DOES ACCESS TO HEALTH INSURANCE INFLUENCE WORK EFFORT AMONG DISABILITY RECIPIENTS?

Norma B. Coe[1] and Kalman Rupp[2]

Abstract

This paper tests whether "disability benefit lock" exists among disability beneficiaries, by exploiting state variation in the access and cost of health insurance, caused by regulation of the non-group market, the existence of Medicaid buy-in programs, and Medicaid generosity. We test for heterogeneity on a variety of margins; including diagnosis, medical spending, and program type (DI vs. SSI beneficiaries). We find that Medicaid buy-in programs ease disability benefit lock, albeit the overall effect is small. We find some evidence of both DI- and SSI-lock, and that different state policies alleviate it for different beneficiaries – heterogeneity is very important.

JEL: J21, I13

Acknowledgements

The research reported herein was pursuant to a grant from the U.S. Social Security Administration (SSA), funded as part of the Retirement Research Consortium (RRC) through the Center for Retirement Research at Boston College. The findings and conclusions expressed are solely those of the authors and do not represent the views of SSA, any agency of the federal government, the RRC, Boston College, or the University of Washington. The authors would like to thank Francoise Becker and Kendrew Wong for excellent programming assistance; Paul Davies, Howard Iams, Susan Grad, Joyce Manchester, Christopher Tamborini, and seminar participants at the SOLE, UW, NBER Summer Institute on Aging, and the RRC annual consortium for helpful comments. All errors are our own.

1. School of Public Health, University of Washington. nbcoe@uw.edu
2. Office of Research, Evaluation and Statistics, the Social Security Administration. Kalman.Rupp@ssa.gov.

Introduction

There are two major health insurance systems in the United States for working-age individuals: (1) employer-sponsored coverage for employed individuals and their families; and (2) public health insurance (Medicaid and Medicare) for individuals who are deemed unable to work. Tying health insurance to employment has well-known adverse side-effects, often referred to as "job lock" (Gruber 2000, Stroupe et al. 2001, Gruber and Madrian 2004). Research suggests that job lock decreases job turnover, decrease entrepreneurial activity, and influences retirement timing (Gruber and Madrian 1994, Madrian 1994, Buchmueller and Valletta 1996). Similar adverse side effects could apply to welfare recipients or the disabled population; tying health insurance coverage to receipt of cash benefits may exacerbate the already strong incentives to stay on the welfare/disability rolls. Evidence suggests that "welfare lock" is statistically significant, though relatively small in magnitude (Ellwood and Adams 1990, Yelowitz 1995). The importance of disability benefit lock remains unquantified, despite the substantial value of public health insurance benefits to the disabled (Autor and Duggan 2006).

In this paper we examine the "disability benefit lock" hypothesis – the idea that tying public health insurance coverage to the receipt of disability benefits reduces work effort and disability program exit rates. We consider both major Social Security Administration (SSA) disability programs (DI and SSI). To test for disability benefit lock, we exploit state-level variation in the access and affordability of health care for disabled individuals in both the non-group and the Medicaid markets. In a difference-in-difference framework, we examine employment and exit patterns of disability recipients in states that have eased access to health insurance for disabled adults compared to those who have not taken such measures. We interpret increased work effort/exiting the disability rolls as an indication that disability benefit lock exists, and is eased by the particular state policy intervention. Since the extent of disability benefit lock is likely heterogeneous, we also employ a triple-difference specification in order to measure the impact of easing health insurance access on the work effort and exit patterns based on disability type, medical spending, and private health insurance access while on the disability rolls.

This paper continues as follows. Section 1 discusses in detail the relevant disability and health insurance programs, and the interactions between these programs. Section 2 describes the theoretical model while Section 3 details the identification strategy of using state-level policy

variables to measure access to health insurance. Section 4 describes the estimation models and Section 5 describes the unique administrative data used for this investigation. Section 6 provides descriptive statistics and results. Section 7 concludes that health insurance access has an impact, albeit small, on the overall work effort of the disabled, but can have sizable effects on specific subgroups.

1. Disability Programs, Health Insurance and Employment

1.1 Disability Programs. Much has been written about the rules and benefit structure of SSA's disability programs, so we provide only details that are most directly relevant to our study.[1] DI is a social insurance program, while SSI is a means-tested program for the elderly and disabled individuals. The two programs share the same criteria to qualify as disabled, but differ in their non-disability related eligibility criteria. DI benefit eligibility is contingent on "DI-insured status" which requires a certain level of lifetime and recent work history.[2] DI benefits are determined by a function of past earnings based on a formula similar to the one that calculates Social Security retirement benefits. In May 2012, the average disabled worker benefit was $1,111 per month.

SSI, in contrast, is a categorical negative income tax program with a strict resource test and an income test with a federal benefit ceiling, commonly referred to as the Federal Benefit Rate (FBR), set at $698 per month for individuals and $1,048 per month for couples in 2012.[3] Federal SSI benefits are determined by subtracting "countable income" from the FBR. Countable income excludes the first $20 of any income (earned or unearned) and an additional $65 of earned income. Above these exclusions, benefits phase out at 50 cents for every dollar of earned income and dollar-for-dollar for unearned income. Differences and changes in unearned and earned income result in federal SSI benefits that can vary between zero and the FBR; the average monthly federal SSI benefit for beneficiaries aged 18-64 is $533 in 2012.

[1] We look for DI lock among beneficiaries, so the most relevant rules are those pertaining to work effort. Newcomb, Payne and Waid (2003) provide an excellent summary of the key features of the DI and SSI programs and work incentives.

[2] In addition to the requirement of being fully insured for Social Security benefits, DI-insured status requires 20 quarters of coverage in the previous 10 years. This requirement is modified for people younger than age 31, but generally follows the pattern of requiring one quarter of coverage for each two calendar quarters that have elapsed since the age of 21. A quarter of coverage is currently defined as a specific amount of earnings and was equivalent to $1,130 in 2012.

[3] Supplementary state benefits are also available in many states with the generosity of supplementary benefits considerably varying across state. We ignore this state variation in benefit levels due to incomplete data.

These programs have complex longitudinal interactions. Many DI beneficiaries also receive SSI benefits at some point, either during the 5-month waiting period, concurrent with DI-benefits, to "top-up" their income, or as they are working their way off the DI rolls (Rupp and Riley 2011, Rupp et al. 2008).

1.2 Health Insurance. Public health insurance is paired with SSA's cash disability programs. SSI beneficiaries are categorically eligible for Medicaid in most states and gain immediate access to the program.[4] DI beneficiaries receive Medicare after a 24-month waiting period – effectively 29 months since disability onset because it is additive with the 5-month DI waiting period. For those DI beneficiaries who are also SSI-eligible, Medicaid can cover them during the 5-month DI waiting period and potentially through the Medicare waiting period. DI-SSI concurrent beneficiaries become "dually eligible" for Medicare and Medicaid after the end of the Medicare waiting period (Rupp and Riley 2012). Medicare remains the primary payer for these dually eligible beneficiaries. In addition, individuals could have private insurance coverage. Employer-sponsored (group) insurance could be secured through their spouse's employer or via COBRA coverage if the individual was previously insured through their employer.[5] Beneficiaries can also buy private insurance on the non-group market. Finally, individuals may be eligible for Medicaid even if they are ineligible for SSI through a variety of channels, such as through Medically Needy programs, as adults that meet the state-specific income test, or through a Medicaid buy-in program that is designed specifically for disabled individuals whose income does not meet the income limits.

Gruber and Kubik (2002) find that insurance coverage is stable upon application to the DI program among individuals age 50-64, but the source of the insurance changes. Both spousal health insurance coverage and Medicaid prevalence increase, offsetting the drop in employer-sponsored health insurance.[6] Livermore, Stapleton and Claypool (2009) find that among

[4] 11 states use Medicaid criteria that are more restrictive than the SSI program, known as 209(b) states (CT, HI, IL, IN, MN, MO, NH, ND, OH, OK, and VA) and six states use SSI thresholds but require a separate Medicaid application, known as SSI Criteria states (AK, ID, KS, NE, NV, OR, and UT). Rupp and Riley (2012) show that both policies impact coverage. However, these state policies have not changed during our study period, and thus would be picked up in the state fixed-effect in our econometric model (section 4).
[5] Individuals applying for disability benefits are eligible for extended COBRA coverage, up to 29 months.
[6] According to Livermore, Stapleton and Claypool (2010), however, both own employer and spousal coverage drops between the third year before and the third year after DI entry. All studies cited here confirm the offsetting effect of public health insurance.

eventual DI entrants, the majority had private insurance coverage 1-12 months prior to entry, 23 percent had no health insurance, and about 10 percent relied on Medicaid or Medicare. They also find that most of the uninsured DI-entrants remain uninsured during the Medicare waiting period. For others, private health insurance access is available even 25-36 months after DI entry, almost one-third still had coverage through a family member, 16 percent retained employer coverage, and 11 percent had private insurance from some other source. So while Medicaid and Medicare coverage substantially increases and becomes dominant two years after DI entry, a substantial minority retain some form of private health insurance.[7]

1.3 Exiting the Disability Rolls. DI beneficiaries can be suspended or terminated if there is evidence suggesting that their work capacity has improved. This could happen through "medical recovery" or by earnings that exceed the Substantial Gainful Activity (SGA) level under certain conditions.[8] Our own data shows that approximately 1 percent of DI beneficiaries leave the rolls per year either due to work effort or medical recovery during the study period.

SSI benefits can be discontinued through "medical recovery," as well as due to increases in assets, earned income or unearned income that make the individual no longer eligible under the SSI means test. Because benefits are phased out at 50 cents on the *earned* dollar, SSI beneficiaries without other sources of countable income can earn up to at least twice the FBR without losing all cash benefits, a substantially higher level than the SGA for individuals and especially for couples. Our data shows that approximately 4 percent of the SSI beneficiaries leave the rolls per year due to these reasons.

Because of the work disincentives embedded in DI and SSI program design, the low exit rates and the very long average duration in both programs, assisting DI and SSI beneficiaries to return to work has been a longstanding policy goal and a major motivation for many policy interventions. Several work incentive programs have been added to the DI program over the years (U.S. Social Security Administration 2012).[9] The primary DI work incentive program

[7] A caveat to be noted here is that the survey-based data used by Livermore, Stapleton, and Claypool substantially underestimates public health insurance three years after DI entry. Based on administrative records, Rupp and Riley (2012) shows practically 100% Medicare coverage after the end of the Medicare waiting period among DI-entrants (including DI-only and concurrents), with a nontrivial subgroup continuing with dual Medicaid and Medicare coverage.

[8] "Medical recovery" is determined through continuing disability reviews (CDRs), whose use has varied widely over time. CDRs affect exits from both SSI and DI programs in the same way.

[9] See Newcomb, Payne and Waid (2003) for a more complete discussion.

relevant to this study is the trial work period (TWP) – 9 months in which beneficiaries can work and earn as much as they want and still be considered disabled. After nine TWP months have been accumulated over a rolling period of 60-months, DI benefits are discontinued.[10] The primary SSI work incentives relevant to this study are the income disregards. $20 of income from any source, an additional $65 of earned income, and 50 percent of any additional earnings are disregarded in the SSI benefit formula. This means that SSI beneficiaries may collect pro-rated benefits if their earnings are above the SGA but below (2*FBR+$85). SSI eligibility will generally continue unless there is a medical improvement or a change resulting in asset or income ineligibility.

