

Who Needs Medicare? Health Insurance Sources for Disability Insurance Recipients Before and After Medicare Eligibility

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Abstract

Social Security Disability Insurance (DI) recipients are the only individuals who qualify for Medicare, the universal health care program for retirees, before age 65. The two-year waiting period between the DI benefit award and Medicare eligibility offers an insight into the health insurance system in U.S. DI recipients are both constrained not to work and to be chronically ill or dying. Hence, this population is part of the most expensive users of the health care system but with greatly reduced access to the primary insurance provider (employer). Using the 2001 to 2008 panels of the Survey of Income and Program Participation, I document trends in the source of or lack of coverage during the waiting period, and the effect of Medicare eligibility on each form of insurance, as well as uninsurance. I estimate a measure of crowd out. This paper serves as a first-order characterization of pre-Affordable Care Act settings and offers a test for ACA effectiveness in the future.

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I. Intro

The health insurance system in America is a patchwork of multiple sources of coverage, including private coverage sponsored by an employer, private coverage purchased by an individual, public coverage intended for the young, public coverage intended for soldiers and veterans, and public coverage intended for the elderly. Individuals can move from one type of coverage should circumstance, such as age or employment, allow for it. Yet, the seams in the health insurance system, in which individuals transition between sources of coverage, are often associated with inefficiencies of some kind, either inefficiently low coverage (uninsured), inefficiently high coverage (multiple forms of insurance), or crowd out (displacement of secure private coverage by public eligibility).

The only transition that will occur with near certainty for all Americans is the move to Medicare, the universal public health insurance program for all individuals in the United States age 65 and older. There is a single exception to the age-65 eligibility requirement: recipients of Social Security Disability Insurance (DI), a program that gives cash income support to individuals with established work history who are no longer working due to health reasons, can enroll at any age. However, Medicare eligibility is not coincidental with DI reciprocity. Individuals must wait two years after beginning DI before they are eligible for Medicare. The health insurance of individuals on DI during the waiting period and after Medicare eligibility is the subject of this analysis.

In the strictest interpretation, the two-year waiting period for Medicare for DI recipients is simply a cost-saving mechanism (Whittaker, 2005). As explained in a Social Security Administration research paper (Bye and Riley, 1989), a two-year delay in eligibility avoids expensive end-of-life care for the terminally ill. Without the two-year waiting period, the total 10-year Medicare bill of a single cohort could be as much 45% higher, primarily due to end-of-life medical expenses. But in a broader sense, the waiting period is one instance of the seams between different sources of coverage, and of particular interest to researchers for two reasons. First, it imposes an extended length of time between qualifying event and public coverage eligibility, allowing for a unique opportunity to examine, without the confounding effect of coincidence of qualification, how individuals transition to public coverage. Second,

the population being studied is not in any way representative of country as a whole. Rather, it is a group that consists of those who are chronically ill and dying, as well as constrained to not be working. Hence, they can be thought of as those most in need of coverage, those likely to consume the most health care, or those without access to the primary means of securing coverage for the under-65 population, which is the employer. This unique position make the pre-Medicare eligible DI population relevant for studying the efficiency of a system of coverage, as well as a test for the effectiveness of the coverage goals of the Affordable Care Act (ACA).

There is a wellspring of research looking at the insurance of individuals who become eligible for Medicare at age 65, notably by Card et al. (2008) and Card et al. (2009), which document the insurance coverage and health consumption of individuals before and after age 65, noting that Medicare is associated with a drop in private coverage and an increase in health consumption. More specifically, Engelhardt and Gruber (2010) find evidence of crowd out from the Medicare Part D expansion. There are also several papers which examine the DI population in particular. Riley (2006) and Livermoore et al. (2009) use 1994-1996 National Health Interview Survey (NHIS) cross-sections linked with Social Security Administration Master Beneficiary Record (MBR) data to determine that there are high rates of uninsurance in the waiting period, and this is associated with problems with access to care. Gruber and Kubik (2002) use the Health and Retirement Survey (HRS) to examine how insurance coverage before application affects the decision to apply among older workers, finding that lack of insurance can deter DI entry. This corresponds to the more recent findings of Maestas et al. (2014). In that paper, the authors use the 2006 Massachusetts health reform to show the influence of health coverage on the DI application decision.

