Selection and Public Insurance: Evidence from Medicare and the Medicaid Medically Needy Program

Martin Andersen*

March 12, 2014

Abstract

I examine the effects of public catastrophic insurance programs on enrollment and selection in private health insurance to supplement Medicare. Using variation over time in the availability and generosity of these programs I show that public catastrophic insurance crowds-in private insurance coverage for individuals in the middle of the health distribution, while reducing insurance for higher-risk individuals. The selective crowd-out of individuals in worse health induces advantageous selection in Medigap, one of two types of supplementary private insurance, and reduces Medigap insurance premiums by $225 per year.

I would like to thank Marcela Alsan, Sebastian Bauhoff, Kate Baicker, Amitabh Chandra, David Cutler, Matt Fiedler, Jonathan Kolstad, Greg Leiserson, Neale Mahoney, Tom McGuire, Joe Newhouse, Daria Pelech, Sam Richardson, Zirui Song, Amanda Starc, Jacob Wallace, and participants at the 2012 American Society of Health Economics meeting, the 23rd Annual Health Economics Conference, and seminars at Georgia Tech, Harvard, Johns Hopkins University, University of Massachusetts—Amherst, the University of Memphis, the University of North Carolina at Chapel Hill, Ohio State, RAND, Stanford, the Urban Institute, and Vanderbilt for helpful comments. I am grateful to David Canning and Mohan Ramanujan for providing access to the restricted version of the Health and Retirement Survey. Funding from the National Institute on Aging, through Grant Number T32-AG000186 to the National Bureau of Economic Research, is gratefully acknowledged.

*Johns Hopkins School of Public Health, Room 456, 624 N. Broadway, Baltimore, MD 21205. Tel: (443) 287-5681. Email: martin.andersen@jhu.edu. Twitter: @andersen_hecon.

1 Introduction

Individuals purchase insurance, at least in part, to protect against financial risk (Arrow, 1963), although health insurance may also increase utility by enabling individuals to purchase goods and services that would not be affordable without insurance (Nyman, 2002, 1999a,b). Therefore, private insurance coverage can be reduced, or crowded-out, by government interventions that provide insurance coverage or compensation for losses, which may make such interventions less efficient.[1] For example, Cutler and Gruber (1996), Gruber and Simon (2008), and others (Brown et al., 2007; Card and Shore-Sheppard, 2006; Dague et al., 2011; Gresenz et al., 2011; Yelowitz, 2000), have documented reductions in private insurance coverage associated with expansions of public health insurance programs since the 1980s. However, reductions in insurance coverage may also manifest as lower self-insurance or reduced savings. Engen and Gruber (2001) document such a reduction in private savings due to unemployment insurance coverage and, unlike the health insurance studies, document larger reductions in savings for individuals who are more likely to be unemployed. Lastly, government interventions may provide compensation under some, but not all circumstances, as in the case with bankruptcy protection and disaster relief, both of which reduce private insurance coverage, just as if the government directly insured individuals against catastrophic losses (Koch, Forthcoming; Kousky et al., 2013; Mahoney, 2012).

In this paper, I study public programs that provide protection against catastrophic health shocks. These programs should directly benefit two types of individuals. First, low-risk individuals who only purchase insurance coverage because they are concerned with the small probability of suffering an extremely large loss may benefit because the programs that I study reduce some of the consequences of such a loss, mainly by continuing to ensure access to health care even after one has consumed most or all of one's assets and income. Second, high-risk individuals who anticipate having extremely large uncompensated losses with private insurance coverage also benefit because now they can use, at a minimum, their assets to consume other goods and services without sacrificing their access to health care. Therefore, providing catastrophic risk protection should crowd-out private insurance coverage among both low- and high-risk individuals, all else equal. However, crowding-out private insurance among high-risk individuals has implications for insurance premiums since the insurer is, in effect, reinsured by the program against catastrophic losses. The reinsurance effect may, in turn, reduce premiums sufficiently to offset the crowding-out effect for low-risk individuals, leading to crowding-in for low-risk individuals.

In this paper, I use three different surveys—the Current Population Survey (CPS), the Health and Retirement Study (HRS) and, the Medicare Current Beneficiary Survey (MCBS)—to test if public catastrophic health insurance programs crowd-out private insurance coverage and affect

[1] Several theoretical models and simulations demonstrate adverse effects of government insurance programs on private insurance (Brown and Finkelstein, 2008) and savings (Hubbard et al., 1995; Kotlikoff, 1986).

selection in the private insurance market. The programs that I study, Medicaid Medically Needy programs, are optional components of state Medicaid programs that allow individuals to deduct medical expenses from income as part of the eligibility assessment.

Restricting to individuals with Medicare coverage and without insurance from a current or previous employer, which yields a consistent and restricted choice of insurance plans, I show that these programs have no significant effect on enrollment into private health insurance coverage or Medicaid over a ten year period from 1998 through 2008, where I identify the effect of the Medically Needy program from five states that either adopt or drop a program during this period. However, when I account for heterogeneous effects by health status, I find that individuals in worse health are four to five percentage points less likely than the average individual to have Medigap insurance, which is one type of insurance that supplements Medicare, in states with a Medically Needy program. Conversely, less healthy individuals appear to be more likely to enroll in Medicaid with a two to four percentage point increase in Medicaid enrollment for higher risk individuals, depending on the dataset and measure of health status that I use. Extending the CPS sample to include individuals with insurance from a current or previous employer I find no effect of the Medically Needy program on average or by health status on the likelihood that an individual has insurance coverage from an employer.

Using data from the MCBS, I also demonstrate that Medically Needy programs affect the composition of health care spending by increasing the share of total spending that is paid for out-of-pocket. Such a shift is consistent with the incentives provided by the Medically Needy program and also manifests as a reduction in Medigap premiums that are reported in the MCBS. The reduction, \$225, is consistent with an elasticity of approximately 1.0 in the absence of crowd-out, which is at the bottom end of the range of 1.1-1.8 in the recent literature (Cabral and Mahoney, 2013; Starc, 2010). The fact that my implied elasticity is smaller than other estimates should not be surprising since my results also include a crowding-out effect, which means that the proper counterfactual for computing the price elasticity uses a somewhat larger increase in insurance coverage than is implied by my estimates.

This paper is closely related to two major strands of literature. First, by focusing on the effect of a public insurance program, and its implicit generosity, on private insurance coverage, this paper is related to Brown and Finkelstein (2008), Mahoney (2012), and Koch (Forthcoming) who study the relationship between the ability to surrender assets, either through a Medicaid "spend-down" process or through bankruptcy, on private insurance coverage (long-term care coverage and acute health insurance, respectively). Unlike these papers, I also consider the implications of crowd-out for selection, in particular for selection in Medigap markets, in the same spirit as Fang et al. (2008), who demonstrate that advantageous selection in the Medigap market is a result of heterogeneity in cognitive ability, and Clemens (2012), who shows how expansions of public insurance programs can ameliorate adverse selection in the private insurance market.

2 Institutional Background

Medicare is the principal source of insurance for individuals over the age of 65 in the United States and is divided into four parts: Part A provides insurance for hospital expenses and home health care; Part B pays for physician and outpatient expenses; Part C, also known as Medicare Advantage, provides a private, subsidized alternative to Parts A and B; and Part D, which became available in 2006, provides prescription drug coverage through subsidized private plans. Most individuals receive Part A coverage by virtue of having paid into the system while working and purchase Part B coverage (>95% of Medicare Part A enrollees also have Part B coverage); Parts C and D charge premiums based on a formula that depends on the cost of insuring the average individual, relative to a benchmark.[2] In addition to premiums, payroll taxes, and general revenue funds, Medicare Parts A and B use cost-sharing[3] both to lower costs and limit utilization. Unlike most insurance offered in the private insurance market, Medicare does not limit out-of-pocket spending.

In light of Medicare's substantial cost-sharing requirements, most Medicare beneficiaries have supplemental insurance that pays some, or all, of the cost-sharing and may cover additional services. For 30% of Medicare beneficiaries, this supplemental coverage is provided by previous employers. However, individuals who do not have coverage from a previous employer may purchase a Medigap policy or enroll in a Medicare Advantage plan. Medigap policies pay the cost-sharing requirements of traditional Medicare, while Medicare Advantage plans use managed care techniques to reduce cost-sharing. These plans, however, still provide only a limited reduction in risk, for example, Medigap plans will pay Medicare coinsurance, but they do not provide meaningful prescription drug coverage. Similarly, Medicare Advantage plans do not provide significant reductions in out-of-pocket costs for individuals in poor health (Biles et al., 2004).

State Medicaid programs provide the final source of coverage with all states providing supplemental coverage, similar to Medigap, to individuals who have income less than 100% of the poverty line and more comprehensive coverage for individuals who are eligible for Supplemental Security Income.[4] Higher income individuals are ineligible for Medicaid coverage through these mechanisms, but are eligible for Medicaid coverage after an adverse health event in states that have "Medically Needy" programs. These programs base eligibility on a combination of having limited countable assets[5] and income net of medical expenses below a specific limit. These limits define a person-specific "deductible," based on an individual's assets in excess of the asset limit

[2] Parts C and D use different methods to construct benchmarks. The Part C benchmark is essentially set by Congress (McGuire et al., 2011), while the Part D benchmark is based on costs of an insurer's competitors.

[3] In 2005, consumers paid \$912 per discharge for hospital care (with additional payments for stays longer than 60 days), a \$110 annual Part B deductible, and 20% coinsurance for Part B services, in nominal terms.

[4] Some states do not provide coverage for all individuals with SSI coverage because of more stringent Medicaid eligibility standards, but these states must permit individuals with SSI to become eligible for Medicaid by paying a person-specific deductible that is similar to the Medically Needy program described below.

[5] Countable assets excludes the primary home (except for Arizona, which excludes \$100,000 in home equity, which is satisfied by roughly half of my sample), usually one car, and household goods.

and her income in excess of the income limit. Unlike the deductible in traditional insurance plans, the Medically Needy deductible is essentially a life time deductible, which primarily reflects an individual's countable assets. After the individual has medical expenses exceeding her deductible she is eligible for Medicaid coverage through the Medically Needy program. Figure 1 presents the median simulated deductible (described below) by state for 1998 and 2008. Deductibles have risen over time, due to inflation and growth in asset holdings, rather than significant changes to the eligibility criteria. One notable exception, however, is New York which more than tripled the asset limit in 2008, leading to a lower median deductible in 2008 than in 1998.[6]

The design of the Medicare program and, in particular, the regulated nature of the supplemental insurance products has enabled many economists to study plan choice and selection in these markets, contributing to a broader literature on selection in insurance.[7] Wolfe and Goddeeris (1991) provide evidence of a positive correlation between spending shocks and Medigap coverage using data from the late 1970s, which is consistent with adverse selection into Medigap coverage. Finkelstein (2004) also concludes that the Medigap market was adversely selected in the 1970s, based on consumer and insurer response to the imposition of minimum benefit standards. Ettner (1997) decomposes the spending increase associated with Medigap coverage into a component due to moral hazard and a component due to adverse selection by comparing individuals who purchased Medigap coverage in the private market with those who received Medigap coverage from an employer, assuming that the latter is exogenous and identifies the moral hazard effect. She concludes that Medigap is adversely selected using data from the 1991 MCBS. Fang et al. (2008) use data from the early 2000s to demonstrate that Medigap insurance coverage is advantageously selected, with lower Medicare spending without conditioning on health status, but higher spending conditional on health status. In addition, their paper traces the source of this advantageous selection back to heterogeneity in cognitive ability. They are able to find advantageous selection in this setting because of a significant policy reform that was implemented in 1992 that standardized insurance products.[8]

[6]New York state increased the asset limit on all Medicaid programs during a period of substantial change in their eligibility requirements following a Federal lawsuit. The specific level—$13,050 in 2008 dollars—was chosen because it was also the asset limit for the Family Health Plus state health insurance program for childless adults.

[7]Cutler and Zeckhauser (2000) provides a somewhat dated review of selection in health insurance markets. Einav et al. (2010) present estimates indicating that selection is only of modest importance in the employer-sponsored insurance market, which is consistent with Cardon and Hendel (2001) who find no evidence of adverse selection in the employer-sponsored market. Outside of health insurance there is a large and growing literature on selection in insurance markets. Cawley and Philipson (1999) study selection in life insurance markets and demonstrates that individuals who are more likely to die are less likely to insure and when they do purchase policies with smaller face amounts. Finkelstein and Poterba (2004) study annuity markets and document both adverse and advantageous selection in that setting, with individuals who are more likely to die purchasing more generous annuities, while those who are less likely to die purchase optional contract features that increase their payouts in the long-run.

[8]The reform limited Medigap insurers to offer a fixed set of plan designs, limited medical loss ratios, and prescribed when insurers could reject applicants on the basis of health.

3 Theoretical Effects of Public Catastrophic Insurance

The economics of the Medically Needy program in my (acute-care) setting is similar to the basic arguments in Brown and Finkelstein (2008) and Pauly (1989, 1990) who study private long-term care insurance. The idea is that public insurance programs that provide catastrophic coverage above a certain deductible make private insurance less attractive for individuals who value protection against large risks, because catastrophic insurance coverage reduces the incremental protection provided by private insurance coverage for these very large shocks.

3.1 Insurance Coverage without Catastrophic Insurance

To fix ideas, suppose that individuals are endowed with income Y and have a risk type r, which is uniformly distributed on the unit interval. The risk type, in turn, determines a density of health shocks, denoted $f(l|r)$, with $\frac{\partial}{\partial r}F(l|r) = \int_0^l f_r(s|r)ds \leq 0$ for all r and l (using subscripts to denote partial derivatives), with the inequality holdings strictly for some l given r, so that higher risk individuals are less likely to draw small losses. I also assume that $\lim_{l \to +\infty} F_r(l|r) = 0$ and $\lim_{l \to 0^+} F_r(l|r) = 0$; the first assumption is necessary to ensure that $f(l|r)$ is a proper density for all r, while the second assumption implies that risk type affects the size of losses, but not the probability of suffering a loss. Individual utility depends on consumption, c, less the loss and is given by $u(c-l)$. I assume that $u(c)$ is a concave function with a positive third derivative. I assume throughout this and the next subsection that all integrals converge and that I can change the order of integration and differentiation.

Prior to observing a loss, the individual may choose to purchase insurance coverage for a premium π that reduces her loss from l to θl, $0 < \theta < 1$. Hence, after observing the loss, l, the individual's ex-post potential gain from having insurance coverage is:

$$\Delta u^{No}(Y, \pi, l) = \underbrace{u(Y - \pi - \theta l)}_{=u_I^{No}} - \underbrace{(u(Y - l)}_{=u_N^{No}}$$

Provided that θ is small enough it is straightforward to show that $\frac{\partial}{\partial l}\Delta u^{No} > 0$, so that the benefit of insurance is increasing in the size of the loss, and $\frac{\partial^2}{\partial l^2}\Delta u^{No} > 0$, implying that the ex-post gain function is convex in the size of the loss. Figure 2 illustrates the relationship between loss size and the ex-post benefit of insurance coverage in the absence of catastrophic insurance coverage. As drawn, the figure implies that a substantial portion of the benefit of insurance coverage comes from protection against large losses, which are presumably rare for the expected utility function to be well-defined. In order for the remainder of the model to be interesting, I assume that income, net of the insurance premium $(Y - \pi)$, is sufficiently large so that $\Delta u^{No}(Y, \pi, l) > 0$ for some l and, in fact, for all $l' > l$.

From the ex-post utility gain, one can define the ex-ante benefit of insurance coverage, which determines insurance purchase decisions, as $\Delta v^{No}(Y,\pi,r) = \int_0^\infty \Delta u^{No}(Y,\pi,l)f(l|r)dl$. I assume that individuals will purchase insurance coverage whenever their expected utility gain is positive, i.e. whenever $\Delta v^{No}(Y,\pi,r) \geq 0$.[9]

Proposition 1: For θ small enough:

1. The ex-post utility gain of insurance coverage, $\Delta u^{No}(Y,\pi,l)$, is an increasing function of the health shock, l;

2. The ex-ante utility gain of insurance coverage, $\Delta v^{No}(Y,\pi,r)$, is increasing in risk type.

Proof: See appendix.

