal Supplemental Security Income (SSI) amount (which equals about $1,809 per month in 2006) or the monthly cost that Medicaid pays for nursing home care (which averaged $3,504 in 2002). To meet functional eligibility, an individual has to be cognitively impaired or need assistance with two or more activities of daily living (such as eating or bathing).

In the case of nursing home expenditures, which account for the majority of long-term care expenditures, Medicare and Medicaid, respectively, pay for roughly 10 percent and 68 percent of the nursing home patients, and roughly 15.7 percent and 43.9 percent of the total nursing home expenditure of 122 billion dollars spent in the U.S. in 2005 (Robert Wood Johnson Foundation 2007). For the remaining expenditures, 26.5 percent was paid for by out-of-pocket sources and only 7.5 percent was paid for by private insurance, and the other 6.4 percent was paid for by other private and public funds.

The private insurance market for long-term care is quite small. It is estimated that only 10 percent of the elderly have any private long-term care insurance to cover their needs for long-term care (Brown and Finkelstein, 2007). In terms of total expenditure, private insurance only pays 4 percent of the long-term care total expenditures (Congressional Budget Office 2004).

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[4] Medicare covers up to 100 days of nursing home stay per illness and the patient has to spend at least three days in a hospital prior to entering a nursing home to qualify for Medicare coverage of nursing home care. Strictly speaking, Medicare's coverage of nursing home stay is not considered as long-term care.

Due to rising medical costs and the aging of the baby boomer generation, long-term care expenditure is expected to triple over the next 35 years (Brown and Finkelstein, 2008). Paying for long-term care has presented a huge challenge for the federal and state governments.

2.3. The Private Long-Term Care Insurance Market

It is controversial that only a narrow spectrum of the population purchases private long-term care insurance. Given the fact that long-term care needs are unpredictable and financially catastrophic, it seems many people would find it optimal to have insurance to cover this potential risk. Why then is the private long-term care insurance market so small? There are both supply and demand side considerations to explain this limited market size. On the supply side, one explanation is that long-term care insurance is a relatively new phenomenon, and it is still developing in its early stages. The idea of private long-term care insurance was introduced in the 1980s, and it was not until the mid 80s that some major insurance companies started to market private long-term care policies as a way to protect consumers from the catastrophic costs which can result from long-term care needs. There is also evidence that this market has high administrative costs. For example, Brown and Finkelstein (2007) find much higher loading factors for the long-term care insurance market as compared to other types of insurance. These costs could have several sources, e.g., imperfect competition, high transaction costs, etc.

On the demand side, various factors are important contributors to the limited market size. One factor is that elderly consumers are usually not aware of or deny the need for long-term care coverage (Robert Wood Johnson Foundation 2007). A majority of them also mistakenly believe that Medicare will cover their long-term care costs.

Another factor is related to the nature of long-term care insurance. An individual usually has to keep paying a premium many years before he finally starts to reap the insurance benefits. As a result, people will be less likely to purchase insurance that covers unforeseeable risks, as compared to that which covers their immediate medical needs.

The last factor, and maybe the most important one, is that Medicaid crowds out the demand for private insurance. Pauly (1990) was among the first to point out that it was rational for consumers to choose not to purchase any private long-term care insurance, given that they can rely on Medicaid to pay for their long-term care needs. More recently, Brown and Finkelstein (2008) developed a dynamic utility maximization model which could be used to

calculate individuals' willingness to pay for private long-term care insurance along different wealth endowment levels. They found that the large implicit tax imposed by Medicaid could explain the relatively small market size for private long-term care insurance.

2.4. The Partnership for Long-term Care Program

Several measures have been taken recently to help bolster the size of the private LTC insurance market, with one of the apparent goals being relief of government spending on long-term care at the federal and state levels. The 1996 Health Insurance Portability and Accountability Act (HIPAA) provided federal tax breaks for long-term care insurance, and subsequently many states have offered state-level tax breaks as well. Prior work has examined the impact of both types of initiatives (Courtemanche and He 2009 for federal and Goda 2011 for state), finding there is a response to these tax initiatives, but a modest one. Both studies find that the tax breaks lead to revenue losses that are actually larger than Medicaid savings.

A different type of initiative was developed by the Robert Wood Johnson Foundation in the 1980s, known as the partnership for long-term care (PLTC) program. The PLTC program combines private long-term care insurance and public Medicaid program to offer insurance protection against impoverishment from the costs of long-term care. With the traditional LTC insurance policies, an individual would be eligible for Medicaid after he spends down his assets to the state asset limit ($2,000 for a single person in most states). However, with the PLTC policies, policy holders are allowed to keep a certain amount of extra assets, which generally is equal to the amount of their insurance coverage. Thus, rather than directly altering the cost of LTC insurance to encourage purchases, the PLTC program essentially alters the benefits by allowing individuals easier access to Medicaid coverage as opposed to tapping their own assets. The PLTC program was intended to attract people to purchase private insurance, who might otherwise turn to Medicaid to finance their long-term care (see, e.g., Meiner 2009).

The PLTC program has been underway since 1992 in four demonstration states: California, Connecticut, Indiana and New York.[5] The passage of the Deficit Reduction Act of

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[5] Based on a report from the Government Accountability Office (GAO-05-1021R), a total number of policies in force in those four states are: California 64,915, Connecticut 30,834, Indiana 29,189 and New York 47,539. Purchasers of the PLTC policies were found to be more highly educated, healthier and wealthier than nonpurchasers (Program to Promote Long-Term Care Insurance for the Elderly, Robert Wood Johnson Foundation).

2005 has now allowed all the states in the U.S. to enact partnership policies.[6] Some important features about the Partnership policies under the DRA include the following (National Conference of State Legislatures, 2012). The policy must meet certain consumer protection rules under the National Association of Insurance Commissioners (NAIC) Model Act of 2000. Asset protection adopts a dollar-for-dollar model, whereas total assets protection is available to the original demonstration states. Inflation protection must be offered for those aged below 76. For example, compound annual inflation protection is required for policy holders under age 61, and some level of inflation protection is needed for policy holders between the ages of 61 and 76. No inflation protection is required for those aged 76 and older at date of purchase. To increase public awareness of the partnership program and educate consumers about their potential needs for long-term care, the DRA 2005 also required the secretary of Health and Human Services to create a National clearinghouse (a website www.longtermcare.gov was launched in 2006) to provide comprehensive information about long-term care planning and the states' partnership program. Adopting states also have their own websites to promote the partnership program.

Up to year 2010, another 33 states have adopted the partnership program (discussed in more detail in Section 4). The expansion of the PLTC program allows for empirical analysis of the effect of the program on LTC insurance purchases. Prior work has examined the types of individuals that purchased PLTC plans in the original four states offering the partnership program (e.g., McCall et al. 1998), but the data heretofore that was used was ill-equipped to assess the actual change in purchasing behavior as a result of the program. Further, as the PLTC program differs substantially from tax incentives, it is unclear if and how the effects of tax incentives would translate to the effects of benefits incentives. It is also unclear what the program's net effect on Medicaid spending will be.

3. Theoretical Impact of the PLTC Program

3.1. How Might the PLTC Program Impact LTC Coverage?

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[6] The DRA 2005 has also changed the existing law regarding the asset transfer penalty. For example, the asset transfer look-back period is extended from 3 to 5 years and the penalty start date is changed from date of transfer to date of eligibility. All these changes have made asset transfer potentially more costly for individuals.