While a continuation of Medicare or Medicaid benefits after cash benefits end was not part of the original cash benefit program design, they were later added for both programs partly due to concerns that low exit rates may be partially attributable to beneficiaries' fear of losing health insurance coverage. Currently beneficiaries can continue Medicare eligibility for 93 months under the Ticket to Work legislation (http://www.ssa.gov/work/overview.html).[11] Continued Medicaid eligibility is available for former SSI recipients as long as the individual continues to have a disabling condition, need Medicaid in order to work, be unable to afford equivalent medical coverage without assistance, and meets all non-disability requirements of SSI.[12]

While little work has been done on the relationship between employment, health insurance and exits from SSA's disability programs, Muller, Scott, and Bye (1996) provide some interesting evidence by exploring the pattern of work behavior and earnings among SSI recipients in years before and after the introduction of continued Medicaid coverage to SSI beneficiaries. While they did not directly estimate the impact of extending Medicaid eligibility, the authors did not find any major changes in either the probability of work or the level of earnings associated with the implementation. The authors suggested that the true effect may be zero or very small.

[10] Any month the beneficiary's monthly earnings surpass a certain threshold (in 2012 it is $720) is regarded to be a TWP month. After the TWP is completed, beneficiaries enter the Extended Period of Eligibility (EPE), a period of 36 months when benefits could be reinstates if their earnings fall below the SGA.

[11] Continued Medicare coverage for former DI beneficiaries no longer eligible for cash benefits who nevertheless continued to meet the disability test was first introduced in 1984 for 36 months, and the benefit was increased subsequently in several steps.

[12] Continued Medicaid eligibility for those exiting SSI was first legislated in 1980, and was made permanent in 1986 under Section 1619(b) of the Social Security Act.

2. Theoretical Model

The disability system creates nonlinearities in the budget set, which are exacerbated once health insurance is taken into account. Despite legislation extending public health insurance coverage for people exiting the disability rolls for work related reasons, disability benefit lock may remain if individuals do not know about the extensions (Livermore, Roche, and Prenovitz 2009) or the present discounted value of future out of pocket health expenses remains a barrier to working today.

The decision of whether to work or remain on disability benefits is a cost-benefit calculation made comparing the marginal utility of the financial gain of working to that marginal disutility of work and lost leisure. We compare the financial gain to working here. While on the SSI program, a beneficiary with no unearned income from other sources and not working receives the full benefit = B= FBR[13], and the Medicaid coverage, which lowers his out of pocket expenditure on health care to *M(x)*, which is a function of his underlying health (*x*). As he begins to work, his SSI benefits are taxed away (at 50 cents on the dollar, after the combined general and earned income disregard, $85), so his after tax wage = $(1-\tau_{SSI})w_t$-$M_t(x)$. Once he earns more than (2*FBR+85), he loses SSI benefits, and may lose Medicaid coverage.

Assuming that returning to work is a permanent state,[14] the financial gain to working for a forward-looking SSI beneficiary receiving benefits *B* and facing a wage of w<2*FBR+85 is:

$$\sum_{t=a}^{t=FRA} \frac{1}{\delta}(B_t + (1-\tau_{SSI})w_t - M_t(x)) - \sum_{t=a}^{t=FRA} \frac{1}{\delta}(B_t - M_t(x)) \quad (1)$$

If w > 2*FBR+85, the financial gain to work becomes:

$$\sum_{t=a}^{t=FRA} \frac{1}{\delta} w_t - OOP_{ht}(x)) - \sum_{t=a}^{t=FRA} \frac{1}{\delta}(B_t - M_t(x)) \quad (2)$$

[13] Technically, the maximum is FBR + $20, reflecting a general income exclusion, and is based on a different FBR for individual and couple beneficiaries, in theory to account for economies of scale in consumption (Rupp et al. 2007). In the empirical analysis we rely on the single FBR since we do not know one's marital status from the administrative records.

[14] By assuming that work is an absorbing state until the full retirement age, we ignore uncertainty pertaining to job stability (which is mitigated by the extended eligibility period, where a disability beneficiary can automatically return to the rolls within a certain time period) or wage growth.

where OOP_{ht} is the out of pocket expenditures (including premiums) associated with coverage by health insurance product *h* (which could be Medicaid, private insurance, or forgoing insurance) at time *t*.

Individuals who face lower out of pocket health expenditure (OOP_{ht}) should have higher SSI exit rates. To the extent that one begins working in order to get off the SSI rolls, then individuals with lower health expenditure would be more likely to work as well. Likewise, if a new insurance product enters the market that lowers out of pocket expenditures among disabled individuals, then SSI exit and work rate would increase.

The budget constraint for DI beneficiaries is slightly different than for SSI. While on DI and zero hours worked, he receives his personalized full benefit = *B*, and value of Medicare coverage (*MC(x)*). As he begins to work, his benefits remain unchanged until he earns over the SGA (for at least 9 months out of 60), after which he loses all of his disability benefits. A DI beneficiary with low assets may qualify for SSI (and Medicaid) benefits while transitioning off the DI program.

If *w*< SGA, working does not impact DI benefits, so all DI beneficiaries covered by Medicare should work as long as the wage net of health expenditure is greater than the disutility of work. If *w*>SGA, the financial return to work for the 10th month out of 60 (when DI benefits are suspended) for a forward-looking DI beneficiary becomes:

$$\sum_{t=a+93}^{t=FRA} \frac{1}{\delta}(w_t - OOP_{ht}(x)) + \sum_{t=a}^{t=93} \frac{1}{\delta}(w_t - MC_t(x)) - \sum_{t=a}^{t=FRA} \frac{1}{\delta}(B_t - MC_t(x)) \qquad (3)$$

Again, healthier beneficiaries with lower out of pocket health expenditures would be more likely to work and leave the DI rolls. Access to health insurance which lowers out of pocket expenditures would also predict higher work and exit rates.

If disability beneficiaries are unaware of their ability to maintain Medicare coverage for 93 months after leaving the DI rolls, then the financial gains to work are simplified, losing the second term in equation 3, and the first term sums from today to the FRA. This misperception would lead a beneficiary to perceive a larger gain to work when health insurance outside of the disability program is cheaper or easier to access, leading to even higher work and exit rates from the cases stated above.

Instead of relying on individual characteristics that are correlated with lower premiums or out-of-pocket spending to test these predictions, we rely on state policy changes that increase access, and thus lower the price, of health insurance for the disabled. These simple budget constraint calculations illustrate that if disabled individuals face lower out of pocket health expenditure (OOP_{ht}), there are several reduced-form predictions for disability beneficiaries:

1) If there is a behavioral response, labor force participation rates should increase among disability beneficiaries in states where health insurance is easier to access at a lower price for disabled individuals. No beneficiaries currently working should withdraw from the labor force, because the same bundle of (leisure, other goods) was available before the state changes made health insurance easier to access.
2) If there is a strong behavioral response, the number of beneficiaries leaving the disability rolls should increase because the new health insurance opportunities are only relevant to beneficiaries who leave the program and lose disability-tied health insurance.[15]
3) Due to the different budget constraints facing disability beneficiaries, and different levels of familiarity with the Medicaid program, there may be differential responses based on which disability program one is enrolled in or in the manner in which a state makes health insurance available to disabled individuals.
4) Beneficiaries who value medical insurance more will be more responsive to access to health insurance. We test for heterogeneous responses on three margins to try to identify individuals who place a high value on access to health insurance: disability diagnosis, medical spending, and lack of private insurance coverage while on the disability rolls.

Diagnosis. We selected five diagnoses to examine based on their likely underlying work capability and their demand for medical insurance. We hypothesize that access to health insurance will have little impact on those with an intellectual disability due to a likely low level of underlying work ability. We also examine the two fastest growing diagnosis: musculo-skeletal and mental illness. We hypothesize that these diagnoses might be more responsive, since the award decision relatively frequently involve "vocational considerations"[16] and that are

[15] Easier access to health insurance could also impact applications to the disability program, but this is beyond the scope of this paper.
[16] Many are allowed based on "vocational considerations" while "meets or equals the listings" at an earlier stage in the disability determination process is more prevalent in the case of other diagnostic categories.

directly related to work-related factors. In addition there may be relatively high demand for services associated with recurring co-payments (such as doctor visits, physical therapy, psychiatric and psychological counseling) and high prescription drug costs in the private health insurance market. We also examine endocrine disorders, since diabetes would also include consistently high health care costs, but once controlled, a beneficiary may have residual work capacity. Finally we examine neoplasm diagnoses. While they have a relatively high mortality rate (Autor and Duggan 2003), those that do not die tend to have relatively high work-rates, and thus may be more likely to respond to health insurance access that does not price based on pre-existing conditions.

Medical spending while a beneficiary. To the extent that medical spending is persistent, disability beneficiaries with medical spending are likely to value health insurance coverage more than those with no claims. Among traditional Medicaid and Medicare Part A and Part B enrollees who do not have additional private insurance coverage, we define three mutually exclusive and exhaustive groups of medical expenditure (zero; moderate, $1-6,000 annually; high, $6,001+ annually). We hypothesize that disabled individuals with moderate expenditure will be more likely to work in states with easier access to health insurance, compared to individuals with no medical expenditures. Ex ante it is less clear what to expect from high-expenditure beneficiaries. Very high expenditures may be associated with a level of case severity that makes them unresponsive to financial incentives. On the other hand, they are able to get health insurance that they value more at the same price as the moderate spending beneficiaries, so they may be more responsive.[17]

No private insurance coverage while a beneficiary. The job-lock literature has shown that individuals with access to health insurance coverage from other sources – such as a spouse's employer – do not exhibit the same decreased job turnover rates due to health insurance access. The administrative data we use indicate whether a DI-beneficiary with Medicare coverage has health insurance from a private source, making Medicare the secondary payer. This private coverage could be from any source – previous employment, current employment, individual

[17] We are grateful to Sarah Taubman for this potential explanation.

coverage, or spousal coverage – and allows us to test for differential sensitivity based on health insurance access.

3. Identification: State Policy Impacting Health Insurance Access for Disabled Adults

State policy plays a large role in determining the access and affordability of health insurance within the state, both through non-group health insurance regulation and through eligibility rules for Medicaid eligibility. We use changes in state policies regulating access and price to health insurance to identify disability benefit lock.

States have a lot of latitude in designing their Medicaid programs, both in terms of defining benefits and the eligible population beyond the federal mandated coverage limits. For example, some states opt to cover all adults without children with incomes up to 100 percent of the federal poverty level (FPL). States with more generous access to Medicaid for adults increase the number of health insurance options for low-income populations. To proxy for the Medicaid eligibility limits for adults, we calculate the ratio of the number of Medicaid insured adults to the number of adults with incomes less than 100 percent of the FPL. There is considerable variation in this ratio within a state over time, as illustrated in Figure 1.

Further, states have been introducing Medicaid buy-in programs, where disabled individuals whose income or assets disqualify them from traditional Medicaid may buy into the program, paying an income-adjusted premium. This policy increases access to health insurance for the precise population of interest. Medicaid buy-in programs have been rapidly increasing over our study period, with 36 states introducing a program by 2006 (Figure 2).

States have a variety of underwriting regulations for the non-group market which impact the price and access to non-group health insurance, especially relevant for disabled individuals. The two most common regulations – and the ones we focus on in this paper – are "guaranteed issue" and "community rating." Guaranteed issue means that insurers have to offer every applicant a policy, but there are no limitations on the price of the policy. Community rating legislation limits the ability of the insurer to use individual characteristics for underwriting insurance policies.[18] These regulations greatly affect non-group market prices and access, with differential impacts based on individual health risk. Unregulated markets have lower premiums

[18] We follow Herring and Pauly (2006) and combine the presence of guaranteed issue and community rating regulation into one variable for "strict" regulation since these regulations are highly correlated.

for healthy individuals and higher premiums for sick individuals. While the success of the regulations varies, the general consensus is that regulated markets expand access for the least healthy individuals – they are more likely to be covered in the non-group market and less likely to be uninsured under strict-regulation regimes (Buckmueller and DiNardo 2002, Herring and Pauly 2006, Belloff and Cantor 2008, LoSasso and Lurie 2009, LoSasso 2011).