Part one of the proposition reflects the fact that individuals with insurance are better able to cushion adverse health shocks because the insurer shares in the cost of the loss and the value of this benefit is larger when the difference in income is larger. Part two of the proposition follows because an increase in r increases the probability of drawing a large loss and reduces the area $A(r)$, which reflects the ex-post cost of insurance coverage that is not utilized in excess of the premium. The final part of the proposition follows from the mechanical relationship between risk type and the distribution of losses.

It immediately follows from the proposition that for a given insurance premium, individuals separate by risk type with individuals with $r > r^*$ purchasing insurance, while those with $r < r^*$ do not, since the ex-ante utility gain of insurance coverage is strictly increasing in risk type (assuming that $\Delta v^{No}(Y,\pi,1) > 0$). By construction, that also means that the expected loss of individuals with insurance is greater than the expected loss of individuals without insurance coverage.

3.2 Insurance Coverage with Public Catastrophic Risk Protection

Now suppose that there is a catastrophic insurance program, denoted by superscript *Cat*, that covers all losses after a deductible D ($Y > D > \pi$). Enrolling in the catastrophic insurance program provides utility $u_D^{Cat}(Y,D) = u(Y-D)$, and the individual may choose to enter the catastrophic insurance program *after* observing the loss. Because individuals can choose to enter the program after observing the loss, ex-post utility for an individual with insurance status $j \in \{N, I\}$ is $u_j^{Cat} = \max\{u_j^{No}, u_D^{Cat}\}$.

For an individual with insurance status j, it is optimal to enter the catastrophic insurance program whenever $u_j^{No} < u_D^{Cat}$, and the smallest such loss is denoted by l^j.[10] Using these thresholds for

[9] This assumption implies that for a given risk type r, either everyone or no one purchases insurance. While this assumption seems strong, if one views the model as being conditional on covariates, then it allows for arbitrary heterogeneity in the utility function. However, this assumption does rule out idiosyncratic preferences for insurance coverage, since the ex-ante utility benefit of insurance coverage is derived solely from the ex-post utility benefit.

[10] Note that $l^I > l^N$ whenever $l^N > \frac{\pi}{1-\theta}$ since l^I and l^N are defined such that $u(Y-\pi-\theta l^I) = u(Y-l^N)$, hence $l^I = \frac{l^N-\pi}{\theta}$, which is greater than l^N if and only if $l^N > \frac{\pi}{1-\theta}$, or as long as the ex-post gain from insurance coverage is positive at l^N in the absence of catastrophic insurance coverage.

entering the catastrophic insurance program, the ex-post utility gain, with a catastrophic insurance program, Δu^{Cat}, is:

$$\Delta u^{Cat}(Y,\pi,D,l) = \begin{cases} \Delta u^{No}(l) & \text{if } l < l^N, \\ u(Y-\pi-\theta l) - u(Y-D) & \text{if } l^N \leq l < l^I, \\ 0 & \text{if } l \geq l^I. \end{cases} \tag{1}$$

As in the previous subsection, I define the ex-ante utility gain from having health insurance as $\Delta v^{Cat}(Y,\pi,D,r) = \int_0^\infty \Delta u^{Cat}(Y,\pi,D,l)f(l|r)dl = \int_0^{l^I} \Delta u^{Cat}(Y,\pi,D,l)f(l|r)dl$ and assume that individuals will purchase insurance if $\Delta v^{Cat} \geq 0$. Figure 2 graphs Δu^{Cat} as a function of the loss size and illustrates the separation between the ex-post benefit, for $l > l^N$, when there is and is not a catastrophic insurance program. The figure indicates that the difference between Δv^{Cat} and Δv^{No} is simply the area $C(r)$, which captures the value of insurance coverage, in the absence of a catastrophic insurance program, for losses in which individuals may choose to use the catastrophic insurance program. The loss of $C(r)$ motivates both crowd-out and selection since they can encompass a significant portion of the ex-ante utility benefit of insurance coverage and the relative weight on this area and its importance for purchasing insurance coverage yields predictions for insurance coverage in the presence of a catastrophic insurance program:

Proposition 2:

1. The ex-post utility gain of insurance coverage, $\Delta u^{Cat}(Y,\pi,D,l)$ has a maximum at $\tilde{l} \in [l^N, l^I)$;

2. The ex-ante utility gain of insurance coverage is smaller if there is a catastrophic insurance program than if there is not ($\Delta v^{Cat}(Y,\pi,D,r) < \Delta v^{No}(Y,\pi,r)$);

3. There may exist a largest risk type, $\overline{r}$, such that $\Delta v^{Cat}(Y,\pi,D,r) < 0$ for all $r > \overline{r}$;

4. There exists a smallest risk type, $\underline{r} \leq 1$, which is greater than r^*, if it exists, such that $\Delta v^{Cat}(Y,\pi,D,r) < 0$ for all $r < \underline{r}$;

5. If they exist, the thresholds $\underline{r}$ and $\overline{r}$ are decreasing and increasing as the deductible increases, respectively; and

6. Utilization of catastrophic insurance coverage is decreasing as the deductible increases.

Proof: See Appendix.

The intuition behind part one of the proposition can be seen in figure 2, where Δu^{Cat} is positive (and increasing) at $l = l^N$ but is zero at $l = l^I$. Hence there is some loss where insurance provides the largest ex-post benefit. The intuition for parts two through five rest on the fact that Δv^{Cat} omits $C(r)$ from the ex-ante utility benefit of insurance coverage. The bounds $\underline{r}$ and $\overline{r}$ correspond to two types of individuals who purchase insurance for protection against events in area B. The first type of person (corresponding to $\underline{r}$) is one who anticipates only experiencing small shocks, which she could self-insure, but she is worried about larger shocks that she cannot self-insure, hence she would purchase insurance in the absence of the catastrophic insurance program, but with the program, that is no longer necessary. The second type of person (corresponding to $\overline{r}$) is one who anticipates larger losses–losses that are as large as l^I or larger, so she does not expect to benefit from health insurance because the probability of suffering a small loss is too low. The final part of the proposition is, in essence, a statement that as the probability of drawing a shock large enough to allow entry into the catastrophic insurance program increases (which is what happens when the deductible is reduced), then the probability of actually entering the program will also increase.

An important caveat to proposition 2 is that I assume that premiums are not affected by the catastrophic insurance program. This assumption is most important for the comparison with r^*, in which a reduction in insurance premiums could reduce $\underline{r}$ to be below r^*. However, the effect on selection is ambiguous and it is possible for insurance premiums to be lower when there is a catastrophic insurance program, in which case the risk thresholds for purchasing private insurance coverage are pushed towards either extreme of the risk distribution and the probability of crowd-out is lower.

4 Data and Methods

4.1 Data

I use data from the March supplement to the Current Population Surveys from 1999 through 2009,[11] which provides information on income and insurance coverage for the years 1998 through 2008. The CPS provides a large, nationally representative sample, which I restrict to individuals 65 and older with Medicare coverage. I define an individual has having Medicaid if she reports as such in the CPS; individual and employer-sponsored insurance are defined by responses to questions about the source of insurance coverage. The larger sample size in the CPS allows me to undertake a number of specification checks that would be difficult with the smaller samples available in the HRS or the MCBS.

To supplement the CPS, I use data from the core surveys of the Health and Retirement Study (HRS), which is a longitudinal survey of more than 30,000 individuals near or in retirement. The initial sample was recruited in 1992 and additional cohorts were included in the survey in 1998 and 2004. I begin my analysis in 1998, when the HRS is representative of the non-institutionalized population 50 and older. I restrict the sample to individuals 65 and older with Medicare Parts A and B (or Medicare Part C) coverage, who do not have supplemental insurance from a former employer[12] or the military. I also distinguish between Medigap and Medicare Advantage plans

[11] I use the version developed by the Minnesota Population Center.

[12] I define employer-sponsored insurance as any non-drug insurance plan that is purchased from or provided by an individual's former employer, a spouse's current or former employer, or the employer or union of a previous spouse.

and I assign individuals who report both types of coverage to Medicare Advantage. I exclude all observations with a proxy respondent, who failed to provide a complete interview, or whose assets were not between the first and 99$^{\text{th}}$ percentiles. Because individuals may move in response to the incentives provided by the Medically Needy program, I assign individuals to their state of residence when they entered the HRS.

I use asset and income imputations for the HRS developed by RAND to measure total wealth, countable assets, exempt assets, and earned and unearned income. I define exempt assets as vehicles,[13] and other assets (primarily household goods). Countable assets are all other assets, except equity in the primary residence, net of debt. Home equity is treated separately since Arizona includes home equity in its eligibility assessment. All dollar figures are converted to real 2010 dollars using the CPI-U.

I base my measure of health status on self-rated health, the CES-D score, which measures mental health status, indicators for having ever been told that one has one of several different health conditions,[14] and difficulties with several activities of daily living (the specific conditions and activities of daily living are presented in appendix table A1). I first constructed an initial six factor model of health status, trying to identify one or more factors that could summarize the eighteen different items that I initially included. The eigenvalues from the initial six factor model supported a one factor model, with the eigenvalue on the first factor of 3.8, compared to eigenvalues that are less then 0.6 on the remaining five factors (see appendix figure A1 for the Scree plot of the eigenvalues). I then re-estimated a single factor model which I used to construct a summary health status measure based on the factor loadings in appendix table A1. A subsequent test of the constituent components of the summary measure yielded a Cronbach's α of 0.75, which is indicative of a high degree of internal consistency in the measure (Cronbach, 1951). As a validation exercise, appendix table A2 presents results from a regression of a dummy for subsequent mortality on quintiles of health status, including an interaction with the presence of a Medically Needy program (based on the specification (3), defined below). The coefficients on the health score quintiles are consistent with the score measuring mortality risk, with individuals in higher quintiles having a higher probability of dying by the next wave of the survey using both current health status and lagged health status.

In order to assess the effects of the Medically Needy program on selection, I also use data from the Medicare Current Beneficiary Survey from 1998 through 2003. This is an annual survey conducted by the Centers for Medicare and Medicaid Services and asks broadly similar questions to the HRS, except that the MCBS provides no information on asset holdings. On the other hand,

All other private insurance plans are assumed to be individually purchased.

[13]Most Medically Needy programs only permit individuals to exempt one vehicle, but the HRS asks about all vehicles combined.

[14]I define an individual as having a condition in a given wave if he or she responds that she has been told that she has the disease. I do not adjust for responses in subsequent years that contradict previous responses.

the MCBS provides better measures of health care utilization. I restrict the sample to individuals who are not residents of a skilled nursing facility in order to construct a sample in the MCBS that is consistent with the HRS sample since the HRS assigns zero weight to individuals living in a skilled nursing facility.

Data on state Medically Needy programs come from the Urban Institute[15], surveys by the Kaiser Family Foundation (2003, 2009), state regulatory codes, and discussions with officials from state Medicaid agencies to clarify any disagreements. I further restrict the sample to unmarried individuals living alone and married individuals living in two-person households.[16] I use these rules to construct the deductible based on the income disregards that are used to determine eligibility for Supplemental Security Income.[17] All deductibles treat individuals as unmarried, regardless of marital status.

Summary statistics for the CPS, HRS, and MCBS samples are presented in table 1. More than three-quarters of individuals in all three samples live in states with a Medically Needy program. In the HRS and MCBS, which identify Medicare Advantage plans, specifically, a higher fraction of individuals in states with a Medically Needy program are enrolled in Medicare Advantage, while in all three datasets there are essentially no differences in Medigap/Individual insurance or Medicaid coverage. Because the rate of individual insurance coverage is so close to the rate of Medigap coverage, I will interpret individual coverage in the CPS as indicating Medigap coverage. Comparing insurance coverage between the three samples, however, indicate substantially higher Medicaid enrollment in both types of states in the MCBS sample, while the CPS estimate of Medicaid enrollment lies between those estimates for the HRS and the MCBS. On other demographic variables the populations are similar, although the MCBS population is one year older than the HRS sample, while the CPS sample is one year younger, despite using sample weights to generate "nationally representative" estimates.

Both the CPS and HRS samples indicate relatively small differences in health status between individuals in the two types of states, although individuals in states with a Medically Needy program are in slightly better health in the HRS sample. Spending data in the MCBS points to greater spending and, in particular, more out-of-pocket spending among seniors in states with a program. Finally, the deductible is almost $150,000, on average, but that is due to a small number of individuals with extremely high asset holdings, since the median is less than one third of the mean deductible. The simulated deductibles have a fairly similar distribution, although the somewhat larger mean in the MCBS sample may simply be an artifact of relatively few policy changes and growth in the nominal simulated deductible that is below the rate of inflations since all figures have

[15]TRIM3 project website, trim3.urban.org, downloaded on March 4, 2013.

[16]The HRS does not assign assets to individuals, but rather to households, and state Medicaid rules differ considerably for individuals with a spouse in a nursing home.

[17]The disregards are $20 per month of unearned income and $65 per month plus one half of all earned income. Almost all states use these disregards in every year.

been inflation-adjusted.

4.2 Empirical methods and identification

To test for crowd-out and heterogeneity in crowd-out from the Medically Needy program, I estimate linear probability difference-in-difference models of insurance choice–these differences are from within state changes in the presence or absence of a Medically Needy program. In order to allow the effect of the Medically Needy program on insurance coverage to vary by health status, I extend the model to a triple difference specification in which I include interactions with indicators for four types of states—never had a Medically Needy program from 1998 through 2008, always had a program, adopted a program, and dropped a program. Including a vector of controls and the deductible associated with the Medically Needy program, my main specification can be written as:

$$\begin{aligned} O_{ist} =&\beta_0 + \beta_1 MN_{st} + \sum_{h=1}^{h_{max}} H^h_{is,t-2} \times \left(\beta^h_2 + \beta^h_3 MN_{st} + \sum_{\sigma \neq never} \beta^h_{3,\sigma} State_{\sigma s} \right) \\ &+ \beta_4 LogDeductible_i + X_{it}\Gamma + \sigma_s + \tau_t + \varepsilon_{ist} \end{aligned} \tag{2}$$

Where O_{ist} is an outcome for individual i in state s in year t. MN_{st} is a dummy for a state having a Medically Needy program in place, $H^h_{is,t-2}$ is an indicator for an individual being in the h^{th} health quantile, $State_{\sigma s}$ is an indicator for the state s belonging to one of the four groups (σ), $LogDeductible_i$ is the log of the deductible for the individual, X_{it} is a vector of controls, which I discuss below, and σ_s and τ_t are state and year fixed effects (there is no need for a state type main effect since each state is assigned to a single type, so the state fixed effects absorb the state type main effects).

I identify equation (2) by imposing the constraints $\sum\limits_{h=1}^{h_{max}} \beta^h_2 = \sum\limits_{h=1}^{h_{max}} \beta^h_3 = \sum\limits_{h=1}^{h_{max}} \beta^h_{3,\sigma} = 0$, which identifies equation (2) without omitting any quantile dummies (Gardeazabal and Ugidos, 2004). Solving these constraints yields the single-equation model:

$$\begin{aligned} O_{ist} =&\beta_0 + \beta_1 MN_{st} + \sum_{h=2}^{h_{max}} (H^h_{is,t-2} - H^1_{is,t-2}) \times \left(\beta^h_2 + \beta^h_3 MN_{st} + \sum_{\sigma \neq never} \beta^h_{3,\sigma} State_{\sigma s} \right) \\ &+ \beta_4 LogDeductible_i + X_{it}\Gamma + \sigma_s + \tau_t + \varepsilon_{ist} \end{aligned} \tag{3}$$

Where I can recover the omitted coefficients as $\beta^1_j = -\sum\limits_{h=2}^{h_{max}} \beta^h_j$. The coefficients β^h_2, β^h_3, and $\beta^h_{3,\sigma}$ reflect the deviation in the outcome variable for individuals in health quantile h from the unconditional average of the outcome, so β^h_2 is the difference from the mean when there is no Medically Needy program, while $\beta^h_{3,\sigma}$ are differences in states that always have a program or choose to adopt or terminate a program. Consequently, β^h_3 is a triple difference coefficient and reflects the change in insurance coverage within a state for individuals in health status group h that is caused by adopting or terminating a Medically Needy program, relative to the effect on the average individual.

