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PRIVATE SAVINGS, MEDICAID AND UNCERTAIN NURSING HOME EXPENSES

Lina Walker  
Congressional Budget Office  
Washington, D.C.  
(E-mail: [lina.walker@cbo.gov](mailto:lina.walker@cbo.gov))

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## Abstract

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The Medicaid program is the largest payer of nursing home services in the nation. The magnitude of program spending and the anticipated program growth as the baby boom cohort ages have raised questions about how Medicaid affects private savings. This paper, which extends previous research, examines how high but uncertain nursing home expenses interact with Medicaid assistance to affect the savings decisions of working-age households. The analysis uses data from the Asset and Health Dynamics of the Oldest Old, and relies on variation in Medicaid eligibility standards over time and across states to estimate the effect of Medicaid on retirement wealth. Using a difference in difference methodology, this analysis finds that retirement wealth is about 15 percent lower for households living in states with easier access to Medicaid. This amounts to a difference of about \$24,000, which is about one-third of median household net worth in the sample. The results are generally consistent with previous findings.

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## 1. Introduction<sup>1</sup>

In 2001, the average annual cost of nursing home services was about \$60,000 (Metlife, 2004). Most nursing home costs are paid out-of-pocket or by the Medicaid program because private insurance for nursing home expenses is limited and the Medicare program does not cover long-term nursing home care.<sup>2</sup> To put these costs in perspective, in 2001, the median elderly household held only \$40,000 in liquid assets and about \$180,000 in household net worth.<sup>3</sup> As a consequence, a nursing home stay has the potential to exhaust the financial resources of an elderly household in a relatively short period of time.

One policy concern is that insufficient private resources for nursing home expenses will compromise the care the elderly receive.<sup>4</sup> This issue is mitigated by the Medicaid program, which assists with nursing home payments for individuals whose income and assets are low enough. There is, however, an additional concern that Medicaid's assistance program creates a disincentive to save for retirement and nursing home expenses. In order to qualify for Medicaid assistance, an elderly person must have few assets and low income. The extent to which individuals adjust their resources to that low level in order to qualify for Medicaid assistance is unclear. To address this question, this paper examines whether private savings is lower for households with access to Medicaid assistance. The evidence is then used to infer the extent to which working-aged households plan ahead to prepare financially for future nursing home expenses.

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<sup>1</sup> I would like to thank Charles Brown, Kerwin Charles, John Laitner, Lucie Schmidt, Purvi Sevak, Dan Silverman, and participants at the University of Michigan public finance seminar for helpful comments. I also acknowledge support from the Michigan Retirement Research Center and the National Institute for Health for financial support. I am responsible for the content of the paper.

<sup>2</sup> In 2003, Medicaid spending accounted for 46 percent of total nursing home spending. Private payments made up 28 percent of total costs. Medicare's share was about 12 percent and private insurance and other sources accounted for 14 percent of total costs (<http://lrc.georgetown.edu/pdfs/nursinghomecosts.pdf>).

<sup>3</sup> Estimates from Gouskova and Stafford (2002) using data from the Panel Study of Income Dynamics.

<sup>4</sup> See Congressional Budget Office (2004) for policy issues relating to the financing of long-term care for the elderly.

The premise of the paper is that in the absence of private or public insurance for out-of-pocket nursing home expenses, households will self-insure (that is, save) for nursing home expenses. The availability of Medicaid nursing home assistance mitigates some of the out-of-pocket payment risk, which may then reduce the level of savings. Therefore, variation in access to Medicaid nursing home assistance should lead to variation in the accumulation of retirement wealth.

For working-aged adults, the need for nursing home care will likely manifest in their retirement years, potentially 20 or 30 years in the future. The underlying issue for this paper is whether households are forward-looking and make saving decisions for nursing home expenses years before an actual nursing home stay is likely to occur. Kimball (1994) notes that for uncertain medical expenses to have a quantitatively large impact on retirement wealth accumulation, those expenses must be large relative to lifetime resources. Given the magnitude of nursing home expenses, it is plausible that anticipated nursing home costs in retirement could influence the savings decisions of working-aged adults.<sup>5</sup>

In simulation studies, working-aged households facing uncertain medical expenses in retirement accumulate sizeable private savings in the form of precautionary wealth (Dynan, Skinner, and Zeldes, 2002; Palumbo, 1999; and Kotlikoff, 1989). The empirical evidence using micro-level survey data, however, is mixed. Levin (1995) finds indirect evidence to support planning for uncertain future health expenses whereas Webb (2001) finds little support.<sup>6</sup> Potentially, the mixed empirical finding might suggest incomplete planning.

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<sup>5</sup> After discounting for 30 years at a rate of 4 percent, the present value cost of nursing home care to a working-aged adult is about \$23,000. If evaluated over a 20 year period, the capitalized cost of a nursing home stay is about \$35,000. The calculations are based on the following sources: the average length of stay in a nursing home is 456 days (Liu and Manton, 1984); annual nursing home cost is \$60,000 in 2001 (Metlife survey, 2004).

<sup>6</sup> Levin (1995) finds a positive relationship between illiquid assets and health insurance premiums using the Retirement History Survey. He argues that the ability to self-insure will vary negatively with the

There is some evidence that households adjust their savings in response to social insurance programs, such as the Medicaid program. This evidence comes from Hubbard, Skinner, and Zeldes (1995), whose simulations show lower savings among households eligible for public insurance; from Gardner and Gilleskie (2006) who observe that individuals hold more wealth in states with higher Medicaid asset qualifying standards; and from Gruber and Yelowitz (1999) who observe a fall in private savings when Medicaid coverage was extended to young households in the Aid to Families with Dependent Children program.<sup>7</sup> The work of Gruber and Yelowitz (1999), however, focuses on the savings response of working-aged households around the time when they qualify for Medicaid assistance. Little is known about the savings response of working-aged households when potential participation in the Medicaid program is well into the future.

I use data from the Assets and Health Dynamics of the Oldest Old (AHEAD) survey. The identification strategy relies on variation in Medicaid eligibility standards over time and across states. The AHEAD data include individuals who attained retirement age several years before the implementation of the Medicaid program in 1965 and several years after. Individuals who retired before the availability of Medicaid faced different saving incentives from those who retired later, enabling a pre- and post-Medicaid comparison. A second source of variation comes from differences in states' eligibility standards for nursing home assistance. Specifically, the difference comes from whether the state allows individuals to use income net of medical expenses to meet the Medicaid income qualifying standard (this criterion is termed the "medically-needy" standard). This second source of variation enables

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proportion of illiquid assets in the household's portfolio; suggesting households are self-insuring against uninsured medical expenses. Using data from AHEAD, Webb (2001) finds no difference in the dis-saving rate between households that anticipate nursing home admission and households that do not.

<sup>7</sup> Aid to Families with Dependent Children provided health insurance coverage through Medicaid to young mothers with children.

a difference-in-difference estimation method.

Use of this quasi-randomization of public insurance coverage at the state level should at least reduce the bias associated with who selects into receiving Medicaid assistance.

Potentially, however, individuals with low retirement wealth might move to states with easier access to Medicaid and this selection may be driving the empirical results. Results from several robustness checks that account for possible migration bias indicate this is not the case.<sup>8</sup>

I find that households living in states with easier access to Medicaid (states that cover the medically-needy population) accumulate lower retirement wealth than households in states that do not cover the medically-needy population. The retirement wealth of households living in medically-needy states is, on average, about 15 percent lower than the retirement wealth of similarly-situated households in other states, amounting to a difference of about \$24,000. I find that the Medicaid medically-needy standard has the largest effect on the savings of households in the middle of the wealth distribution. Households in the upper end of the wealth distribution are less likely to seek Medicaid assistance probably because of the stringent resource standard for eligibility. These findings suggest that Medicaid does affect private savings which, in turn, suggests some planning for nursing home expenses. The magnitude of the estimate, however, is too small relative to actual nursing home costs to interpret as complete forward-planning for anticipated out-of-pocket nursing home costs.

## **2. Background**

### Evolution of Public Assistance with Nursing Home Expenses

Prior to 1960, federal assistance for medical care was available only to recipients who

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<sup>8</sup> Potentially, states that tend to have households with lower savings might be more likely to provide easier access to Medicaid assistance; however, the more generous Medicaid states include California and New York, which tend to have wealthier households.

were also receiving cash-assistance through the Old Age Assistance (OAA) program.<sup>9</sup> This circumstance meant that elderly persons whose income and assets were too high to qualify for cash assistance could not receive publicly-funded medical care. Individuals in need of nursing home care at that time had to rely on their own resources or on charity care.

Beginning in 1960, states were given the authority to extend health insurance coverage to the elderly who were not financially eligible for cash assistance but whose income was insufficient to meet their medical expenses (the “medically-needy”). This coverage was available through the Medical Assistance for the Aged (MAA) program. Under this program, individuals who met the asset test could deduct medical expenses from income to bring their net income down to the income threshold.<sup>10</sup>

As a requirement for receiving federal funds under MAA, states had to provide both institutional and non-institutional care. As a consequence, public assistance with nursing home expenses, by and large, began with the passage of the MAA program. By August 1963, 20 states had implemented a MAA program that assisted with nursing home payments. (These states are highlighted with an `X' in column 1 of Table 1.<sup>11</sup>)

The Medicaid program was established in 1965, at the same time that Medicare was enacted. Medicare pays for hospital and physician services while Medicaid pays for services that have limited or no coverage under the Medicare program. One such service is nursing home care. The Medicaid program also pays the Medicare part B insurance premium and other Medicare cost-sharing for cash assistance recipients. This assistance means that for the

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<sup>9</sup> Medical assistance provided under OAA, however, was very limited and most states did not cover nursing home expenses (Health Law Project, 1972).