In this paper, I use the 2001, 2004 and 2008 Surveys of Income and Program Participation (SIPP) to study the effect of Medicare eligibility on health insurance coverage of DI recipients. There are several advantages of using the SIPP which enables this paper to make a new and unique contribution to the literature. First, using the three most recent SIPPs allows for a longer and more relevant time frame to study DI entry, between 2001-2012, years which cover business cycle peaks and troughs, a series of Medicaid expansions¹ as well the decline

¹The 1996 Personal Responsibility and Work Opportunity Act ended the formal ties between Medicaid

of private coverage². Second, each SIPP is a three- or four-year panel survey, which allows for the use of a within-person fixed effects estimator, rather than aggregate results from cross-sectional data. Lastly, the SIPP is not left truncated by age, but includes in its sample potential DI applicants of all ages. It is not limited to older populations, who might have private insurance options, such as spousal coverage or retiree plans, that are less likely for younger DI entrants.

For my analysis, I perform an event study with individual fixed effects to regress each of the first six years of DI tenure on eight different dependent variables: three public insurance programs (Medicare, Medicaid, and military coverage); three types of employer- or union-sponsored coverage (ESI), any ESI, ESI owned by the individual and ESI owned by another person (the latter two are subcategories of the first); privately purchased coverage; and lack of insurance, or uninsurance. The paper proceeds as follows: Section II provides a policy background to Disability Insurance and forms of health coverage, Section III details the data used. Section IV presents the model, results, and robustness, and Section V concludes the paper.

II. Background

Disability Insurance

Social Security Disability Insurance (DI) became law in 1956 as an amendment to the 1935 Social Security Act. DI is a part of a social insurance system; workers pay premiums as a payroll tax to earn insurance coverage for themselves and their dependent family members that offers protection against the risk that they will not be able to work—in the case of DI, if they become too sick. Importantly, this means that DI eligibility is based on work history and health, but not income.

To attain DI benefits, individuals apply to the program through a local Disability Determination Office with a complete summary of work history, medical history, lab tests, and welfare. The 1997 Balanced Budget Act introduced the State Children’s Health Insurance Program. The 1999 Ticket to Work and Work Incentives Improvement Act and the 2001 1115 waiver for Health Insurance Flexibility Accountability encouraged states to expand Medicaid coverage, including to parents of poor children and childless adults.

²In 2000, 69.2% of the under 65 population had employer-sponsored private insurance, compared with 58.6% in 2011 (Gould, 2012).

prescription history, tax forms, and evaluations from the individual's doctor. DI applicants must pass a two-part earnings test, showing that they have a work history, but have not earned substantial income in the past six months, in addition to being determined to be medically disabled. The initial application time varies from 0 - 18 months and if an individual is rejected, they can appeal the decision to a Social Security judge, which can take an additional 1 - 12 months.

To clarify, DI is not means tested in the sense that it is not a program targeted or limited to a low-income population, the way that Supplemental Nutrition Assistance or Temporary Assistance to Needy Families is. All individuals who worked in Social Security covered employment, even if they were in the top 1% of wage earners, can apply to DI. However, because it is a program targeted to individuals who cannot work due to an illness, individuals applying cannot be working. The income test of DI is not that the individual's *former* income must be below some threshold, but rather that *current* wage income must be zero, or near zero.

DI benefits, once awarded, continue until the individual reaches retirement age, at which point they switch to retirement benefits, unless the individual returns to work. Individuals on DI can work 9 months within a 60-month period at any earnings level and receive full DI benefits (trial period). After 9 months, benefits are stopped if the individual makes over a certain amount (\$1010 per month in 2012), or continue for another 36 months if they make under that amount (extended period). Again, the income test is a proxy for an ability-to-work test. Individuals who leave DI can resume DI benefits without reapplying within five years of stopping.