The deductible raises a separate identification challenge because: i) individuals in states without a Medically Needy program do not have a deductible; ii) individuals can alter how they hold their assets in order to minimize the deductible[18]; and iii) there is a negative correlation between health status and asset holdings/income. I address the first problem by assigning individuals a value of zero for the deductible if they live in a state without a Medically Needy program and demean the deductible for individuals in states with a Medically Needy.[19] To solve the second and third issues, I instrument for the deductible using a "simulated deductible" (Currie and Gruber, 1996; Mahoney, 2012). I construct the simulated deductible for groups defined by exogenous demographic characteristics: age group (65-69,70-74,75-79,80-84, 85 and up), gender, education, and a dummy for being white[20]. For each individual, I compute her deductible in every state in that year and then compute the average log deductible for each group.[21] The resulting simulated deductible is an exogenous parameterization of the generosity of a state's Medically Needy program, with higher values corresponding to less generous programs. The instrument also motivates the choice of which variables to include in X_{it}: I include fixed effects for each demographic group, smoking status, marital status, and a cubic polynomial in age. Estimating (3) with demographic fixed effects implies that β_4 is identified from variation within demographic groups in the outcome variable for states with more versus less generous Medically Needy programs.

Appendix table A3 presents the first stage regressions associated with a specification that omits the health interactions (specifications with health interactions are virtually identical). The coefficient on the log simulated deductible is less than one, indicating that individuals may be responding strategically to the deductible by altering the composition of their asset holdings to minimize the deductible (recall that individuals in states with a Medically Needy program have, on average, more assets, which would imply a coefficient greater than one on the deductible without some strategic response). Including assets, increases the first stage coefficient by .03 points and indicates that almost half of the deductible value comes from asset holdings. Finally, the weak identification statistics are all well in excess of 10 and the underidentification test statistics reject the null that the instrument is irrelevant for identifying the deductible (Kleibergen and Paap, 2006; Staiger and

[18]In particular, since most states exclude home equity from the deductible calculation, one could pay-off mortgage debt or renovate one's primary residence to reduce the deductible.

[19]β_4 is unaffected by the value of the deductible that I assign to individuals in states without a Medically Needy program or to demeaning the deductible because the Medically Needy-by-deductible interaction is collinear with the deductible and the Medically Needy indicator. Consider the regression $y_{ist} = \gamma_0 + \gamma_1 MN_{st} + \gamma_2 Deduct_i + \gamma_3 MN_{st} \times Deduct_i$, which is not identified because $Deduct_i - D_0 = 1 - MN_{st} + MN_{st} \times (Deduct_i - D_0)$, where D_0 is an arbitrary value, such as the average deductible. Therefore a) the value of D_0 is immaterial to identifying the coefficient on the deductible and b) the Medically Needy-by-deductible interaction is superfluous, particularly when I assign a value of 0 to the deductible for individuals in states without a Medically Needy program.

[20]The sample size is too small to permit a finer classification of minorities.

[21]The HRS only provides data in even-numbered years; I use data from the previous wave in order to compute deductibles in odd-numbered years for use in analyses involving the MCBS.

Stock, 1997).

The model in (3) is suitable for estimating the effect of the Medically Needy program on insurance coverage and provides some insight into the effect on selection. A second test for selection uses the idea that a risk pool that is adversely selected will, by definition, have higher insured losses, which is the motivation for the positive correlation test (Chiappori and Salanié, 2000; Chiappori et al., 2006). The test works by regressing a measure of loss on the variables used by the insurer in pricing a policy and an insurance dummy, with the coefficient on the dummy indicating the direction of any information asymmetry.[22] The resulting model to estimate risk selection is:

$$\begin{aligned} Spend_{ist} = \beta_0 + \beta_1 MN_{st} + \beta_2 Insured_{ist} + \beta_3 MN_{st} \times Insured_{ist} \\ + \beta_4 SimulatedLogDeductible_{ist} + X_{it}\Gamma + \sigma_s + \tau_t + \epsilon_{ist} \end{aligned} \tag{4}$$

Where $Spend_{ist}$ is a measure of spending on health care for person i in state s for year t, $Insured_{ist}$ is a vector of insurance coverage dummies, and $SimulatedLogDeductible_{ist}$ is the simulated log deductible based on person i's demographic group, state, and year that I use to instrument for the log deductible in (3) (I use the reduced form specification because I do not have data on asset holdings in the MCBS). In order to be consistent with the Chiappori test, I only include state and year fixed effects, a cubic polynomial in age, and fixed effects for demographic groups defined by age group, gender, and smoking status, which are the factors that Medigap insurers may use in pricing their policies.[23] The spending measures that I use are total, out-of-pocket, and non-out-of-pocket spending.

Note that while I will make causal claims about the effect of the Medically Needy program in equation (3), I will not make any causal claims about equation (4).

5 Enrollment

Figure 3 plots the fraction of individuals who report having Medicaid or individually purchased insurance in states that change status over the 1998 through 2008 time frame by the current presence of a Medically Needy program as a function of income, expressed as a percentage of the Federal poverty level. The figure demonstrates a positive association between income and private insurance coverage and a negative association for Medicaid enrollment. The latter is consistent with the means-tested nature of Medicaid. What is interesting, however, is the comparison between the associations for individuals when there is a Medically Needy program, compared to without such a program. There is a reduction in private insurance coverage for low income individuals—those with income less than 100% of income—which is mirrored by a modest increase in Medicaid enrollment

[22] A positive coefficient is consistent with either moral hazard or adverse selection, while a negative coefficient is consistent with advantageous selection.

[23] Medicare Advantage premiums are community-rated, but the payment received by the insurer is risk-adjusted (McGuire et al., 2011).

over that same income range. For higher income individuals, the difference in Medicaid enrollment is, in some cases, even larger and is almost always positive, implying that Medicaid coverage is more common for higher income individuals in states with a Medically Needy program; results for private insurance coverage are relatively similar, which may reflect lower insurer costs (due to crowding-out of high-risk individuals) that is being passed on to consumers in the form of lower insurance premiums.

Table 2 presents statistical tests of the change in insurance coverage associated with the presence of a Medically Needy program using the CPS sample. In the difference-in-difference specifications, I cannot reject the null hypothesis that the Medically Needy program had no effect on either private insurance or Medicaid coverage at the five percent level, but the coefficient on Medically Needy in column (4) is significant at the ten percent level, providing some evidence that the Medically Needy program enables additional people to enroll in Medicaid. Columns (2) and (5) document how the effect of the Medically Needy varies with health status, as reported in the CPS. Generally these results are consistent with the theoretical model in that high-risk individuals (those in poor health) drop private insurance coverage and take up Medicaid instead. In addition, the p-values at the bottom of the table indicate that heterogeneity by health status is significant.[24] Including the simulated log deductible does not alter the basic conclusions about how self-rated health interacts with the Medically Needy program, nor is it ever statistically significant. Column (7) demonstrates that the association between the Medically Needy program and employer-provided insurance coverage is essentially zero and does not vary with health status.

For further analysis of the effects of the Medically Needy program, the Current Population Survey is inadequate, so I turn to the Health and Retirement Study. I begin by replicating the difference-in-difference analyses I presented above, but now take advantage of the greater detail on types of insurance plans in the HRS to identify Medicare Advantage policies and use additional data on asset holdings to estimate an individual's deductible in order to enter the Medically Needy program. The first four columns of table 3 present results without controlling for asset holdings, while the last four columns include controls for assets. The first column of panel A demonstrates that there was a statistically significant four percentage point increase in the probability that an individual had private insurance coverage, in addition to Medicare, in states with a Medically Needy program. The vast majority of the increased insurance coverage comes from enrollment into Medigap, although the estimates by insurance type are too noisy for either the Medigap or Medicare Advantage estimates to be statistically significant. Including additional controls, beyond state and year fixed effects, attenuates the coefficient on the Medically Needy dummy by ten percent and increases the standard error to the point that the estimate is no longer statistically significant (the

[24] Columns (1)-(6) omit individuals with employer-provided insurance coverage, including such individuals leaves the Medicaid results broadly unchanged and, potentially, stronger. However, none of the effects are statistically significant for individual insurance coverage even though the pattern of coefficients remains the same.

p-value increases to 0.13 with these controls), with asset controls reducing point estimate by an additional 10%.

The results in panels A and B are inconsistent with the theoretical model, which predicted that there should be a reduction in private insurance coverage. However, that model also assumed that insurance premiums would not be affected by the Medically Needy program, even though there would be fewer individuals with large losses in the risk pool. These results could be consistent with the theoretical model if insurance premiums fall by a large enough amount to increase insurance coverage by more than four percentage points (or 10% if the increase is confined to Medigap). Assuming a price elasticity of demand of -1.8 (Cabral and Mahoney, 2013), then premiums would have to fall by more than \$120, or 5.5%, using the average Medigap premium in the MCBS data of \$2,217 in states without a Medically Needy program, assuming no crowd-out. A larger premium reduction would be consistent with a crowd-out effect since the crowd-out effect offsets an increase in enrollment associated with lower insurance premiums. In order for there to be such a decline in Medigap premiums, there should be a shift in Medigap enrollment towards lower risk individuals, which has implications for the bias in OLS estimates of the effect of the deductible on insurance coverage—because assets and health are negatively correlated, the OLS coefficient on the deductible will be too large if insurance coverage is advantageously selected.

Panels C and D include OLS and IV estimates of the effect of the log deductible on insurance coverage. The crowding-in argument implies that the OLS estimate in panel C should be upward biased for Medigap coverage and there should be a downward bias in the Medicaid regressions if Medicaid is absorbing individuals in worse health. Both panels confirm this hypothesis, with the bias remaining even once I control for log assets in the columns (5)-(8).

Panel E replicates panel D, but replaces the deductible with the interaction between assets and the Medically Needy program. To the extent that one is concerned that the deductible may be mismeasured, comparing panels D and E should allay those fears as the point estimates are virtually identical and a one percent increase in assets should also result in an approximately one percent increase in the deductible. Panel F uses a subset of the data–individuals whose income exceeds 135% of the poverty line and are, therefore, unlikely to be eligible for Medicaid coverage through any means but the Medically Needy program, to demonstrate that the deductible does increase Medigap enrollment among this population where one would expect to see an effect.

The results in table 3 are suggestive of heterogeneous effects of the Medically Needy program by health status. To consider this question further, figure 4 plots the probability of having private insurance coverage or Medicaid as a function of the percentile of lagged health status for individuals in states that either always had or never had a Medically Needy program between 1998 and 2008, along with the difference in this probability.[25] To account for demographic differences, I reweighted

[25]The figure using the actual lagged health score is similar, except at the upper tail of the distribution, where the relatively few and widely dispersed health scores results in a very noisy relationship between risk and insurance

the data (DiNardo et al., 1996) to match the demographic characteristics of residents of states with a Medically Needy program.[26]

The key takeaway from figure 4 is the consistently lower probability of having private insurance coverage, regardless of type, for individuals in worse health (higher scores). In addition, the Medigap results also demonstrate that lower risk individuals are relatively less likely to purchase Medigap coverage in states with a Medically Needy program. The implication is that people are getting some protection from Medicaid, rather than private insurance coverage. If individuals are substituting Medicaid for Medigap or other private insurance coverage, then one should see increases in Medicaid enrollment at those points of the risk distribution where there is a dip in private insurance coverage. Comparing the figures for Medicaid and any private insurance coverage indicates that this may be happening—private insurance coverage is (relatively) lower in states with a Medically Needy program in the first quintile and the fourth and fifth quintiles, which is where the difference in Medicaid enrollment is greater.

Figure 5 plots the Medically Needy-by-quintile coefficients (β_3^h from equation (3)) for the four insurance coverage types from regressions with and without the log deductible. Table 4 presents the underlying regression coefficients for the Medically Needy dummy, the difference from the mean effect for individuals in the highest and lowest quintiles of health status, and the log deductible. In addition, the table also provides the joint p-value on the Medically Needy-by-health status interaction, which tests the joint hypothesis that all of the β_3^h's are equal to zero. The only statistically significant heterogeneity by health status is for Medigap and Medicaid coverage, where Medigap coverage falls by four to five percentage point for individuals in the highest quintile of health status. On the other hand, Medicaid coverage is exhibiting an upward trend as health status worsens, although none of the point estimates are individually statistically significant.

Table 4 presents estimates of (3) for all four insurance types using varied specifications that include the deductible, asset holdings, and person fixed effects.[27] Consistent with the "crowding-out" hypothesis, column (5) indicates that individuals in the worst health two years ago were more likely to be enrolled in Medigap coverage at the time of the interview, while some high-risk individuals enrolled in Medicare Advantage instead (column 9). The Medigap result confirms one of the main predictions of the theoretical model—that high-risk individuals will drop insurance coverage when there is a public catastrophic insurance program. This result is robust to including

coverage. Appendix figure A2 presents similar graphs using current health.

[26] Within each demographic group that I use in constructing the instrument, I adjust the weights on individuals living in states without a Medically Needy program so that they represent half of the weighted sample within that demographic group.

[27] Appendix table A4 presents similar estimates for the second column in each panel of table 4 that omit the interactions between state type and health status and provide the p-values for the significance of the state type interactions. Estimates from the heterogeneous difference-in-difference model, which excludes the state type interactions, are generally less extreme than for the triple difference model, but I also find that the state type interactions are highly significant in those cases, implying that the exclusion restriction underlying the heterogeneous difference-in-difference model is invalid.

the log deductible and person fixed effects. However, including asset controls renders the point estimate no longer statistically significant, even at the ten percent level, and the Medically Needy-by-health status interactions are no longer jointly significant at the five percent level. The joint p-values also indicate that there is an effect of the Medically Needy program on Medicaid enrollment, with the most plausible effect being a reduction in Medicaid utilization by individuals who were healthy in the prior wave.

Table 5 separates out the effect of the Medically Needy program in states that adopt (Arizona and Ohio) or drop (Oklahoma, Oregon, Tennessee) a program. Adopting a Medically Needy program generally has weak effects on insurance coverage using lagged health status measures, except for Medicaid enrollment, where individuals in poor health are more likely to have Medicaid coverage after a state adopts a Medically Needy program. On the other hand, states that drop a Medically Needy program witness a sharp drop in Medigap coverage that comes predominantly from a reduction in Medigap enrollment among low-risk individuals. In all cases the health status interactions are jointly significant in states that add or drop a Medically Needy program.

Finally, table 6 considers the effect of the Medically Needy program on life insurance coverage. Unlike health insurance, the Medically Needy program does not substitute for life insurance coverage, but life insurance is counted as an asset for purposes of assessing eligibility. So if individuals understand the Medically Needy program rules then: i) the Medically Needy program should reduce life insurance coverage; ii) individuals with higher deductibles will be more likely to hold life insurance, all else equal; and iii) individuals in worse health should be less likely to have a life insurance policy, all else equal. The first two columns of the table demonstrate that, on average, living in a state with a Medically Needy program reduces the probability that an individual has life insurance coverage by almost two percentage points, but this reduction in life insurance coverage is offset by having a higher deductible. The remaining two columns demonstrate that there is significant heterogeneity in the effect of the Medically Needy program by health status, but this effect is not concentrated at either extreme, rather there is a large increase in insurance coverage in the middle of the risk distribution. Collectively, these results suggest that individuals are, in fact, aware of and responsive to the incentives provided by the Medically Needy program.

5.1 Robustness

I rely on the CPS for most of my specification checks since the larger sample size provides a greater opportunity to include additional controls. Table 7 summarizes the results of a number of checks that include state-by-year fixed effects, interactions between year and health status and, state and health status, and extending the sample to include 1995 through 2009 data, all of which similar findings to my main CPS analysis and are consistent with the results from the HRS.

Because I have so few policy changes, I am also unable to include a number of standard robustness checks (see Wolfers, 2006), including using pseudo-programs to test for pre- and post-trends in the data. However, I adapt a technique from Buchmueller et al. (2011) and estimate the distribution of outcomes by randomly turning programs on or off among those states without a policy change and plot the distribution of treatment effects.