<sup>10</sup> For instance, if the income threshold for qualifying is \$400 a month, a person with a monthly income of \$600 can qualify if her medical expenses are more than \$200 a month; and that person’s assets do not exceed the asset threshold.

<sup>11</sup> Data for Table 1 are compiled from: Bruen, et al. (1999), Burwell and Rymer (1987), Congressional Research Service (1988, 1993), Health Law Project (1972), Health Care Financing Administration (1970, 1980, 1984, 1986), Special Committee on Aging (1963), Spitz and Holahan (1996).

elderly who qualify for cash assistance, Medicaid provides in-kind transfers even when the recipient does not incur medical expenses.

States are required to provide Medicaid coverage to all cash-assistance recipients. Because the financial eligibility standards for cash assistance is fairly uniform across states, there is limited cross-state variation in eligibility standards for cash assistance recipients.<sup>12</sup> In addition to covering cash-assistance recipients, some states chose to cover the medically needy (as they could under the MAA program). Because individuals in medically-needy states can deduct medical expenses from income to qualify, this raises the effective income threshold in these states above the cash assistance limit. In contrast, in non-medically-needy states, only individuals who meet the cash assistance income standard can qualify. Therefore, the variation in access to Medicaid substantially arises from the variation in coverage of the medically-needy population.<sup>13</sup> Table 1 shows the states that covered the medically-needy through Medicaid in selected years between 1966 and 1992.<sup>14</sup> The data shows very little variation in medically-needy coverage over time.

Legislation in 1974 gave states without a medically-needy program the option to cover institutionalized people whose income was no more than 300 percent of the SSI benefit for that year. By the 1980s, all states without medically-needy programs had implemented a special income standard for the institutionalized, and most states set that standard at 300

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<sup>12</sup> Prior to 1974, each state independently established its financial eligibility standards for cash-assistance under OAA so there was some variation but the variation was small. In 1974, cash-assistance payments were federalized under the Supplemental Security Income (SSI) program. From that time on, eligibility for cash-assistance was based on the SSI financial standards regardless of state residence. States do provide Medicaid assistance to elderly persons who are not on SSI but who are receiving State Supplemental Payments (SSP). The number of individuals who qualify only for SSP and not SSI, however, is very small.

<sup>13</sup> For example, suppose the income standard is \$400. Then, in a medically-needy state, the individual qualifies if  $(\text{income} - \text{medical expenses}) \leq \$400$ ; whereas in a non medically-needy state, she qualifies if  $(\text{income} \leq \$400)$ . Given that nursing home expenses can reach \$3,000 a month, the medically-needy standard substantially increases the number of individuals who can qualify in medically-needy states.

<sup>14</sup> Since 209(b) states are allowed to deduct medical expenses from income to qualify, in spirit, these states are similar to medically-needy states. As such, I categorize 209(b) states as medically-needy states in Table 1.

percent of SSI. With the implementation of the 300 percent rule, the income standard for Medicaid nursing home assistance was, effectively, no lower than 300 percent of SSI, regardless of the state in which the recipient lived. Therefore, beginning in the 1980s, living in a medically-needy state only benefited households whose income was above 300 percent of SSI.

Figure 1 shows public spending for nursing home services from 1950 through 1977. In the 10 year period between 1960 and 1970, public payments rose from \$260 million to \$2,610 million -- a ten-fold increase (HCFA, 1980). Most of that growth occurred between 1965 and 1970, coinciding with the passage of Medicaid.<sup>15</sup> The accelerated pace of growth and the magnitude of program spending suggest an increasing awareness by the public of the role of the Medicaid program in financing nursing home expenses.<sup>16</sup>

### **3. The Theoretical Framework**

#### The Basic Model

I assume the agent lives for two periods, where period one corresponds to the agent's working years and period two corresponds to retirement years. Earnings in period one for agent  $i$  are denoted as  $Y_{i1}$  and the agent has no earnings in retirement. Earnings are assumed to be exogenous in this model. The subscript  $i$  on  $Y_1$  indicates that agents differ by income. Income is the only dimension along which agents differ. Suppose the agent expects with probability,  $p$ , a good health outcome in period two and with probability,  $1-p$ , a bad health outcome. When the agent receives a bad health draw, she incurs positive medical expenses,

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<sup>15</sup> The increase between 1970 and 1975 coincides with the inclusion of the disabled in the Supplemental Security Income program, which meant their inclusion in the Medicaid program.

<sup>16</sup> The growth in nursing home spending during this period was largely driven by growth in public spending. In 1960, private expenditure on nursing home expenses accounted for 2.46 percent of total health spending compared to 0.48 percent in public spending. In 1970, private spending accounted for 3.07 percent whereas public spending for nursing home care had increased to 2.31 percent of total health care spending.

$M > 0$ ; otherwise, she has no medical expenses.

The agent cares only about consumption in both periods and health does not enter the agent's utility function directly. Instead, health affects consumption through the effect of medical expenses on the budget constraint. The only uncertainty in the second period is whether the agent draws good or bad health. It is assumed that the agent faces imperfect capital markets, so she is unable to completely insure against possible medical expenses. Her second-period consumption can be expressed as:

$$\begin{aligned} C_{i,2g} &= (1+r)(Y_{i1} - C_{i1}) && \text{if good health} \\ C_{i,2b} &= (1+r)(Y_{i1} - C_{i1}) - M && \text{if bad health} \end{aligned}$$

where  $Y_{i1} - C_{i1}$  is first-period savings and  $r$  is the real rate of interest.

In this basic model, there is no Medicaid program. The agent's maximization problem can be written as:

$$\max_{C_{i1}, C_{i,2g}, C_{i,2b}} EU(t) = U(C_{i1}) + \frac{1}{1+\rho} [pU(C_{i,2g}) + (1-p)U(C_{i,2b})] \quad (1)$$

*s.t.*

$$Y_{i1} = \begin{cases} C_{i1} + \frac{C_{i,2g}}{1+r} & \text{if good health} \\ C_{i1} + \frac{C_{i,2g}}{1+r} + \frac{M}{1+r} & \text{if bad health} \end{cases} \quad (2)$$

$$C_1 \leq Y_1 \quad (3)$$

where  $E$  is the expectations operator,  $\rho$  is the subjective discount rate, and subscripts  $2g$  and  $2b$  in (1) denote good and bad health in period two, respectively. Utility,  $U(\cdot)$ , is concave in  $C$  and it displays the usual properties:  $U' > 0$ ,  $U'' < 0$ . In addition, I assume that preferences are such that  $U' \rightarrow \infty$  if  $U \rightarrow 0$ . Since agents can choose  $C_1$  such that savings is less than  $M$ , this latter assumption ensures this outcome is never an optimal choice and

assures positive consumption in each period.<sup>17</sup> Expression (2) describes the budget constraint with good and bad health outcomes, and the inequality constraint reflects the borrowing constraint.

Substituting the expressions for  $C_{i,2g}$  and  $C_{i,2b}$  into (1) and taking the derivative with respect to  $C_{i1}$  gives the following first order condition (FOC):

$$U'(C_{i1}) = \frac{1+r}{1+\delta} [pU'(C_{i,2g}) + (1-p)U'(C_{i,2b})] + \lambda_1 \quad (4)$$

where  $\lambda_1$  is the shadow price of the borrowing constraint.

Because the agent has no second period income, she must save; therefore,  $C_1 < Y_1$  and  $\lambda_1 = 0$ . The agent's FOC reduces to  $U'(C_{i1}) = \frac{1+r}{1+\delta} [pU'(C_{i,2g}) + (1-p)U'(C_{i,2b})]$ . The agent's optimal consumption path,  $C_i^*$ , equates the marginal utility of period one consumption with the expected marginal utility of period two consumption.

From (4), we see that the optimal choice of  $C_{i1}^*$ , and savings, will vary with  $p$ . Removing subscripts (for ease of exposition) and taking the total derivative of (4) with respect to  $p$  gives:

$$\frac{dC_1}{dp} = \frac{K(U'_{2g} - U'_{2b})}{U''_1 - pKU''_{2g} \frac{dC_{2g}}{dC_1} - (1-p)U''_{2b} \frac{dC_{2b}}{dC_1}} > 0 \quad (5)$$

where  $K = \frac{1+r}{1+\delta}$ . This condition implies that the greater the likelihood of poor health, the higher the level of savings. In the absence of insurance markets, the agent will self-insure against uncertain medical expenses.

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<sup>17</sup> I assume the Inada condition because it accommodates a constant relative risk aversion (CRRA) utility function.

## A Model with Medicaid

In this section, I modify the basic model to include Medicaid program characteristics that will affect the agent's consumption choices.<sup>18</sup> The setup of the model follows Hubbard, Skinner, and Zeldes (1995).

As described in the previous section, the Medicaid program provides two types of transfers: assistance with Medicare cost-sharing for agents with very low resources and assistance with nursing home expenses. Since Medicare out-of-pocket payments are very small relative to nursing home expenses, I denote good health as the event where the agent only incurs Medicare cost-sharing and bad health as the event where she incurs out-of-pocket nursing home expenses.

Eligibility for Medicaid assistance depends on second-period resources.<sup>19</sup> If the agent's second-period resources meet Medicaid's resource standard, then she qualifies for the transfer. The resource standard differs for transfers in good health and transfers in bad health. These are expressed in (6) and (7). If  $D$  denotes eligibility, then:

Good Health:

$$D = \begin{cases} 1 & \text{(qualify)} & \text{if } (1+r)(Y_{i1} - C_{i1}) \leq \bar{C}_2 \\ 0 & \text{(not qualify)} & \text{if otherwise} \end{cases} \quad (6)$$

Bad Health:

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<sup>18</sup> In this model, I abstract from concerns about differences in quality between Medicaid-financed and privately-financed nursing homes.