Since 1972, DI recipients have been eligible for Medicare after a two-year waiting period. Regardless of the length of time spent processing the original DI application, beneficiaries are eligible for Medicare 24 months after the established onset date of the illness.³ The work restrictions and benefit rules discussed for DI do not apply to Medicare; if Medicare is awarded, coverage continues for 93 months after leaving DI, regardless of earnings.

³There are two exceptions to this rule. DI recipients with end stage renal (kidney) failure are eligible for Medicare three months after their dialysis begins. DI recipients with Amyotrophic Lateral Sclerosis (ALS, or Lou Gehrig's disease) are eligible for Medicare immediately. In addition, DI beneficiaries who successfully appealed an initial rejection can also appeal their eligibility 24 months since their rejection, rather than initial benefit receipt.

There are two items worth particular note for later analysis in this paper. One, the lower bound of the length of time from leaving work to becoming Medicare eligible is 24 months, assuming the individual applied for DI exactly six months after stopping work and was approved immediately. The upper bound can extend additional months or years if she had been out of work longer than six months before applying to DI, if her application took time to process, or if she was originally rejected. Two, because of the work incentives and allowances, as well as the ability to maintain Medicare, it is possible that a DI beneficiary is working while on DI or that a DI beneficiary can begin (resume) DI with Medicare coverage.

Possible sources of health coverage

Medicare is awarded to all individuals at age 65 and continues to their death, or to DI recipients after a two-year waiting period. It is universal in the context of eligibility, as there is only an age requirement, but it is not limitless in coverage. Certain services, such as long-term care, are not included in Medicare, nor does Medicare allow for dependent coverage. The program is also not free; beneficiaries must still pay premiums, coinsurance, copayments, deductibles, and other out-of-pocket expenses.

Medicaid is the state-run, federally financed health insurance program for low-income families that some DI recipients will qualify for separately from DI. As previously noted, DI benefits are part of Social Security; individuals from any prior earnings level can apply and benefits are based on earnings history, not need. On the other hand, Supplemental Security Income (SSI) is a separate welfare program that provides additional cash benefits to elderly, blind, and disabled individuals who are also in poor households. It can be confusing, because individuals on DI are restricted from earning a wage income, but they can still garner income from other sources, as well as be in a household with working individuals. Individuals who become disabled can apply for DI, SSI, or both simultaneously. Regardless of when it was awarded, SSI recipients are eligible for Medicaid, which has no waiting period. Medicaid and Medicare can be jointly consumed; they are both public programs, but do not offer the same type of coverage. Notably, Medicaid coverage is considered more comprehensive and covers many of the out-of-pocket expenses Medicare does not.

Military coverage is a separate public health coverage system for veterans, actively serving

members of the military, and in some programs, their spouses and children. Military coverage includes TRICARE, CHAMPUS, CHAMPVA, and VA health care. Individuals with military coverage use that coverage as their primary care, but are required to sign up for Medicare if they become eligible.

Employer-sponsored insurance is private insurance sponsored and partially paid for by the employer. Workers can⁴ be offered benefit plans for themselves and possibly their family as part of the compensation package. Plans vary widely in quality, cost, and services covered. An individual can have ESI through her own employment (self-owned plan) or a family member's (owned by another individual). It is possible to maintain ESI, self-owned coverage even if an individual is no longer working if the continued coverage was negotiated as part of a retirement package, a severance package, or if the individual qualifies and can afford COBRA benefits.⁵

Purchased coverage is private plans that are purchased by the individual directly from the insurer.

III. Data

The Survey of Income and Program Participation (SIPP) is a panel study of U.S. households. The 2001 SIPP survey spanned three years and included 104,504 individuals. The 2004 SIPP spanned four years and included 131,586 individuals. Finally, the 2008 SIPP spanned four years and included 171,987 individuals. After pooling the three datasets, I kept all individuals who received Social Security for disability reasons,⁶ were younger than 65 when the panel began, and were eligible for benefits through their own work history, rather than as a dependent. The reduced sample is 13,321 individuals, or 3.3% of the original sample.