In the appendix (tables A5 and A6), I demonstrate that my results are generally robust to using current, rather than lagged, health status and are stronger when I use the change in health status, which suggests that part of the response to the Medically Needy program arises from individuals reacting to adverse and favorable health shocks, which can also be seen in the main analyses using person fixed effects. I also present results that disaggregate the health status index into its constituent parts (table A7), which demonstrates the negative association between self-rated health and Medigap coverage in the HRS (which was also seen in the CPS), while results for other items are mixed, with most physician diagnosed conditions yielding positive, but non-significant, point estimates, except for Medicaid enrollment, while difficulties with activities of daily living have varied signs and are generally not significant either.

6 Selection

The results from the previous section on crowd-out effects of the Medically Needy program and the interaction between the Medically Needy program and health status raises the possibility that the Medically Needy program induces selection in the private insurance market (and into Medicaid). In order to test for selection, which will manifest as a change in average spending among individuals with various insurance types, I turn to data from the Medicare Current Beneficiary Survey, which provides more detailed data on spending than does the HRS. Table 8 presents estimates of (4) for total and out-of-pocket (OOP) spending and Medigap premiums. Because the MCBS does not record any asset information, columns (3), (6), and (8) include the simulated log deductible, rather than the actual deductible.

Column (1) of table 8 demonstrates that private insurance is advantageously selected and the coefficient on Medigap, which indicates that individuals with Medigap coverage spending \$4,695 less per year than individuals with no private insurance coverage, is somewhat smaller than the effect reported in Fang et al. (2008).[28] Column (2) demonstrates that more than a third of the reduction is coming from Medigap beneficiaries in states with a Medically Needy program, suggesting that, on the margin, Medigap is incrementally advantageously selected in states with a Medically Needy program.

Controlling for the simulated deductible (column 3) does not affect the point estimates for any of the coefficients presented, which is consistent with the small (and very imprecise) effect of the simulated deductible on total spending and the small effect of the deductible itself on insurance

[28] Fang et al. (2008) report that individuals with Medigap coverage spend \$4,392.7 less (table 2). It is unclear if they adjusted for inflation in their analysis, but it seems unnecessary for their analysis. Assuming that this reduction in spending is measured in 2000 dollars, then the inflation at the all items rate would increase the estimate by 27%, to roughly \$5,500, or 18% larger than my estimate.

coverage. Columns (4) through (6) replicate the previous analysis, but for out-of-pocket spending. Not surprisingly, the results demonstrate that individuals with any type of insurance, in addition to Medicare, spend significantly less out-of-pocket than do their peers without such coverage. The Medically Needy program also increases out-of-pocket spending, which is not surprising given that the program also increases total spending. However, the increase in out-of-pocket spending among individuals without other insurance coverage is actually larger than the increase in total spending, which implies that individuals are increasing the share of costs that they pay, relative to Medicare. This phenomenon is also visible for individuals enrolled in Medigap, where spending by Medicare or the private insurer falls by $223 to $227, while spending by Medicare and other insurers is higher for individuals enrolled in Medicare Advantage and Medicaid. Finally, the last two columns report the change in premiums paid by consumers associated with the introduction or termination of a Medically Needy program. Here there is a reduction in the Medigap premium of $225 in both specifications, which is consistent with the increase in consumer's out-of-pocket spending. Hence insurers appear to be passing on their savings to consumers.

Combining the fall in the Medigap premium with existing price elasticities for Medigap insurance ranging from -1.0 to -1.8 (Cabral and Mahoney, 2013; Starc, 2010) implies that one would expect there to be a ten to twenty percent increase in Medigap coverage (4.3 to 7.2 percentage points). My estimated change in Medigap enrollment was considerably smaller using both the CPS and the HRS. One explanation is that the demand for Medigap coverage is actually less elastic than was reported by Starc and Cabral and Mahoney. However, an alternative arises from my theoretical model, which suggests that the Medically Needy program crowds-out Medigap coverage, which would reduce Medigap enrollment, while the price effect would increase Medigap enrollment and I only observe the combination of the two. Hence the effect on insurance premiums suggests that there may be some crowd-out, in the aggregate, due to the Medically Needy program.

7 Conclusions

In this paper I have shown that state-based Medically Needy programs that provide catastrophic insurance coverage to Medicare enrollees affect private insurance coverage. These programs crowd-out Medigap coverage for high-risk individuals and crowd-in low-risk individuals, which implies that average Medigap spending and premiums should be lower in states with a Medically Needy program. I confirm these predictions for spending and premiums using data on spending by Medicare beneficiaries.

The salient features of the Medically Needy program that induces advantageous selection is that the Medically Needy program provides full insurance above a catastrophic maximum, which was not available in the private insurance market in my setting. Hence, individuals who experience severe health shocks are provided with access to health care in the Medically Needy program, but not outside of the program. In a setting in which the private does provide full insurance after a threshold has been reached, which is part of the design of ACA-compliant health insurance contracts, my results imply that high-risk individuals may be induced to purchase particular types of contracts that combine a low premium with a relatively high out-of-pocket maximum as long as the total potential payment is lower than for alternative contracts. The result is that high-deductible plans, may be adversely selected.[29]

One mechanism to address catastrophic risks, which is included in the Affordable Care Act, is the use of reinsurance, in which a third party holds the insurer harmless for losses above a threshold. The selection results, which reflect the equilibrium relationship between insurance coverage and health status, point towards insurance premiums that are less responsive to geographic variation in health status as a result of reinsurance. From the perspective of the insurer this is because individuals will drop private insurance coverage as their health deteriorates, which is equivalent to reinsurance. Hence the transitional mechanism in the ACA (it is only in effect from 2014 to 2016) should reduce insurance premiums, with the reduction depending on the probability that an enrollee's spending exceeds the threshold for the insurer to receive reinsurance payments, offset by the cost of the reinsurance mechanism to the plan. The regulations establishing the reinsurance mechanism contemplate a nationwide per enrollee premium to finance the system, so plans in high-cost states will receive a net subsidy from the reinsurance mechanism and will reduce premiums and the converse for plans in low-cost states.

Finally, not all mechanisms to address catastrophic risks are insurance. There are a number of other policies or institutions that provide protection against catastrophic risks, but are not conventionally equated with insurance coverage. For example, the ability to discharge medical debt in bankruptcy reduces private insurance for individuals with relatively few assets that can be seized by their creditors and the threat of bankruptcy also leads to lower prices for these same individuals (Koch, Forthcoming; Mahoney, 2012). The Emergency Medical Treatment and Labor Act, which mandates that emergency rooms must stabilize individuals without regard to ability to pay, and the provision of charity care provide additional sources of catastrophic risk protection, although of a more restricted type than either a Medically Needy program or bankruptcy (Herring, 2005). Federal disaster assistance provides a third source of catastrophic risk protection that appears to crowd-out private insurance coverage; my model adds the implication that the crowd-out effect will be strongest for individuals who are most likely to get such assistance (Kousky et al., 2013). Lastly, social capital may also provide insurance in the sense that individuals in a community can assist one another to finance catastrophic expenses, potentially by providing charity care (Hendryx et al., 2002).

[29]This is fundamentally an incentive compatibility problem and can be resolved by limiting the potential reductions in insurance premiums one can achieve by choosing a higher out-of-pocket limit to be smaller than the increase in the deductible, as is done in the Swiss health insurance system.

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A Proofs

Proof of Proposition 1:

1. The ex-post utility gain of insurance coverage, $\Delta u^{No}(Y,\pi,l)$, is an increasing function of the health shock, l.

The first derivative of Δu^{No} is $u'(Y-l)-\theta u'(Y-\pi-\theta l)$, which is always positive if $Y-\pi-\theta l > Y-l$ (or $l > \frac{\pi}{1-\theta}$) since the marginal utility of consumption is decreasing, for all $\theta > 0$. Now suppose that $\theta < \frac{u'(Y)}{u'(Y-\pi)}$, in which case $-\theta u'(Y-\pi) > -u'(Y)$. Then the following inequalities hold:

$$\begin{aligned}\Delta u^{No\prime} &= u'(Y-l) - \theta u'(Y-\pi-\theta l)\\ &> u'(Y-l) - \theta u'(Y-\pi)\\ &> u'(Y-l) - u'(Y) > 0.\end{aligned}$$

Therefore, as long as θ is smaller than $\frac{u'(Y)}{u'(Y-\pi)}$, the ex-post utility gain of insurance coverage is increasing for all l.

2. The ex-ante utility gain of insurance coverage, $\Delta u^{No}(Y,\pi,r)$, is increasing in risk type. The first derivative of the ex-ante utility gain of insurance coverage with respect to risk type is $\frac{\partial \Delta v^{No}}{\partial r} = \int_0^\infty \Delta u^{No}(Y,\pi,l)f_r(l|r)dl = [F_r(l|r)\Delta u^{No}(Y,\pi,l)]_0^\infty - \int_0^\infty \frac{\partial \Delta u^{No}}{\partial l}F_r(l|r)dl$. This expression is positive because the term in square brackets vanishes (recall that $\lim_{l\to+\infty} F_r(l|r) = 0$ and $\lim_{l\to 0^+} F_r(l|r) = 0$ for all r) and the integral is negative since Δu^{No} is increasing in the size of the loss and $F_r \leq 0$. Therefore $\frac{\partial \Delta v^{No}}{\partial r} > 0$ for all r.

Proof of Proposition 2:

1. The ex-post utility gain of insurance coverage, $\Delta u^{Cat}(Y,\pi,D,l)$ has a maximum at $\tilde{l} \in [l^N, l^I)$. The existence of a maximum in the half-open interval $[l^N, l^I)$ follows from the continuity of $\Delta u^{Cat}(Y,\pi,D,l)$ as a function of l and the fact that $\Delta u^{Cat}(Y,\pi,D,l^N) > \Delta u^{Cat}(Y,\pi,D,l^I) = 0$.

2. The ex-ante utility gain of insurance coverage is smaller if there is a catastrophic insurance program than if there is not ($\Delta v^{Cat}(Y,\pi,D,r) < \Delta v^{No}(Y,\pi,r)$). One can write the ex-ante utility gain without catastrophic insurance coverage as:

$$\begin{aligned}\Delta v^{No}(Y,\pi,r) &= \int_0^\infty \Delta u^{No}(Y,\pi,l)f(l|r)dl\\ &= \int_0^{l^I} \Delta u^{Cat}(Y,\pi,D,l)f(l|r)dl + \int_{l^I}^\infty \Delta u^{No}(Y,\pi,l)f(l|r)dl\\ &+ \int_{l^N}^{l^I} \{u(Y-D)-u(Y-l)\}f(l|r)dl\end{aligned}$$

Where the second equality follows from the first line by decomposing the ex-ante utility benefit without catastrophic insurance into parts suggested by figure 2. In figure 2, the ex-ante benefit without catastrophic insurance is the sum of areas A, B, and C. The first integral, the ex-ante benefit of insurance coverage with catastrophic insurance, corresponds to areas A and B, while the second and third integrals combine to form the area C. Because the second and third integrals are both non-negative, the ex-post utility benefit of insurance is positive for $l > l^I$, and the density is non-negative, it follows that $\Delta v^{Cat}(Y, \pi, D, r) < \Delta v^{No}(Y, \pi, r)$.

3. There may exist a largest risk type, $\overline{r}$, such that $\Delta v^{Cat}(Y, \pi, D, r) < 0$ for all $r > \overline{r}$. Unlike in a setting without a catastrophic insurance program, it is no longer possible to sign the first derivative with respect to risk type of the ex-ante utility benefit of insurance. I.e. $\frac{\partial \Delta v^{Cat}(Y,\pi,D,r)}{\partial r} = \int_0^{l^I} \Delta u^{Cat}(Y, \pi, D, l) f_r(l|r) dl = [\Delta u^{Cat}(Y, \pi, D, l) F_r(l|r)]_0^{l^I} - \int_0^{l^I} \frac{\partial \Delta u^{Cat}(Y,\pi,D,l)}{\partial l} F_r(l|r) dl$. While it is still the case that the term in square brackets will vanish, the integral can no longer be signed because of the previous part of proposition 2, which implies that $\Delta u^{Cat}(Y, \pi, D, l)$ is decreasing for $l > \tilde{l}$, hence for loss distributions such that an increase in r increases the probability of drawing a loss in the range $(\tilde{l}, l^I)$, $\Delta v^{Cat}(Y, \pi, D, r)$ will be decreasing in r, potentially becoming negative.

4. There exists a smallest risk type, $\underline{r} \leq 1$, which is greater than r^*, if it exists, such that $\Delta v^{Cat}(Y, \pi, D, r) < 0$ for all $r < \underline{r}$. If r^* does not exist, then even without a catastrophic insurance program insurance coverage is never optimal, hence $\underline{r} = 1$ satisfies the claim. Now suppose that r^* does exist; if $\Delta v^{Cat}(Y, \pi, D, r)$ is always negative then setting $\underline{r} = 1$ also satisfies the claim. The final case is when $\Delta v^{Cat}(Y, \pi, D, r) \geq 0$ for at least one r, but part 1 of this proposition establishes that $\Delta v^{Cat}(Y, \pi, D, r) < \Delta v^{No}(Y, \pi, r)$, so $\Delta v^{Cat}(Y, \pi, D, r^*) < 0$ and $r^* < \underline{r}$.

5. If they exist, the thresholds $\underline{r}$ and $\overline{r}$ are decreasing and increasing as the deductible increases, respectively The thresholds solve the maximization problem:

$$(\underline{r}, \overline{r}) = \arg\max_{\underline{r}, \overline{r}} \int_{\underline{r}}^{\overline{r}} \Delta v^{Cat}(Y, \pi, D, r) dr.$$

Which has the first order conditions $\Delta v^{Cat}(Y, \pi, D, \underline{r}) = \Delta v^{Cat}(Y, \pi, D, \overline{r}) = 0$. Differentiating the first order conditions with respect to D and the thresholds, while holding the premium (π) fixed, and using $\frac{\partial \Delta v^{Cat}}{\partial D}(Y, \pi, D, r) = u'(Y - D)(F(l^I|r) - F(l^N|r))$ yields the comparative statics:

$$\frac{\partial \underline{r}}{\partial D} = -\frac{u'(Y - D)(F(l^I|\underline{r}) - F(l^N|\underline{r}))}{\frac{\partial}{\partial r} \Delta v^{Cat}(Y, \pi, D, \underline{r})} < 0 \tag{A1a}$$

$$\frac{\partial \overline{r}}{\partial D} = -\frac{u'(Y - D)(F(l^I|\overline{r}) - F(l^N|\overline{r}))}{\frac{\partial}{\partial r} \Delta v^{Cat}(Y, \pi, D, \overline{r})} > 0 \tag{A1b}$$

The numerator in both equations is positive because $l^I > l^N$. The sign of the denominator, however, depends on r. When $r = \underline{r}$, $\frac{\partial}{\partial r} \Delta v^{Cat}(Y, \pi, D, r) > 0$ because $\underline{r}$ is the smallest r at which the consumer is willing to purchase insurance. Conversely, when $r = \overline{r}$, $\frac{\partial}{\partial r} \Delta v^{Cat}(Y, \pi, D, r) < 0$ and the signs and result follow.