<sup>19</sup> For simplicity, I do not separate the effects of the income and asset tests on savings. This simplification is justifiable because there is limited variation in both the income and the asset-standard across states. In 1992, the income standard ranged from \$100 to \$760, with the average being \$400; while the asset limit ranged from \$1,600 to \$5,000, with the majority of states adopting \$2,000. The substantive variation comes from whether medical expenses are deducted from gross income when assessing eligibility; that is, the medically-needy coverage.

$$D = \begin{cases} 1 & \text{(qualify)} & \text{if } (1+r)(Y_{i1} - C_{i1}) - \theta_1 M \leq \bar{C}_2 \\ 0 & \text{(not qualify)} & \text{if otherwise} \end{cases} \quad (7)$$

where  $\theta_1$  reflects the state Medicaid eligibility rules for nursing home assistance and  $\bar{C}$  is some minimum consumption level.

From above, we see that in order to receive Medicaid assistance with Medicare premiums (transfers in good health), the agent's second period resources, denoted by  $(1+r)(Y_{i1} - C_{i1})$ , can be no higher than  $\bar{C}_2$  and this condition does not vary across states.<sup>20</sup> Eligibility for Medicaid nursing home assistance (transfers in bad health), on the other hand, depends on  $\theta_1$ . In medically-needy states, agents can deduct medical expenses from second period resources to qualify, therefore,  $\theta_1 = 1$ . In non medically-needy states, agents only qualify if they meet the cash-assistance standard, so  $\theta_1 = 0$ . This condition means that if the agent lives in a medically-needy state, she can hold up to  $\bar{C}_2 + M$  and still qualify for Medicaid.

Once qualified, Medicaid recipients must apply all resources towards the cost of medical care (this is sometimes referred to as the Medicaid tax). Medicaid will cover any excess nursing home payments and provide a minimum level of consumption level  $\bar{C}_2$ . The size of the Medicaid transfer is:

$$\begin{aligned} \text{Good health:} \quad TR_{2g} &= \max\{0, \bar{C}_2 - (1+r)(Y_{i1} - C_{i1})\} \\ \text{Bad health:} \quad TR_{2g} &= \max\{0, \bar{C}_2 + M - (1+r)(Y_{i1} - C_{i1})\} \end{aligned} \quad (8)$$

From above, we see that the agent is able to affect whether she qualifies for Medicaid, and the size of the transfer payment, through her choice of  $C_{i1}$ .

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<sup>20</sup> Although the eligibility standard under OAA varied across states, the variation was relatively small and unlikely to produce quantitatively significant differences in savings.

With transfers, the agent's second period consumption is:

$C_j = (1+r)(Y_{i1} - C_{i1}) - M_j + TR_j$ , where  $j=2g, 2b$  and  $M_{2g} = 0$ . Then, the FOC can be rewritten as:

$$\begin{aligned} U'(C_{i1}) &= \left( \frac{1+r}{1+\delta} \right) p U'(C_{i,2g})(1-D_{2g}) \\ &\quad + \left( \frac{1+r}{1+\delta} \right) (1-p) U'(C_{i,2b})(1-D_{2b}) \\ &\quad + \lambda_1 \end{aligned} \quad (9)$$

If the agent knows with certainty that she will not qualify for Medicaid in period two, then  $D_{2g} = D_{2b}$  and equation (9) reduces to (5). This is the FOC for the basic model without Medicaid transfers.

Because of the non-convexity of the budget set, there are multiple local maxima to this maximization problem. The agent in a medically-needy state has three possible outcomes: the agent can choose transfers in good health and bad health; can receive transfers only in bad health; or can choose not to take-up the program at all. In non medically-needy states, because there is only one type of transfer, there are only two local maxima: one with transfers in good and bad health and one with no transfers. To obtain the global maximum, the agent compares the utility from each local maximum and chooses the outcome that gives the highest utility.

### Local Optima 1

In order to qualify in both health events, the agent must meet the eligibility standard in the good health draw. Therefore, her second period resources must be  $(1+r)(Y_{i1} - C_{i1}) < \bar{C}_2$ . If  $D_{2g} = 1 = D_{2b}$ , she consumes exactly  $\bar{C}_2$  in either health draw.

Since saving \$1 from period one will only reduce her transfer and it does not increase her second period consumption in either health outcome, the agent will choose not to save.

Then,  $C_{i1} = Y_{i1}$ ,  $\lambda_1 > 0$ , and her FOC is  $U'(C_{i1}) = \lambda_1$ .

### Local Optima 2

Agents in medically-needy states have the possibility of only taking the transfer in bad health. Then,  $D_{2g} = 0$ ,  $D_{2b} = 1$  and the agent consumes  $\bar{C}_2$  in bad health. From (7), we see that an agent can hold as much as  $\bar{C}_2 + M$  in resources and still qualify for the transfer. Since saving an extra \$1 can increase her second period consumption in good health above  $\bar{C}$  without disqualifying the agent from transfers in bad health; therefore, this agent will save. Then,  $\lambda_1 = 0$  and her FOC becomes  $U'(C_{i1}) = p \left( \frac{1+r}{1+\delta} \right) U'(C_{i,2g})$ . The agent's savings will depend on  $p$ , the probability of good health. In the extreme case where  $p=0$  and the agent expects bad health with certainty, the agent will not save. In the other extreme where good health is expected with certainty,  $p=1$ , the agent saves the certainty equivalent amount.

### Local Optima 3

In the third scenario, the agent chooses not to take-up Medicaid. Then,  $D_{2g} = 0 = D_{2b}$  and the FOC is  $U'(C_{i1}) = \left( \frac{1+r}{1+\delta} \right) \{ pU'(C_{i,2g}) + (1-p)U'(C_{i,2b}) \}$ . This is the FOC of the basic model with no Medicaid. Here, the agent self-insures against uncertain nursing home expenses. The agent chooses  $C_1$  such that second-period consumption is higher than  $\bar{C}_2$  in both good and bad health. This is the solution of the basic model.

Solution 2 will lead to lower savings than solution 3 because in 2, the extra \$1 in savings will only increase consumption in good health and not in bad health. The agent's opportunity cost of consuming an extra \$1 in period one is the discounted marginal utility of consumption in good health multiplied by  $p$ , the probability of good health. Since  $p$  is less than unity, it is not optimal for the agent to save the amount that corresponds to her interior solution.

This result means that as long as solutions 1 or 2 are optimal choices for some agents, average savings will be lower in a model with Medicaid than in the basic model. This gives the first testable prediction: it is expected that private savings fell when Medicaid was implemented in 1965. However, households that were at, or close to, retirement age in 1965 would have had less time to adjust their pre-retirement consumption than households that were younger and several years from retirement. Therefore, retirement wealth of the younger (the post-Medicaid regime) household is expected to be lower than the retirement wealth of the older (pre-Medicaid regime) household.<sup>21</sup>

The choice of the optimal solution will vary by income. In non medically-needy states, the agent only has the choice of solution 1 or solution 3. Given the concavity of the utility function, receiving the transfer in good health will be optimal only for agents with low lifetime income whereas agents with high lifetime income will not choose Medicaid assistance.<sup>22</sup> In medically-needy states, agents have the additional option of only receiving the transfer in bad health. In that circumstance, consumption in good health can be as high as

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<sup>21</sup> In a dynamic model, the agent can adjust consumption *in retirement* in response to the new information. In that event, an optimizing agent will annuitize the gain from the anticipated transfer by increasing consumption over her remaining lifetime. This behavior will reduce the measured difference in retirement wealth between the pre- and post-Medicaid households, and this difference will diminish over time. I return to this point in the empirical section.

<sup>22</sup> If the agent cares about equalizing marginal utilities, then she will avoid having very large consumption in one outcome and very low consumption in another. This preference rules out high income households consuming all their resources in period one to qualify for Medicaid in period two.

$\bar{C}_2 + M$ . Agents with moderate lifetime income will choose solution 2. Given that  $\bar{C}_2$  is very low, agents that choose solution 2 will save less than those that choose solution 3.

This result provides the second testable prediction: the retirement wealth of households with moderate lifetime income will be lower in medically-needy states than in non medically-needy states; whereas there should be no cross-state variation in the retirement wealth of households with very low or high lifetime income.<sup>23</sup>

#### **4. The Econometric Analysis**

##### The Identification Strategy

I use data from the 1993 Asset and Health Dynamics of the Oldest Old. The AHEAD surveyed individuals, and their spouses, who were born in 1923 or earlier. In 1993, survey respondents were 70 years of age and older. The advanced age of the sample enables the identification strategy. Specifically, the younger cohort in the sample were in their prime earning years around the time the Medicaid program was implemented in 1965, whereas the older cohort was at or close to retirement during that same period. The age distribution of the sample therefore allows me to use the event of Medicaid's implementation, and the consequent difference in the risk of out-of-pocket nursing home expenses facing the two cohorts, as a source of variation.

It is unlikely that near-retirement aged workers anticipated nursing home assistance through either the MAA program or the Medicaid program and adjusted their consumption prior to the enactment of these programs. Potentially, households with low savings may have moved to states with easier access to Medicaid in order to qualify for coverage in their

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<sup>23</sup> The effect of the Special Income Limit (the 300 percent rule) on savings is not described because the sample of households in this paper is too old to have been affected by these rules *during their earning years*. This rule, however, potentially could effect dis-saving behavior in retirement. I return to this point later in the paper.

retirement years. This issue, which is addressed later in the paper, does not appear to be driving the results.

As noted in the previous section, after Medicaid was implemented, there were substantial differences in eligibility standards between states. This difference was largely coming from whether the state chose to cover the medically-needy population.