Figure 3 shows the variation in strict health insurance regulation during our sample period. There have been a few states that both introduce and repeal strict health insurance regulation of the non-group market. Our identification of this effect comes from changes in MA, KY, NH and NJ.

4. Estimation

To estimate whether health insurance regulation has an overall impact on work effort among DI and SSI recipients, we estimate the following probit model:

$$Work_{it} = \beta_0 + \beta_1 HI\ Market_{st} + \beta_2 X_i + \beta_3 Z_{it} + S_{it} + \gamma_t + \varepsilon_{it} \qquad (4)$$

where $Work_{it}$ is an indicator for whether an individual has positive earnings.[19] *HI Market*$_{st}$ is a vector of state-level variables, indicating changes in health insurance access, and β_1 measures the effect of health insurance access on work effort. X_i is a vector of time-invariant individual characteristics, which include initial primary disability diagnosis (congenital, endocrine, infections and parasitic, injuries, intellectual disability, mental, neoplasms, circulatory, digestive, genitourinary, nervous, respiratory, musculo-skeletal [omitted group], other), an indicator for the presence of a secondary diagnosis, and gender. We also include indicators for prior earnings to capture capacity and taste for work prior to disability onset. We use two variables here: (a) inflation-adjusted average earning 5 to 10 years prior to a beneficiary's first-ever disability award; and (b) the number of years for the same period with earnings. The first measure is intended to proxy pre-disability earnings capacity, while the second is intended to measure the degree of pre-disability labor force attachment in a way that is independent of earnings capacity. Z_{it} is a vector of time-varying individual characteristics, including age categories and indicators for how long one has been on the disability rolls. Also included are indicators for the beneficiary's historical disability program status: have received only DI benefits to date, have

[19] A similar equation is estimated to model the transition to nonbeneficiary status (exit from the disability rolls for reasons other than death and reaching age 65).

received only SSI benefits to date (omitted group), or have had both DI and SSI benefits at some point since first disability award. We include information on the number of months the individual was covered by Medicare and Medicaid at time t and t-1, and an indicator for the individual being dual-eligible at time t. We also create a categorical variable to measure the level of Medicare and Medicaid expenditures at time t, respectively. The expenditure is defined as "zero" if the individual has no expenditure that year (omitted group), "moderate" if the individual has between $1-$6,000 expenditure, and "high" expenditure if the claims data indicate more than $6,000 of claims that year.[20] Also included is an indicator for Medicare being the "primary payer" among Medicare-covered individuals, so we don't accidentally label a zero or moderate Medicare expenditure person with unobserved non-Medicare expenditures as healthy. S_{it} is a vector of state of residence fixed-effects, γ_t is a vector of year fixed-effects.

In order to test for differential effects by diagnosis, we estimate equation (1) for sub-samples with the diagnosis of interest as the primary diagnosis. To test for differential effects by medical spending we estimate a triple-difference variation of equation (4):

$$Work_{it} = \beta_0 + \beta_1 HI\ Market_{st} + \beta_2 X_i + \beta_3 HI\ Market_{st} * V_{it} + \beta_{43} Z_{it} + S_{it} + \gamma_t + \varepsilon_{it} \qquad (5)$$

where V_{it} is a vector of medical spending. The marginal effects are calculated to take into account the interaction terms (Ai and Norton 2003). We estimate a similar model for differential effects by private health insurance coverage while on the disability rolls.

Further testing for heterogeneous effects requires sample restrictions. When examining the differential impact of health insurance access by medical spending, we limit the sample to traditional Medicaid enrollees and traditional Medicare enrollees with both Part A and Part B coverage without private insurance coverage to ensure that we have complete insurance claims data. When testing for differential sensitivity if one already has private health insurance coverage, we limit the sample to beneficiaries who have Medicare coverage during the entire calendar year.

[20] The selection of these categories was the result of an analysis of empirical patterns of medical expenditure distributions and their relationship to relevant outcomes such as death, disability program exits, and earnings during the subsequent year, as well as benchmarking against national statistics of average medical expenditures among persons in their early fifties (mainly reflecting the average for nondisabled individuals). We do not have individual spending for Medicare HMO enrollees so we assign them the average HMO spending.

5. Data

This paper uses a combination of administrative datasets. First, we use an individual-level data file that was developed under a collaborative project between Center for Medicare and Medicaid Services (CMS) and SSA, and was the first effort to create a longitudinal file of DI and SSI beneficiaries combined with Medicaid and Medicare records at the individual level (Rupp and Riley 2011, 2012). Our main analytical file is a 10-percent sample of individuals ages 18-64 receiving SSDI or SSI at some point between 1999 and 2006. The person-year file was constructed to include current or former beneficiaries alive and aged 18-64 during the applicable reference year (2000-2006) for the given person-year observation.[21] The file contains information on DI and SSI awardee characteristics, DI and SSI benefit eligibility, benefit amounts, and date of death on a monthly basis, and annual earnings histories from a variety of SSA administrative record systems. The earnings data were adjusted to account for certain non-wage items believed to be associated with W-2 reports from certain Employment Identification Numbers (EINs).[22] Administrative data on Medicaid and Medicare – both coverage and expenditures – were merged to the dataset. Medicare and Medicaid coverage variables are available on a monthly basis, while the expenditure data reflect annual totals.[23]

Second, we merge to this micro dataset publicly available state-level data on health insurance regulatory changes (guarantee issue, community rating),[24] Medicaid generosity measures, and Medicaid buy-in programs for the disabled.[25] We also added to the dataset state-level unemployment rates from the Current Population Survey (CPS).

Because many of our variables are observed only on an annual basis – earnings, expenditure from Medicare and Medicaid – we first collapse the data and create an individual-

[21] While we focus on disability cash benefit and public health insurance expenditure data for the 1999 to 2006 period, benefit history going back to 1994 and earnings records going back to 1978 were available. From the longitudinal earnings records we created variables reflecting earnings 6-10 years prior to the start of the individual's first benefit eligibility spell.

[22] The results are highly robust to the use of this adjustment, but we believe that the adjusted series gives a more accurate reflection of earnings for the sample used for this study.

[23] For more detail on the source data sets, see Rupp and Riley (2011, 2012). Spending by Medicare and Medicaid HMO beneficiaries is set to be the average spending per patient in each type.

[24] Data on state regulations of health insurance were compiled from The Henry J. Kaiser Family Foundation (2010a; 2010b), and Georgetown University Health Policy Institute (2004).

[25] These data were compiled from Kehn, Croake, and Schimmel (2010), Croake and Liu (2009), Gruman et. al (2008), Jensen (2004, 2006), Georgia Department of Community Health (https://www.gmwd.org/WebForms/StaticContent1.aspx), Delaware Health and Social Services (http://dhss.delaware.gov/dhss/dmma/), Commonwealth of Kentucky (http://manuals.chfs.ky.gov/dcbs_manuals/DFS/VOLIVA/OMVOLIVA.pdf).

year (unbalanced) panel dataset. Individuals had to be alive and between ages 18 to 64 on January 1 of each year for inclusion. Some monthly information is retained, such as the number of months a beneficiary had Medicaid, Medicare, or was in trial work period status. However, earnings – our main outcome of interest – is only available on an annual basis, while many of the concepts described above are monthly in nature – i.e. if a beneficiary earns above the SGA or (2*FBR+$85). In order to address this issue, we annualize the monthly levels (multiply the SGA and FBR by 12), as has been done in previous work (Schimmel, Stapleton and Song 2011). This process will miss month-to-month variation in earnings and will introduce some measurement error into the measurement of our outcomes of interest. However, it will still pick-up sustained earnings necessary to exit the disability rolls due to work effort.

6. Results

6.1 Descriptive Statistics

Table 1 presents the sample means of our 3 samples: the Full Sample, Traditional Medicaid/Medicare enrollees,[26] and Medicare-covered Beneficiaries. The unit of observation for sample means is the person-year.

Overall, the sample means are reasonably similar except for variables that are related to factors affecting rules of eligibility for participation in the different programs. Twenty-two percent of the overall sample has positive earnings, slightly higher than the two sub-samples. Twenty-two percent of the overall sample leaves the disability rolls, while only 12 percent do in the subsamples. As expected, mental and musculo-skeletal conditions are the most common diagnoses among disability beneficiaries. Almost one-half of the samples have more than one diagnosis.

On average, individuals in the Full Sample had over 5 months of Medicaid coverage this year and last year, while they had around 6 months of Medicare coverage this year and last. Coverage months increase when we limit the sample to traditional Medicaid and Medicare enrollees. By construction, the Medicare-covered Beneficiaries sample has 12 months of Medicare coverage during the current year, and not surprisingly over 11 months during the preceding year. Interestingly, the months of Medicaid coverage statistic does not change much

[26] We define the traditional Medicaid and Medicare enrollee sample as anyone in the traditional fee for service (non-HMO) Medicaid program in year t, and anyone in the traditional fee for service Medicaid Part A and Part B programs, without private health insurance coverage, to ensure we have accurate claims data.

when we limit the sample to the Medicare-covered Beneficiaries sample: on average they still had over 4 months of Medicaid coverage this and the previous year.

Eighteen percent of the Full Sample had coverage from both disability programs during the current calendar year, but not surprisingly there is substantial variation in the other samples. For example, there are almost no SSI-only beneficiaries in our Medicare-coverage beneficiaries sample. Approximately 50 percent of our samples are female. Half of the Full Sample is between the ages of 35 and 55 and almost a quarter are between 55 and 61.

Variables related to program participation – both characteristics related to eligibility for the DI program and health insurance – are the other margin in which we see significant differences between the samples. Prior average annual earnings, measured 6-10 years before the disability application, also vary dramatically by sample. The Full Sample had prior average annual earnings of almost $9,000; the Medicare-covered sample had prior average annual earnings of over $12,000. This is as expected since a history of higher earnings translates to higher DI benefits, which makes one less likely to meet the means test for SSI benefits after completion of the 5-month DI waiting period. Almost half of all three samples (44-51 percent) have been on the disability rolls for 10 years or more.

6.2 Overall effect. The results estimating equation (1) are presented in Table 2.[27] To see if there are different effects based on which disability program(s) one is enrolled in, we present the results for the full sample (column 1), for the DI-only (column 2), the SSI-only (column 3), and the DI-SSI concurrent (column 4) subsamples. Panel A presents the results for the probits estimating the likelihood of positive earnings; Panel B the results for leaving the disability rolls. Each cell contains the probit coefficient, standard error in parentheses, and marginal effect in brackets. The marginal effects of the interaction terms account for the nonlinearity of the model (Ai and Norton 2003).