6. Utilization of catastrophic insurance coverage is decreasing as the deductible increases. The probability of using catastrophic insurance is a function of both the decision to insure, or not, and the probability of exceeding the loss thresholds l^I and l^N. Hence the probability of using the catastrophic insurance program is:

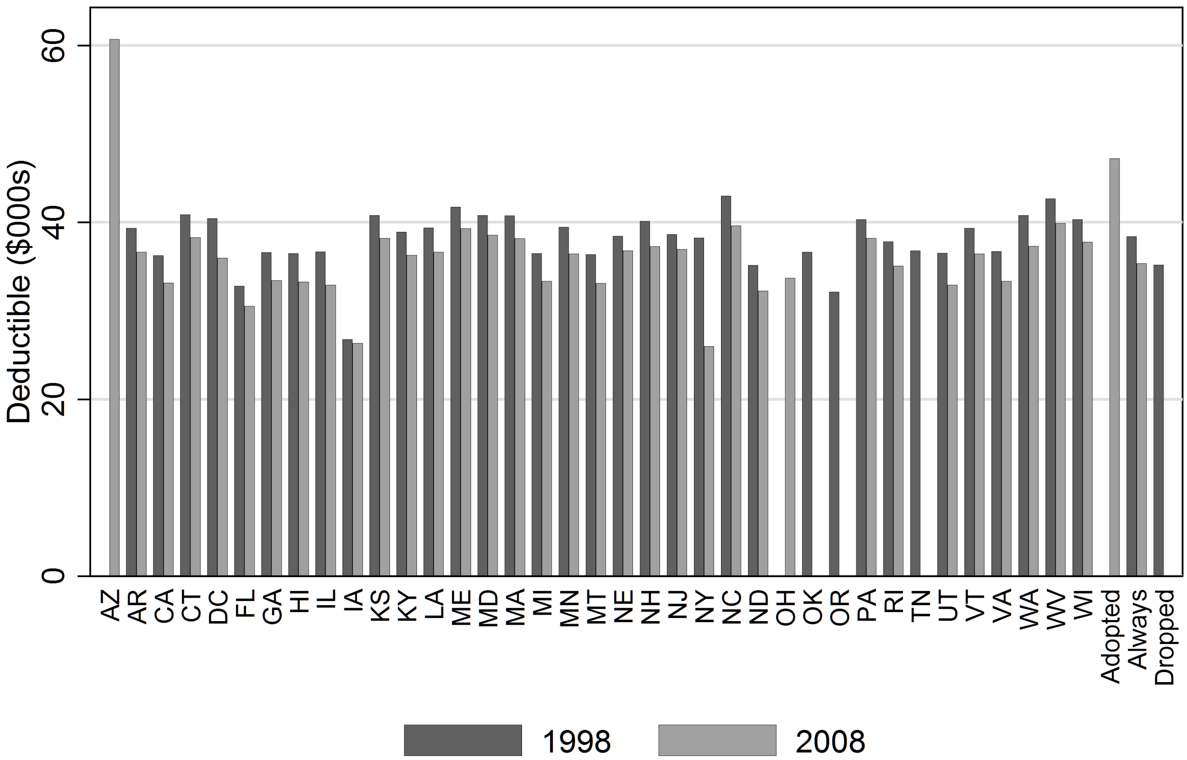
$$\int_0^{\underline{r}} (1 - F(l^N|r))dr + \int_{\underline{r}}^{\overline{r}} (1 - F(l^I|r))dr + \int_{\overline{r}}^{1} (1 - F(l^N|r))dr$$

Which is decreasing in D since the derivative of the previous expression is:

$$\begin{aligned} &- \frac{\partial l^N}{\partial D}\left[\int_0^{\underline{r}} f(l^N|r)dr + \int_{\overline{r}}^{1} f(l^N|r)dr\right] - \frac{\partial l^I}{\partial D}\int_{\underline{r}}^{\overline{r}} f(l^I|r)dr \\ &+ (F(l^I|\underline{r}) - F(l^N|\underline{r}))\frac{\partial \underline{r}}{\partial D} - (F(l^I|\overline{r}) - F(l^N|\overline{r}))\frac{\partial \overline{r}}{\partial D} \end{aligned}$$

The first line is negative since the loss thresholds are increasing in the deductible (because the utility provided by the catastrophic insurance program is falling) and the integrals are all positive. The second line is also negative since the lower threshold for purchasing insurance is decreasing in the deductible and $l^I > l^N$, while the upper threshold is increasing in the deductible. Hence an increase in the deductible decreases the probability that an individual uses the catastrophic insurance program.

Figure 1: Median Implied Deductible



Note: Arizona and Ohio started Medically Needy programs in 2001, Oklahoma and Oregon terminated their Medically Needy programs in early 2003, and Tennessee suspended enrollment in its Medically Needy program from 2005 through 2007 and limited enrollment in subsequent years.

Figure 2: Ex-Post Utility Benefit of Insurance Coverage

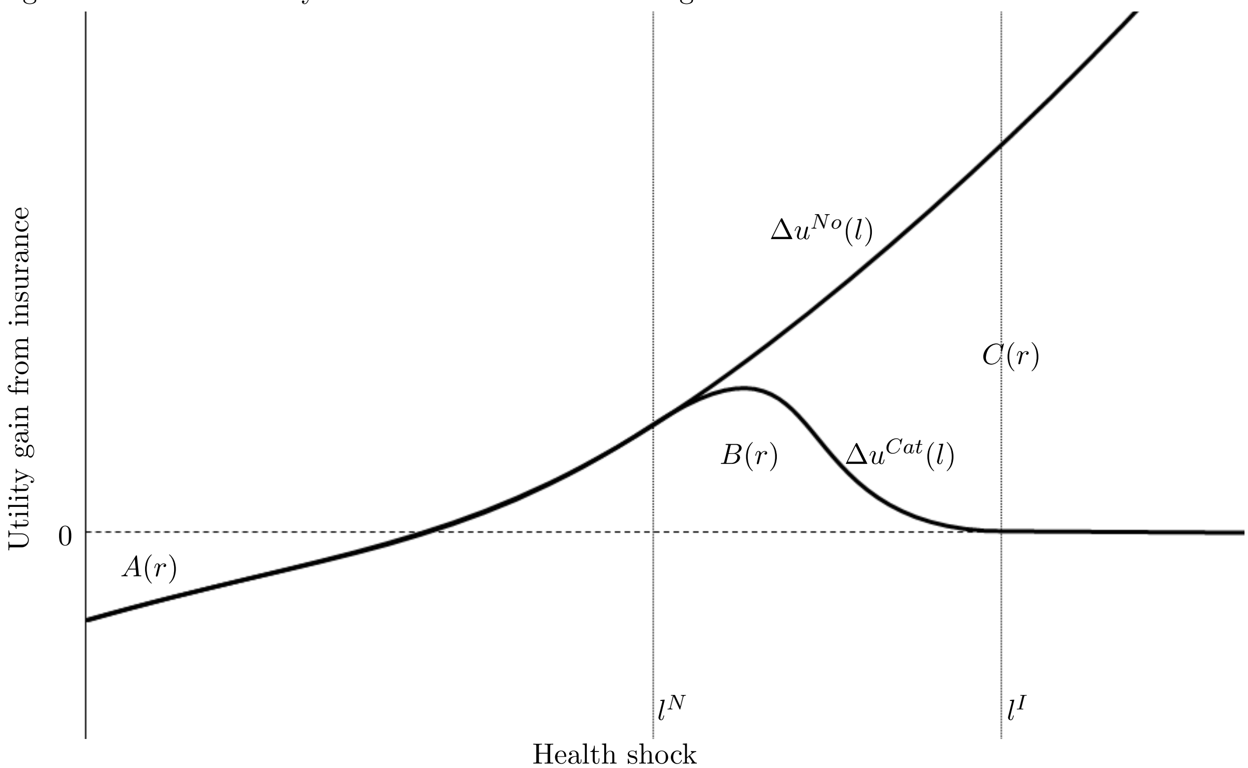
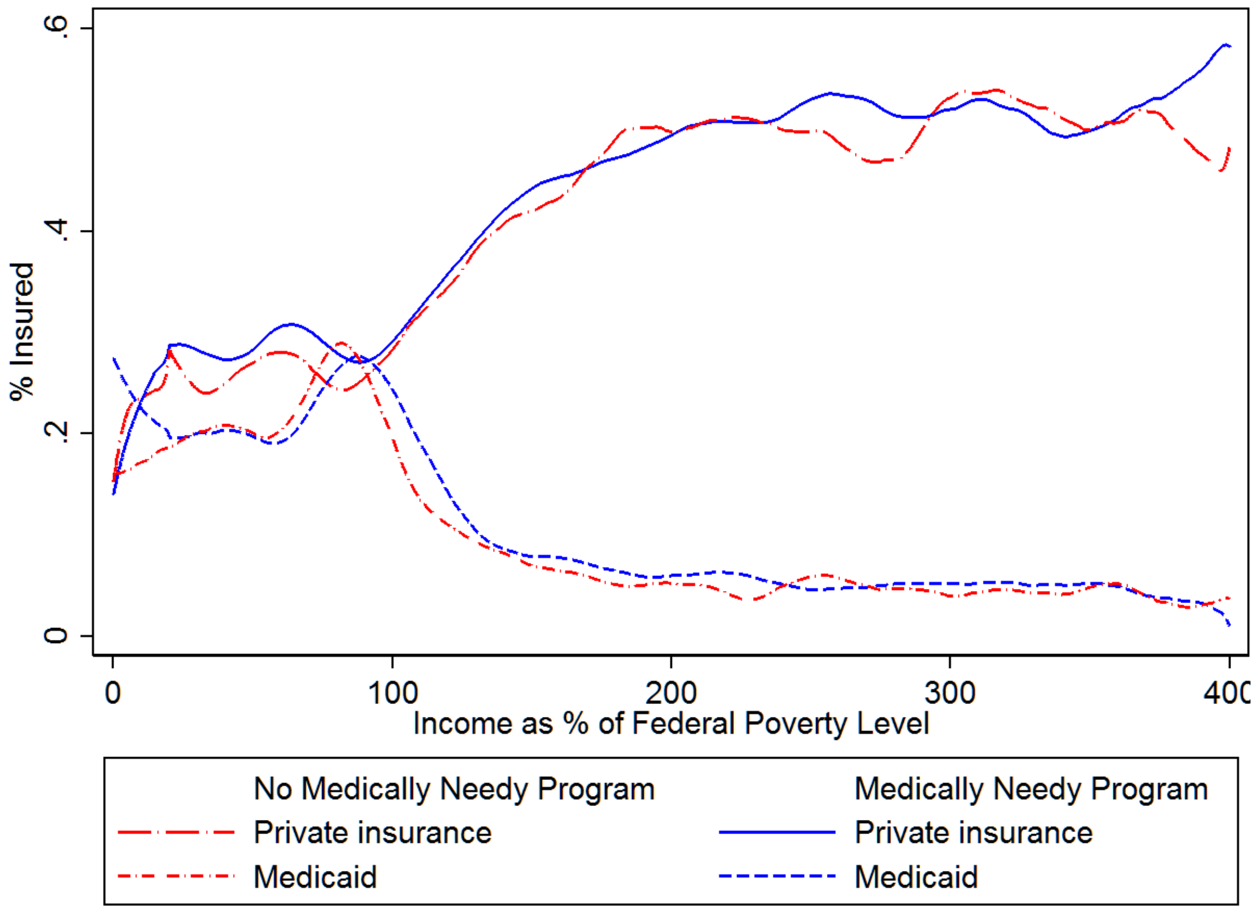
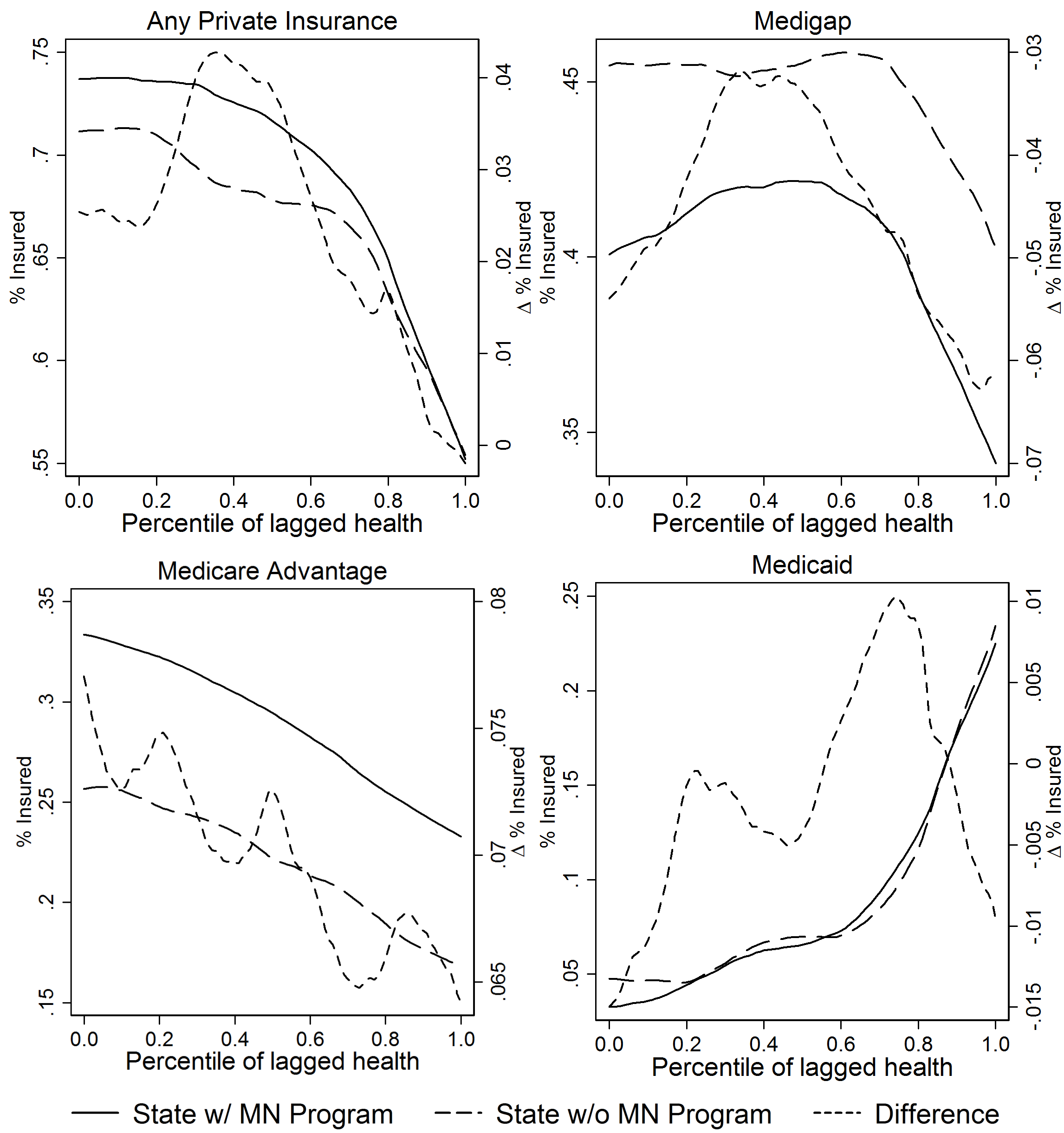