The variation in eligibility over time together with the variation in eligibility standards across states provides clear predictions in a difference in difference (DD) estimation. Specifically, the difference in retirement wealth between pre- and post-Medicaid households living in medically needy states should be larger than the difference in retirement wealth between pre- and post-Medicaid households living in non medically-needy states. That is, the DD estimate should be unambiguously negative.<sup>24</sup>

Theory predicts that the younger (post-Medicaid) cohort would accumulate lower retirement wealth than the older (pre-Medicaid) cohort because of the availability of Medicaid assistance. However, even if the older, pre-Medicaid workers did not anticipate Medicaid assistance when they retired, once Medicaid was implemented, it is expected they would revise their assessment of risk and annuitize the gain from the lower risk by increasing consumption over her remaining lifetime.<sup>25</sup> This adjustment *in retirement* means that the measured difference in wealth will be smaller when observed at more advanced ages than around retirement age. Given that the average age of my sample is 80 years, the reported estimates should be interpreted as a lower bound of the true effect.

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<sup>24</sup> The DD approach is widely used in studies that evaluate the impact of a program or treatment over a population of individuals. The appeal of the DD method is that it reduces the likelihood that time-invariant omitted variables (such as, changes in state laws and labor market conditions) and time trends (such as, capital accumulation or technological progress) will bias the estimated effect of the program since these effects are “differenced-out”. See Meyer (1995) and Angrist and Krueger (2000) for more detailed discussion.

<sup>25</sup> With concave utility, she prefers a smooth consumption path; therefore she spreads the gain over her remaining lifetime rather than consume the gain in one lump-sum.

The identification strategy relies on two assumptions. The first is that individuals are aware of Medicaid program rules. Conceivably, the elderly might have learned about the rules from the publicity surrounding the program in the years soon after implementation. Working-aged households may have learned about Medicaid's coverage when assisting elderly family members with their long-term care choices. A second assumption is that households were saving for nursing home expenses prior to the implementation of Medicaid. Data from the Centers of Medicare and Medicaid indicate that private spending for nursing home expenses has hovered between 2.5 percent and 3.5 percent of national health care spending from 1960 to 2004.<sup>26</sup> The historical trend lends validity to this assumption.

### Data

I use the 1993 AHEAD data linked to administrative data from the Social Security Administration. That linkage allows me to construct a measure for household lifetime earnings. I use the husband's lifetime earnings as a proxy for household lifetime earnings since the husband was usually the primary and single earner in the household for this cohort.<sup>27</sup>

Since lifetime income is constructed from earnings that were subject to Social Security tax, lifetime income will be understated for individuals whose earnings were consistently above the Social Security earnings maximum, or who had earnings that were not subject to the Social Security tax ("uncovered employment"). Therefore, instead of relying directly on the value of constructed lifetime earnings, I sort households into lifetime earning

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<sup>26</sup> Private spending for nursing home expenditure accounted for 2.46 percent of national health care expenditure in 1960. In 2003, it was 2.48 percent of national health care expenditure. Private spending on nursing home expenditure as a share of national health spending peaked in 1990 at 3.59 percent. Source: [http://www.cms.hhs.gov/NationalHealthExpendData/02\\_NationalHealthAccountsHistorical.asp](http://www.cms.hhs.gov/NationalHealthExpendData/02_NationalHealthAccountsHistorical.asp)

<sup>27</sup> Details of the construction of husband's lifetime income can be obtained from the author.

deciles and use their relative ranking instead.<sup>28</sup>

Tables 2a and 2b present the median and means of wealth and income variables by lifetime earnings decile. Wealth and pension income are generally monotonically increasing with lifetime income up to the median decile group. Beyond that, wealth appears to fluctuate. This variation is probably due to the understatement of lifetime earnings for higher earning households as a result of the Social Security earnings cap. Median household net worth is \$25,500 in the lowest decile group and median wealth is about \$77,000.<sup>29</sup>

I assign households to the pre-Medicaid regime if the husband was 58 years or older in 1965; all other households are assigned to the post-Medicaid regime.<sup>30</sup> For comparability, I focus on households where the husband was 49 or older in 1965. After deleting all cases with incomplete information, my sample includes 1,502 households. Table 3 provides some descriptive statistics for the sample. Median household net worth is about \$75,000. Total wealth for the median household is about \$163,000. About 10 percent of households in the sample had less than \$407 in Social Security and pension income in 1992.<sup>31</sup> About three-quarters of the sample lived in a medically-needy state, of which about 50 percent lived in a state that previously implemented the MAA program. The average household is about 80 years old and only 40 percent were married in 1993.<sup>32</sup> Seventy percent of these households own a home and 11 percent are black households. The advanced age of this sample explains the low percent of married households.

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<sup>28</sup> This is similar to the procedure used by Venti and Wise (1999). The authors argue that the ranking by Social Security earnings is a good approximation to the ranking by true lifetime earnings, and so the Social Security earnings decile are a good approximation to true lifetime earnings decile.

<sup>29</sup> Household net worth is the sum of stocks, bonds, certificate of deposits, checking and savings, business and real estate, automobile, home equity, less debt.

<sup>30</sup> Where the husband's age is missing, I use the wife's age and adjust it upwards by three. Three years is the mean age difference for married households in the AHEAD sample.

<sup>31</sup> \$407 was the Supplemental Security Income benefit amount in 1992.

<sup>32</sup> I assume the younger spouse will be the longer-lived spouse in the household, so I take that age as the age of the household.

As noted in the background section, states began covering the medically-needy as early as 1960, through the MAA program. Presumably, household savings would have adjusted to the MAA program. However, as Table 1 shows, not all MAA states continued to cover the medically-needy through Medicaid. For the cleanest measure, I focus only on those states that covered the medically-needy for the first time through Medicaid. I denote this group as the medically-needy (MN) group. I denote the group that covered the medically-needy through the MAA program as the MAA group.

In the theoretical framework, it is the Medicaid eligibility standards that were in place during the household's earning years that affected the household's consumption and saving decisions. Therefore, I use the Medicaid standards in 1977 in this paper. By 1977, Medicaid had been operational in some states for almost 11 years and all but Arizona had implemented a Medicaid program. In addition, in 1977, the 300 percent rule hadn't yet been implemented so there were still large differences in eligibility standards between states. Figure 2 shows the geographic distribution of MAA and MN states.

#### Validity of Difference in Difference Estimator

Before proceeding with the estimation, I address a potential shortcoming of the DD estimation. The DD identification strategy is valid as long as there are no omitted variables that vary with time and across states, and where the variation is correlated with the interaction term of interest. For instance, it would be problematic if agents with low wealth are more likely to move to states that cover the medically-needy and this propensity increased over time.<sup>33</sup> Then, it would be difficult to identify whether the negative correlation

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<sup>33</sup> Wealth in the AHEAD sample might overstate average wealth of the cohort because the data include only households that survived to age 70 or older. When comparing differences over time, however, this

between retirement wealth and medically-needy status is due to this selection effect or to the effect of lower exposure to out-of-pocket nursing home expenses.<sup>34</sup>

As a check on the validity of the identifying assumption, I compare state-level and household-level characteristics of the treatment groups to those of the control group. This comparison will highlight whether there are observable variables related to wealth that are correlated with the interaction of interest and provide an indication of the likelihood that unobserved variables are driving the results. The comparison tables are presented in Tables 4a, 4b, and 4c. As hypothesized, wealth is lower in medically-needy states but a comparison of state and household characteristics do not reveal any obvious factors that could be driving down wealth. In fact, households in medically-needy states have higher lifetime income. In addition, medically-needy states experienced better economic outcomes over time than non medically-needy states.

### Regression Results

I estimate the effect of the Medicaid program on retirement wealth using Ordinary Least Squares (OLS).

$$\begin{aligned} \log W_i = & \beta_0 + \beta_1(1965_i \cdot MAA_i) + \beta_2(1965_i \cdot MN_i) \\ & + \beta_3MAA_i + \beta_4MN_i + \beta_51965_i + \beta_6Y_i + \beta_7Z_i + \varepsilon_i \end{aligned} \quad (10)$$

where  $W_i$  is total retirement wealth and the variable  $1965_i$  is set to 1 for the post-Medicaid regime household. Retirement wealth is the sum of Social Security wealth, pension wealth,

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selection will either bias the DD estimate downwards (if the pre-Medicaid group has a higher proportion of healthier households) or be absorbed by the time dummy.

<sup>34</sup> I would argue that this particular example is less of an issue since the main destination states for the elderly (Florida, Arizona, Texas) are states that do not cover the medically-needy. Nevertheless, I conduct several robustness checks to examine the extent to which elderly migration affects the estimated results: these are reported later in the paper.

veteran benefits, and household net worth.<sup>35</sup> As noted earlier, it is predicted that the DD estimate will be negative. However, since households in MAA states had less access to nursing home assistance, on average, than households in medically-needy states, it is expected that the DD estimate for the MAA group will be less negative than the DD estimate for the MN group. That is,  $\beta_1 < 0$ ,  $\beta_2 < 0$ ,  $\beta_2 < \beta_1$ <sup>36</sup>.

The term  $Y_i$  is a vector of dummies for lifetime earning decile group and  $\varepsilon_i$  is an independent normal random term with mean zero and variance,  $\sigma_\varepsilon^2$ . The control vector  $Z_i$  includes variables expected to affect the level retirement wealth, such as age of the household, race, number of children, marital transitions (separation, divorce, or death), whether a homeowner, whether the household lived on a farm, and state-specific characteristics (the change in real housing prices between 1960 and 1990, median housing price in 1990, and the number of nursing home beds per 1000 elderly persons).