The coefficients of particular interest are the health insurance regulations. For the most part, the state health insurance measures are not significant predictors of having positive earnings. Medicaid buy-in programs have a positive, but small, effect on earning, increasing the overall likelihood of positive earnings by 0.4 percentage points. Off a base of 22 percent working, this represents a relatively small effect of less than 2 percent increase in the percent in

[27] The full results of estimating equation (1) are presented in Appendix Table 1.

the labor market. Additionally, Panel B shows that overall, these measures of health insurance access have no impact on the probability of leaving the disability rolls. *Differential Response based on Program.* The different work incentives (zero vs. 50 percent tax) and the different levels of earnings for which these tests apply (SGA vs. 2*FBR+85), could impact the likelihood someone worries about working their way off the rolls. Table 2 also explores the heterogeneity in the response to health insurance access by disability program. Here we find interesting heterogeneity by program. While both DI and SSI beneficiaries are more likely to work in states with a Medicaid buy-in program, the impact is over two times larger for SSI-beneficiaries. This is not surprising, since disincentives to enter the labor market under the SSI program are stronger – DI beneficiaries do not lose benefits for minimal earning levels, while SSI benefits are reduced at a 50 percent offset rate. Further, Medicaid buy-in programs have differential impacts among SSI and DI recipients, which explains the null effect found in the total sample. The likelihood of SSI-only beneficiaries leaving the disability rolls is 0.2 percentage points higher in states with Medicaid buy-in programs, while DI-only beneficiaries are 0.2 percentage points *less* likely to leave the disability rolls in these states. This latter negative effect could be due to the Medicaid buy-in program itself having a negative impact on work effort among DI-only beneficiaries who restrict their work efforts to maintain eligibility under Medicaid buy-in programs.

In addition, states with high adult Medicaid enrollment have a 0.3 percentage point higher disability program exit rates among individuals who are receiving both DI and SSI, which was masked in the overall analysis. While these are statistically significant effects, they remain relatively small (0.01 percent increase off a base of 29 percent leaving the rolls).

6.3 Differential Response based on Diagnosis. One potential reason for the lack of substantial effects overall in Table 2 is that only certain individuals would be expected to be responsive to non-group health insurance or Medicaid program eligibility, and so the non-responders are making the average effect close to zero. To test this hypothesis, we estimated five disaggregated equations that are conditioned on belonging to one of five primary diagnostic groups: intellectual disability; musculo-skeletal; mental illness; endocrine disorders; and neoplasms. The results are presented in Table 3.

As hypothesized, health insurance access has little impact on individuals diagnosed with intellectual disorders, likely due to a low level of underlying work ability. We again see the

Medicaid buy-in programs are successful at getting some disabled individuals into the workforce, primarily driven by musculo-skeletal and mental disorders, which is consistent with the notion that these individuals value health insurance more due to their relatively high and persistent medical spending. Work effort among beneficiaries diagnosed with neoplasms and endocrine disorders are also positively associated with Medicaid buy-in programs, but the relationship is not statistically significant in these sub-groups.

However, Panel B shows that access to health insurance seems to be impacting the intensive margin only; none of these subgroups are working enough to leave the disability rolls altogether. This could be due to a true inability to work enough to no longer be classified as disabled, or that health insurance access is not providing enough of an incentive to get individuals to leave the rolls and forego their free, disability-connected health insurance coverage.

6.4 Differential Response based on Health Insurance Utilization. To test if current health spending is related to the extent to which health insurance access can impact disability benefit lock, we also limit the sample to individuals covered in the traditional fee for service Medicaid program, traditional fee for service Medicare Parts A and B, and do not have private health insurance, to insure we have accurate health insurance utilization measures from the claims data. Figure 4 illustrates the cumulative distribution of annual health insurance costs for this sample, by medical insurance program. Not surprisingly, medical expenditure is highly skewed within the Medicare, Medicaid, and dual-eligible populations. Medicare beneficiaries spend less while dual-eligibles spend the most.

Given these spending distributions, we define three mutually exclusive and exhaustive groups of medical expenditure (zero; moderate, high). While only 0.3 percent of dual-eligibles spend zero, a full 16 percent of Medicare-only disability beneficiaries have no Medicare expenditures. The moderate category, $1-6,000 annually, captures 60 percent of the Medicare-only beneficiaries and almost 1/3rd of the dual-eligibles.

We modify equation (4) to include interaction terms with levels of health expenditure, presented in Table 4.[28] The first column presents the direct effect of the variable of interest on the work outcome; columns 2-4 present the interaction terms between the variables of interest

[28] The coefficients, standard errors, and marginal effects of the variables of particular interest are presented only due to space limitations. Full results are available from authors upon request.

and the health insurance regulations – strict regulation of the non-group market, Medicaid buy-in program, and Medicaid generosity, respectively. The interaction terms are the coefficients of interest since this is essentially a triple-difference specification, comparing beneficiaries between states, over time, by medical spending levels.

In this specification, the level-effects are also of interest. We find that medical spending is negatively related to both earnings and leaving the disability rolls. For example, beneficiaries with no medical expenditures have a 1.4 and 1.7 percentage point higher likelihood of leaving the disability rolls than those with moderate or high medical expenditures, respectively. While we do not want to ascribe causality to these patterns, they are consistent with the notion that medical expenditure is picking up unmeasured severity; simply that beneficiaries with high medical expenditures are sicker and thus less able to work. These high expenditure beneficiaries may also be the most sensitive to losing health insurance.

Given the level effects, the interaction effects reported are triple-differences. Controlling for state, year, and medical expenditure levels, these interaction terms test whether there is a differential in propensity to work between beneficiaries with no vs. moderate/high medical expenditures in states with easier access to health insurance, compared to no vs. moderate/high medical expenditure beneficiaries in states with more difficult or expensive access.

Here we find significant effects of regulation in the non-group market on work effort. Beneficiaries with moderate or high medical expenditures are less likely to have positive earnings in states that impose strict regulation in the non-group market, but Medicaid expansions tend to encourage labor force participation. This difference between programs could be driven by the price of insurance – strictly regulated individual health insurance markets increase access but also tend to have associated premiums that are much higher than expanding access through Medicaid expansions or buy-in programs. This price differential could discourage work effort if earning enough to sustain consumption and pay the premium seems too difficult.

Adult enrollment in the Medicaid program has the hypothesized u-shape, with a higher impact on moderate-spending beneficiaries than high spending ones (1.1 and 0.6 percentage points higher than their zero-spending counterparts). However, the Medicaid buy-in effect on earning is effective at increasing work effort only among individuals with high medical spending: 0.5 percentage point higher likelihood of having positive earnings than their zero-spending counterparts.

Panel B presents the results for leaving the disability rolls. While strictly-regulated states had lower labor force participation among moderate and high spending disability beneficiaries, they have higher exit rates than their zero-spending counterparts (0.9 and 1.2 percentage points, respectively). Given that overall 12 percent leave the disability rolls in this sample, these represent a 0.75-1.0 percent increase in the exit rate.

We find that Medicaid expansions have a virtually no impact on high-spending individuals, and differential impacts on moderate-spending beneficiaries, depending on how the program is expanded. Compared to their zero-spending counterparts, Medicaid buy-in programs decrease the probability of moderate spending individuals to leave the disability rolls by 0.2 percentage points, while high rates of adult enrollment in Medicaid overall increases the probability of leaving the rolls by 1.8 percentage points. Further work as to why Medicaid buy-in programs have this differential effect is warranted since it could be due to work disincentives related to the premium structure of the program itself.

6.5 Differential Response based on Current Health Insurance Access. Table 5 presents the results testing whether individuals with Medicare as a secondary payer – having current private insurance coverage (which is primary by law) – are less sensitive to health insurance access through the non-group market compared to those with only public insurance (Medicare and in some cases also Medicaid) coverage. The sample is limited to individuals with Medicare coverage for the entire calendar year. The results in Table 5 are presented in the same manner as Table 4, with each column presenting the level and interaction effect within the same probit regression model, and panel A presenting the results for positive earnings and panel B presenting the results for exiting the disability rolls.

The level-effects in this regression are also of interest. Overall, we find that disability beneficiaries with private health insurance are more likely to have positive earnings (0.5 percentage points) but less likely to leave the disability rolls (by 3.5 percentage points). We do not find consistent evidence of particular types of health insurance access leading to gains in both work and disability exits. Beneficiaries with access to private insurance are more likely to work in strictly regulated states, but are more likely to leave the disability rolls in states with Medicaid buy-in programs. In fact, when examining for differential responses by program, we find that DI-only beneficiaries with private health insurance coverage are actually less likely to have positive earnings in Medicaid buy-in states but more likely to leave the rolls. This is

suggestive evidence that the Medicaid buy-in program's work disincentives split the DI-only population into two types—those who respond by cutting their work effort and those who respond by increasing their work effort and leaving the disability rolls. DI-SSI concurrent beneficiaries are more likely to work and more likely to leave the rolls in strictly regulated states.

7. Conclusions

The disability benefit lock hypothesis is a longstanding policy concern but yet it is relatively unexamined empirically. While disability beneficiaries can maintain public health insurance if they exit the rolls due to work, there remains concern that beneficiaries are unaware of this fact, and thus "perceived disability benefit lock" continues. This paper sheds light on this phenomenon, and tests whether state health insurance policy can help alleviate this problem.

Overall, there is little relationship between state health insurance access and beneficiaries working or leaving the disability rolls. This may reflect the success of previous reforms extending Medicaid and Medicare eligibility for people leaving the DI and/or SSI rolls for work-related reasons. SSI beneficiaries appear to be the most responsive to health insurance access gained through Medicaid, either through a buy-in program or generous eligibility rules. However, we find some evidence of remaining disability benefit lock even after the expansion of continued Medicaid and Medicare eligibility for some subgroups, highlighting the importance of heterogeneity. Our findings suggest that different state-level policies assist the disabled to leave the rolls in certain situations. We find that Medicaid buy-in programs ease disability benefit lock among beneficiaries with medical expenditures and among beneficiaries without access to private health insurance. Further, we find that strict health insurance regulation helps to ease SSI lock among those with moderate medical expenditures and eases disability benefit lock among beneficiaries without access to private health insurance. Finally, we find that Medicaid generosity has differential impacts among DI and SSI recipients, a finding consistent with differences in rules governing public health insurance coverage between the two programs.

References

Ai, Chunrong & Norton, Edward C., 2003. "Interaction Terms in Logit and Probit Models." *Economics Letters*, Elsevier, vol. 80(1), pages 123-129, July.

Autor, David and Mark Duggan. 2006. "The Growth in the Social Security Disability Rolls: A Fiscal Crisis Unfolding." *Journal of Economic Perspectives* 20(3): 71-96.

Belloff, Dina and Joel Cantor. 2008. "Private Insurance Coverage: A Case Study of the Small Group Market in New Jersey." Albany, NY: New York State Health Policy Research Center.

Buckmueller, Thomas C. and John DiNardo. 2002. "Did Community Rating Induce an Adverse Selection Death Spiral? Evidence from New York, Pennsylvania, and Connecticut." *American Economic Review* 92(1): 280-294.

Buchmueller, Thomas C. and Robert G. Valletta. 1996. "The Effects of Employer-Provided Health Insurance on Worker Mobility." *Industrial and Labor Relations Review* 49(3): 439-455.

Croake, Sarah and Su Liu. 2009. "A Government Performance and Results Act (GPRA) Report: The Status of the Medicaid Infrastucture Grants Program as of 12/31/08." Princeton, NJ: Mathmatica Policy Research, Inc.

Commonwealth of Kentucky. "Operational Manual Volume IVA: Medicaid (MA) and State Supplementation." Available at: http://manuals.chfs.ky.gov/dcbs_manuals/DFS/VOLIVA/OMVOLIVA.pdf.

Delaware Health and Social Services. "Division of Medicaid & Medical Assistance." Available at: http://dhss.delaware.gov/dhss/dmma/.

Ellwood, David and Kathleen Adams. 1990. "Medicaid Mysteries: Transitional Benefits, Medicaid Coverage, and Welfare Exits." *Health Care Financing Review* 1990 Annual Supplement: 119-131.