Figure 3: Income and Insurance Coverage



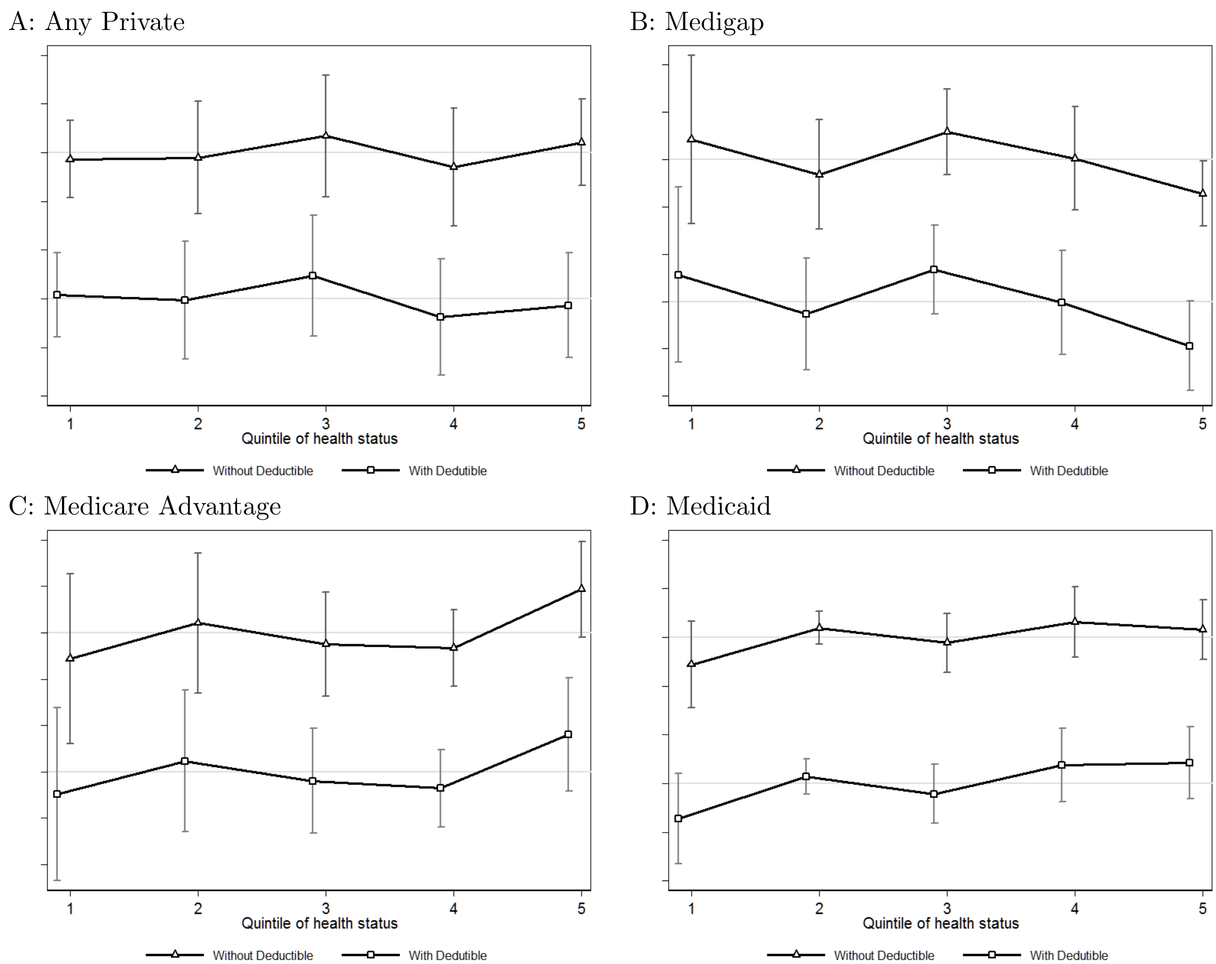
Source—Author's analysis of the 1999-2009 Current Population Survey.
Note—Local mean probability of insurance coverage in states with and without a Medically Needy program. Sample restricted to states without policy change.

Figure 4: Insurance Coverage and Lagged Health Status



Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Local mean probability of insurance coverage in states with and without a Medically Needy program. Sample restricted to states without policy changes and individuals non-parametrically reweighted so that the distribution of demographic characteristics is the same in states with and without a Medically Needy program.

Figure 5: Effect of the Medically Needy Program on Insurance Coverage



Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Plotted coefficients are for the Medically Needy-by-health status quintile from models in table 4. Heavier lines correspond to models in columns (1)-(4) while lighter lines correspond to models (5)-(8). Joint significance of the interaction given by the p-values in the row labeled "Joint P-value." Coefficients have been shifted vertically in the interest of clarity; each tick corresponds to a five percentage point change

Table 1: Summary Statistics

	State with a Medically Needy program			State without a Medically Needy program		
	Mean	SD	Median	Mean	SD	Median
Panel A: CPS Sample (1998-2008)						
Individual insurance	0.40	0.49		0.39	0.49	
Medicaid	0.13	0.34		0.12	0.33	
Employer-sponsored insurance[a]	0.35	0.48		0.32	0.47	
Age	74.3	5.1	75.0	74.0	5.2	74.0
Female	0.61	0.49		0.61	0.49	
Health[b]	3.2	1.1	3.0	3.2	1.2	3.0
N	92123			33161		
Panel B: HRS Sample (1998-2008)						
Any private insurance	0.68	0.47		0.63	0.48	
Medicare and Medigap	0.39	0.49		0.39	0.49	
Medicare Advantage	0.29	0.45		0.24	0.43	
Medicaid	0.09	0.29		0.11	0.31	
Lagged health	-0.12	0.90	-0.31	-0.07	0.91	-0.25
Income	19038	16895	14356	18869	17773	13874
Assets	149006	234785	43752	136227	215945	42134
Homeowner	0.76	0.43		0.81	0.39	
Deductible	149867	235641	44183			
Simulated deductible	148389	85916	150446			
Age	75.5	7.1	75.0	74.8	7.0	74.0
Female	0.62	0.48		0.61	0.49	
N	26053			7141		
Panel C: MCBS Sample (1998-2003)						
Any private insurance	0.71	0.46		0.68	0.46	
Medicare and Medigap	0.40	0.49		0.40	0.49	
Medicare Advantage	0.31	0.46		0.28	0.45	
Medicaid	0.17	0.37		0.17	0.38	
Medigap premium	2290	1727		2217	1615	
Total health spending	10848	18563	3914	9565	16344	3499
Out-of-pocket health spending	2952	8300	954	2621	6747	979
Simulated deductible	157432	28584	147013			
Age	76.4	7.1	75.0	76.0	6.9	75.0
Female	0.62	0.49		0.63	0.48	
N	20205			7183		

[a] Sample enlarged to include individuals with employer sponsored insurance.
[b] Mean from five level scale of self-rated health, 1 = Excellent to 5 = Poor.
Source—Author's analysis of the CPS, HRS, and MCBS.

Table 2: Insurance Coverage, the Medically Needy Program, and Health in the CPS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Medically Needy	0.013	0.012	0.013	0.031	0.028	0.029	-0.004
	(0.016)	(0.014)	(0.014)	(0.016)	(0.017)	(0.018)	(0.018)
×Excellent		0.009	0.010		-0.063**	-0.062**	-0.028
		(0.013)	(0.013)		(0.019)	(0.020)	(0.022)
×Very good		0.023	0.024		0.031*	0.032*	0.014
		(0.021)	(0.021)		(0.012)	(0.012)	(0.013)
×Good		-0.002	-0.002		-0.017	-0.016	0.001
		(0.017)	(0.017)		(0.013)	(0.013)	(0.026)
×Fair		0.009	0.009		0.003	0.002	0.009
		(0.018)	(0.019)		(0.011)	(0.011)	(0.012)
×Poor		-0.039***	-0.040***		0.045*	0.044*	0.004
		(0.011)	(0.011)		(0.020)	(0.021)	(0.024)
Log Simulated Deductible			-0.001			-0.002	
			(0.002)			(0.007)	
N	125284	125284	125284	125284	125284	125284	187342
Mean	0.399	0.399	0.399	0.129	0.129	0.129	0.342
P-value on Medically Needy-by-Health		0.000	0.000		0.002	0.002	0.626

Source—Author's analysis of the 1999-2009 Current Population Survey.

Note—Dependent variable is a dummy for having individually purchased private insurance (1-3), Medicaid (4-6), or employer sponsored insurance (7). Samples in columns (1)-(6) exclude individuals with insurance from their employer. Medically Needy is a dummy for living in a state with a Medically Needy program, health status coded as in Gardeazabal and Ugidos (2004) and coefficient for Excellent health is the negative of the sum of the coefficients on the remaining four health status levels, log simulated deductible based on cells defined by age group, gender, education, and a dummy for being white. Models also include fixed effects for each demographic group, marital status, additional racial/ethnic groups, and educational groups, also include state and year fixed effects. Standard errors clustered on state in parentheses.

* p<0.05, ** p<0.01, *** p<0.001

Table 3: Effect of the Medically Needy Program on Insurance Coverage

	Without Log Assets				With Log Assets			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Any Private	Medigap	Medicare Advantage	Medicaid	Any Private	Medigap	Medicare Advantage	Medicaid
A: State and year fixed effects only								
Medically Needy	4.0*	3.9	0.2	-0.7				
	(2.0)	(5.2)	(3.5)	(0.7)				
B: Add demographics								
Medically Needy	3.6	3.7	-0.1	-0.5	3.2	3.4	-0.2	-0.2
	(2.4)	(5.6)	(3.5)	(0.9)	(2.4)	(5.5)	(3.5)	(0.8)
C: Add log deductible (OLS)								
Medically Needy	3.7	3.8	-0.1	-0.6	3.3	3.5	-0.1	-0.3
	(2.7)	(5.6)	(3.5)	(0.9)	(2.5)	(5.5)	(3.5)	(0.8)
Log Deductible	3.4**	2.6**	0.8+	-2.8**	1.4**	1.0**	0.5	-1.5**
	(0.3)	(0.4)	(0.4)	(0.3)	(0.3)	(0.4)	(0.5)	(0.5)
D: Log deductible (2SLS)								
Medically Needy	3.6	3.7	-0.1	-0.5	3.2	3.4	-0.2	-0.1
	(2.4)	(5.6)	(3.5)	(0.9)	(2.4)	(5.5)	(3.5)	(0.8)
Log Deductible	-0.8	-0.6	-0.3	0.7	-0.6	-0.4	-0.2	0.5
	(0.7)	(0.9)	(1.0)	(0.7)	(0.5)	(0.8)	(0.9)	(0.5)
Mean (%)	67.2	39.4	27.8	9.5	67.2	39.4	27.8	9.5
E: Medically Needy-by-Assets (2SLS)								
Medically Needy					3.4	3.5	-0.1	-0.3
					(2.4)	(5.5)	(3.5)	(0.8)
$\times$Log Assets					-0.6	-0.4	-0.2	0.5
					(0.4)	(0.7)	(0.9)	(0.4)
F: Log deductible (2SLS)—Income$\geq$135% of FPL								
Medically Needy	1.7	1.8	-0.1	-0.1	1.7	1.8	-0.1	-0.1
	(2.4)	(5.3)	(3.5)	(1.0)	(2.3)	(5.2)	(3.6)	(1.0)
Log Deductible	-0.2	2.4*	-2.6	-0.9	-0.4	2.3+	-2.7	-0.8
	(1.5)	(1.2)	(1.9)	(0.8)	(1.4)	(1.3)	(1.8)	(0.8)
Mean (%)	74.2	42.7	31.5	2.8	74.2	42.7	31.5	2.8

Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Dependent variable is a binary indicator for possessing the listed insurance type, in addition to Medicare coverage. Demographics include demographic group fixed effects, continuous controls for age, additional racial/ethnic groups, marital status, education, and smoking status. Sample includes 33194 individiuals in all panels, except for panel F, which includes 15658 individuals. Coefficients have been multiplied by 100 for interpretation and standard errors, clustered on state, are in parentheses.
+ p<0.10, * p<0.05, ** p<0.01

Table 4: Effect by Lagged Health Status of the Medically Needy Program on Insurance Coverage

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: Any Private Insurance				Panel B:Medigap			
Medically Needy	3.3	3.4	2.7	1.6	3.6	3.7	3.1	3.3
	(2.4)	(2.4)	(2.5)	(2.2)	(5.3)	(5.3)	(5.4)	(2.9)
×Best health	-0.7	0.4	-1.1	-2.0	2.1	2.8	1.6	1.9
	(2.0)	(2.2)	(2.7)	(3.2)	(4.5)	(4.7)	(4.4)	(2.7)
×Second quintile	-0.5	-0.2	0.5	-4.0	-1.6	-1.3	-0.8	3.7
	(2.9)	(3.1)	(3.6)	(3.1)	(3.0)	(3.0)	(2.7)	(4.1)
×Third quintile	1.7	2.4	0.8	1.4	2.9	3.3	2.1	0.9
	(3.2)	(3.2)	(3.3)	(4.0)	(2.3)	(2.4)	(2.0)	(2.6)
×Fourth quintile	-1.5	-1.9	-1.3	5.9	0.1	-0.1	0.3	1.9
	(3.1)	(3.1)	(3.3)	(5.5)	(2.8)	(2.8)	(2.7)	(3.8)
×Worst health	1.1	-0.7	1.1	-1.3	-3.6*	-4.7+	-3.3	-8.4*
	(2.3)	(2.7)	(2.7)	(3.8)	(1.7)	(2.4)	(2.5)	(3.5)
Log Deductible		-1.2	-0.9	1.3		-0.8	-0.5	-0.7
		(0.9)	(0.6)	(1.3)		(1.1)	(0.9)	(1.2)
Joint p-value[a]	0.474	0.925	0.678	0.243	0.003	0.001	0.068	0.202
N	29174	29174	29174	25376	29174	29174	29174	25376
State fixed effects	X	X	X		X	X	X	
Assets			X				X	
Person fixed effects				X				X

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Panel C: Medicare Advantage				Panel D: Medicaid			
Medically Needy	-0.3	-0.2	-0.4	-1.7	-0.5	-0.6	-0.0	-0.1
	(3.2)	(3.2)	(3.2)	(2.0)	(1.0)	(1.1)	(1.1)	(1.1)
×Best health	-2.8	-2.4	-2.7	-4.0*	-2.8	-3.6	-2.5	-1.5
	(4.7)	(4.8)	(4.9)	(1.8)	(2.3)	(2.4)	(2.3)	(1.4)
×Second quintile	1.0	1.2	1.3	-7.6*	1.0	0.7	0.2	1.2
	(3.9)	(3.9)	(4.1)	(3.4)	(0.9)	(0.9)	(1.3)	(1.8)
×Third quintile	-1.2	-1.0	-1.3	0.5	-0.6	-1.1	0.0	0.5
	(2.9)	(2.9)	(3.0)	(3.5)	(1.6)	(1.5)	(1.5)	(1.1)
×Fourth quintile	-1.6	-1.8	-1.7	4.0	1.6	1.9	1.4	-1.3
	(2.1)	(2.1)	(2.2)	(3.6)	(1.8)	(1.9)	(1.8)	(2.6)
×Worst health	4.7+	4.0	4.4	7.1*	0.8	2.1	0.8	1.1
	(2.6)	(3.1)	(3.0)	(3.0)	(1.6)	(1.9)	(1.9)	(2.1)
Log Deductible		-0.5	-0.4	2.0		0.9	0.7	-0.7
		(1.1)	(1.1)	(1.2)		(0.6)	(0.5)	(0.6)
Joint p-value[a]	0.334	0.448	0.383	0.039	0.003	0.455	0.190	0.628
N	29174	29174	29174	25376	29174	29174	29174	25376
State fixed effects	X	X	X		X	X	X	
Assets			X				X	
Person fixed effects				X				X

[a] P-values on Medically Needy-by-health status quintiles; quintiles plotted in figure 5; coded as in Gardeazabal and Ugidos (2004), see text for details.
Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Dependent variable is a binary indicator for possessing the listed insurance type, in addition to Medicare coverage. All models include year and demographic group fixed effects, continuous controls for age, additional racial/ethnic groups, marital status, education, and smoking status. Coefficients for Medically Needy by health status quintiles 2-4 omitted from the table. Coefficients have been multiplied by 100 for interpretation and standard errors, clustered on state, are in parentheses.
+ $p<0.10$, * $p<0.05$, ** $p<0.01$

Table 5: Effect of Adding or Dropping a Medically Needy Program on Insurance Coverage

	(1) Any Private	(2) Medigap	(3) Medicare Advantage	(4) Medicaid
Adopt MN	-2.7	-6.6	3.8	-1.1
	(3.0)	(8.7)	(6.1)	(2.6)
×Best Health	-3.2+	6.0	-9.2	-0.6
	(1.6)	(8.8)	(7.5)	(2.2)
×Worst Health	2.2	-0.6	2.7	4.4+
	(3.2)	(1.9)	(2.3)	(2.5)
Drop MN	-7.2**	-9.9**	2.8	0.3
	(2.3)	(3.6)	(2.5)	(0.8)
×Best Health	-3.4	-1.7	-1.7	5.6
	(2.3)	(5.3)	(3.9)	(3.5)
×Worst Health	2.3	7.0*	-4.7	-0.7
	(2.6)	(2.9)	(4.8)	(2.1)
Log Deductible	-1.3	-0.8	-0.5	0.9
	(0.9)	(1.1)	(1.1)	(0.6)
P-value, Adopting[a]	0.000	0.000	0.000	0.000
P-value, Dropping[a]	0.000	0.000	0.000	0.000