The coefficient  $\beta_5$  absorbs the effect of time trends that are common to households in every state (such as, the impact of Medicare insurance). The coefficients  $\beta_3$  and  $\beta_4$  absorb the permanent average differences in MAA and MN states, respectively. Observations are weighted by sample weights for the AHEAD data to reflect the elderly non-institutionalized population in the United States. Standard errors are clustered by state to correct for possible correlations between observations within each state.

Table 5 presents the results for total wealth. As expected, the coefficients on the

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<sup>35</sup> Social Security and pension wealth are the expected present discounted value of the flow of benefits. Because virtually all households had either Social Security or pension benefits, only a handful of households in the data had zero wealth. These observations were dropped with the logarithmic transformation.

<sup>36</sup> I also estimated the above equation using the log of non-housing wealth as the dependent variable since there is some evidence that households regard housing wealth as non-fungible wealth (Levin, 1998; Venti and Wise, 1989, 2001). The point estimates were very similar (-0.03 and -0.15, respectively) although they were both imprecisely estimated. These results are not reported in this paper.

interaction term,  $(1965_i \cdot MN_i)$  is negative and significant. Access to Medicaid's medically-needy coverage reduced total retirement wealth by 15 percent; that is, households in medically-needy states held \$24,400 less in retirement wealth than households in non medically-needy states.

The point estimate for MAA states, however, is essentially zero and it is imprecisely estimated. Potentially, this may be because there were a number of MAA states that dropped medically-needy coverage soon after the implementation of Medicaid.<sup>37</sup> As a result, there is insufficient variation in eligibility standards between MAA states and non medically-needy states.

The coefficients on the remaining variables are as expected. Households appear to be drawing down wealth with age. Households with fewer children have higher retirement wealth: households with 1-3 children have 9 percent less wealth and childless households have 12 percent less wealth than households with four or more children. Black households and households where a spouse died, or where there was a separation or divorce, held lower retirement wealth. Home-owners and households that live on a farm held higher wealth.

#### The Savings Effect by Lifetime Income Group

The theoretical model predicts that only households with moderate lifetime income will respond to the Medicaid medically-needy incentive. Since the regression specification above includes households in the top and bottom lifetime income distribution, the DD estimates understates the effect for this middle group. Ideally, one would focus on this middle group to ascertain the true effect of the medically-needy standard on retirement wealth.

In practice, however, it is difficult to identify households that fall into this “moderate lifetime income” category accurately because we do not observe preferences and cannot

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<sup>37</sup> These states are such as Arkansas, Idaho, Louisiana, Oregon, and South Carolina.

identify the thresholds that determine membership in this income group. Simply using current household income is inappropriate because current income includes income from assets and the level of assets in retirement is affected by the availability of medically-needy coverage.

As an approximation, I use quantile regression analysis to examine whether the effect of the medically-needy coverage varies across the wealth distribution. Table 6 reports results at the tenth percentile of retirement wealth and at selected points through to the 90th percentile of retirement wealth. From Table 6, we see that retirement wealth is lower for households in MN states throughout the entire wealth distribution but it is significantly different from zero only from the 20th percentile through the 60th percentile. Over that range, retirement wealth is between 14 percent and 24 percent lower for households in medically-needy states. This result is consistent with the OLS estimates. Beyond the 60th percentile, the standard errors on the DD estimator increase and the estimate loses precision.

The quantile regression estimates for MAA states differ from the OLS estimates in that the point estimate for MAA states is negative and precisely estimated from the 25th percentile to the 35th percentile. Beyond the 35th percentile, the point estimates fall by half and remain close to zero throughout the rest of the distribution. This suggests that the earlier OLS results for the MAA states may have been partly driven by outliers. Between the 25th and 35th percentile, retirement wealth of households in MAA states is between 12 percent and 16 percent lower than for similar households in low access states. As hypothesized, the point estimate is smaller for households in MAA states than for households in MN states.

Taken together, the results from Tables 5 and 6 suggest that households are responding to the Medicaid medically-needy coverage by reducing retirement wealth. This response indicates that access to Medicaid does affect retirement savings, and it also suggests that some component of retirement saving can be attributable to saving for medical expenses.

## Robustness Checks

Earlier, I raised the concern that the DD estimates may be biased by elderly migration. I had assumed throughout that households remained in the same state throughout their lifetime. Given that over 70 percent of the sample lived in their house for over 10 years, this assumption seems reasonable. However, three of the top five states with the largest proportion of elderly who migrated from other states do not cover the medically-needy. These states are Florida, Arizona, and Texas.<sup>38</sup> If an increasing number of wealthy households moved to these, then this migration could account for higher average retirement wealth among households in non medically-needy states relative to medically-needy states. For a cleaner test, it would be ideal to exclude all elderly households whose current state of residence is not the state in which they spent their working years. Given the limitation of the data, I instead constrain the sample to households that are less likely to have moved.

In the first instance, I exclude the top three destination states listed above and re-estimate (10). The results are reported in column 1 of Table 7. In the second specification, I control for whether the elderly person has lived in their home for over 10 years. The results of this specification are reported in column 2. In the final specification, I exclude the top five *net* migration states for the elderly over the period 1985-1990 in the hopes of selecting only households that are less likely to have moved at all.<sup>39</sup> These results are reported in column 3.

Looking across all three columns in Table 7, the results are robust across each specification. In fact, when states with high elderly migration are excluded from the sample, it improves the point estimate and the precision for MN states, although it does not

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<sup>38</sup> The other two are California and North Carolina. California is a MAA state and North Carolina is a medically-needy state. These states represent the top 5 elderly immigration states for the period 1985-1990 and 1995-2000 (Longino, et.al, 2003).

<sup>39</sup> These states are Florida, Arizona, North Carolina, Nevada, and Oregon.

significantly change the results for the MAA group. In specifications 1 and 3, the retirement wealth of households living in medically-needy states is 27 percent lower than the retirement wealth of comparable households in non medically-needy states.

Finally, the model makes predictions about the relative level of wealth at a point in the life-cycle when the household is at risk for nursing home expenses. Ideally, I want to observe households just when they need nursing home care but before they begin to draw-down their assets to pay for medical expenses. The current sample, however, includes widowed households, who may already have incurred out-of-pocket nursing home expenses for the deceased spouse. The inclusion of widowed households may understate the estimates of  $\beta_1$  and  $\beta_2$ .

To adjust this bias, I re-estimate (10) for married households only. I assume that intact married households are less likely to have incurred substantial nursing home expenses and, therefore, their retirement wealth will better reflect their full accumulation for nursing home expenses.

There is a second reason for limiting the sample to only married households. Potentially, households may transfer assets to relatives in order to qualify for Medicaid nursing home assistance (also known as “spend-down”). If spend-down behavior is more prevalent among the younger cohort of households living in medically-needy states, this behavior potentially could bias the DD estimate downwards and confound the interpretation of the coefficient of interests.

Evidence on spend-down behavior suggests that widowed households are more likely to engage in transfers to avoid the Medicaid tax than married households because the treatment of assets subject to the Medicaid tax is more favorable for married households with a non-institutionalized spouse. If the earlier estimates were mainly attributable to spend-

down behavior, then constraining the sample to married households, who are less likely to engage in spend-down, should produce a smaller point estimate. If, on the other hand, the point estimates do not change substantively, then spend-down is less of a concern.

The estimates for married households are presented in column 4 of Table 7. Retirement wealth is 33 percent lower for households in high access states and it is highly significant. The difference amounts to about \$54,000 in retirement wealth between household in medically-needy states and households in non medically-needy states. This estimate is more than twice the estimate for the full sample, suggesting that the earlier estimate may have been understated because some part of wealth had already been spent on medical expenses. In addition, the new point estimates indicate earlier results were not driven by asset transfer behavior. One should, however, regard the results for married households with caution because the estimates are based on small cell sizes.<sup>40</sup>

## **5. Conclusion**

The Medicaid program is the largest payer of nursing home services in the nation. Medicaid's nursing home expenditure in 2003 was \$56 billion and spending is projected to increase sharply as the baby boom cohort reaches retirement age. The magnitude of program spending and anticipated program growth has raised questions about how Medicaid influences private savings for nursing home care. Although access to Medicaid nursing home assistance may reduce the incentive to save, the asset standard for qualifying may also deter individuals from seeking Medicaid assistance. This paper evaluates how high but uncertain nursing home expenses interact with Medicaid assistance to affect the level of

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<sup>40</sup> Of the pre-Medicaid cohort, there were only 53 households from MAA states and 22 households from MN states.

retirement wealth accumulation.

The empirical results indicate that households that anticipated lower out-of-pocket nursing home expenses accumulated lower retirement wealth than households that anticipated higher out-of-pocket nursing home expenses. On average, retirement wealth is about 15 percent lower for households living in states that allowed individuals to use income net of medical expenses to reach the income qualifying standard (that is, households in medically-needy states). The difference in retirement wealth is about \$24,000, which is one third the median household net worth in the sample.

There is some evidence, albeit weak, that the savings of households in the middle of the wealth distribution are more responsive to the medically-needy standard than are the savings of households at the lower and the upper end of the wealth distribution. Households in the upper end of the distribution are less likely to seek Medicaid assistance, probably because of the stringent resource standards, and it is households in the middle of the distribution who are more likely to benefit from the state's adoption of the medically-needy provision.

The results in this paper support the notion that households incorporate information about Medicaid access into their saving decisions. Although the magnitude of the point estimate is substantial relative to household net worth, the level is far below the actual cost of nursing home care. With nursing home costs averaging \$60,000 a year, and average nursing home stays lasting one and a half years, a household would need about \$90,000 to fund their entire nursing home stay with private resources.

There are reasons to believe that the estimated effect of the Medicaid coverage is understated. For instance, some households may already have incurred out-of-pocket nursing home expenses or the control group in the experiment (the pre-Medicaid households) may have responded to the treatment by adjusting their consumption in retirement. Yet, even after

accounting for these adjustments, it is unlikely that the estimated effect would come close to the anticipated cost of nursing home care. This result can be interpreted in two ways.