Georgia Department of Community Health. "What is Georgia Medicaid for Workers with Disabilities (GMWD) Medicaid?" Available at: https://www.gmwd.org/WebForms/StaticContent1.aspx.

Georgetown University Health Policy Institute. 2004. "Summary of Key Consumer Protections in Individual Health Insurance Markets. April, 2004." Washington, DC.

Gruber, Jonathan. 2000. "Health Insurance and the Labor Market." In *Handbook of Health Economics, Volume 1A*, edited by Anthony J. Culyer and Joseph P. Newhouse, 645-706. Amsterdam, Netherlands: Elsevier B.V.

Gruber, Jonathan and Jeffrey Kubik. 2002. “Health Insurance Coverage and the Disability Insurance Application Decision.” Working Paper 9148. Cambridge, MA: National Bureau of Economic Research.

Gruber, Jonathan and Brigitte C. Madrian. 1994. “Health Insurance and Job Mobility: The Effects of Public Policy on Job-Lock.” Industrial and Labor Relations Review 48(1): 86-102.

———. 2004. “Health Insurance, Labor Supply and Job Mobility: A Critical Review of the Literature.” In *Health Policy and the Uninsured*, edited by Catherine McLaughlin, 97-178. Washington, DC: Urban Institute Press.

Gruman, Cindy, Sarah Croake, Jody Schimmel, and Su Liu. 2008. “A Government Performance and Results Act (GPRA) Report: The Status of the Medicaid Infrastructure Grants Program as of 12/31/07.” Princeton, NJ: Mathmatica Policy Research, Inc.

Henry J. Kaiser Family Foundation. 2010a. “50 State Comparisons: Individual Market Rate Restrictions (Not Applicable to HIPPAA Eligible Individuals.” Accessed April 12, 2011. Available at: http://www.statehealthfacts.org/comparetable.jsp?ind=354&cat=7.

———. 2010b. “50 State Comparisons: Individual Market Guaranteed Issue (Not Applicable to HIPPAA Eligible Individuals.” Accessed April 12, 2011. Available at: http://www.statehealthfacts.org/comparetable.jsp?ind=353&cat=7.

Herring, Bradley and Mark V. Pauly. 2006. “The Effect of State Community Rating Regulations on Premiums and Coverage in the Individual Health Insurance Market.” Working Paper 12504. Cambridge, MA: National Bureau of Economic Research.

Jensen, Allen. 2004. “Initial Development of Medicaid Buy-In Program and Related Comprehensive Employment Initiatives October 2002.”

———. 2006. “Initial Development of Medicaid Buy-In Program and Related Comprehensive Employment Initiatives October 2004.”

Kehn, Matthew, Sarah Croake and Jody Schimmel. 2010. “A Government Performance and Results (GPRA) Report: The Status of the Medicaid Infrastructure Grants Program as of 12/31/09.” Princeton, NJ: Mathmatica Policy Research, Inc.

Livermore, Gina A., Allison Roche, and Sarah Prenovitz. 2009. *Work Activity and Use of Employment Supports Under the Original Ticket to Work Regulations: SSI and DI Beneficiaries with Work-Related Goals and Expectations*. Washington, DC: Center for Studying Disability Policy (Mathematica Policy Research, Inc.).

Livermore, Gina A., David C. Stapleton, and Henry Claypool. 2009. “Health Insurance and Health Care Access Before and After SSDI Entry.” Publication 1255. New York, NY: The Commonwealth Fund.

LoSasso, Anthony T. 2011. “Community Rating and Guarantee Issue in the Individual Health Insurance Market.” *Expert Voices* January. Washington, DC: NIHCM Foundation.

LoSasso, Anthony T. and Ithai Z. Lurie. 2009. “Community Rating and the Market for Private Non-Group Health Insurance.” *Journal of Public Economics* 93(1-2): 264-279.

Madrian, Brigitte C. 1994. “Employment-Based Health Insurance and Job Mobility: Is There Evidence of Job Lock?” *Quarterly Journal of Economics* 109(1): 27-54.

Muller, L. Scott, Charles G. Scott, and Barry V. Bye. 1996. “Labor-Force Participation and Earnings of SSI Disability Recipients: A Pooled Cross-Sectional Times Series Approach to the Behavior of Individuals.” *Social Security Bulletin* 59(1): 22-42.

Newcomb, Chad, Suzanne Payne, and Mikki D. Waid. 2003. “What Do We Know About Disability Beneficiaries’ Work and Use of Work Incentives Prior to Ticket? Background Information and Baseline Data.” In *Paying for Results in Vocational Rehabilitation: Will Provider Incentives Work for Ticket to Work*? edited by Kalman Rupp and Stephen H. Bell, 31-69. Washington, DC: Urban Institute Press.

Rupp, Kalman, Paul S. Davies and Alexander Strand. 2008. “Disability Benefit Coverage and Program Interactions in the Working-Age Population.” *Social Security Bulletin* 68(1): 1-30.

Rupp, Kalman and Gerald F. Riley. 2011. “Longitudinal Patterns of Participation in the Social Security Disability Insurance and Supplemental Security Income Programs for People with Disabilities.” *Social Security Bulletin* 71(2): 25-51.

———. 2012. “Longitudinal Patterns of Medicaid and Medicare Coverage among Disability Cash Benefit Awardees.” *Social Security Bulletin* 72(3):19-35.

Schimmel, Jody, David C. Stapleton, and Jae G. Song. 2011. “How Common is ‘Parking’ among Social Security Disability Insurance Beneficiaries? Evidence from the 1999 Change in the Earnings Level of Substantial Gainful Activity.” *Social Security Bulletin* 71(4): 77-92.

Stroupe, Kevin T., Eleanor D. Kinney, Thomas J.J. Kniesner. 2001. “Chronic Illness and Health Insurance-Related Job Lock.” *Journal of Policy Analysis and Management* 20(3): 525-44.

U.S. Social Security Administration. 2012. *The Red Book – A Guide to Work Incentives*. Baltimore, MD.

Yelowitz, Aaron S. 1995. “The Medicaid Notch, Labor Supply and Welfare Participation: Evidence from Eligibility Expansions.” *Quarterly Journal of Economics* 110(4): 909-940.

Figure 1. *Number of States with Large Changes in Their Medicaid Generosity*

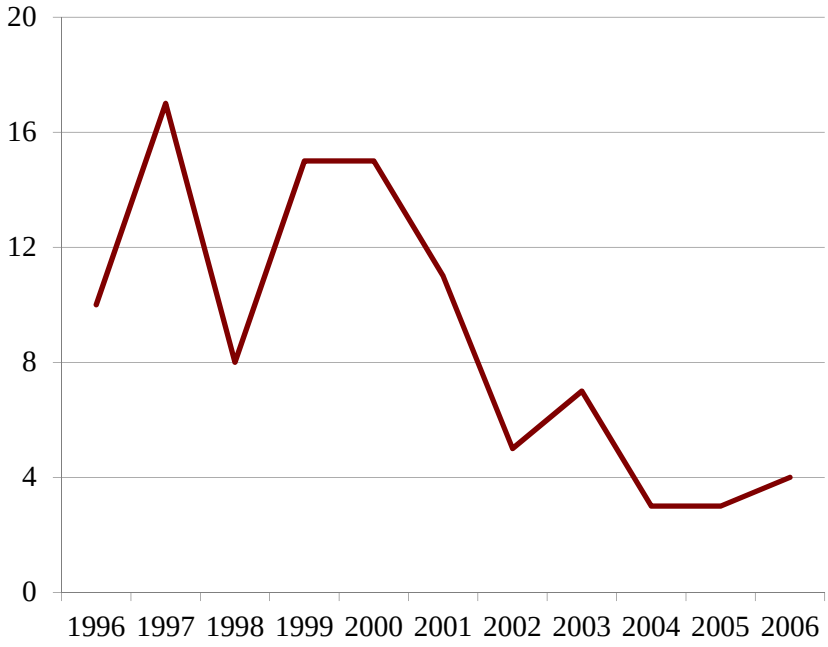

Figure 2. *Number of States with Medicaid Buy-in Programs*

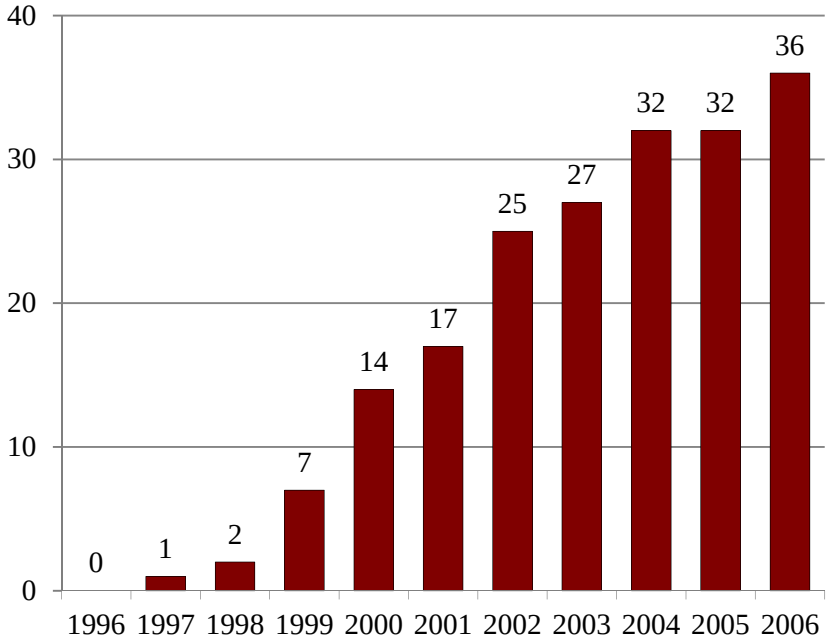

Figure 3. *Number of States with Strict Health Insurance Regulation*

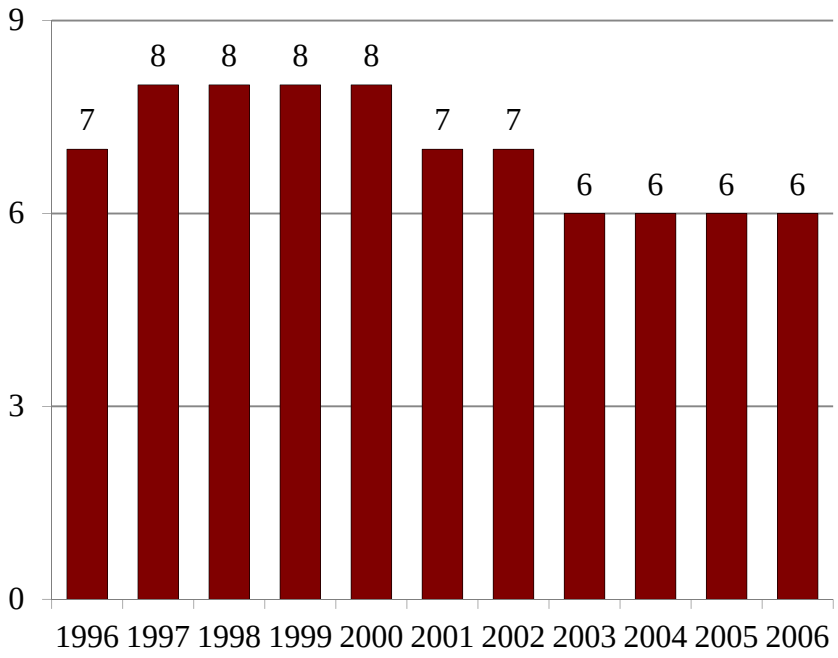

Figure 4. *Individual Public Health Insurance Costs Among Traditional Medicare and Medicaid Beneficiaries without Private Health Insurance: 2005*