As the PLTC program offers an added benefit for individuals to purchase LTC coverage, it seems unlikely that it could reduce purchase rates. However, it is not clear ex ante whether it should notably increase purchasing, and if so, which types of individuals will respond. Considering any overall positive effect, one factor that may dampen this would be a Medicaid stigma. Prior work (Wiener et al. 2000) has documented that individuals are averse to going on Medicaid, so a benefit that allows them to go on Medicaid faster may not be seen as much of a benefit at all. Further, moving to Medicaid restricts one's choice of nursing home, since not all of them accept Medicaid.

Even if the PLTC does positively impact LTC insurance purchases, it's unclear whether this effect should be uniform across demographic groups. The individuals targeted by this program are "middle income," (e.g., Meiners 2009) as these are more likely to go on Medicaid than the rich but have substantial assets they would like to protect, as compared to the poor. It may seem obvious ex ante that this will be the group most likely to respond – the rich and poor see the added benefit of faster Medicaid coverage as minimal, since the former likely won't need it and the latter will tap into Medicaid quickly anyway. Further, to the extent that there is a Medicaid stigma, it seems plausible that this may be disproportionately high among the rich, which would further serve to make them less responsive to the PLTC program than the middle class. However, there is reason to believe the rich may respond more to the program than the middle class. Specifically, as noted by Brown and Finkelstein (2008), Medicaid imposes an "implicit tax" on private LTC insurance, that can be felt up to relatively high wealth levels. Consequently, this crowd-out effect of Medicaid may dampen the response of the middle class to the PLTC program compared to the rich, who would not experience this tax.

The literature on LTC insurance suggests two other plausible drivers of individuals' response to the partnership program. One is bequest intent. Several papers (e.g., Sloan and Norton 1997, Lockwood 2011, Brown et al. 2011) have assessed the relationship between LTC insurance purchasing behavior and bequest motives.[7] In doing so, they cite various reasons why bequest motives may influence LTC insurance purchases, e.g., via a direct increase in demand due to altruism or an impact on the opportunity cost of precautionary saving. These insights may

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[7] Previous work has also showed the importance of bequest motives in wealth accumulation and demand for life insurance and annuities, such as Bernheim (1991), Bernheim, Skinner and Weinberg (2001), Dynan, Skinner, Zeldes (2002), Kopczuk and Lupton (2007).

also be relevant with respect to policy changes concerning LTC insurance. The other possible driver of response rates to the program that we consider is awareness levels. McCall et al. (1998) find that having talked with a financial planner strongly predicts purchase of LTC insurance. Thus, variation in awareness of the partnership program and its benefits may predict response rates to incentives in this market. Both of these drivers, intent to bequest and awareness, may be important on their own in determining response rates to the program, but they also likely are correlated with wealth levels. Consequently, in addition to Medicaid crowd-out, they may help explain differential responses according to wealth levels.

3.2. How Might the PLTC Program Impact Medicaid Spending?

Whether PLTC can result in savings in Medicaid spending has been an intense subject of analysis since the program's inception. Proponents of the program claim that the PLTC program can encourage more consumers to purchase private insurance to cover long-term care needs and that this possibility will lead to savings in Medicaid spending. Opponents of the program are instead concerned that the PLTC program will make Medicaid pay for the pool of rich people who would otherwise not qualify for Medicaid. If the PLTC program mainly attracts those who would purchase traditional LTC insurance anyway,[8] Medicaid will end up paying more.

The potential savings from the partnership program are not as straightforward as those coming from tax incentive programs. Tax deductions at the federal and state level are designed to provide an incentive for individuals to purchase LTC insurance policies, and when such purchases are made, the need for Medicaid is lessened. In contrast, if an individual purchases a partnership policy, ceteris paribus, he will qualify for Medicaid after the same amount of loss as in the case that he didn't have LTC insurance. To illustrate this, consider an individual with $80,000 in assets. Without insurance, he would qualify for Medicaid after a loss of $78,000. If he buys a partnership policy that ultimately pays out $X where $X < $78,000, he will also qualify for Medicaid after a loss of $78,000. If such a loss occurs, his insurance will pay $X, and he will have to pay $80,000 - $2,000 - $X out of pocket before qualifying for Medicaid (since the partnership allows him to keep $X in assets). Thus, for coverage $X, he will qualify for Medicaid when his loss exceeds $X + ($80,000 - $2,000 - $X) = $78,000.

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[8] Depending on the source, it has been estimated that roughly 20 to 30 percent of those who purchases PLTC policies would not have purchased insurance if not for the partnership program.

So how are savings possible in the partnership program? Meiners (2009) sums up the potential areas for savings as follows (citing the U.S. Department of Health and Human Services):

1. Reduction in asset transfers to qualify for Medicaid
2. Care management assistance and preferred provider choices to control cost
3. Earned income on protected assets could be contributed to the cost of care
4. Consumer over-insurance

By consumer over-insurance, we mean the case where an individual buys more PLTC insurance than assets they have to protect. For example, if an individual has $52,000 in assets, he needs only buy $50,000 in PLTC insurance to protect these assets. In this case, any LTC costs exceeding $52,000 will result in the individual being eligible to go on Medicaid. Consequently, if this individual buys, say, $70,000 in PLTC insurance, he is over-insured.

Savings methods #1 and #4 could be substantial; however, they are likely to arise only through PLTC insurance purchases by mid-wealth[9] individuals. In particular, high-wealth individuals likely are unable to manipulate their assets enough to qualify for Medicaid even after a shock to their health, and they are certainly not constrained by the choice set of PLTC insurance plans such that a purchase implies asset over-insurance.

The potential costs from the partnership program are straightforward. If an individual was already purchasing LTC insurance, and then switches to PLTC insurance when it is made available, the program simply allows him to access Medicaid more easily. Such an outcome is far more likely for mid-wealth individuals since they would have fewer assets beyond those protected by a PLTC insurance purchase.

In sum, the costs and benefits of the partnership program are largely driven by the behavior of mid-wealth individuals. If adoption of the partnership program causes this group to make insurance purchases that otherwise wouldn't have been made, savings may be possible; however, if adoption of the partnership program generates few new purchases in this group but causes many of its members to switch to a PLTC insurance plan from another plan, Medicaid costs will likely rise.

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[9] These claims also hold for low-wealth individuals, but as discussed above, these individuals have virtually no incentive to purchase PLTC insurance.

4. Data

The primary data used in this analysis come from the Health and Retirement Study (HRS). The HRS is a longitudinal biannual household survey data set for the elderly and near elderly in the United States. The original HRS cohort consists of individuals born between 1931 and 1941 and their spouses, and the initial survey was administered in 1992. The cohort was expanded in 1998 by adding three more samples: the AHEAD (The Study of Assets and Health Dynamics among the Oldest Old) cohort of individuals born before 1924, the CODA (Children of Depression) cohort born between 1924 and 1930, and the WB (War Baby) cohort born between 1942 and 1947. The HRS data were last expanded in 2004 with the inclusion of the EBB (Early Baby Boomer) cohort born between 1948 and 1953.