One interpretation is that individuals save for nursing home expenses while young but they cannot perfectly anticipate their need for nursing home care when they are older; or they incorrectly assume Medicare will cover these costs. As a consequence, they save too little. If so, the estimates reflect actual, although incomplete, savings for anticipated out-of-pocket nursing home expenses.

An alternative interpretation is that most of the adjustment to consumption occurs in retirement. Potentially, working-age households may not have saved for nursing home expenses. When they reach retirement age, they obtain new information about their risk for out-of-pocket nursing home expenses and only then make adjustments to consumption. This behavior would be consistent with the well-documented discrete fall in consumption around retirement, which has been interpreted, in part, as response to new information (Banks, Blundell, and Tanner, 1998).

In order to distinguish between these two explanations, it is necessary to identify the timing of savings, that is, whether adjustments to consumption occurs before or after retirement. Doing so would require information about the level of household wealth immediately after retirement. Given the limitations of the current data, this question is deferred to a later date.

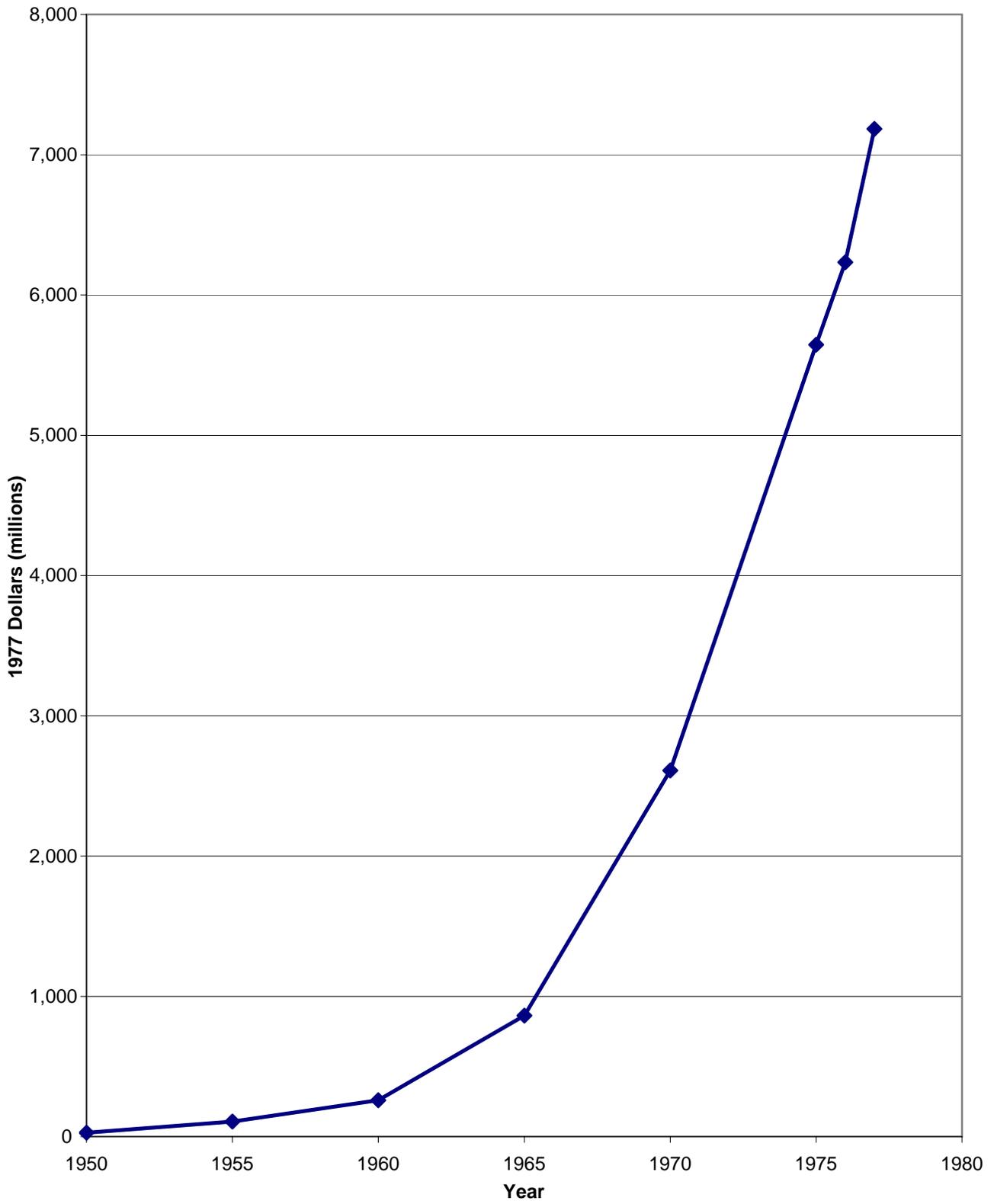
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**Figure 1: Federal and State Nursing Home Expenditures**



Source: Health Care Financing Administration (1980), Special Committee on Aging (1963)



Table 1 : States that Cover the Medically-Needy in Selected Years

State	pre-Medicaid	Year	Medicaid States					
	MAA States*	Implemented	1966	1970	1976	1980	1987	1992
ALABAMA		1970						
ALASKA		1972	---					
ARIZONA		1982	---	---	---	---		
ARKANSAS	X	1970						
CALIFORNIA	X	1966	X	X	X	X	X	X
COLORADO		1969	---					
CONNECTICUT	X	1966	X	X	X	X	X	X
DELAWARE		1966						
DISTRICT OF COLUMBIA	X	1968	---	X	X	X	X	X
FLORIDA		1970	---					
GEORGIA		1967						X
HAWAII	X	1966	X	X	X	X	X	X
IDAHO	X	1966						
ILLINOIS		1966	X	X	X	X	X	X
INDIANA		1970	---	X	X	X	X	X
IOWA		1967	---					
KANSAS		1967	---	X	X	X	X	X
KENTUCKY	X	1966	X	X	X	X	X	X
LOUISIANA	X	1966				X	X	X
MAINE		1966			X	X	X	X
MARYLAND		1966	X	X	X	X	X	X
MASSACHUSETTS	X	1966	X	X	X	X	X	X
MICHIGAN	X	1966	X	X	X	X	X	X
MINNESOTA		1966	X	X	X	X	X	X
MISSISSIPPI		1970	---	X	X	X	X	X
MISSOURI		1967	---	X	X	X	X	X
MONTANA		1967	---		X	X	X	X
NEBRASKA		1966		X	X	X	X	X
NEVADA		1967	---					
NEW HAMPSHIRE		1967	---	X	X	X	X	X
NEW JERSEY		1970						
NEW MEXICO		1966						
NEW YORK	X	1966	X	X	X	X	X	X
NORTH CAROLINA		1970		X	X	X	X	X
NORTH DAKOTA	X	1966	X	X	X	X	X	X
OHIO		1966	X	X				
OKLAHOMA	X	1966	X	X	X	X	X	X
OREGON	X	1967	---				X	X
PENNSYLVANIA	X	1966	X	X	X	X	X	X
RHODE ISLAND		1966	X	X	X	X	X	X
SOUTH CAROLINA	X	1968	---					X
SOUTH DAKOTA		1967	---					
TENNESSEE	X	1969	---		X	X	X	X
TEXAS		1967	---					
UTAH	X	1966	X	X	X	X	X	X
VERMONT		1966	X	X	X	X	X	X
VIRGINIA		1969	---	X	X	X	X	X
WASHINGTON	X	1966		X	X	X	X	X
WEST VIRGINIA	X	1966			X	X	X	X
WISCONSIN		1966	X	X	X	X	X	X
WYOMING		1967	---					X

Notes:

Medically-needy states allow individuals to deduct medical expenses from income to qualify for the Medicaid program ("spend-down").

"X" indicates the state covers the medically-needy. Dashes indicate the state had no Medicaid program in that year.

Medically-needy states include 209(b) states.

The MAA program is the Medical Assistance for the Aged program. MAA states allowed spend-down prior to Medicaid.

\*\*\* denotes MAA states that covered nursing home care.

Data compiled from: Bruen, et al. (1999), Burwell and Rymer (1987), Congressional Research Service (1988, 1993), Health Law Project (1972)

Health Care Financing Administration (1970, 1980, 1984, 1986), Special Committee on Aging (1963), Spitz and Holahan (1996)

Tabel 2a : Table of Median Values by Lifetime Earnings Decile Group

Decile Group	Total Wealth	Non-Housing Wealth	Household Net Worth	Home Equity	Pension Income	Investment Income
1=Lowest Decile Group	77,157	51,726	25,450	11,500	42,422	0
2	107,244	68,131	40,250	22,000	51,973	0
3	140,237	87,720	68,586	40,000	60,039	0
4	160,798	102,639	65,000	38,000	71,970	0
5	191,449	125,126	100,000	42,000	80,771	300
6	177,447	118,701	89,000	50,000	76,771	200
7	146,094	110,805	69,000	35,000	67,748	3
8	207,125	136,841	97,898	50,000	85,970	900
9	253,972	178,472	147,500	65,000	97,861	980
10=Highest Decile Group	232,466	168,811	117,000	52,000	89,518	800

Notes:

Data are from the 1993 Asset and Health Dynamics of the Oldest Old (AHEAD)

The lifetime earnings measure is the husband's Primary Insurance Amount.

Wealth is the sum of Social Security, pension wealth and household net worth

Net worth includes stocks, bonds, CDs, checking and savings, business and real estate, automobile, home equity, less debt.

Investment income includes income from stocks, bonds, checking accounts, and CDs.