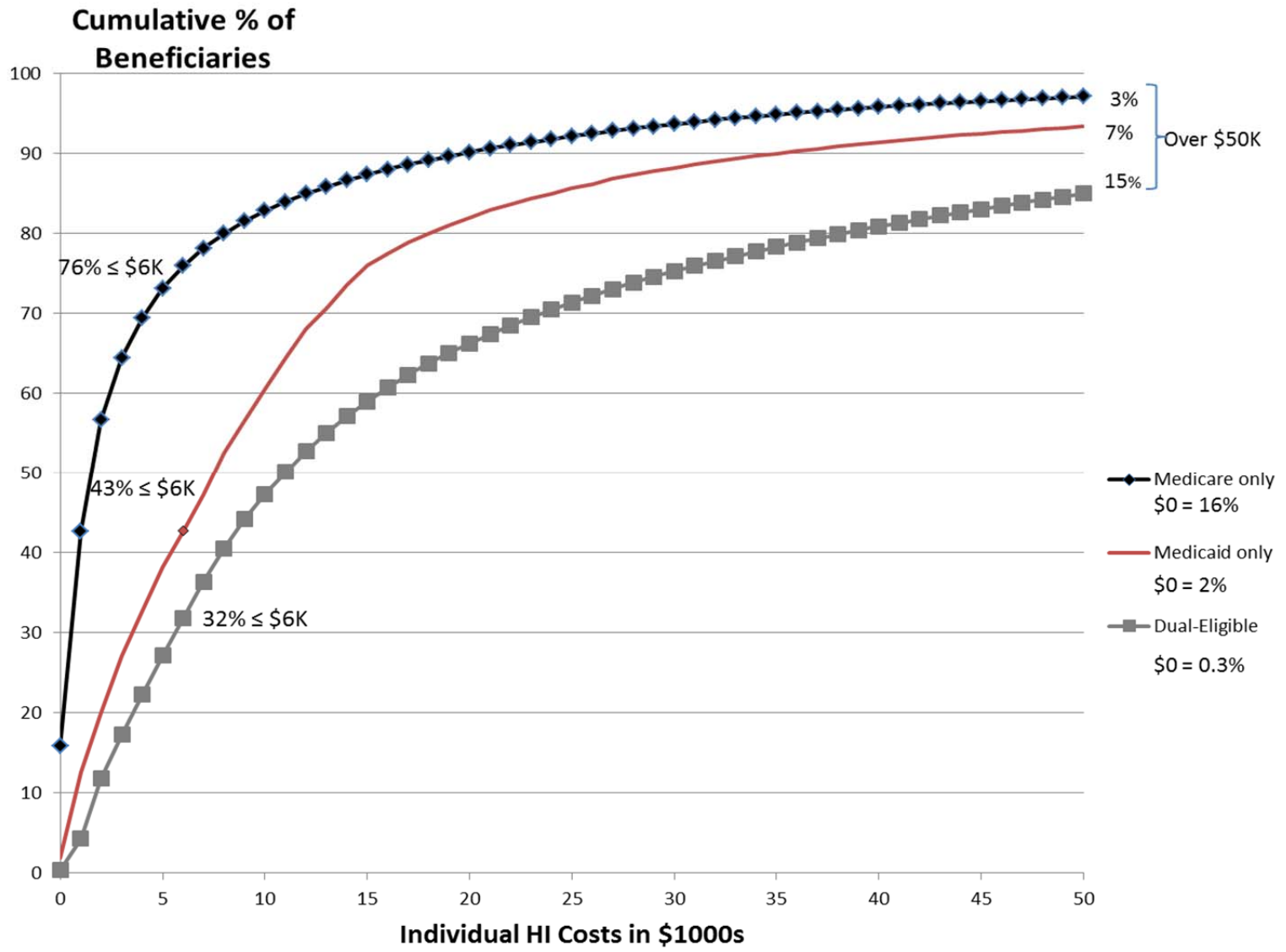

Table 1: Descriptive Statistics

	Full Sample[1]	Traditional Medicare/ Medicaid enrollees[2]	Medicare-covered Beneficiaries Sample[3]
Outcome Variables			
Positive Earnings	0.22	0.16	0.17
Not Receiving Disability Cash Benefits for at Least One Month	0.29	0.18	0.18
Not Receiving Disability Cash Benefits All Year	0.22	0.12	0.12
State Health Insurance Policy			
Strict Regulation	0.15	0.17	0.15
Medicaid Buy-In Program	0.50	0.51	0.50
Medicaid Generosity	1.55	1.56	1.54
Disability Diagnoses			
Congenital	0.00	0.00	0.00
Endocrine	0.04	0.04	0.04
Infection or Parasitic	0.02	0.02	0.02
Injury	0.03	0.03	0.04
Intellectual Disability	0.12	0.15	0.10
Mental	0.28	0.30	0.27
Neoplasm	0.02	0.01	0.02
Circulatory	0.07	0.07	0.08
Digestive	0.01	0.01	0.01
Genitourinary	0.01	0.01	0.02
Musculoskeletal	0.18	0.16	0.21
Nervous System	0.08	0.08	0.09
Respiratory	0.03	0.02	0.02
Other	0.01	0.01	0.01
Unknown	0.10	0.08	0.06
Presence of secondary diagnosis indicator	0.48	0.47	0.47
Health Insurance and Expenditures[4]			
Months on Medicaid	5.46	7.60	4.27
Months on Medicaid Last Year	5.32	7.26	4.27
Moderate Medicaid Expenditures	0.30	0.38	0.29
Moderate Medicaid Expenditures Last year	0.30	0.38	0.28
High Medicaid Expenditures	0.23	0.32	0.18
High Medicaid Expenditures Last Year	0.22	0.31	0.18
Months on Medicare	6.29	7.78	12.00
Months on Medicare Last Year	5.63	7.26	11.28
Moderate Medicare Expenditures	0.29	0.40	0.53
Moderate Medicare Expenditures Last Year	0.27	0.39	0.53
High Medicare Expenditures	0.13	0.16	0.26
High Medicare Expenditures Last Year	0.10	0.12	0.20
Both Medicaid and Medicare	0.21	0.31	0.39
Both Medicare and Medicaid last year	0.19	0.29	0.38
Medicare is Secondary Payer	0.03	0.00	0.06

Table 1 (continued): Descriptive Statistics

	Full Sample[1]	Traditional Medicare/ Medicaid enrollees[2]	Medicare-covered Beneficiaries Sample[3]
Demographics			
Female	0.49	0.50	0.46
Age 18-24	0.07	0.06	0.02
Age 25-29	0.05	0.05	0.03
Age 30-34	0.06	0.06	0.05
Age 35-39	0.09	0.09	0.08
Age 40-44	0.12	0.12	0.12
Age 45-49	0.14	0.14	0.14
Age 50-54	0.15	0.15	0.16
Age 55-61	0.23	0.23	0.27
Age 62-64	0.09	0.10	0.12
Earnings History			
Number of years with zero earnings 6-10 years prior to first-ever disability award	1.43	1.39	0.80
Average Earnings 6-10 year prior to first-ever disability award	$8,934.52	$7,625.17	$12,219.87
Disability Program Information[5]			
Both DI and SSI	0.18	0.23	0.27
Only DI	0.44	0.43	0.71
Only SSI	0.38	0.34	0.02
Number of months since first-ever disability-award[6]			
1-12 months	0.07	0.02	0.00
13-24 months	0.07	0.03	0.01
25-36 months	0.06	0.06	0.09
37-48 months	0.06	0.06	0.08
49-60 months	0.05	0.06	0.07
61-72 months	0.05	0.05	0.07
73-84 months	0.05	0.05	0.06
85-96 months	0.05	0.05	0.06
97-108 months	0.05	0.05	0.05
109-120 months	0.05	0.05	0.05
121+ months	0.44	0.51	0.46
Sample Size			
Number of beneficiaries	1,587,698	1,125,536	885,855
Person-year observations	8,093,007	4,512,859	4,006,209

[1] Ten percent sample of current or former DI and/or SSI disability beneficiaries aged 18-64 and alive during 2000-2006 reference year based on individual records from SSA and CMS administrative data systems.

[2] Subsample is limited to people with full traditional Medicaid coverage all year or traditional Medicare coverage for both Part A and Part B and no private insurance all year. Some may satisfy both, while others are covered for all 12 months of the year with one program combined with part-year coverage for the other program. We exclude cases with (a) indication that there was a primary payer on the Medicare record; (b) any months of HMO enrollment on the Medicare or Medicaid record; or (c) Medicare Part B without Part A. Expenditures for subsample includes any Medicare and/or any Medicaid expenditure recorded for given year. Note that some with Medicare coverage only may have Medicaid expenditures as a result of less than full Medicaid coverage; in this study being covered by Medicaid is defined by "full" Medicaid coverage and does not include eligibility to restricted

[3] Subsample limited to DI and/or SSI beneficaries or former beneficiaries who are Medicare covered during 2000-2006 reference year.

[4] Months on Medicaid or Medicaid variables refer to the reference person-year observation. "Last year" refers to year immediately prior to reference year. Expenditure data are limited to program expenditures by the Medicaid and/or Medicaid programs based on CMS administrative records. For both programs expenditures were classified as follows: (a) no expenditure during year; (b) "moderate" expenditure defines as $1-$6,000; (c) "high" expenditure defined as $6,001 or over.

[5] Classification is based on DI-only or SSI-only benefit-receipt between first-ever disability award and the reference year with a residual category of beneficiaries with at least one month in DI, and at least one month in SSI benefit receipt status during the given time-period.

[6] Number of calendar months elapsing between first-ever disability award and January of the reference year. May include months in nonbeneficiary status, and therefore can be interpreted as upper-bound estimate of duration of disability benefit receipt (DI and/or SSI) during given time period.

Table 2: Direct effect of state health insurance policies on positive earnings among disability beneficiaries

Hypothesis 1

	ALL[1]	DI-only[2]	SSI-only[2]	Both DI and SSI[2]
Panel A: Positive Earnings				
State Health Insurance Policy				
Strict Regulation	-0.018	-0.036	-0.011	-0.047
	(0.015)	(0.024)	(0.024)	(0.039)
	[- 0.003]	[- 0.004]	[- 0.002]	[- 0.007]
Medicaid Buy-In Program	0.026 *	0.022 *	0.028 *	0.014
	(0.004)	(0.006)	(0.006)	(0.009)
	[0.004]	[0.002]	[0.005]	[0.002]
Medicaid Generosity	0.001	-0.024 *	0.031 *	0.023
	(0.007)	0.011	(0.012)	(0.017)
	[0.000]	[- 0.003]	[0.005]	[0.004]
Panel B: Leave Disability Rolls				
State Health Insurance Policy				
Strict Regulation	0.007	0.010	0.001	0.021
	(0.018)	(0.034)	(0.027)	(0.053)
	[0.001]	[0.000]	[0.000]	[0.001]
Medicaid Buy-In Program	0.001	-0.033 *	0.019 *	0.005
	(0.004)	(0.008)	(0.007)	(0.012)
	[0.000]	[- 0.002]	[0.002]	[0.000]
Medicaid Generosity	-0.005	0.027	0.011	0.058 *
	(0.009)	(0.016)	(0.013)	(0.023)
	[- 0.000]	[0.001]	[0.001]	[0.003]
N Person-year observations[3]	8,089,831	3,567,362	3,068,715	1,453,754

Note: All regressions include all applicable covariates listed in Appendix Table 1, as well as state and year fixed-effects. The table presents the coefficients, standard errors (in parentheses), and marginal effects (in brackets) from a probit model. Coefficients estimated to be statistically significantly different from zero at the 0.95 level of confidence are indicated by "*". Note that standard error estimates assume single random sampling and therefore include some downward bias.