⁴Workers with lower wages are much less likely than their high wage counterparts to have ESI. In 2010, only 41.0% of workers in the bottom wage quintile, making at or below \$9.38 an hour, had ESI, compared to 85.1% in the highest wage quintile, making at or above \$30.00 an hour (Gould, 2012).

⁵The Consolidated Omnibus Reconciliation Act (COBRA) of 1986 outlined rules for employees leaving employment for reasons other than gross misconduct to maintain their health coverage for 18 months, so long as they pay both the employer and employee side. The bill also includes an exception for individuals with a disability, allowing for them to continue for an additional 11 months.

⁶The SIPP asks about Social Security in several parts of the survey. To be counted as a Social Security recipient in this paper, individuals had to indicate that they had Social Security in three variables: coverage, income, and benefits. The SIPP does not, however, ask what type of Social Security insurance benefit an individual receives, but does ask for the reason they receive benefits. Individuals were kept in the sample if they answered that disability was the primary and only reason for receiving Social Security.

According to the 2013 Annual Statistical Supplement of the Social Security Administration, there were 8.8 million DI worker beneficiaries in 2012, or 2.8% of the population. Finding a slightly larger DI share in the sample is expected because the SIPP oversamples low-income populations.

Of equal interest is not only finding individuals in the SIPP who are on DI, but being able to distinguish between those who are in the two-year wait for Medicare and those who are past it. The SIPP asks all respondents at what age Social Security Disability benefits first began. From this, combined with the survey year and year of birth, I can construct a variable of DI tenure in years.⁷ For example, if an individual reports that DI began at 52, and they are currently 56, then DI tenure, as I have defined it, is four years.

Relying on a measure of tenure based on age means that I lose precision in capturing Medicare eligibility. I only know that it should occur 24 months since DI benefits began, or sometime during the second year of DI tenure. For an individual who was awarded DI the day before her 30th birthday, the age awarded is technically 29. When she is 31, she is in her second year of DI tenure, but is actually only 366 days from award date, and still 364 days from being eligible for Medicare. Alternatively an individual awarded DI on their 30th birthday will be eligible for Medicare when he is 32, and the year-increment captures his eligibility perfectly. Individuals in the sample fall somewhere between these two extremes. Although a determination of Medicare eligibility from a tenure calculation is not exact, it has its advantages over relying on the number of months observed in the survey on DI to calculate the first Medicare eligible month for each individual in that it is constructed identically for each individual and uses fewer assumptions.

Health insurance, both the source of coverage and, if applicable, the owner of the private plan, is measured monthly in the SIPP. Medicare, Medicaid, employer-sponsored coverage (ESI), privately purchased coverage, and military coverage indicator variables are based on survey response; uninsurance is constructed from a negative response to all possible forms of insurance, and excludes any individual with a non-response to any category.

The sample means and standard deviations of demographic characteristics, educational

⁷Some individuals reported multiple ages in different waves as the age DI first began. To be consistent, the youngest age provided was used.

attainment, program participation, and health coverage of the sample are presented in Table 1. The unit of comparison is individuals' status at time of interview; it captures both the number of people and, more relevant for the program participation and health coverage variables, the frequency of the characteristic. The table compares three time periods: the first two years of DI, during which individuals are not eligible for Medicare (column 1), 2 years since DI began, the year in which DI recipients become Medicare eligible (column 2), and the first four years of Medicare eligibility (column 3). The SIPP is longitudinal over three or four years, so individuals can be counted in multiple columns if they are observed in both years 1, 2, and 3.

The demographic and educational attainment characteristics of individuals on DI vary little over the first six years of the program. All three show an even share of males (50.6%, 49.4%, and 51.1%), an outsized representation of black (17.9%, 17.8%, and 17.5%) and Hispanic (10.0%, 11.9% and 10.6%) individuals, and a low share of college graduates (11.8%, 10.7% and 11.9%). Individuals less than two years on DI are slightly younger (49.3 years old) than individuals more than two years (50.7 and 51.5 years old), but began DI at slightly older ages (48.7 years old compared to 48.7 and 47.0 years old). Participation in means tested programs in the first six years of Disability Insurance suggests that the DI population grows poorer over time, or that individuals who start DI at younger ages are relatively poorer. The share of individuals on Food Stamps remains constant, from 19.8%, to 19.4%, to 19.2%, but the share on SSI increases, from 14.4%, to 16.6%, to 16.7%.