The HRS provides detailed information about the respondents' demographics, financial wealth, insurance coverage, and health conditions. We draw most of the data from the RAND HRS data files [10]. However, variables regarding long-term care insurance coverage and other insurance related variables, such as life insurance coverage, are from the original HRS data. We also draw information about bequest motives, internet usage and working history from the original HRS data. The restricted data of HRS is used to provide information about the residence of state for each individual in the sample.

We limit our analysis to the 1996 to 2010 waves of the HRS. The first two waves are not included due to inconsistency in survey questions regarding purchase of long-term care insurance (Finkelstein and McGarry, 2006). Following previous literature (Courtemanche and He, 2009; Brown, Coe and Finkelstein, 2008), we focus on the sample aged between 50 and 69 during our study period, as this is the primary age range of purchasing LTC insurance. Ultimately, the sample we use for our primary results covers 16,843 unique individuals with a total of 69,818 observations.

We merged the HRS data with policy data regarding the implementation of the partnership program. We collected state level information about whether and when the partnership has been implemented for a given state during our study period[11]. As mentioned

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[10] The RAND HRS file is derived from all waves of HRS by the RAND Center for the Study of Aging. The data has cleaned and processed variables with consistent and intuitive naming conventions. It also includes imputations of wealth, income, and medical expenditure.

[11] Most of the policy data were collected from a database of Thomson Reuters through http://w2.dehpg.net/LTCPartnership/. We also obtained data from other online sources containing information about

above, the partnership program was initially implemented in the early 90s in four demonstration states. With the passage of the DRA 2005, another 33 states implemented this program by 2010, when our study ends.

Table 1 provides summary statistics of the variables used in the analysis[12]. All the statistics are calculated using individual sampling weights. Over the entire sample, the average insurance take-up is about eleven percent. For the last two waves (2008 and 2010), the average insurance take-up is twelve percent and thirteen percent, respectively. Note that about twenty-eight percent of the sample experienced the onset of the partnership program. Table 2 shows the set of states that adopted the PTLC Program and the year they adopted. Finally, as has been noted by several prior studies (e.g., Goda 2011), we find that private LTC coverage is associated with higher education, higher income, and more assets.

[Tables 1 and 2 about here]

5. Econometric Model and Results

5.1. Econometric Model

To determine the impact of the Partnership Long-Term Care Program, we estimate a linear probability model controlling for state fixed effects, year fixed effects, individual fixed effects, and time-varying individual characteristics. Our primary econometric model looks as follows:

(1) $y_{it} = \alpha + \gamma P_{st} + X_{it}\beta + \eta_t + \sigma_s + \mu_i + \varepsilon_{ist}$

The dependent variable, y_{it}, is a dichotomous variable indicating whether an individual i has private long-term care insurance coverage at year t. The policy variable P_{st} is a dichotomous variable indicating whether the partnership program is being implemented in a state s for year t. Our time-varying individual characteristics, X_{it}, consist of: age, marital status, self-reported health, body mass index (BMI), assets, and income. For alternative specifications that don't include individual fixed effects, we also include time-fixed variables in X_{it}, which include:

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the partnership program for each state; further details regarding the sources of these data could be obtained upon request.

[12] Observations at the person-year level are weighted using individual-level weights.

gender, a dummy for Hispanic ethnicity, a dummy for African American race and years of education. The next three components of the model include our time fixed effects (η_t), state fixed effects (σ_s), and individual fixed effects (μ_i). The final term, ε_{ist}, captures unobservables at the individual-state-year level that impact the decision to purchase long-term care insurance.

We use policy variation across time and across states in the implementation of the partnership program to identify how it impacts individuals' choices for long-term care insurance. Our key identifying assumption is that the timing and location of implementation of the partnership program is not correlated with our individual-state-year unobservables.

The above specification is suitable for measuring the average impact of the PLTC Program. To determine if the program is impacting the middle class, we allow its effect to vary according to an individual's asset level. To do this, we construct three asset dummies indicating each individual's asset level. These dummies consist of LA_{it}, MA_{it}, and HA_{it}, which indicate low assets (below the 50th percentile in the data), medium assets, (50th to 80th percentile in the data), or high assets (above the 80th percentile in the data), respectively[13]. We then include the interaction terms of those dummies with the policy variable as follows:

$$(2) \quad y_{it} = \alpha + \gamma_1 LA_{it} P_{st} + \gamma_2 MA_{it} P_{st} + \gamma_3 HA_{it} P_{st} + X_{it}\beta + \eta_t + \sigma_s + \mu_i + \varepsilon_{ist}$$

5.2. Main Findings

Table 3 summarizes our main results. The first column estimates the model using the state and year fixed effects, but no individual fixed effects. Therefore, it includes our entire set of individual-level controls (time-varying and time-fixed). The policy effect is positive, and of modest size (0.018). In the second column we include individual fixed effects. For this specification, the policy impact is identified using variation within an individual across time. Here, the measured effect is even smaller (0.014) and only marginally statistically significant (p-value near 0.10). Looking at our (log) asset variable, its coefficient can be interpreted as follows: when an individual's asset level is increased by 10 percent, the probability of purchasing long-term care insurance will increase by 3 percentage points.

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[13] Our results are robust to other cutoffs, e.g., 70th and 40th percentiles. As would be expected, the measured effects for the high- and middle-wealth groups go down since they are comprised of less wealthy individuals on average.

[Table 3 about here]

The results in columns (1) and (2) suggest that the treatment effect of the PLTC Program is modest on average (little over 1 percentage point). However, as discussed in Section 3, there is reason to believe the treatment effect of this program is not homogeneous across individuals. There, we highlight reasons why wealthier individuals might respond more or less to the PLTC Program, so it is up to the data to show us which effect(s) dominate, if any.

Columns (3) and (4) report results for our extended model that allows for a heterogeneous policy impact along wealth levels, with column (4) controlling for individual fixed effects. Interestingly, we find that for people with low and middle asset levels, the partnership program essentially has no significant impact on the purchase of private insurance. However we do see a positive and quite significant effect for people with a high level of assets. Columns (5) and (6) allow for a non-linear effect of asset levels, and we continue to see this much higher impact of the partnership program on high-asset individuals. Our preferred model is in column (6), where we include individual fixed effects and allow for a non-linear effect of assets. Here, we see that the partnership program has increased private insurance up-take by 5.1 percentage points, which represents about a 46 percent increase of the baseline coverage rate of 11 percent, or a 28 percent increase of the baseline coverage rate of 18 percent for individuals above the 80th wealth percentile.

5.3. Does the Effect Vary with Time?

A potential critique of our results – particularly the average impact measure in column (2) of Table 3 – is that, for several states, the program has not been in place long enough for an impact to occur. For many observations in our data, the home state of the observed individual had very recently adopted the partnership program, and so there may not have been ample time to respond with a purchase. To test this possibility, we run the following extension of model (2) above:

(3) $\quad y_{it} = \alpha + \gamma_1 LA_{it}P_{st} + \gamma_2 MA_{it}P_{st} + \gamma_3 HA_{it}P_{st} + \gamma_4 LA_{it}P_{st}E_{st} + \gamma_5 MA_{it}P_{st}E_{st} + \gamma_6 HA_{it}P_{st}E_{st} + X_{it}\beta + \eta_t + \sigma_s + \mu_i + \varepsilon_{ist}$

For this extension, we construct a dummy variable, E_{st}, which equals one if the partnership program has been "established" in state s by time t. We consider two possible definitions for "established:" 1) The program has been in place for at least two years and 2) The program has been in place for at least three years. The results from our estimation of equation (3) using both definitions for "established" are in Table 4. Here, we see that allowing for differential effects of the program over time has little effect on our results[14]. Hence, it appears that our findings in Table 3 are not driven by observations where the program was relatively new.