Note: All regressions include all applicable covariates listed in Appendix Table 1, as well as state and year fixed-effects. The table presents the coefficients, standard errors (in parentheses), and marginal effects (in brackets) from a probit model. Coefficients estimated to be statistically significantly different from zero at the 0.95 level of confidence are indicated by "*". Note that standard error estimates assume single random sampling and therefore include some downward bias.

[1] Ten percent sample of current or former DI and/or SSI disability beneficiaries aged 18-64 and alive during 2000-2006 reference year based on individual records from SSA and CMS administrative data systems.

[3]Person-year observations are slightly lower than those reported in Table 1 descriptive analysis as a result of missing values resulting in exclusion of person-year observations from the model estimating the equations.

Table 3: Heterogenous Effects of State Health Insurance Policies, by Diagnosis

	Intellectual Disability	Musculo-Skeletal	Mental Disorder	Endocrine	Neoplasm
Panel A: Positive Earnings					
State Health Insurance Policy					
Strict Regulation	-0.0369	-0.0305	0.0244	-0.11	0.13
	(0.0421)	(0.0399)	(0.0270)	(0.0996)	(0.1098)
	[- 0.008]	[- 0.003]	[0.004]	[- 0.009]	[0.026]
Medicaid Buy-In Program	-0.00303	0.0658 *	0.0247 *	0.0163	0.0235
	(0.0093)	(0.0094)	(0.0068)	(0.0217)	(0.0243)
	[- 0.001]	[0.006]	[0.004]	[0.001]	[0.005]
Medicaid Generosity	-0.0344	0.032	0.00225	0.0157	0.0649
	(0.0187)	(0.0191)	(0.0133)	(0.0446)	(0.0492)
	[- 0.008]	[0.003]	[0.000]	[0.001]	[0.013]
Panel B: Exit Disability Rolls					
State Health Insurance Policy					
Strict Regulation	0.0513	-0.0805	0.0401	-0.0645	0.2832
	(0.0477)	(0.0525)	(0.0333)	(0.1088)	(0.1494)
	[0.007]	[- 0.004]	[0.003]	[- 0.003]	[0.023]
Medicaid Buy-In Program	0.00521	0.0102	0.00409	0.0335	0.018
	(0.0110)	(0.0126)	(0.0084)	(0.0251)	(0.0326)
	[0.001]	[0.000]	[0.000]	[0.002]	[0.001]
Medicaid Generosity	-0.0286	0.0483	0.00661	0.0178	0.0336
	(0.0224)	(0.0257)	(0.0166)	(0.0522)	(0.0665)
	[- 0.004]	[0.002]	[0.001]	[0.001]	[0.003]
Observations	940,388	1,454,517	2,278,381	304,465	156,723

[1] Ten percent sample of current or former DI and/or SSI disability beneficiaries aged 18-64 and alive during 2000-2006 reference year based on individual records from SSA and CMS administrative data systems. 1,711 observations were dropped from the sample frame due to missing value of Medicaid generosity in Hawaii in 2000.

[2] Expenditure data are limited to program expenditures by the Medicaid and/or Medicaid programs based on CMS administrative records. For both programs expenditures were classified as follows: (a) no expnediture during year; (b) "moderate" expenditure defines as $1-$6,000; (c) "high" expenditure defined as $6,001 or over. In all of the regressions "no expenditure" is the reference category.

[3] Classification is based on DI-only or SSI-only benefit-receipt between first-ever disability award and the reference year with a residual category of beneficiaries with at least one month in DI, and at least one month in SSI benefit receipt statu during the given time-period.

Table 4: Heterogenous Effects of State Health Insurance Policies, by Medical Spending

	Hypothesis 2: Medical Expenditures			
	Level Effect	*Strict Regulation	*Medicaid Buy-In Program	*Medicaid Generosity
Panel A: Positive Earnings				
State Health Insurance Policy				
Strict Regulation	0.0686 *			
	(0.028)			
	[- 0.006]			
Medicaid Buy-In Program	-0.0297 *			
	(0.013)			
	[- 0.001]			
Medicaid Generosity	-0.127 *			
	(0.020)			
	[- 0.004]			
Medical expenditures [2]				
Moderate Spending ($1-$6000)	-0.0789 *	-0.0795 *	-0.00543	0.1212 *
	(0.026)	(0.015)	(0.013)	(0.019)
	[- 0.009]	[- 0.008]	[- 0.000]	[0.011]
High Spending ($6,001+)	-0.0662 *	-0.2265 *	0.0594 *	0.0605 *
	(0.027)	(0.015)	(0.013)	(0.019)
	[- 0.002]	[- 0.020]	[0.005]	[0.006]
Panel B: Exit Disability Rolls				
State Health Insurance Policy				
Strict Regulation	-0.1009 *			
	(0.032)			
	[0.003]			
Medicaid Buy-In Program	-0.0155			
	(0.015)			
	[- 0.002]			
Medicaid Generosity	-0.2109 *			
	(0.025)			
	[- 0.006]			
Medical expenditures [2]				
Moderate Spending ($1-$6000)	-0.6596 *	0.1297 *	-0.0543 *	0.2732 *
	(0.033)	(0.018)	(0.015)	(0.023)
	[- 0.014]	[0.009]	[- 0.002]	[0.018]
High Spending ($6,001+)	-0.2661 *	0.1762 *	-0.00074	-0.0119
	(0.033)	(0.018)	(0.015)	(0.023)
	[- 0.017]	[0.012]	[0.000]	[0.001]
Observations	4,511,148			

[1] Ten percent sample of current or former DI and/or SSI disability beneficiaries aged 18-64 and alive during 2000-2006 reference year based on individual records from SSA and CMS administrative data systems. 1,711 observations were dropped from the sample frame due to missing value of Medicaid generosity in Hawaii in 2000.

[2] Expenditure data are limited to program expenditures by the Medicaid and/or Medicaid programs based on CMS administrative records. For both programs expenditures were classified as follows: (a) no expnediture during year; (b) "moderate" expenditure defines as $1-$6,000; (c) "high" expenditure defined as $6,001 or over. In all of the regressions "no expenditure" is the reference category.

[3] Classification is based on DI-only or SSI-only benefit-receipt between first-ever disability award and the reference year with a residual category of beneficiaries with at least one month in DI, and at least one month in SSI benefit receipt status during the given time-period.

Table 5: Heterogenous Effects of State Health Insurance Policies on Positive Earnings Among Disability Beneficiaries

	Level Effect	*Strict Regulation	*Medicaid Buy-In Program	*Medicaid Generosity
Panel A: Positive Earnings				
State Health Insurance Policy				
Strict Regulation	-0.057 *			
	(0.024)			
	[- 0.005]			
Medicaid Buy-In Program	0.018 *			
	(0.005)			
	[0.002]			
Medicaid Generosity	-0.031 *			
	(0.011)			
	[- 0.003]			
Medicare is secondary payer	0.108 *	0.103 *	-0.017	-0.045 *
	(0.029)	(0.018)	(0.013)	(0.020)
	[0.005]	[0.011]	[- 0.002]	[- 0.005]
Panel B: Exit Disability Rolls				
State Health Insurance Policy				
Strict Regulation	-0.014			
	(0.031)			
	[- 0.001]			
Medicaid Buy-In Program	-0.008			
	(0.007)			
	[- 0.000]			
Medicaid Generosity	0.002			
	(0.014)			
	[0.000]			
Medicare is secondary payer	-0.824 *	0.010	0.120 *	0.010
	(0.055)	(0.034)	(0.025)	(0.038)
	[- 0.035]	[0.001]	[0.004]	[0.000]

Note: All regressions include all applicable covariates listed in Appendix Table 1, as well as state and year fixed-effects. The table presents the coefficients, standard errors (in parentheses), and marginal effects (in brackets) from a probit model. The table presents the coefficients, standard errors (in parentheses), and marginal effects (in brackets) from a probit model. Coefficients estimated to be statistically significantly different from zero at the 0.95 level of confidence are indicated by "*". Note that standard error estimates assume single random sampling and therefore include some downward bias.

[1] Medicare-covered beneficiaries sample and subsamples are limited to DI-only and DI/SSI beneficaries or former beneficiaries who are Medicare covered during 2000-2006 reference year. 1,422 person-year observations were dropped from the sample frame due to missing value of Medicaid generosity in Hawaii in 2000.

Appendix Table 1: Direct effect of state health insurance policies on positive earnings among disability beneficiaries

Hypothesis 1

	ALL[1]	DI-only[2]	SSI-only[2]	Both DI and SSI[2]
State Health Insurance Policy				
Strict Regulation	-0.018	-0.036	-0.011	-0.047
	(0.015)	(0.024)	0.024	0.039
	[- 0.003]	[- 0.004]	[- 0.002]	[- 0.007]
Medicaid Buy-In Program	0.026 *	0.022 *	0.028 *	0.014
	(0.004)	(0.006)	0.006	0.009
	[0.004]	[0.002]	[0.005]	[0.002]
Medicaid Generosity	0.001	-0.024 *	0.031 *	0.023
	(0.007)	(0.011)	0.012	0.017
	[0.000]	[- 0.003]	[0.005]	[0.004]
Disability Diagnoses				
Congenital	0.225 *	0.438 *	-0.262 *	0.524 *
	(0.015)	(0.029)	0.021	0.032
	[0.034]	[0.062]	[- 0.043]	[0.078]
Endocrine	-0.032 *	0.027 *	-0.267 *	0.116 *
	(0.006)	(0.009)	0.011	0.015
	[- 0.004]	[0.003]	[- 0.044]	[0.014]
Infection or Parasitic	0.387 *	0.576 *	-0.064 *	0.570 *
	(0.008)	(0.011)	0.014	0.018
	[0.062]	[0.088]	[- 0.011]	[0.086]
Injury	0.049 *	0.147 *	-0.298 *	0.135 *
	(0.006)	(0.008)	0.012	0.014
	[0.007]	[0.018]	[- 0.049]	[0.017]
Intellectual Disability	0.382 *	0.851 *	-0.218 *	0.734 *
	(0.004)	(0.007)	0.007	0.009
	[0.061]	[0.148]	[- 0.037]	[0.119]
Mental	0.165 *	0.245 *	-0.186 *	0.425 *
	(0.003)	0.004	0.006	0.008
	[0.024]	[0.031]	[0.032]	[0.060]
Neoplasm	0.611 *	0.573 *	0.460 *	0.674 *
	(0.007)	(0.009)	0.012	0.018
	[0.107]	[0.087]	[0.089]	[0.106]
Circulatory	0.095 *	0.101 *	0.017	-0.003
	(0.005)	(0.006)	0.009	0.014
	[0.014]	[0.012]	[0.003]	[- 0.000]
Digestive	0.141 *	0.179 *	-0.052 *	0.149 *
	(0.009)	(0.013)	0.016	0.023
	[0.021]	[0.022]	[- 0.009]	[0.019]
Genitourinary	0.684 *	0.967 *	0.147 *	0.765 *
	(0.008)	(0.011)	0.017	0.022
	[0.123]	[0.177]	[0.027]	[0.125]
Nervous System	0.123 *	0.192 *	-0.243 *	0.371 *
	(0.004)	(0.006)	0.008	0.010
	[0.018]	[0.024]	[- 0.041]	[0.051]
Respiratory	0.061 *	-0.068 *	0.058 *	0.019
	(0.007)	(0.010)	0.012	0.020
	[0.009]	[- 0.007]	[0.010]	[0.002]
Other	0.286 *	0.269 *	0.002	0.573 *
	(0.011)	(0.018)	0.017	0.025
	[0.044]	[0.035]	[0.000]	[0.087]
Unknown	0.437 *	0.401 *	0.180 *	0.475 *
	(0.004)	0.007	0.006	0.012
	[0.072]	[0.056]	[0.033]	[0.069]
Presence of secondary diagnosis indicator	-0.141 *	-0.306 *	0.045 *	-0.085 *
	(0.002)	(0.003)	0.003	0.005
	[- 0.040]	[- 0.064]	[0.015]	[- 0.026]