Health coverage in the Medicare waiting period is dominated by Medicaid, which covers 31.1% of individuals on DI in that 24 months. Somewhat surprisingly, 27.8% report Medicare in the first two years of DI, when they are still in the waiting period for Medicare eligibility. There are three possible explanations for this. First, individuals have Medicare in the waiting period because they are returning to DI and retained Medicare coverage or they have an illness which qualifies them for an exception to the waiting period (kidney failure and ALS). Second, individuals could be misreporting Medicare, as it is possible to confuse Medicare with Medicaid. Last, and most likely, individuals have Medicare but are misclassified into the waiting period in my analysis. DI tenure is constructed using the individual's reported starting age, but individuals could be interpreting that question differently, giving the time

they became disabled instead of the time that the disability payments began.⁸

Together with military coverage, half the individuals who are on DI and in the waiting period for Medicare already have public coverage. Only 35.6% have employer-sponsored coverage, which is split fairly evenly between plans that are owned by another person (18.7%) and plans that are owned by the disabled individual (16.9%). A small share (8.5%) have privately purchased coverage. Nearly a fifth (17.2%) are uninsured.

After the two-year mark, though, the composition of health coverage in the DI population changes considerably. In column 3, Medicaid and military coverage is roughly constant, at 33.4% and 3.3%, respectively. But Medicare jumps almost 50 points to 70.7%, employer-sponsored plans fall to 23.2%, with a larger decline in plans owned by the disabled individual, which fall from 14.1% to 9.5%, compared to the relatively steady plans owned by another individual, which fall from 14.6% to 13.5%. Privately purchased coverage ticks up from 7.9% to 9.7%, and there is a large drop in uninsured, to 5.8%. Figures 1 - 8 show the means for all individuals in the sample of each type of health coverage over the first six years of Disability Insurance.

Previous studies examining coverage of this population in the mid-1990s (Livermoore et al., 2009) find higher rates of uninsurance (23.3%), higher rates of private coverage (29.9% of private coverage owned by a family member, 26.4% private coverage owned by the individual), but lower rates of Medicaid (17.1%) and much lower rates of Medicare (3.7%).⁹ These differences likely reflect a changed health insurance landscape after 1996, with steadily declining private coverage (Gould, 2012) and large expansions to Medicaid eligibility in the late 1990s and early 2000s. Moreover, the comparison suggests that misclassification into the waiting period accounts for most of the Medicare coverage reported before my calculated eligibility. I drop individuals reporting Medicare from the sample.

The sample means show definitively that DI recipients are not representative of the U.S. population, and even less so do they correspond to how the majority of Americans transition

⁸Applicants to Disability Insurance indicate when their work-preventing illness began, the alleged onset date (AOD). When approved for benefits, the examiner determines when the illness began, an established onset date (EOD). DI benefits begin with application approval, but include a one-time, lump-sum payment for all months since EOD, less five months. Medicare eligibility begins 24 months after the EOD.

⁹From Livermoore et al. (2009), Table 5. In that paper, the authors do not distinguish, as here, between privately purchased coverage and private employer-sponsored coverage, not allowing for a direct comparison.

to Medicare. One could say that, as a result, little could be extrapolated from this study and applied elsewhere because the population and policy is so specific. However, being non-representative in this case is an advantage. The DI population is chronically sick and dying, the vast majority are not working and even fewer are working full-time. It is clear that, given their condition, they would need coverage and access to care, yet equally unclear what type of health insurance they have or should have, given that they reduced access to employer-sponsored insurance, but will be enrolled in public coverage after two years. Their place at the intersection of multiple forms of coverage is revealing of how the health insurance system as a whole operates and measures whether it can efficiently provide coverage through transition periods.