[Table 4 about here]

5.4. Endogeneity Concerns and a Falsification Test

As mentioned above, our identification of the impact of the partnership program relies on adoption of the program being uncorrelated with unobservables that impact the likelihood of purchasing private long-term care insurance. In essence, we are assuming that changes in demand for long-term care insurance associated with the partnership program are caused by the implementation of the program, and not unobserved demand shocks that might be correlated with the implementation of program.

One concern with our identification assumption may be that other policies designed to influence LTC insurance purchases were implemented in the same states as the partnership program. Specifically, our identification would be flawed if the states that implemented the partnership program in our data tended to also be the states that implemented state tax breaks for LTC insurance premiums. If this relationship held, then our measured effect for the partnership program may be confounded by effects of these tax breaks. To assess whether this may be a problem, we did the following. For the three waves during which virtually all of the identification of the partnership program's effects occurs (i.e., 2006, 2008 and 2010), for each state we identified whether it had a tax break and whether it had adopted the partnership program. Using these two simple binary variables, we then calculated their correlation coefficient, which was approximately 0.09 and not statistically different from zero. If we include

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[14] The effect of an established PLTC program of three years or more for our mid-asset group (0.009+0.016) does become significant at the 10% level; however, the substantial difference across wealth levels persists.

prior waves, this correlation gets even closer to zero, since there was virtually no variation in partnership program adoption. Consequently, we conclude it is very unlikely that our estimates for the effect of the partnership program are confounded by any effects of tax breaks on LTC insurance purchases.

We also check our identification assumption using a falsification test. Specifically, we run the same specifications used in Table 3, but instead use the purchase of life insurance as the dependent variable. Because the partnership program has no direct impact on life insurance, we should not expect to see a significant impact on life insurance purchasing. However, we note that, if life insurance and long-term care insurance are substitutes or complements, an effect may emerge. Nevertheless, even in such a case, we expect any impact to be much less pronounced. Therefore, if we do find significant effects, this may reflect the existence of unobserved demand shocks.

The estimation results are reported in Table 5. The two specifications correspond to the last two columns in Table 3. Overall, the pattern of these results does not at all resemble the pattern we find in Table 3. Using our preferred specification in column (2) (corresponding to column (6) in Table 3), there appears to be some evidence that long-term care insurance and life insurance are substitutes (from the negative coefficient on PLTC*HighAssets). However, these results generally suggest that there is no direct policy impact on life insurance purchases. This finding is consistent with the claim that our results are not driven by unobserved demand shocks that are common to life insurance and long-term care insurance.

[Table 5 about here]

5.5. Effect on Intensive Margins

The above analysis measured the effect of the partnership program on the extensive margin of purchasing LTC insurance. We also assess if and how the partnership program impacted individuals' LTC insurance purchases on the intensive margin. To do this, we follow the analysis in Goda (2011), and estimate our main model on the entire dataset using indicators of two optional policy features as our dependent variables, rather than an indicator of LTC insurance purchase. The two features we consider are: 1) whether the policy covers both in-

home and nursing home care and 2) whether the policy is inflation protected. The results of this analysis are in Table 6.

[Table 6 about here]

Here we see that the partnership program appears to have a similar effect on both intensive margins as it does on the extensive margin. More specifically, we find that the partnership program has increased the purchase likelihood of a policy with both in-home and nursing home coverage by 4.9 percentage points (more than 50% if compared to the base rate) for individuals with high asset levels. Moreover, the program has almost doubled the purchase likelihood of a policy with inflation protection for high-asset individuals

The above analysis suggests that any movement on the intensive margin is largely dependent on movement along the extensive margin. To further test this claim, at the state-year level, we calculated the fraction of the policies that cover both in-home and nursing home care, and the fraction of policies that are inflation protected. We then ran regressions of these fractions on the implementation of the partnership program, controlling for state and year fixed effects. We find that the partnership program is associated with approximately a five percentage point increase for the fraction of plans covering both in-home and nursing home care, and for the fraction of inflation protected plans. This effect is not statistically significant in either case, again suggesting that most movement on the intensive margin is largely due to movement on the extensive margin.

5.6. Alternative Drivers of Program Response

As the partnership program was largely intended to increase LTC insurance purchases by the middle class, our primary analysis assessed whether this group was the most likely to respond. Given the response was almost entirely driven by the rich, this lends support to the idea that Medicaid crowd-out substantially dampens response to incentives along a wide range of wealth levels, as noted in Brown and Finkelstein (2008). In this section, we consider two other plausible drivers of individuals' response to the partnership program: bequest intent and awareness levels. The HRS data contain variables that are useful for measuring both dimensions. To measure bequest intent, we can observe each individual's self-assessed importance of leaving

inheritance to their heirs. This information was collected in the 1992 survey, and has been used in, e.g., Sloan and Norton (1997) and Lockwood (2011).[15] We then construct a binary variable equaling one if the respondent(s) indicate that leaving an inheritance is "very important." To measure awareness levels, we observe whether each individual uses the Internet to gather information and whether he/she ever held a job in finance. The former can serve as a proxy for general awareness of the partnership program, as many of the details of the program for each adopting state are available online.[16] The latter can serve as a proxy not just for general awareness of the program but also awareness of its benefits due to financial training. We then construct binary variables equaling one if the individual used the web by 2006 (when our wave of program adoptions began) or ever worked in finance, respectively.[17]

Using these binary variables, we extend model (2) to allow for differential responses to the program according to the realization of these dichotomous variables as well as asset levels. Specifically, for each of the three dichotomous variables defined above, generically labeled as X, we estimate:

$$(4) \quad y_{it} = \alpha + \gamma_1 LA_{it}P_{st}I(X_{it} = 1) + \gamma_2 MA_{it}P_{st}I(X_{it} = 1) + \gamma_3 HA_{it}P_{st}I(X_{it} = 1) +$$
$$\gamma_4 LA_{it}P_{st}I(X_{it} = 0) + \gamma_5 MA_{it}P_{st}I(X_{it} = 0) + \gamma_6 HA_{it}P_{st}I(X_{it} = 0) + X_{it}\beta + \eta_t + \sigma_s + \mu_i + \varepsilon_{ist}$$

Written this way, we can see whether, given an asset level, response to the program depends on X (e.g., comparing γ_3 to γ_6), and whether differential responses to the program along the asset dimension depend on X (comparing γ_1-γ_3 to γ_4-γ_6). The results are in Table 7.

[Table 7 about here]

The first two columns of Table 7 suggest bequest motives are notably predictive of response to the program. Specifically, wealthy individuals with relatively low bequest motives

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[15] This variable was only available from wave 1992.

[16] In addition to the national clearinghouse website developed by the secretary of Health and Human Services, all adopting states have used their government websites to provide comprehensive information the partnership program. Our conversation with an Indiana state partnership program director has confirmed to us that the Internet provides the most comprehensive and reliable information about the partnership program.