Appendix Table 1 (continued): Direct effect of state health insurance policies on positive earnings among disability beneficiaries
Hypothesis 1

	ALL[1]	DI-only[2]	SSI-only[2]	Both DI and SSI[2]
Health Insurance History				
Months on Medicaid	-0.072 *	-0.029 *	-0.078 *	-0.062 *
	(0.000)	(0.001)	0.001	0.001
	[- 0.010]	[- 0.003]	[- 0.013]	[- 0.010]
Months on Medicaid Last Year	-0.042 *	-0.020 *	-0.029 *	-0.024 *
	(0.000)	0.001	0.001	0.001
	[- 0.006]	[- 0.002]	[- 0.005]	[- 0.004]
Moderate Medicaid Expenditures	-0.229 *	-0.218 *	-0.061 *	-0.303 *
	(0.004)	(0.008)	0.006	0.010
	[- 0.038]	[- 0.025]	[- 0.032]	[- 0.055]
Moderate Medicaid Expenditures Last year	-0.141 *	-0.059 *	-0.149 *	-0.120 *
	(0.004)	(0.008)	0.006	0.010
	[- 0.024]	[- 0.002]	[- 0.031]	[- 0.023]
High Medicaid Expenditures	-0.331 *	-0.200 *	-0.419 *	-0.247 *
	(0.005)	(0.011)	0.008	0.012
	[- 0.053]	[- 0.023]	[- 0.081]	[- 0.046]
High Medicaid Expenditures Last Year	-0.171 *	0.017	-0.319 *	0.001
	(0.005)	(0.011)	0.008	0.012
	[- 0.029]	[0.002]	[0.063]	[0.000]
Months on Medicare	-0.127 *	-0.136 *	-0.042 *	-0.102 *
	(0.001)	(0.001)	0.002	0.001
	[- 0.018]	[- 0.014]	[- 0.007]	[- 0.016]
Months on Medicare Last Year	0.009	-0.040 *	0.011 *	-0.002
	(0.001)	(0.001)	0.003	0.001
	[0.001]	[- 0.004]	[0.002]	[- 0.000]
Moderate Medicare Expenditures	-0.120 *	-0.137 *	-0.061 *	-0.062 *
	(0.004)	(0.005)	0.021	0.007
	[- 0.021]	[- 0.017]	[- 0.013]	[- 0.012]
Moderate Medicare Expenditures Last Year	0.085 *	0.045 *	0.053 *	0.114 *
	(0.004)	(0.005)	0.024	0.007
	[0.016]	[0.006]	[0.011]	[0.024]
High Medicare Expenditures	-0.326 *	-0.313 *	-0.673 *	-0.324 *
	(0.005)	(0.006)	0.031	0.010
	[- 0.052]	[- 0.035]	[- 0.121]	[- 0.059]
High Medicare Expenditures Last Year	-0.117 *	-0.128 *	-0.611 *	-0.175 *
	(0.006)	(0.007)	0.035	0.010
	[- 0.016]	[- 0.013]	[- 0.089]	[- 0.026]
Covered by both Medicaid and Medicare	0.811 *	0.352 *	0.684 *	0.409 *
	(0.005)	(0.009)	0.021	0.010
	[0.136]	[0.042]	[0.133]	[0.059]
Covered by both Medicaid and Medicare Last Year	0.739 *	0.395 *	0.622 *	0.321 *
	(0.005)	(0.009)	0.025	0.010
	[0.123]	[0.048]	[0.120]	[0.047]
Medicare is Secondary Payer	-0.003	0.016 *	0.287 *	0.471 *
	(0.006)	(0.006)	0.045	0.016
	[- 0.000]	[0.002]	[0.052]	[0.086]

Appendix Table 1 (continued): Direct effect of state health insurance policies on positive earnings among disability beneficiaries
Hypothesis 1

	ALL[1]	DI-only[2]	SSI-only[2]	Both DI and SSI[2]
Demographics and Earnings History				
Female	0.050 *	0.096 *	0.070 *	-0.003
	(0.002)	(0.003)	(0.003)	(0.004)
	[0.007]	[0.010]	[0.012]	[- 0.001]
Age18-24	2.252 *	1.635 *	3.174 *	1.763 *
	(0.006)	(0.014)	(0.012)	(0.016)
	[0.414]	[0.268]	[0.474]	[0.262]
Age25-29	1.965 *	1.722 *	2.819 *	1.758 *
	(0.006)	(0.011)	(0.012)	(0.015)
	[0.325]	[0.293]	[0.377]	[0.261]
Age30-34	1.646 *	1.378 *	2.469 *	1.482 *
	(0.005)	(0.008)	(0.012)	(0.014)
	[0.236]	[0.198]	[0.290]	[0.190]
Age35-39	1.355 *	1.078 *	2.146 *	1.269 *
	(0.005)	(0.007)	(0.012)	(0.014)
	[0.167]	[0.131]	[0.220]	[0.144]
Age40-44	1.084 *	0.815 *	1.839 *	1.055 *
	(0.005)	(0.006)	(0.012)	(0.014)
	[0.114]	[0.084]	[0.163]	[0.105]
Age45-49	0.830 *	0.585 *	1.536 *	0.804 *
	(0.005)	(0.006)	(0.012)	(0.014)
	[0.075]	[0.052]	[0.115]	[0.067]
Age 50-54	0.538 *	0.323 *	1.211 *	0.528 *
	(0.005)	(0.006)	(0.012)	(0.014)
	[0.040]	[0.024]	[0.075]	[0.036]
Age 55-61	0.192 *	0.065 *	0.759 *	0.233 *
	(0.005)	(0.006)	(0.012)	(0.014)
	[0.029]	[0.007]	[0.144]	[0.039]
1-4 years with zero earnings 6-10 years prior to first-ever disability award	-0.137 *	-0.075 *	-0.255 *	-0.085 *
	(0.003)	(0.004)	(0.004)	(0.006)
	[- 0.020]	[- 0.008]	[- 0.045]	[- 0.013]
5 years with zero earnings 6-10 years prior to first-ever disability award	-0.326 *	-0.393 *	-0.400 *	0.036 *
	(0.003)	(0.007)	(0.004)	(0.007)
	[- 0.043]	[- 0.035]	[- 0.066]	[0.006]
Average Earnings 6-10 year prior to Disability ($1,000s)	0.000 *	0.000 *	0.000 *	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
	[0.000]	[0.000]	[0.000]	[0.000]

Appendix Table 1 (continued): Direct effect of state health insurance policies on work effort among disability beneficiaries
Hypothesis 1

	ALL[1]	DI-only[2]	SSI-only[2]	Both DI and SSI[2]
Disability Program Information[2]				
Both DI and SSI	0.303 *	--	--	--
	(0.004)	--	--	--
	[0.042]	--	--	--
Only DI	0.274 *	--	--	--
	(0.004)	--	--	--
	[0.038]	--	--	--
Number of months since first-ever disability award: 1-12 months[4]	-0.629 *	-1.518 *	-0.294 *	-0.864 *
	(0.006)	(0.010)	(0.009)	(0.017)
	[- 0.073]	[- 0.116]	[- 0.048]	[- 0.093]
Number of months since first-ever disability award: 13-24 months[4]	-0.459 *	-1.221 *	-0.147 *	-0.768 *
	(0.006)	(0.010)	(0.010)	(0.015)
	[- 0.057]	[- 0.104]	[- 0.025]	[- 0.086]
Number of months since first-ever disability award: 25-36 months[4]	-0.080 *	-0.297 *	-0.080 *	-0.227 *
	(0.006)	(0.009)	(0.010)	(0.016)
	[- 0.012]	[- 0.036]	[0.014]	[- 0.032]
Number of months since first-ever disability award: 37-48 months[4]	-0.050 *	-0.027 *	-0.030 *	-0.112 *
	(0.006)	(0.008)	(0.010)	(0.015)
	[- 0.007]	[- 0.004]	[- 0.005]	[- 0.017]
Number of months since first-ever disability award: 61-72 months[4]	0.041 *	0.027 *	0.022 *	0.078 *
	(0.006)	(0.008)	(0.010)	(0.016)
	[0.006]	[0.004]	[0.004]	[0.012]
Number of months since first-ever disability award: 73-84 months[4]	0.087 *	0.069 *	0.050 *	0.148 *
	(0.006)	(0.008)	(0.009)	(0.016)
	[0.013]	[0.009]	[0.009]	[0.024]
Number of months since first-ever disability award: 85-96 months[4]	0.109 *	0.084 *	0.068 *	0.178 *
	(0.006)	(0.009)	(0.009)	(0.015)
	[0.017]	[0.012]	[0.012]	[0.029]
Number of months since first-ever disability award: 97-108 months[4]	0.120 *	0.102 *	0.072 *	0.182 *
	(0.006)	(0.009)	(0.009)	(0.015)
	[0.019]	[0.014]	[0.013]	[0.030]
Number of months since first-ever disability award: 109-120 months[4]	0.123 *	0.111 *	0.077 *	0.170 *
	(0.006)	(0.009)	(0.009)	(0.015)
	[0.019]	[0.016]	[0.014]	[0.028]
Number of months since first-ever disability award: 121+ months[4]	0.049 *	0.027 *	-0.024 *	0.144 *
	(0.004)	(0.007)	(0.008)	(0.012)
	[0.007]	[0.003]	[- 0.004]	[0.022]
N Person-year observations[7]	8,089,831	3,567,362	3,068,715	1,453,754

Note: All regressions also include state and year fixed-effects. The table presents the coefficients, standard errors (in parentheses), and marginal effects (in brackets) from a probit model. Coefficients estimated to be statistically significantly different from zero at the 0.95 level of confidence are indicated by "*". Note that standard error estimates assume single random sampling and therefore include some downward bias.

[1] Ten percent sample of current or former DI and/or SSI disability beneficiaries aged 18-64 and alive during 2000-2006 reference year based on individual records from SSA and CMS administrative data systems.

[2] Classification is based on DI-only or SSI-only benefit-receipt between first-ever disability award and the reference year with a residual category of beneficiaries with at least one month in DI, and at least one month in SSI benefit receipt status during the given time-period.

[5] Months on Medicaid or Medicaid variables refer to the reference person-year observation. "Last year" refers to year immediately prior to reference year. Expenditure data are limited to program expenditures by the Medicaid and/or Medicaid programs based on CMS administrative records. For both programs expenditures were classified as follows: (a) no expenditure during year; (b) "moderate" expenditure defined as $1-$6,000; (c) "high" expenditure defined as $6,001 or over. In all of the regressions "no expenditure" is the reference .

[6] Number of calendar months elapsing between first-ever disability award and January of the reference year. May include months in nonbeneficiary status, and therefore can be interpreted as upper-bound estimate of duration of disability benefit receipt (DI and/or SSI) during given time period.

[7] Person-year observations are slightly lower than those reported in Table 1 descriptive analysis as a result of missing values resulting in exclusion of person-year observations from the model estimating the equations.