Tabel 2b : Table of Mean Values by Lifetime Earnings Decile Group

Decile Group	Total Wealth	Non-Housing Wealth	Household Net Worth	Home Equity	Pension Income	Investment Income
1=Lowest Decile Group	154,586	125,394	82,378	29,192	72,208	1,507
2	244,487	166,390	169,330	78,097	75,157	3,297
3	210,424	154,969	130,449	55,455	79,975	3,639
4	219,719	169,915	126,354	49,942	93,884	2,348
5	243,736	178,188	146,503	65,339	96,403	2,817
6	250,469	171,094	156,800	79,374	93,668	3,744
7	213,229	165,657	129,228	47,572	84,001	3,845
8	238,251	177,285	146,349	60,966	91,903	6,547
9	357,991	273,689	236,931	84,301	121,060	6,152
10=Highest Decile Group	307,230	234,718	196,694	74,570	115,695	6,111

Notes:

Data are from the 1993 Asset and Health Dynamics of the Oldest Old (AHEAD).

The lifetime earnings measure is the husband's Primary Insurance Amount.

Wealth is the sum of Social Security, pension wealth and household net worth.

Net worth includes stocks, bonds, CDs, checking and savings, business and real estate, automobile, home equity, less debt.

Investment income includes income from stocks, bonds, checking accounts, and CDs.

Table 3: Summary Statistics for the Sample

Variables		Mean	Std Dev.	Median
Total Wealth		242,589	312,373	162,647
Non-Housing Wealth		180,537	244,470	111,392
Average Lifetime Earnings		1,628	927	1,530
Household Net Worth		150,483	288,467	75,150
Home Equity		62,052	155,933	40,000
Pension Income		92,107	74,807	71,825
Investment Income		3,948	11,583	100
Distribution of Households by Pension Income*:	Less than SSI	0.11	0.31	
	Between SSI and 300% SSI	0.70	0.45	
	Above 300% SSI	0.19	0.39	
Households Living in Medically-Needy States:	Previously had an MAA program	0.47	0.50	
	Previously had no MAA program	0.27	0.44	
Households Living in the Medicaid Regime		0.70	0.46	
Age		80		
Number of Children		2.54	2.08	
Separated, Divorced, or Widowed Household		0.57	0.49	
Own Home		0.70	0.46	
Black Household		0.11	0.32	

*n=1502*

Notes:

Data are from the 1993 Asset and Health Dynamics of the Oldest Old (AHEAD).

Wealth is the sum of Social Security, pension wealth and household net worth.

Net worth includes stocks, bonds, CDs, checking and savings, business and real estate, automobile, home equity, less debt.

Pension income includes Social Security, pension, and veteran benefits. Investment income includes income from stocks, bonds, checking accounts, and CDs.

Households in the Medicaid regime are households where the head (or, husband if married) was between ages 49 and 57 in 1965.

Medically-needy states allow individuals to deduct medical expenses from income to qualify for the Medicaid program ("spend-down").

The MAA program is the Medical Assistance for the Aged program. MAA states allowed spend-down prior to Medicaid.

The lifetime earnings measure is the husband's Primary Insurance Amount.

Dollar amounts are in 1993\$. The 1992 SSI benefit level was \$407 a month.

\*Figures may not sum to 1 due to rounding.

Table 4a: Selected Characteristics by Medically-Needy Status

Variables	Medically-Needy States			Non Medically-Needy States		
	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
Total Wealth	242,258	304,159	165,640	243,228	327,931	156,756
Non-Housing Wealth	173,121	203,219	112,751	194,835	308,559	108,929
Household Net Worth	149,843	279,907	74,000	151,715	304,570	78,200
Housing Equity	69,137	187,558	40,000	48,393	55,830	40,000
<u>Household-Level Characteristics</u>						
Pension Income	92,415	75,154	73,728	91,513	74,201	69,078
Non Pension Investment Income	4,078	12,370	5	3,695	9,926	200
Average Lifetime Earnings	1,670	937	1,568	1,546	904	1,457
Percent with Income below 300%of SSI	0.81	0.38		0.82	0.38	
Percent with Income below SSI	0.09	0.29		0.14	0.35	
Age	80			80		
<u>State-Level Characteristics</u>						
Median House Price in 1990	100,840	52,129	74,848	84,500	32,902	76,566
Change in Housing Prices, 1960-1990	0.71	0.59	0.56	0.57	0.31	0.48
No. of Nursing Home Beds per 1000 Elderly, 1973	63.91	19.17	62.60	50.35	20.62	46.30
Median Household Income in 1994	40,380	4,757	42,643	38,725	5,077	37,392
Percent of Elderly Receiving OASDI Benefits	92.54	4.06	94.30	90.77	3.35	91.00
<i>number of observations</i>	989			513		

Notes:

Wealth and other demographic variables are from 1993 AHEAD data.

Wealth is the sum of Social Security and pension wealth and household net worth.

Net Worth includes stocks, bonds, CDs, checking and savings, business and real estate, automobile, home equity, less debt.

Pension income includes Social Security, pension, and veteran benefits.

Investment income includes income from stocks, bonds, checking accounts, and CDs.

Medically-needy states allow individuals to deduct medical expenses from income to qualify for the Medicaid program ("spend-down").

The 1992 SSI benefit level was \$407 per month.

Dollar amounts are in 1993\$.

Table 4b : Selected Characteristics for Non Medically-Needy and Medically-Needy States, Pre- and Post-Medicaid

State-Type	Variables	Pre-Medicaid Regime			Post-Medicaid Regime		
		Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
Non Medically-Needy States (Control group)	Pension Income	56,198	39,177	46,932	108,407	80,814	84,653
	Investment Income	3,355	10,979	125	3,857	9,394	200
	Lifetime Earnings	1,759	910	1,840	1,444	882	7,358
	Percent with Income below SSI	0.16	0.37		0.13	0.34	
	Percent with Income below 300%of SSI	0.92	0.27		0.77	0.42	
	Age	85	6.64		78	4.37	
	Live on Farm	0.06	0.17		0.04	0.19	
	Own Home	0.64	0.48		0.75	0.43	
	Black Household	0.15	0.36		0.09	0.28	
	Median House Price in 1990	80,600	28,261	76,566	86,365	34,789	76,566
	Change in Housing Prices, 1960-1990	0.53	0.29	0.48	0.58	0.32	0.48
	No. of Nursing Home Beds per 1000 Elderly, 1973	51	22	46	50	20	46
	Median Household Income in 1994	38,278	4,384	37,392	38,939	5,370	37,392
	<i>number of observations</i>	166			347		
Medically-Needy States (Treatment Group)	Pension Income	57,776	43,486	47,173	108,096	80,160	89,851
	Investment Income	4,313	11,694	187	3,963	9,860	153
	Lifetime Earnings	1,886	811	1,969	1,561	928	1,394
	Percent with Income below SSI	0.12	0.33		0.09	0.29	
	Percent with Income below 300%of SSI	0.96	0.19		0.78	0.41	
	Age	86	4.74		77	4.93	
	Live on Farm	0.05	0.21		0.08	0.28	
	Own Home	0.56	0.50		0.76	0.43	
	Black Household	0.08	0.28		0.12	0.33	
	Median House Price in 1990	78,182	22,490	70,660	77,153	20,536	70,660
	Change in Housing Prices, 1960-1990	0.44	0.46	0.25	0.43	0.40	0.45
	No. of Nursing Home Beds per 1000 Elderly, 1973	71	18	70	73	21	67
	Median Household Income in 1994	41,384	3,390	4,300	41,560	3,529	43,000
	<i>number of observations</i>	105			256		

Notes:

Wealth and other demographic variables are from 1993 AHEAD data.

Pension income includes Social Security, pension, and veteran benefits.

Investment income includes income from stocks, bonds, checking accounts, and CDs.

The lifetime earnings measure is the husband's Primary Insurance Amount.

Medically-needy states allow individuals to deduct medical expenses from income to qualify for the Medicaid program ("spend-down").

The 1992 SSI benefit level was \$407 per month.

Dollar amounts are in 1993\$.

Tabel 4c : Selected Characteristics for Non Medically-Needy and MAA States, Pre- and Post-Medicaid

State-Type	Variables	Pre-Medicaid Regime			Post-Medicaid Regime		
		Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
Non Medically-Needy States (Control group)	Pension Income	56,198	39,177	46,932	108,407	80,814	84,653
	Investment Income	3,355	10,979	125	3,857	9,394	200
	Lifetime Earnings	1,759	910	1,840	1,444	882	7,358
	Percent with Income below SSI	0.16	0.37		0.13	0.34	
	Percent with Income below 300%of SSI	0.92	0.27		0.77	0.42	
	Age	85	6.64		78	4.37	
	Live on Farm	0.06	0.17		0.04	0.19	
	Own Home	0.64	0.48		0.75	0.43	
	Black Household	0.15	0.36		0.09	0.28	
	Median House Price in 1990	80,600	28,261	76,566	86,365	34,789	76,566
	Change in Housing Prices, 1960-1990	0.53	0.29	0.48	0.58	0.32	0.48
	No. of Nursing Home Beds per 1000 Elderly, 1973	51	22	46	50	20	46
	Median Household Income in 1994	38,278	4,384	37,392	38,939	5,370	37,392
	<i>number of observations</i>	166			347		
MAA States (Treatment Group)	Pension Income	63,835	49,850	46,760	103,348	80,216	83,632
	Investment Income	3,964	11,053	0	3,876	13,672	8
	Lifetime Earnings	1,915	856	1,957	1,526	964	1,400
	Percent with Income below SSI	0.13	0.34		0.08	0.27	
	Percent with Income below 300%of SSI	0.86	0.35		0.79	0.41	
	Age	85	6.72		79	4.51	
	Live on Farm	0.05	0.22		0.06	0.24	
	Own Home	0.58	0.50		0.73	0.44	
	Black Household	0.13	0.33		0.12	0.32	
	Median House Price in 1990	108,693	56,823	74,848	111,817	59,524	74,848
	Change in Housing Prices, 1960-1990	0.82	0.58	0.59	0.85	0.62	0.59
	No. of Nursing Home Beds per 1000 Elderly, 1973	59	16	61	60	17	61
	Median Household Income in 1994	39,255	5,002	39,869	39,594	5,217	41,254
	<i>number of observations</i>	198			475		

Notes:

Wealth and other demographic variables are from 1993 AHEAD data.