[17] HRS provides data on web usage since 2002. Our analysis uses the 2006 data. Although not reported in the paper, we have also used alternative years' data (e.g., year 2002 and year 2008) to measure web usage and the results are consistent,

respond to the program significantly more than wealthy individuals with relatively high bequest motives (0.073 vs. 0.008). Even among the middle class, response to the program becomes statistically significant (0.030) when there is low bequest motive, but not when there is a high one (0.014). These results are consistent with the idea that wealthy individuals with bequest motives are less responsive to insurance incentives. This may be the case if they are more likely to self insure (Lockwood, 2011).

The last two columns of Table 7 suggest awareness levels are highly predictive of response to the program. Specifically, use of the Internet for information significantly increases response to the program for both middle- and high-asset individuals. For those who worked in the financial sector, we see the same effect, but even stronger. To the extent that these variables proxy for individuals' awareness levels, these findings suggest that one's level of awareness is important for predicting response to the program. Further, those not using the Internet for information showed no response, suggesting that the Internet proxies for a very baseline awareness level, i.e., awareness that the program exists at all. One may argue that those having worked in the financial sector possess an even higher level of awareness, as they may better understand the benefits of the program, and our results indicate that this notably increases response. Our finding about awareness of the program adds to the existing literature on understanding saving and insurance purchase behavior for the elderly population. Previous work has found that financial literacy is associated with better retirement planning (Lusardi and Mitchell, 2007) and cognitive ability plays an important role in purchasing Medigap insurance plans (Fang, Keane and Silverman, 2008).

When we look at differential responses to the program along wealth levels, we see that the differences we found in Table 3 persist, even after controlling for bequest motives and awareness. They do disappear for those who don't get information via the Internet, but this is only because no one in this group responds to the program. The strong persistence of a wealth effect despite these added controls indicates that Medicaid crowd-out is likely the key driver of differential responses to the program across wealth levels.

In sum, the results in Table 7 show that differences in bequest motives and awareness can help explain differential responses to PLTC, in addition to wealth levels. Further, they show that the different responses to the program according to wealth level are likely the result of Medicaid crowd-out.

We conclude this subsection by noting that, while these additional variables (importance of bequest, Internet usage, and finance experience) may proxy for bequest intent and program awareness, they may also capture other variables that affect LTC insurance purchasing behavior. This could have consequences when trying to make causal interpretations. To this concern, we note the following. First, our additional variables vary at the individual level (not individual-year level), so any other variables correlated with "importance of bequest," "Internet usage," or "financial experience" that affect LTC insurance purchases are captured by our individual-level fixed effects. Consequently, our causal interpretation is flawed only if our three additional variables are correlated with other variables that generate a differential response to the partnership program. One such variable might be wealth; however, we allow for a differential response along wealth levels, and our results indicate that wealth differences cannot explain the differential responses we find along these three additional variables. Although we cannot identify an obvious variable that both would generate a differential response to the partnership program for reasons other than bequest motive and/or awareness and would be correlated with one of our additional measures, we concede that one may exist. Hence, our causal interpretations above should be taken with that caution in mind.

6. The Effect of the PLTC Program on Medicaid Spending

In light of the above results, it is natural to ask what is the expected net impact on Medicaid spending as a result of implementing the partnership program. The partnership program's effect on Medicaid spending has been a central issue since its inception, since a clear motivating factor is cost effectiveness (Meiners 2009).

While prior work has measured the impact of tax subsidies for long-term care on Medicaid expenditures (Courtemanche and He 2009, Goda 2011), the cost/benefit analysis for the partnership program is quite different than that of tax subsidies. Following discussion in Section 3, the cost of the partnership program is increased Medicaid coverage for those who would have already purchased LTC coverage. In contrast, the cost of tax subsidies is lost government revenue. The benefits of the partnership program come in the form of: reduction in asset transfers to qualify for Medicaid, care management assistance and preferred provider choices to control cost, earned income on protected assets could be contributed to the cost of care, and consumer over-insurance (see Section 3 for more details). In contrast, the benefit from

tax subsidies is substitution of private coverage for Medicaid expenditures when individuals purchase LTC in response to the subsidy.

In what follows, we use our main results, along with supplemental analysis, to provide some important insights concerning the program's likely impact on Medicaid expenditures. Specifically, we simulate Medicaid spending prior to and after the implementation of the partnership program.

We consider expected Medicaid expenditure with and without the partnership program in place. Unfortunately, our data do not allow us to determine whether, in the case that an individual purchased LTC insurance, the plan was a partnership or non-partnership plan – we only know a plan of some kind was purchased. Consequently, in our subsequent analysis, we must make an assumption as to the distribution of LTC insurance purchases between partnership and non-partnership plans when the partnership program has been implemented. We proceed by assuming all LTC insurance purchases are partnership plans when the partnership program is in place. This will give us an upper bound on net Medicaid costs of implementing the partnership program, since costs come in the form of prior LTC insurance purchasers switching to partnership LTC plans. We consider relaxing this assumption later in the analysis.

With the above assumption, the expected Medicaid share of expenditures (M_Share) with no partnership program (NPP) can be represented as:

(5) $\quad M\_Share^{NPP} = \Pr(LTC = 1) * M\_Share(LTC = 1) + \Pr(LTC = 0) * M\_Share(LTC = 0)$

And the expected Medicaid share of expenditures with the partnership program (PP), and assuming all LTC insurance purchases are partnership plans under this scenario, can be represented as:

(6) $\quad M\_Share^{PP} = \Pr(PLTC = 1) * M\_Share(PLTC = 1) + \Pr(PLTC = 0) * M\_Share(PLTC = 0)$

Note that each expression consists of two parts. The first part is the expected share of spending with insurance coverage (fully private or a partnership plan), and the second part is the expected share of spending with no insurance. We focus our analysis on the difference in Medicaid spending share with the partnership program, and hence the difference in these

expressions: $M\_Share^{PP} - M\_Share^{NPP}$. A negative (positive) value of the difference suggests that the PLTC program decreases (increases) Medicaid spending.

When there is no LTC insurance purchase (partnership or otherwise), Medicaid expenditures are the same, i.e., *M_Share(PLTC = 0) = M_Share(LTC = 0)*. Consequently, we can decompose this difference in Medicaid spending share into two parts as follows:

$$(7) \quad M\_Share^{PP} - M\_Share^{NPP} = \Pr(LTC = 1) * \{M\_Share(PLTC = 1) - M\_Share(LTC = 1)\} + \{\Pr(PLTC = 1) - \Pr(LTC = 1)\} * \{M\_Share(PLTC = 1) - M\_Share(PLTC = 0)\}$$

The first part of the difference is positive, since replacing a non-partnership plan with a partnership plan will increase expected Medicaid share of expenditures. The second part of the difference is negative, as the first component is nonnegative and the second is negative. The first component of the second part is the difference in LTC insurance purchases with and without the partnership program; this is positive (as confirmed by our data) since the partnership program only adds benefits to individuals. The second component of the second part is the difference in Medicaid's share of expenditures with a partnership plan and no plan; this is nonnegative since a partnership plan is able to generate Medicaid savings compared to not having coverage, as described above.