[a] P-value on Medically Needy-by-health status quintiles; coded as in Gardeazabal and Ugidos (2004), see text for details.
Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Dependent variable is a binary indicator for possessing the listed insurance type, in addition to Medicare coverage. All models include state, year, and demographic group fixed effects, continuous controls for age, additional racial/ethnic groups, marital status, education, and smoking status, and interactions between state type and health status. Sample includes 29174 observations. Coefficients have been multiplied by 100 for interpretation and standard errors, clustered on state, are in parentheses.
+ p<0.10, * p<0.05, ** p<0.01

Table 6: Life Insurance and the Medically Needy Program

	(1)	(2)	(3)	(4)
Medically Needy	-1.8+	-1.8+	-2.1	-2.3
	(1.1)	(1.0)	(1.7)	(1.5)
×Best Health			1.5	-0.2
			(2.3)	(2.2)
×2nd quintile			-5.4+	-5.9*
			(2.8)	(2.9)
×3rd quintile			10.5**	9.5*
			(4.0)	(3.9)
×4th quintile			-5.6	-4.9
			(4.6)	(4.7)
×Worst Health			-1.1	1.6
			(4.7)	(4.9)
Log Deductible		1.4*		2.0**
		(0.7)		(0.7)
Joint p-value[a]			0.000	0.000
N	32881	32881	28921	28921

[a] P-values on Medically Needy-by-health status quintiles; coded as in Gardeazabal and Ugidos (2004), see text for details.
Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Dependent variable is a binary indicator for having life insurance. All models include year and demographic group fixed effects, continuous controls for age, additional racial/ethnic groups, marital status, education, and smoking status. Coefficients have been multiplied by 100 for interpretation and standard errors, clustered on state, are in parentheses.
+ p<0.10, * p<0.05, ** p<0.01

Table 7: Specification Checks of Insurance Coverage and the Medically Needy Program in the CPS

	Individual insurance				Medicaid			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Medically Needy		0.013	0.013	0.033*		0.028	0.027	0.024
		(0.014)	(0.014)	(0.016)		(0.017)	(0.017)	(0.015)
×Excellent	0.007	0.013	0.015	0.020	-0.064**	-0.061**	-0.058**	-0.040**
	(0.013)	(0.012)	(0.013)	(0.014)	(0.020)	(0.019)	(0.019)	(0.013)
×Very good	0.024	0.021	0.018	0.015	0.035**	0.030*	0.033*	0.022*
	(0.023)	(0.020)	(0.019)	(0.010)	(0.011)	(0.013)	(0.013)	(0.009)
×Good	0.000	-0.001	-0.002	0.004	-0.014	-0.015	-0.011	-0.016
	(0.017)	(0.019)	(0.020)	(0.009)	(0.013)	(0.013)	(0.011)	(0.013)
×Fair	0.009	0.004	-0.000	0.000	0.001	0.002	0.001	0.008
	(0.018)	(0.019)	(0.020)	(0.013)	(0.009)	(0.014)	(0.014)	(0.007)
×Poor	-0.040**	-0.038**	-0.031*	-0.039***	0.041*	0.045*	0.035	0.026
	(0.012)	(0.013)	(0.013)	(0.009)	(0.019)	(0.021)	(0.023)	(0.019)
N	125284	125284	125284	165554	125284	125284	125284	165554
Mean	0.399	0.399	0.399	0.414	0.129	0.129	0.129	0.129
P-value on Medically Needy-by-Health	0.000	0.000	0.000	0.000	0.000	0.017	0.039	0.000
State-by-year fixed effects	X				X			
Year-by-health		X	X			X	X	
State-by-health			X				X	

Source—Author's analysis of the 1999-2009 Current Population Survey, except for columns (4) and (8), which uses the 1996-2009 CPS.

Note—Dependent variable is a dummy variable indicated by the column group header. Medically Needy is a dummy for living in a state with a Medically Needy program, health status coded as in Gardeazabal and Ugidos (2004) and coefficient for Excellent health is the negative of the sum of the coefficients on the remaining four health status levels. Models also include fixed effects for each age group-by-gender-education-white cell, marital status, additional racial/ethnic groups, and educational groups, also include state and year fixed effects. Standard errors clustered on state in parentheses.

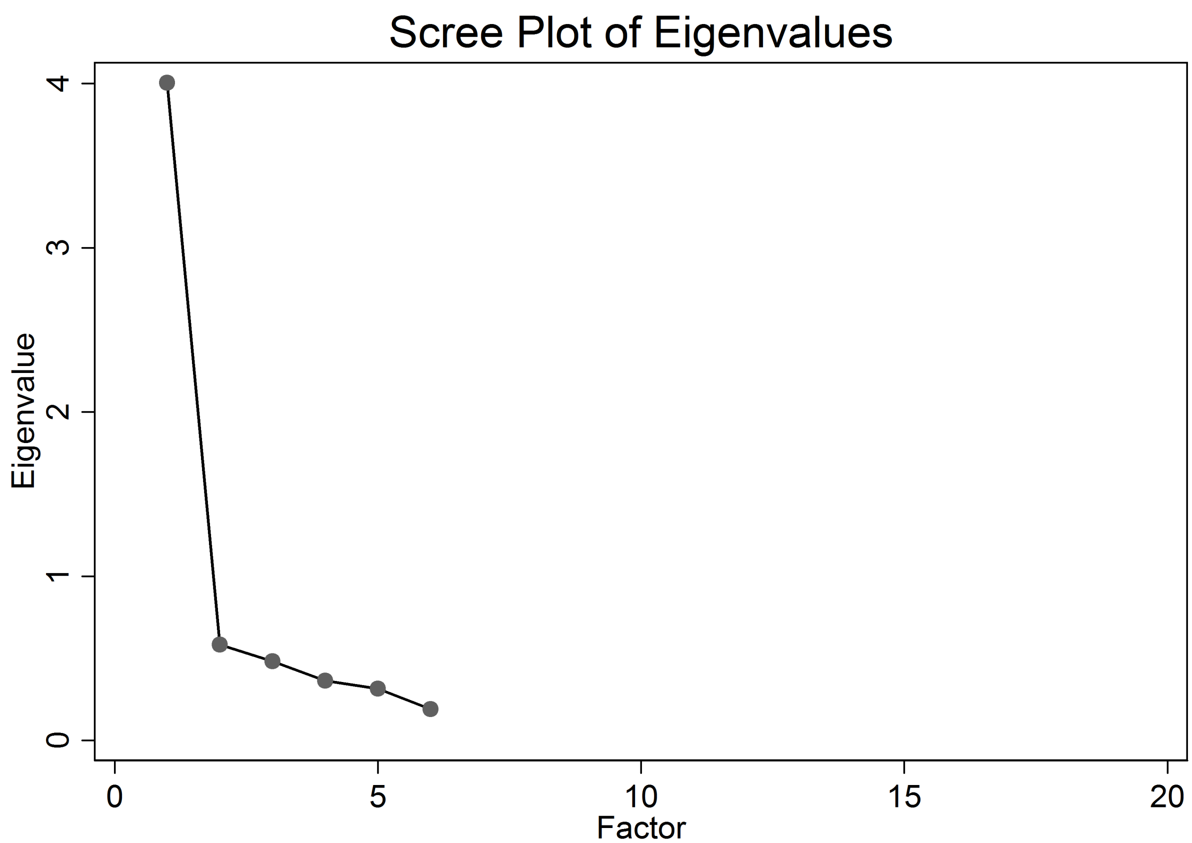
* p<0.05, ** p<0.01, *** p<0.001

Table 8: Effect of the Medically Needy Program on Spending

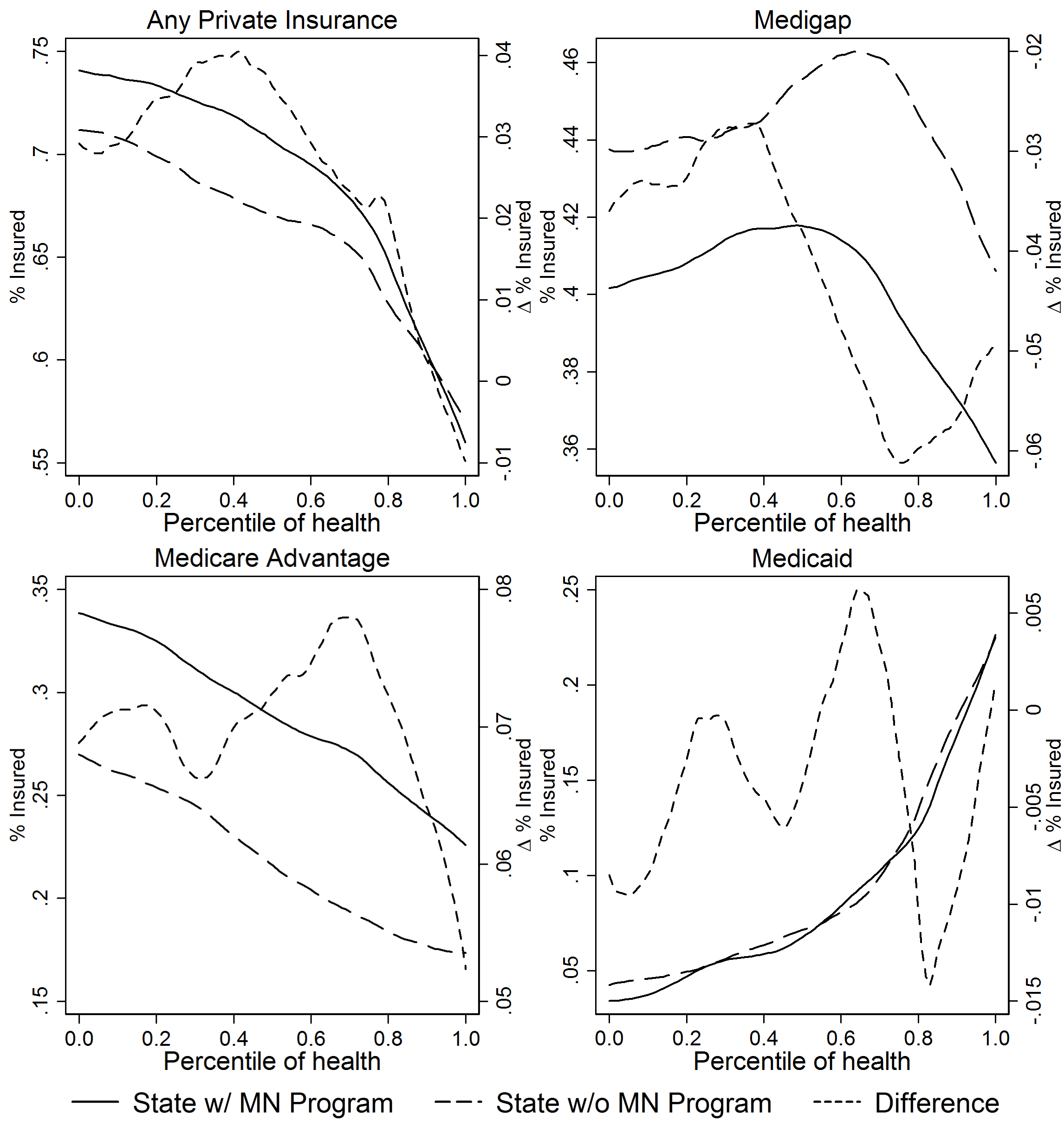
	Total Spending			Out-of-pocket Spending			Medigap premium	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Medigap	-4695**	-3473**	-3483**	-5731**	-3943**	-3947**		
	(668)	(885)	(891)	(506)	(687)	(693)		
Medicare Advantage	-6524**	-5673**	-5681**	-5932**	-4189**	-4192**		
	(607)	(688)	(695)	(461)	(596)	(600)		
Medicaid	5704**	5332**	5304**	-5165**	-3706**	-3717**		
	(968)	(1192)	(1240)	(418)	(690)	(709)		
Medically Needy		1845*	1838*		2857**	2854**		
		(772)	(775)		(871)	(878)		
× Medigap		-1679+	-1666		-2464**	-2459**	-227*	-224*
		(999)	(1016)		(886)	(893)	(98)	(105)
× Medicare Advantage		-1129	-1122		-2384**	-2381**		
		(863)	(877)		(801)	(806)		
× Medicaid		502	537		-2018*	-2005*		
		(1739)	(1739)		(858)	(877)		
Sim. Log Deductible			149			58		109
			(508)			(195)		(81)
R-squared	0.122	0.122	0.122	0.139	0.141	0.141	0.053	0.053
Mean	10521	10521	10521	2867	2867	2867	2271	2271

Source—Author's analysis of the 1999-2003 Medicare Current Beneficiary Survey.
Note—Dependent variable is listed in the column header. All models include continuous cubic polynomial in age interacted with gender and state, year, and selection group fixed effects, except for columns (4) and (8) which includes the demographic group fixed effects from the enrollment regressions rather than the selection group fixed effects. Includes 27388 observations. Standard errors, clustered on state, are in parentheses.
+ p<0.10, * p<0.05, ** p<0.01

Appendix Figure A1: Eigenvalues from Six Factor Model of Health Status ("Scree" plot)



Appendix Figure A2: Insurance Coverage and Current Health Status



Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Local mean probability of insurance coverage in states with and without a Medically Needy program. Sample restricted to states without policy changes and individuals non-parametrically reweighted so that the distribution of demographic characteristics is the same in states with and without a Medically Needy program.

Appendix Table A1: Factor Loadings

Factor	Loading
Self-rated Health (1-5)	0.61
CES-D Score (0-8)	0.49
Ever Told Has:	
High Blood Pressure	0.24
Chronic Lung Disease	0.23
Heart Condition	0.28
Psychiatric Condition	0.29
Arthritis	0.38
Incontinence	0.29
Has Difficulty:	
Walking Several Blocks	0.69
Sitting	0.38
Rising from Chair	0.57
Climbing Several Flights of Stairs	0.61
Stooping	0.59
Reaching	0.44
Pulling/Pushing Heavy Objects	0.62
Lifting Heavy Objects	0.64
Picking up a Dime	0.29

Appendix Table A2: Health Score and Subsequent Mortality

	Current Health	Lagged Health	Change in Health
Medically Needy	1.2	0.6	1.1
	(0.9)	(0.8)	(0.8)
Health Status			
1st Quintile[a]	-4.2**	-3.4**	-0.9+
	(0.5)	(0.4)	(0.5)
2nd Quintile[a]	-2.2**	-1.2	-1.5**
	(0.6)	(0.7)	(0.5)
3rd Quintile[a]	-0.8	-1.7**	-1.5**
	(0.5)	(0.5)	(0.6)
4th Quintile[a]	1.5*	1.6**	1.9**
	(0.7)	(0.4)	(0.7)
5th Quintile[a]	5.7**	4.7**	2.0**
	(0.8)	(0.8)	(0.4)
Health Status ×Medically Needy			
1st Quintile[a]	-0.2	-0.1	-0.0
	(0.6)	(0.5)	(0.6)
2nd Quintile[a]	-1.1	-1.6*	0.2
	(0.7)	(0.8)	(0.6)
3rd Quintile[a]	-0.3	0.6	0.9+
	(0.5)	(0.7)	(0.5)
4th Quintile[a]	0.9	-0.1	-1.6*
	(0.8)	(0.6)	(0.7)
5th Quintile[a]	0.8	1.1	0.5
	(0.9)	(0.9)	(0.7)
R-squared	0.07	0.07	0.06
Mean	7.8	7.9	7.8
N	31316	29174	27473

[a] Quintiles coded as in Gardeazabal and Ugidos (2004), see text for details.
Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Dependent variable is a binary indicator for dying by the next wave (two years later). All models include state, year, and demographic group fixed effects, continuous controls for age, additional racial/ethnic groups, marital status, education, and smoking status, and interactions between state type and health status. Coefficients have been multiplied by 100 for interpretation and standard errors, clustered on state, are in parentheses.
+ p<0.10, * p<0.05, ** p<0.01

Appendix Table A3: First Stage Regression Results

	(1)	(2)	(3)	(4)
Log Sim. Deductible	0.866**	0.897**	0.940**	0.925**
	(0.033)	(0.022)	(0.040)	(0.050)
Log Assets			0.489**	0.487**
			(0.063)	(0.065)
State FE	No	Yes	No	Yes
N	33194	33194	33194	33194
Weak Identification	674.2	1702.2	541.5	341.1
Underidentification	9.5	8.7	8.7	7.4
P-value	0.002	0.003	0.003	0.007

+ p<0.10, * p<0.05, ** p<0.01
Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Notes: All models include year and demographic group fixed effects, a cubic polynomial in age, and marital and smoking status. Models estimated using sample weights and standard errors in parentheses are clustered on the state of residence.