IV. Model, Results, and Robustness

Model

Given longitudinal data on health insurance and DI tenure, the time path of coverage as individuals become eligible for DI and then Medicare can be modeled in the following way:

$$y_{it} = X'_{it}\beta + \sum_{j=0}^6 \gamma D_{it+j} + \theta_i + \epsilon_{it} \quad (1)$$

The key variable of interest is D_{it+j} , where j is the number of years since DI began, i is the individual, and t is the time period. This means that each year an individual is on DI is considered a separate treatment relative to the omitted year one. As mentioned previously, the eight types of insurance comprise the dependent variables y_{it} . The dependent variable is binary, equal to 1 if the individual indicated coverage at time of interview and 0 if not. An individual can have more than one type of coverage in any time period. The covariates X_{it} include family income, marital status, age, family size, as well as year effects, while the individual fixed effects θ_i any individual time-invariant heterogeneity.

The central assumption of the model is that Medicare eligibility is captured with year-increments of tenure D_{it+j} , as the data are limited to showing Medicare coverage, but not eligibility. The length of time an individual has been on DI is used to approximate eligibility, and interpretation of the results are contingent on the accuracy of that assumption. The basic

test of model validity is to find a clear effect of Medicare eligibility on reported Medicare coverage. However, there is test of internal validity built into the analysis through the other two forms of public coverage. Public coverage is not a choice in the way that private insurance can be. Eligibility is ruled-based. Medicaid’s eligibility is based on income and SSI participation. Military coverage is based on current or prior military service. They provide two placebo tests for the model.

Coefficient estimates for the eight iterations of equation (1) for each dependent variable are presented in Table 2 when $j=-1$ is omitted.¹⁰ With a binary dependent variable in a linear regression, the coefficients are easily interpretable as percentage-point changes in the likelihood of each type of coverage associated with each year of DI tenure, relative to year one. It is important for interpretation to remember that the classification into each year of DI tenure is fuzzily captured—some point during year zero, individuals begin DI benefits; hence, the coefficients in year zero can be thought of as the change in coverage before and after DI begins. Notable in Table 2 is that no form of coverage is significantly different from year one in year zero, meaning there are no large changes in coverage before Medicare eligibility. At some point during year two, individuals become eligible for Medicare. Year three is the first full year of Medicare coverage.

Medicare’s coefficients, shown in column 1, indicate that my empirical model captures Medicare eligibility. Although there is little difference in the likelihood of Medicare as individuals begin DI, in year two, they are 34.2 percentage-points more likely to report Medicare coverage. This increases each year, reaching 58.2 percentage points in year three and 62.1 by year four, where it remains for the next two years of study. The model picks up the increase in Medicare in the year individuals transition as well as the first year of full coverage. The aforementioned placebo tests perform equally well—there is no significant relationship between Medicaid or Military coverage and yearly increments of DI tenure.

The coefficients when the dependent variable is employer-sponsored coverage are presented in columns 4-6. In general, employer-sponsored coverage is declining as individuals become eligible for Medicare, starting with -0.031 in year two, -0.052 in year three, and lev-

¹⁰All results are replication in the appendix which include the 800 individuals who reported Medicare coverage simultaneous with DI.

eling out at -0.076 in years five and six. And, as indicated by the null coefficient in year zero, this decline did not begin until the year of Medicare eligibility. This implies that Medicare crowds out private coverage, or that disabled individuals maintain private coverage until they become eligible for Medicare, when they drop their private plans. This decline is diffused through years 2, 3, and 4 of DI, most likely because private plans are fixed-term contracts and individuals are waiting for private plans to expire.

But the contrast between columns 4 and 5 indicate that the crowding out of employer plans is limited to those owned by the disabled individual, and the same crowd out is not seen of employer plans owned by the disabled person's spouse. It is not until the sixth year of DI, four years into Medicare eligibility, that employer-plans owned by a family members decline enough in a year to be precisely estimated. Privately purchased coverage sees a similar consistency—there is no significant change in any year, and no clear relationship with Medicare eligibility.