Pension income includes Social Security, pension, and veteran benefits.

Investment income includes income from stocks, bonds, checking accounts, and CDs.

The lifetime earnings measure is the husband's Primary Insurance Amount.

Medically-needy states allow individuals to deduct medical expenses from income to qualify for the Medicaid program ("spend-down")

The MAA program is the Medical Assistance for the Aged program. MAA states allowed spend-down prior to Medicaid.

The 1992 SSI benefit level was \$407 per month.

Dollar amounts are in 1993\$.

Table 5 : Ordinary Least Squares Results  
 Effect of Medicaid Medically-Needy Coverage on Retirement Wealth  
 (Robust Standard Errors in Parenthesis)

Dependent Variable: Log Retirement Wealth	Coef
Medicaid * MAA States (1965*MAA)	-0.002 (.089)
Medicaid * Medically-Needy States (1965*MN)	-0.158 * (.088)
Medicaid Regime (1965)	0.204 *** (.051)
MAA States (MAA)	-0.070 (.077)
Medically-Needy States (MN)	0.029 (.095)
Age	0.292 *** (.036)
No Children	0.124 * (.071)
1-3 children	0.095 *** (.035)
Black	-0.420 *** (.075)
Marital Disruption	-0.318 *** (.043)
Own Home	0.832 *** (.062)
Live on Farm	0.140 * (.079)
Constant	13.360 *** (.328)
Controls for Lifetime Earning Deciles	yes
State Controls	yes
<i>n</i>	1502
R-square	0.5

Notes:

Medically-needy states allow individuals to deduct medical expenses from income to qualify for the Medicaid program ("spend-down"). The MAA program is the Medical Assistance for the Aged program. MAA states allowed spend-down prior to Medicaid. Omitted group includes non medically-needy states. Medicaid regime means the head (or, husband if married) was between ages 49 and 57 in 1965. The pre-Medicaid regime are households where the head, or husband, was age 58 or older in 1965. Wealth and other demographic variables are from 1993 AHEAD data. Total wealth is the sum of Social Security, pension wealth and household net worth. Household net worth includes stocks, bonds, CDs, checking and savings, business and real estate, automobile, home equity, less debt. Age is the age of the younger person in the household divided by 10. The lifetime earnings measure is the husband's Primary Insurance Amount. Marital disruption means separation, divorce, or widowhood. State controls are: median household income in 1994, nursing home bed per 1000 elderly, real housing value in 1990, and change in real housing prices between 1960 and 1990. Estimates are weighted to reflect the non-institutionalized population in the United States. Standard errors are clustered at the state level. Significance denoted as: \*\*\* - 1%, \*\* - 5%, \* -10%.

Table 6 : Quantile Regression Results  
 Effect of Medicaid Medically-Needy Coverage on Retirement Wealth  
 (Robust Standard Errors in Parenthesis)

Dependent Variable: Log Retirement Wealth	10th percentile Coef	20th percentile Coef	25th percentile Coef	35th percentile Coef	50th percentile Coef	60th percentile Coef	70th percentile Coef	90th percentile Coef
Medicaid * MAA States (1965*MAA)	-0.104 (.107)	-0.122 (.076)	-0.133 * (.076)	-0.155 * (.082)	-0.078 (.066)	-0.007 (.088)	-0.058 (.119)	0.284 (.179)
Medicaid * MN States (1965*MN)	-0.096 (.133)	-0.187 ** (0.093)	-0.193 ** (.093)	-0.167 * (.099)	-0.138 * (.080)	-0.238 ** (.108)	-0.208 (0.145)	-0.10 (.220)
Medicaid Regime (1965)	0.229 ** (.093)	0.317 *** (.065)	0.342 *** (.064)	0.298 *** (.067)	0.216 *** (.053)	0.187 *** (.071)	0.193 ** (.094)	-0.224 (.149)
MAA States (MAA)	0.047 (.090)	0.076 (.063)	0.071 (.064)	0.063 (.068)	-0.023 (.055)	-0.116 (.074)	-0.074 (.099)	-0.004 (.185)
Medically-Needy States (MN)	0.055 (.115)	0.123 (.079)	0.112 (.079)	0.100 (.084)	0.066 (.068)	0.104 (.093)	0.081 (.124)	-0.026 (.140)
Age	-0.314 *** (.050)	-0.319 *** (.036)	-0.317 *** (.035)	-0.317 *** (.036)	-0.294 *** (.029)	-0.310 (.039)	-0.281 *** (.052)	-.346 *** (.082)
No Children	-0.142 * (.075)	-0.068 (.053)	-0.019 (.053)	0.018 (.057)	0.107 ** (.046)	0.135 (.062)	0.192 ** (.083)	0.257 ** (.126)
1-3 children	0.075 (.054)	0.105 *** (.038)	0.098 ** (.038)	0.090 ** (.041)	0.159 *** (.033)	0.175 (.044)	0.097 (.060)	0.081 (.092)
Black	-0.215 *** (.072)	-0.226 *** (.051)	-0.256 *** (.050)	-0.275 *** (.053)	-0.312 *** (.043)	-0.383 (.058)	-0.464 *** (.078)	-0.596 *** (.117)
Marital Disruption	-0.214 *** (.051)	-0.244 *** (.034)	-0.220 *** (.034)	-0.263 *** (.037)	-0.300 *** (.030)	-0.320 (.041)	-0.384 *** (.055)	-0.552 *** (.086)
Own Home	0.755 *** (.051)	0.761 *** (.035)	0.819 *** (.034)	0.863 *** (.038)	0.890 *** (.031)	0.905 (.042)	0.900 *** (.058)	0.791 *** (.090)
Live on Farm	0.260 ** (.102)	0.177 ** (.071)	0.154 ** (.069)	0.091 (.076)	0.154 ** (.061)	0.143 (.082)	0.136 (.107)	0.247 (.153)
Constant	12.981 *** (.442)	13.048 *** (.323)	13.064 *** (.310)	13.177 *** (.319)	13.146 *** (.255)	13.493 (.339)	13.520 *** (.447)	14.890 *** (.704)
Controls for Lifetime Earning Deciles and selected state characteristics	yes							
<i>n</i>	1502	1502	1502	1502	1502	1502	1502	1502
R-square	0.40	0.40	0.40	0.38	0.34	0.31	0.28	0.23

Notes:

Medically-needy states allow individuals to deduct medical expenses from income to qualify for the Medicaid program ("spend-down").

The MAA program is the Medical Assistance for the Aged program. MAA states allowed spend-down prior to Medicaid. Omitted group includes non medically-needy states.

Medicaid regime means the head (or, husband if married) was between ages 49 and 57 in 1965. The pre-Medicaid regime are households where the head, or husband, was age 58 or older in 1965.

Wealth and other demographic variables are from 1993 AHEAD data. Total wealth is the sum of Social Security, pension wealth and household net worth.

Household net worth includes stocks, bonds, CDs, checking and savings, business and real estate, automobile, home equity, less debt. The lifetime earnings measure is the husband's Primary Insurance Amount.

Age is the age of the younger person in the household divided by 10. Marital disruption means separation, divorce, or widowhood.

State controls are: nursing home bed per 1000 elderly, real housing value in 1990, and change in real housing prices between 1960 and 1990.

Estimates are weighted to reflect the non-institutionalized population in the United States. Standard errors are clustered at the state level. Significance denoted as: \*\*\* - 1%, \*\* - 5%, \* -10%

Table 7: Robustness Checks  
 Dependent Variable is Log of Retirement Wealth  
 (Robust Standard Errors in Parenthesis)

sample selection	(1) Exclude Sunbelt States	(2) Live in Home over 10 years	(3) Exclude Top 5 Migration States	(4) Married Households
Dependent Variable: Log Retirement Wealth	<u>Coef</u>	<u>Coef</u>	<u>Coef</u>	<u>Coef</u>
Medicaid * MAA (R*MAA)	-0.120 (.088)	-0.002 (.094)	-0.172 * (.089)	-0.159 (.128)
Medicaid * Medically-Needy (R*MN)	-0.274 *** (.079)	-0.141 * (.084)	-0.269 *** (.080)	-0.327 ** (.147)
N	1229	1492	1093	591
R-squared	0.63	0.64	0.61	0.65

Notes:

Medically-needy states allow individuals to deduct medical expenses from income to qualify for the Medicaid program ("spend-down"). The MAA program is the Medical Assistance for the Aged program. MAA states allowed spend-down prior to Medicaid. Omitted group includes non medically-needy states. Data are from the Asset and Health Dynamics of the Oldest Old. Medicaid regime means the head (or, husband if married) was between ages 49 and 57 in 1965. The pre-Medicaid regime are households where the head, or husband, was age 58 or older in 1965. Excluded sunbelt states are Florida, Arizona, and Texas. The top 5 net migration states are Florida, Arizona, North Carolina, Nevada, and Oregon. Estimates are weighted to reflect the non-institutionalized population in the United States. Standard errors are clustered at the state level. Significance denoted as: \*\*\* - 1%, \*\* - 5%, \* -10%.