Appendix Table A4: Heterogeneous Difference-in-Differences vs Triple Difference Specification

	Any Private		Medigap		Medicare Adv.		Medicaid	
	(1) Het-DD	(2) DDD	(3) Het-DD	(4) DDD	(5) Het-DD	(6) DDD	(7) Het-DD	(8) DDD
Medically Needy	3.4	3.3	3.4	3.6	0.1	-0.3	-0.4	-0.5
	(2.4)	(2.4)	(5.4)	(5.3)	(3.3)	(3.2)	(1.2)	(1.0)
×Best Health	-0.8	-0.7	-1.3	2.1	0.5	-2.8	-1.1	-2.8
	(1.2)	(2.0)	(2.1)	(4.5)	(1.7)	(4.7)	(0.8)	(2.3)
×Worst Health	-1.1	1.1	-0.1	-3.6*	-1.0	4.7+	0.2	0.8
	(1.4)	(2.3)	(1.8)	(1.7)	(1.5)	(2.6)	(1.6)	(1.6)
Joint p-value[a]	0.453	0.474	0.403	0.003	0.912	0.334	0.028	0.003
Functional Form tests[b]								
Always MN		0.794		0.319		0.101		0.949
Adopted MN		0.090		0.011		0.444		0.096
Dropped MN		0.001		0.000		0.000		0.978

[a] P-values on Medically Needy-by-health status quintiles; coded as in Gardeazabal and Ugidos (2004), see text for details.
[b] P-values on state-type-by-health status quintiles; coded as in Gardeazabal and Ugidos (2004), see text for details.
Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Dependent variable is a binary indicator for possessing the listed insurance type, in addition to Medicare coverage. All models include year and demographic group fixed effects, continuous controls for age, additional racial/ethnic groups, marital status, education, and smoking status. Sample includes 29174 observations. Coefficients for Medically Needy by health status quintiles 2-4 omitted from the table. Coefficients have been multiplied by 100 for interpretation and standard errors, clustered on state, are in parentheses.
+ p<0.10, * p<0.05, ** p<0.01

Appendix Table A5: Effect by Current Health Status of the Medically Needy Program on Insurance Coverage

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: Any Private Insurance				Panel B:Medigap			
Medically Needy	3.7	3.7	3.2	2.4	4.2	4.2	3.8	3.2
	(2.5)	(2.5)	(2.5)	(1.5)	(5.4)	(5.4)	(5.4)	(2.7)
×Best health	-1.4	-0.6	-2.1	-0.1	3.4	4.0	2.7	0.3
	(4.5)	(4.4)	(4.0)	(3.8)	(3.1)	(3.3)	(2.8)	(1.9)
×Second quintile	3.8	4.2	4.1	0.3	3.1	3.4	3.2	3.6
	(2.7)	(2.8)	(2.9)	(3.9)	(3.1)	(3.2)	(3.6)	(5.1)
×Third quintile	-4.0	-3.9	-3.7	-1.3	-4.2	-4.2	-4.0	1.8
	(4.4)	(4.4)	(3.8)	(2.3)	(3.3)	(3.4)	(2.7)	(3.3)
×Fourth quintile	0.3	0.1	0.2	-1.6	-2.5	-2.6	-2.6	-1.3
	(4.0)	(4.0)	(4.3)	(3.1)	(3.1)	(3.0)	(3.4)	(3.5)
×Worst health	1.3	0.1	1.6	2.7	0.2	-0.5	0.6	-4.5
	(2.2)	(2.6)	(2.1)	(2.9)	(2.4)	(2.9)	(2.6)	(3.3)
Log Deductible		-0.9	-0.7	0.5		-0.6	-0.4	-0.1
		(0.8)	(0.6)	(1.0)		(1.0)	(0.8)	(1.2)
Joint p-value[a]	0.000	0.001	0.000	0.838	0.000	0.031	0.003	0.693
N	31316	31316	31316	27338	31316	31316	31316	27338
State fixed effects	X	X	X		X	X	X	
Assets			X				X	
Person fixed effects				X				X

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Panel C: Medicare Advantage				Panel D: Medicaid			
Medically Needy	-0.5	-0.5	-0.6	-0.8	-0.7	-0.7	-0.3	-0.0
	(3.3)	(3.3)	(3.3)	(2.2)	(0.6)	(0.7)	(0.6)	(1.2)
×Best health	-4.8	-4.5	-4.8	-0.4	-0.3	-0.9	0.3	0.5
	(4.2)	(4.3)	(4.3)	(2.8)	(1.1)	(1.3)	(1.8)	(1.7)
×Second quintile	0.7	0.9	0.8	-3.4	0.3	-0.1	0.1	-1.2+
	(3.4)	(3.4)	(3.4)	(2.7)	(0.8)	(0.9)	(1.2)	(0.7)
×Third quintile	0.2	0.3	0.3	-3.1	-1.7+	-1.8+	-1.9**	-3.4*
	(1.4)	(1.4)	(1.4)	(3.7)	(0.9)	(0.9)	(0.4)	(1.5)
×Fourth quintile	2.8	2.7	2.7	-0.4	1.2	1.3	1.3	1.9
	(5.0)	(5.1)	(5.1)	(2.9)	(0.8)	(0.9)	(1.0)	(1.8)
×Worst health	1.1	0.7	1.0	7.2*	0.5	1.3	0.3	2.2
	(1.4)	(1.9)	(1.8)	(3.2)	(1.4)	(1.9)	(1.6)	(2.1)
Log Deductible		-0.3	-0.3	0.6		0.6	0.5	-0.5
		(1.0)	(1.0)	(1.2)		(0.7)	(0.5)	(0.6)
Joint p-value[a]	0.670	0.800	0.775	0.211	0.066	0.076	0.000	0.079
N	31316	31316	31316	27338	31316	31316	31316	27338
State fixed effects	X	X	X		X	X	X	
Assets			X				X	
Person fixed effects				X				X

[a] P-values on Medically Needy-by-health status quintiles; quintiles plotted in figure 5; coded as in Gardeazabal and Ugidos (2004), see text for details.

Source—Author's analysis of the 1998-2008 Health and Retirement Study.

Note—Dependent variable is a binary indicator for possessing the listed insurance type, in addition to Medicare coverage. All models include year and demographic group fixed effects, continuous controls for age, additional racial/ethnic groups, marital status, education, and smoking status. Coefficients for Medically Needy by health status quintiles 2-4 omitted from the table. Coefficients have been multiplied by 100 for interpretation and standard errors, clustered on state, are in parentheses.

+ $p<0.10$, * $p<0.05$, ** $p<0.01$

Appendix Table A6: Effect by Change in Health Status of the Medically Needy Program on Insurance Coverage

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: Any Private Insurance				Panel B:Medigap			
Medically Needy	3.5	3.5	3.1	2.6	3.6	3.6	3.3	3.3
	(2.6)	(2.6)	(2.6)	(1.9)	(5.7)	(5.7)	(5.8)	(2.9)
×First quintile	3.6	3.5	3.2	-2.4	-7.2+	-7.3+	-7.6	-9.8**
	(3.4)	(3.3)	(3.8)	(2.8)	(4.4)	(4.3)	(4.7)	(3.0)
×Second quintile	-1.7	-1.6	-0.7	2.5	6.0*	6.0*	6.8*	7.1+
	(1.1)	(1.3)	(0.8)	(3.8)	(2.9)	(2.8)	(3.2)	(3.7)
×Third quintile	0.3	0.5	1.4	0.5	7.6**	7.8**	8.4**	3.5
	(2.6)	(2.6)	(2.4)	(2.5)	(1.7)	(1.8)	(1.6)	(2.5)
×Fourth quintile	3.4	3.5	2.8	5.9*	4.3+	4.3+	3.7+	6.0+
	(5.2)	(5.3)	(5.3)	(2.8)	(2.5)	(2.5)	(2.1)	(3.2)
×Fifth quintile	-5.6+	-5.9+	-6.6+	-6.5	-10.6**	-10.8**	-11.4**	-6.9*
	(3.4)	(3.6)	(3.4)	(4.1)	(3.2)	(3.3)	(3.1)	(3.5)
Log Deductible		-1.1	-0.9	1.0		-0.7	-0.6	-0.5
		(0.8)	(0.6)	(1.1)		(1.0)	(0.8)	(1.1)
Joint p-value[a]	0.000	0.000	0.000	0.088	0.000	0.000	0.000	0.001
N	27473	27473	27473	23558	27473	27473	27473	23558
State fixed effects	X	X	X		X	X	X	
Assets			X				X	
Person fixed effects				X				X
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Panel C: Medicare Advantage				Panel D: Medicaid			
Medically Needy	-0.1	-0.1	-0.2	-0.7	-0.1	-0.1	0.3	-0.0
	(3.4)	(3.4)	(3.3)	(2.4)	(1.2)	(1.3)	(1.2)	(1.1)
×Best health	10.8**	10.8**	10.7**	7.3**	0.6	0.7	1.0	-0.0
	(3.7)	(3.7)	(3.7)	(2.7)	(1.2)	(1.2)	(0.9)	(1.7)
×Second quintile	-7.7*	-7.7*	-7.5*	-4.6+	-1.5	-1.5	-2.2	-2.2
	(3.6)	(3.7)	(3.6)	(2.7)	(2.2)	(2.3)	(1.6)	(1.7)
×Third quintile	-7.3**	-7.2**	-7.1**	-3.0	0.4	0.2	-0.4	2.0
	(2.6)	(2.6)	(2.6)	(2.9)	(2.2)	(2.2)	(1.4)	(2.1)
×Fourth quintile	-0.8	-0.8	-1.0	-0.1	-2.9	-2.9	-2.4	-3.6+
	(4.1)	(4.1)	(4.2)	(3.5)	(2.2)	(2.3)	(2.2)	(2.2)
×Worst health	5.0*	4.9*	4.8*	0.4	3.4*	3.6*	4.1*	3.8+
	(2.2)	(2.3)	(2.3)	(2.3)	(1.7)	(1.8)	(2.0)	(2.2)
Log Deductible		-0.4	-0.4	1.5		0.7	0.6	-0.5
		(1.0)	(1.0)	(1.3)		(0.6)	(0.5)	(0.7)
Joint p-value[a]	0.000	0.000	0.000	0.014	0.000	0.000	0.001	0.482
N	27473	27473	27473	23558	27473	27473	27473	23558
State fixed effects	X	X	X		X	X	X	
Assets			X				X	
Person fixed effects				X				X

[a] P-values on Medically Needy-by-health status quintiles; quintiles plotted in figure 5; coded as in Gardeazabal and Ugidos (2004), see text for details.
Source—Author's analysis of the 1998-2008 Dealth and Retirement Study.
Note—Dependent variable is a binary indicator for possessing the listed insurance type, in addition to Medicare coverage. All models include year and demographic group fixed effects, continuous controls for age, additional racial/ethnic groups, marital status, education, and smoking status. Coefficients for Medically Needy by health status quintiles 2-4 omitted from the table. Coefficients have been multiplied by 100 for interpretation and standard errors, clustered on state, are in parentheses.
+ p<0.10, * p<0.05, ** p<0.01

Appendix Table A7: Effect of Components of Health Status and the Medically Needy Program on Insurance Coverage

	(1) Any Private	(2) Medigap	(3) Medicare Adv.	(4) Medicaid
Medically Needy	10.8**	12.4+	-1.6	-9.7*
	(3.4)	(6.7)	(5.1)	(4.2)
×Self-rated health	-2.0	-3.6*	1.6	2.4
	(1.3)	(1.7)	(1.8)	(1.6)
×CES-D	-2.0	-1.8	-0.2	-1.1*
	(1.2)	(1.7)	(1.1)	(0.5)
×Ever told has				
High Blood Pressure	1.1	2.4	-1.3	2.7+
	(1.5)	(3.7)	(4.4)	(1.5)
Lung Disease	1.8	4.5	-2.7	4.9
	(4.5)	(5.0)	(2.1)	(6.6)
Heart Condition	-6.5*	-2.6	-3.9	3.0**
	(2.7)	(2.1)	(4.0)	(0.8)
Psychiatric Condition	6.7	3.1	3.6	3.4
	(8.9)	(4.0)	(7.1)	(4.0)
Arthritis	-2.6	4.6	-7.2+	4.2
	(4.1)	(6.6)	(4.2)	(2.6)
Incontinence	0.9	-7.6	8.5*	-1.6
	(5.0)	(5.7)	(3.8)	(1.8)
×Has difficulty				
Walking	6.3+	4.3	1.9	-1.1
	(3.6)	(4.3)	(6.6)	(1.6)
Sitting	7.1	5.2	1.9	-4.7*
	(5.8)	(4.4)	(5.6)	(2.2)
Rising from chair	-4.9	0.2	-5.1**	3.1
	(6.0)	(5.0)	(1.5)	(2.1)
Climbing stairs	0.8	-1.0	1.8	0.3
	(2.6)	(4.0)	(3.7)	(3.0)
Stooping	0.5	-0.9	1.3	-3.1
	(8.3)	(6.2)	(5.1)	(5.9)
Reaching	-0.3	-6.8*	6.4	1.3
	(3.4)	(3.0)	(5.5)	(1.6)
Moving objects	14.6*	15.2**	-0.6	-4.3
	(6.0)	(5.7)	(2.9)	(2.8)
Lifting objects	-16.3**	-13.5**	-2.8	3.7
	(3.2)	(2.4)	(4.3)	(2.6)
Picking up a Dime	4.6	-0.8	5.4	-5.5**
	(3.4)	(10.4)	(8.1)	(2.1)
Log Deductible	-1.7*	-1.0	-0.7	1.0
	(0.8)	(1.1)	(1.1)	(0.7)

Source—Author's analysis of the 1998-2008 Health and Retirement Study.
Note—Dependent variable is a binary indicator for possessing the listed insurance type, in addition to Medicare coverage. All models include year and demographic group fixed effects, continuous controls for age, additional racial/ethnic groups, marital status, education, and smoking status. Sample includes 26149 observations. Coefficients have been multiplied by 100 for interpretation and standard errors, clustered on state, are in parentheses.
+ $p<0.10$, * $p<0.05$, ** $p<0.01$

Appendix Table A8: Effect of the Medically Needy Program on Spending by Service

	(1)	(2)	(3)	(4)	(5)
	Ambulatory	Inpatient	Prescription Drugs	Facility	All Other[a]
Medigap	1137**	-70	456**	-4353**	54
	(196)	(274)	(29)	(571)	(58)
Medicare Advantage	-474**	-188	317**	-4078**	-85
	(112)	(310)	(38)	(570)	(81)
Medicaid	1305**	642*	568**	1702*	66
	(204)	(284)	(94)	(777)	(49)
Medically Needy	-124	-432	11	1724**	403*
	(155)	(314)	(53)	(516)	(197)
× Medigap	415+	427	50	-2146**	-156
	(245)	(296)	(45)	(675)	(102)
× Medicare Advantage	36	513	41	-1481*	-97
	(168)	(326)	(51)	(696)	(124)
× Medicaid	148	132	125	110	-87
	(235)	(332)	(101)	(1298)	(98)
R-squared	0.036	0.006	0.070	0.228	0.013
Mean					

[a] includes other instutional care, home health, hospice, and dental care.

Source—Author's analysis of the 1999-2003 Medicare Current Beneficiary Survey.

Note—Dependent variable is listed in the column header. All models include continuous cubic polynomial in age interacted with gender and state, year, and selection group fixed effects. Includes 27388 observations. Standard errors, clustered on state, are in parentheses.

+ p<0.10, * p<0.05, ** p<0.01