To evaluate the difference in Medicaid spending, we must estimate each element in equation (5) above. We rely on the HRS data and our empirical model to calculate the insurance take-up without the partnership program (*Pr(LTC = 1)*), and increased coverage under the PLTC program (Pr*(PLTC = 1) – Pr(LTC = 1)*). Estimating the shares of Medicaid spending under various scenarios is more complicated due to data constraints. The HRS data lack sufficiently rich information about when or if a policyholder has started to rely on Medicaid to finance his long-term care needs. Moreover, most of the states started to implement the PLTC program in recent years, and the average age of beginning long-term care usage is about eighty (Brown and Finkelstein, 2007). To proceed, we follow the model developed in Brown and Finkelstein (2008) to simulate Medicaid's share of long-term care expenditure, with some modifications.

For our estimates, we assume individuals have the option to purchase a single, typical LTC insurance policy that pays a maximum of $3000 per month with zero day deductible and an unlimited benefit period. This plan also has an inflation protection provision, so benefits grow at

a 3 percent annual rate in nominal terms. The inflation protection provision is important as the DRA 2005 requires that all the policies sold to individuals under the age of 76 include such a provision. As a robustness check, we also study a scenario without the inflation protection provision and the results are qualitatively similar.

The LTC insurance policy we consider covers both home care and nursing home care. A nominal unisex premium of $212 is charged each month, which reflects a load of 0.5 for males and -0.12 for females.[18] In Brown and Finkelstein (2008), the load for a policy without inflation protection is 0.5 for males and -0.06 for females.

Assuming the LTC plan described above is the one and only plan individuals may purchase, we use the Brown and Finkelstein (2008) model to calculate Medicaid's share of the expected present discounted value (EPDV) of long-term care expenditure for a representative individual at the age of 65 on the basis of his asset endowment. We consider three different coverage scenarios: no insurance, (non-partnership) LTC insurance, and PLTC insurance. Note that the last scenario implies the individual has purchased the plan described above but also has asset protection provided by the partnership program.

In calculating Medicaid's share for the three coverage scenarios, the first two calculations follow the methods in Brown and Finkelstein (2008). To calculate Medicaid's share for an individual with PLTC insurance, we first calculate at each given time period, the expected cumulative amount of benefits that would have been paid out by the insurance policy for the individual.[19] This calculation provides a measure of disregarded assets at a given period, which is used to determine whether and when the individual has passed the asset eligibility test to qualify for Medicaid coverage.

In Columns (1) through (3) of Table 8, we report the corresponding Medicaid share of EPDV of LTC expenditures, separately for males and females, for each of our three coverage scenarios. As we should expect, these calculations indicate that under each scenario, it becomes less likely for an individual to rely on Medicaid to finance his long-term care needs as his asset

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[18] Load is defined as the difference between unity and the ratio of the expected present discounted value (EPDV) of benefits to the EPDV of premiums. More details regarding the discussion of load for a LTC insurance policy can be found in Brown and Finkelstein (2008). We use a unisex premium since premiums are gender neutral. We follow Brown and Finkelstein (2008) to assume a load of 0.5 for males, which enables us to calculate the monthly premium to be $212. Since we assume a unisex premium, we arrive at a load of -0.12 for females.

[19] Note that based on the dollar-for-dollar protection model, the amount of disregarded assets for an individual depends on that individual's entire health history and the specific insurance policy that he purchases.

endowment increases. We also see that purchasing LTC insurance greatly decreases Medicaid's share through delaying or preventing spend-down to Medicaid. However, relative to having non-partnership LTC insurance, having a PLTC plan slightly increases Medicaid's share due to its asset disregard provision. It is interesting to see that for individuals with asset endowment lower than the 40th percentile, there is no significant increase in Medicaid's share of expenditure between the LTC insurance and PLTC insurance scenarios. This is because those individuals have rather low asset endowment, meaning they would be eligible for Medicaid after relatively low long-term care expenses, regardless of whether additional assets are protected. As an individual's asset endowment increases, policyholders with PLTC plans would pass the Medicaid asset eligibility test at an earlier stage as compared to the scenario with LTC insurance. This leads to an increase in Medicaid's share of long-term care expenditure for a PLTC plan vs. a (non-partnership) LTC plan.

[Table 8 about here]

Columns (4) and (5) in Table 8 contain the probability of purchasing an LTC policy and the difference in the probability of purchasing an LTC policy under the partnership program for each asset-level decile, respectively. Column (4) reports the initial insurance coverage with LTC insurance (before the partnership plan is implemented, if at all), which are calculated using the sample means for each wealth decile.[20] Consistent with previous literature, the average coverage rate is about 11 percent. Also, a higher fraction of individuals has insurance coverage as the asset level increases. Column (5) reports how the PLTC program increases insurance take-up. Recall that our empirical analysis indicates that only individuals with asset endowment above the 80th percentile increase insurance take-up with the partnership program, and they do so by about five percentage points.

We use the information in columns (1) through (5) to determine the increase in Medicaid costs (first part of equation 5) and decrease in Medicaid costs (second part of equation 5) from the partnership program. The EPDV of the total long-term care expenditure for an individual at the age of 65 is $ 17,510 for males and $43,750 for females, following Brown and Finkelstein

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[20] We used data between 1996 and 2004 to calculate the fraction of individuals that have LTC insurance, with individual sampling weight used to represent the whole population. We did not include year 2006 and 2008 because most of the states started to implement the PLTC program after 2006.

(2008). Column (6) measures the increase in Medicaid costs by multiplying the EPDV figure by the difference in columns (2) and (3), and the value in column (4). For example, for a male with asset endowment at the 50th percentile, Medicaid costs are increased by about $17 under the partnership program. This increase in Medicaid spending is due to the additional asset protection under the partnership program. Column (7) measures the decrease in Medicaid costs by multiplying the EPDV figure by the difference in columns (1) and (3), and the value in column (5). For example, for a male with asset endowment at the 80th percentile, the negative change to Medicaid costs is about $89 under the partnership program. This decrease in Medicaid costs is a result of an increase in insurance take-up, and the corresponding savings as described in Section 3.[21] It is worth noting that as asset levels increase, the potential decrease in Medicaid costs shrinks, as individuals with high asset endowment have a lower Medicaid share of expenditure. Finally, column (8) takes the difference between columns (6) and (7), representing the net change in Medicaid expenditures.

Looking at columns (6) through (8) of Table 8, it is clear that Medicaid savings are only possible if there is an increase in up-take of LTC insurance resulting from implementation of the partnership program. In our data, only high-asset individuals respond to the program, and we are not finding any net savings, even among this group. Thus, it appears that there is little potential for savings in Medicaid costs from the program, and quite possibly an increase in costs, according to our estimates. There are, however, two important caveats to this conclusion. First, the above analysis was done assuming all individuals who previously had purchased an LTC insurance policy will switch to a PLTC policy if the partnership plan is implemented. This could lead us to overestimate the costs of the program. However, as only high-asset individuals responded to the program, the likelihood of Medicaid savings is still quite small. This is because, even if there was no plan switching after implementation of the program, there would only be modest savings realized on a relatively small portion of individuals (approximately $58 per person for men in top 20th percentile of assets and approximately $167 per person for women in top 20th percentile of assets). Second, our model does not explicitly allow for savings due to reduced asset transfers, care management assistance, or preferred provider choices, as these are very difficult to reliably estimate. We note that asset transfers are most likely to occur among the

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[21] However, we note that the Brown and Finkelstein (2008) model that we used in the calculation can only allow for savings due to over-insurance and income on assets. We revisit this fact at the end of this subsection.

wealthy, for whom potential Medicaid savings are least. However, while it seems unlikely that large savings can be realized from these sources, we concede that we cannot fully quantify the expected savings they may generate.

When Would Medicaid Savings Be Possible?

Our above analysis suggests Medicaid savings are highly unlikely given the current up-take rates of the partnership program. However, Medicaid savings might be possible if the PLTC program increases insurance up-take for a wider range of individuals. Specifically, if individuals with lower asset levels responded to the program, savings would be more likely, as this group is more prone to need Medicaid assistance at some point in time.

To see if and when Medicaid savings are possible, we examine how total Medicaid spending will change if individuals from lower asset deciles purchase LTC insurance in response to the partnership program. Specifically, we assume a 25 percent increase in insurance take-up for each wealth decile, roughly consistent with the observed increase for the top two deciles in our data. We report our results in Table 9. In column (1), we report the newly calculated increase in LTC insurance up-take resulting from the program for the deciles below the 80th, and replicate the measured effects for the 80th and 90th deciles. Columns (2) through (4) calculate the average change in Medicaid spending per person (for males, females, and both) if the given row's decile and above increase LTC coverage by the specified amount. For example, the row for the 60th percentile contains the average change in Medicaid spending per person for males, females, and both for the case where individuals at the 60th percentile increased up-take by 0.03, individuals at the 70th percentile increased up-take by 0.036, and individuals at the 80th and 90th percentiles increased up-take by 0.051 (and all other deciles have no increase in up-take).

[Table 9 about here]

The results in Table 9 indicate that, for example, given a 3.6 percentage point increase in insurance up-take (instead of 0) for the 70th wealth percentile, Medicaid spending increases by $16.86 per person. We do not observe any overall Medicaid savings until individuals at the 60th wealth percentile also increase insurance up-take. At the 60th percentile, there are net savings of $22.09 per person. Savings top $100 per person if a comparable response reaches down to the

40th wealth percentile. As this analysis was done assuming all individuals who previously had purchased an LTC insurance policy will switch to a PLTC policy if the partnership plan is implemented (leading us to potentially overestimate the costs of the program), these more substantial savings may be possible if such up-take occurs beginning at an even higher decile (e.g., 50th). Overall, our findings highlight the importance of generating response to the partnership program by individuals with relatively low asset levels for savings to be realized.

7. Conclusions

Through analysis of eight waves of Health and Retirement Study data, our study indicates that, to date, implementation of the partnership program has had a rather modest impact on long-term care insurance up-take overall. Along the wealth dimension, the one group that has notably responded is the wealthy (top 20 percent in assets), but there is essentially no response by any other wealth group. As we demonstrate, this implies the program has only a small impact on expected Medicaid spending, and in fact, likely increases it rather than decreases it.

We also find evidence that, beyond wealth levels, difference in bequest motives and awareness levels of the program are also likely predictors of individuals' responses to the program. However, controlling for these factors does not dissipate our findings concerning wealth.

Taken together, our findings indicate that Medicaid crowd-out is strongly suppressing the impact of the partnership program on the middle class; however, greater awareness of the program and its benefits may mitigate this problem. If this is indeed the case, cost savings from the program may be possible with relatively minimal intervention in the form of increased awareness.

Our Medicaid cost analysis indicates that if the lower-wealth households were to respond just as much as the higher-wealth households, the partnership program has the potential to create net Medicaid savings. This increased response need only extend to approximately the median household, rather than all the way to the poorest households, for savings to be realized.

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Tables

Table 1
Summary Statistics

Variable	**Mean**	**Std. Dev.**	**Min**	**Max**	**N**
Long-term Care Insurance	0.106	0.308	0	1	69818
Age	61.164	4.945	50	69	69818
Female	0.565	0.496	0	1	69818
Married	0.714	0.452	0	1	69818
Hispanic	0.093	0.291	0	1	69818
African-American	0.148	0.355	0	1	69818
Years of Education	12.618	3.118	0	17	69818
Self-reported Health[22]	2.706	1.121	1	5	69818
BMI	28.140	5.670	7	82.7	69818
Number of Children	3.232	2.077	0	20	69818
(Log) Assets	11.325	2.665	0	18.23	69818
(Log) Income	10.401	1.430	0	16.80	69818
Life Insurance	0.716	0.451	0	1	70695
LTC Insurance (In-home & Nursing home)	0.083	0.276	0	1	69195
LTC Insurance (Inflation protected)	0.048	0.214	0	1	68465
Leaving Inheritance is very important	0.238	0.426	0	1	42423
Uses web as of 2006	0.475	0.499	0	1	58234
Worked in finance	0.073	0.259	0	1	69818

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[22] Ranges from 1 to 5, with 1 being excellent and 5 being poor.

Table 2
States that adopted the PLTC Program

State	Year of Adoption
Connecticut	1992
Indiana	1993
New York	1993
California	1995
Idaho	2006
Minnesota	2006
Nebraska	2006
Florida	2007
Georgia	2007
Kansas	2007
Maine	2007
Missouri	2007
Montana	2007
North Dakota	2007
New Hampshire	2007
Nevada	2007
Ohio	2007
Pennsylvania	2007
South Dakota	2007
Virginia	2007
Arkansas	2008
Arizona	2008
Colorado	2008
New Jersey	2008
Oklahoma	2008
Oregon	2008
Rhode Island	2008
Tennessee	2008
Texas	2008
Alabama	2009
Kentucky	2009
Louisiana	2009
Maryland	2009
South Carolina	2009
Wisconsin	2009
Wyoming	2009
Iowa	2010

Table 3
Estimates for the effect of the PLTC Program on LTC coverage rates[23]

Variable	(1)	(2)	(3)	(4)	(5)	(6)
PLTC	0.018* (0.009)	0.014+ (0.008)				
PLTC*LowAssets			-0.016* (0.007)	-0.010 (0.008)	0.010 (0.011)	-0.001 (0.010)
PLTC*MidAssets			0.015 (0.011)	0.013 (0.009)	0.017+ (0.010)	0.014 (0.009)
PLTC*HighAssets			0.091** (0.020)	0.058** (0.013)	0.041* (0.018)	0.051** (0.014)
Assets	0.008** (0.001)	0.003* (0.001)	0.006** (0.001)	0.001 (0.001)		
MidAssets					0.027** (0.005)	0.006 (0.006)
HighAssets					0.065** (0.008)	0.009 (0.011)
Heterogeneous Policy Impact?	No	No	Yes	Yes	Yes	Yes
Non-linearity of Asset?	No	No	No	No	Yes	Yes
Individual Fixed Effects?	No	Yes	No	Yes	No	Yes
Observations	69818	69818	69818	69818	69818	69818
R-squared	0.041	0.010	0.043	0.012	0.045	0.012

[23] All regressions include a constant term, and controls for: income, age, sex, marital status, years of education, Hispanic, African American, self-reported health, BMI, and number of children. When fixed effects are included, controls that are not time varying (e.g., sex) are dropped. Robust standard errors, clustered at the state level, in parentheses. Individual weighting is used to represent the whole population. Results with no weighting are very similar. ** is significant at the 1% level; * is significant at the 5% level; + is significant at the 10% level. Within estimator used in regressions with fixed effects, so R-squared is for within variation.

Table 4
Estimates for the effect of the PLTC Program on LTC coverage rates, allowing for differential effect according to whether the program is "established"[24]

Variable	Established after 2 years	Established after 3 years
PLTC*LowAssets	-0.008 (0.008)	-0.005 (0.010)
PLTC*MidAssets	0.012 (0.010)	0.009 (0.009)
PLTC*HighAssets	0.056** (0.014)	0.056** (0.015)
PLTC*Established*LowAssets	0.016 (0.012)	0.019 (0.014)
PLTC*Established*MidAssets	0.006 (0.012)	0.016 (0.012)
PLTC*Established*HighAssets	-0.006 (0.014)	-0.004 (0.015)
MidAssets	0.007 (0.006)	0.007 (0.006)
HighAssets	0.010 (0.011)	0.011 (0.010)
Observations	69818	69818
R-squared	0.012	0.012

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[24] Both regressions include a constant term, and controls for: income, age, marital status, self-reported health, bmi, and number of children. Robust standard errors, clustered at the state level, in parentheses. Individual weighting is used to represent the whole population. Results with no weighting are very similar. ** is significant at the 1% level; * is significant at the 5% level; + is significant at the 10% level. R-squared is for within variation.

Table 5
Estimates for the effect of the PLTC Program on life insurance coverage rates[25]

Variable	(1)	(2)
PLTC*LowAssets	-0.032**	0.004
	(0.009)	(0.009)
PLTC*MidAssets	-0.009	-0.010
	(0.013)	(0.012)
PLTC*HighAssets	-0.008	-0.024*
	(0.017)	(0.012)
MidAssets	0.005	-0.003
	(0.008)	(0.008)
HighAssets	-0.072**	-0.013
	(0.012)	(0.010)
Individual Fixed Effects?	No	Yes
Observations	70695	70695
R-squared	0.119	0.031

Table 6
Estimates for the effect of the PLTC Program on intensive margins[26]

Variable	Covers In-home and nursing home	Inflation protected
PLTC*LowAssets	-0.008	-0.003
	(0.009)	(0.005)
PLTC*MidAssets	0.012	0.011
	(0.008)	(0.007)
PLTC*HighAssets	0.049**	0.042**
	(0.015)	(0.012)
MidAssets	0.010*	0.008+
	(0.005)	(0.004)
HighAssets	0.012	0.013
	(0.010)	(0.009)
Observations	69195	68465
R-squared	0.017	0.014

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[25] Both regressions include a constant term, and controls for: income, age, sex, marital status, years of education, Hispanic, African American, self-reported health, bmi, and number of children. When fixed effects are included, controls that are not time varying (e.g., sex) are dropped. Robust standard errors, clustered at the state level, in parentheses. Individual weighting is used to represent the whole population. Results with no weighting are very similar. ** is significant at the 1% level; * is significant at the 5% level; + is significant at the 10% level. Within estimator used in regressions with fixed effects, so R-squared is for within variation.

[26] Both regressions include a constant term, and controls for: income, age, marital status, self-reported health, bmi, and number of children. Robust standard errors, clustered at the state level, in parentheses. Individual weighting is used to represent the whole population. Results with no weighting are very similar. ** is significant at the 1% level; * is significant at the 5% level; + is significant at the 10% level. R-squared is for within variation.

Table 7

Estimates for the effect of the PLTC Program, allowing for differential effects according to bequest probability and knowledge of finance[27]

Variable	X = I(Bequest Very High)	X = I(Uses Web for Information)	X = I(Worked in Finance)
PLTC*LowAssets *(X=1)	0.007 (0.016)	0.013 (0.014)	-0.028 (0.020)
PLTC*MidAssets *(X=1)	0.014 (0.017)	0.025* (0.011)	0.061** (0.019)
PLTC*HighAssets *(X=1)	0.008 (0.023)	0.068** (0.014)	0.110** (0.029)
PLTC*LowAssets *(X=0)	0.015 (0.012)	-0.014 (0.008)	0.0005 (0.009)
PLTC*MidAssets *(X=0)	0.030* (0.015)	-0.014 (0.012)	0.010 (0.009)
PLTC*HighAssets *(X=0)	0.073** (0.023)	0.012 (0.020)	0.043** (0.014)
MidAssets	0.006 (0.007)	0.010 (0.006)	0.006 (0.006)
HighAssets	0.012 (0.013)	0.015 (0.011)	0.009 (0.011)
Observations	42423	58234	69818
R-squared	0.015	0.014	0.012

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[27] All regressions include a constant term, and controls for: income, age, marital status, self-reported health, bmi, and number of children. Robust standard errors, clustered at the state level, in parentheses. Individual weighting is used to represent the whole population. Results with no weighting are very similar. ** is significant at the 1% level; * is significant at the 5% level; + is significant at the 10% level. R-squared is for within variation.

Table 8
Medicaid expense shares by plan type, LTC insurance purchase probabilities, and Medicaid spending estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Medicaid Share of Expenditures			**Prob. of Purchase**		**Medicaid Spending**		
	No Plan	LTC Plan	PLTC Plan	Pr(LTC)	Pr(PLTC)-Pr(LTC)	Cost+	Cost-	Net Cost
Panel A: Males								
10th	0.98	0.34	0.34	0.05	0	0	0	0
20th	0.89	0.27	0.27	0.06	0	0	0	0
30th	0.80	0.24	0.24	0.07	0	0	0	0
40th	0.71	0.21	0.21	0.09	0	0	0	0
50th	0.60	0.17	0.18	0.10	0	16.98	0	16.98
60th	0.46	0.13	0.15	0.12	0	40.97	0	40.97
70th	0.32	0.09	0.11	0.14	0	50.08	0	50.08
80th	0.17	0.05	0.07	0.17	0.05	59.18	89.30	-30.12
90th	0.07	0.02	0.04	0.18	0.05	64.44	26.79	37.65
Panel B: Females								
10th	0.99	0.35	0.35	0.05	0	0	0	0
20th	0.93	0.30	0.30	0.06	0	0	0	0
30th	0.88	0.27	0.27	0.07	0	0	0	0
40th	0.80	0.24	0.25	0.09	0	40.69	0	40.69
50th	0.72	0.21	0.22	0.10	0	42.44	0	42.44
60th	0.60	0.17	0.19	0.12	0	102.38	0	102.38
70th	0.45	0.11	0.15	0.14	0	250.25	0	250.25
80th	0.24	0.06	0.11	0.17	0.05	369.69	290.06	79.63
90th	0.08	0.02	0.06	0.18	0.05	322.00	44.63	277.38

Table 9

Hypothetical changes to Medicaid expenses with increased LTC insurance up-take by individuals in lower asset deciles

	(1)	(2)	(3)	(4)
Wealth Decile	Increased up-take	Avg. Medicaid expense change for Males	Avg. Medicaid expense change for Females	Avg. Medicaid expense change overall
90th	0.051	22.76	120.31	71.54
80th	0.051	12.84	88.08	50.46
70th	0.036	-1.86	35.58	16.86
60th	0.03	-19.96	-24.21	-22.09
50th	0.024	-39.57	-82.54	-61.06
40th	0.023	-61.94	-144.03	-102.99
30th	0.018	-81.56	-197.41	-139.49
20th	0.015	-99.65	-243.35	-171.50
10th	0.012	-114.59	-280.68	-197.64