In the final column, the estimates of the effect of Medicare are uninsurance are large and precisely estimated. Uninsurance declines by 9.9 percentage-points in year two as individuals transition to Medicare and reaches a permanent 15 percentage-point decrease by year three. Given the sample means presented in Table 1, this is equivalent to roughly 85% reduction in uninsurance associated with Medicare.

The coefficients presented in Table 2 suggest that Medicare eligibility is associated with a drop in employer coverage and uninsurance, as well as the clear in Medicare coverage. But it does not allow for comments on the composition of coverage. An individual may have multiple sources of coverage, but its not clear given how the dependent variables are currently defined how Medicare affects double coverage, and what type. To explore this, I redefine the dependent variables to be mutually exclusive and exhaustive categories: Medicare only, Medicaid or military only, ESI owned by the disabled individual only, ESI owned by another individual only, and purchased only. In addition, there are two types of double coverage: double public and double public and private. The former consists of Medicare coupled with either Medicaid or military coverage, the latter consists of Medicare, Medicaid, or military coverage coupled any type of private coverage. Uninsurance is unchanged. The advantage of mutually exclusive and exhaustive dependent variables is that the means of coverage types in

a single year sum to one, and the γ coefficients from equation (1) across the eight dependent variables in a single year sum to zero, as shown in Table 3.

Starting in column 1, the coefficient estimates of Medicare in isolation is cut by over a third, relative to any Medicare, ranging from 0.107 to 0.187, compared to .342 to .624. This means that although Medicare coverage is increasing with Medicare eligibility, the majority of individuals who gain Medicare either maintain or simultaneously gain another form of coverage. Combined, Medicare eligibility is associated with a 39.6 percentage-point increase in double coverage, either double public (0.166, column 6) or double public and private (0.230, column 7). Nor is the increase in double coverage temporary—the coefficients remain high for the remainder of the event study window.

The advantage of mutually exclusive and exhaustive dependent variables is that they allow for characterization of the composition of coverage and the change in coverage. If we assume that individuals who previously were uninsured (column 8) or previously under Medicaid or military coverage (column 2) did not pick up private coverage when they became Medicare eligible, then the combined drop in those two columns (-.151 and -.153) accounts for 90% of the increase in Medicare and double public coverage (columns 1 and 6, 0.170 and 0.166). Hence, only 10% of Medicare’s increase is attributable to dropped private coverage. Similarly, 87% of the decline in private coverage in isolation in columns 3, 4, and 5 (-0.013, -0.090, -0.042) can be accounted for with the increase in double private and public coverage in column 7 (0.023). From either direction, this represents relatively little crowd out in the traditional interpretation.

As a robustness measure, Tables 4 and 5 replicate Tables 3 and 4 using a logit model and Appendix Tables 1-4 replicate Tables 2-5 including in the sample the individuals who report Medicare in the waiting period. The coefficient estimates are not sensitive to model or sample specification and are consistent throughout.

V. Discussion and conclusion

The results from the event study and various robustness checks point to three main conclusions that can be drawn from the study of the health insurance coverage of the DI population as it transitions to Medicare eligibility: Medicare eligibility is coincidental with a large de-

cline in uninsurance, the crowd out of private coverage limited to ESI owned by the disabled individual, and a large increase in double coverage. I will discuss each of these in turn.

First, unless there is a strong preference among some individuals to not have health coverage during the waiting period, the high uninsurance rates in the waiting period and their subsequent fall with Medicare eligibility suggest either a barrier to accessing coverage or barrier to affording coverage for the DI population, or a combination of both. This is not surprising, given the pre-ACA insurer policies on pre-existing conditions, coverage denial, and looser regulation of premiums. A test of ACA effectiveness in the future will be in reducing the rates of uninsurance for this population. But in addition to a litmus test for new policy, the high uninsurance in the waiting period calls into question the possible cost of the current policy, in terms of medical out-of-pocket expenses for the disabled individual, uninsured care for hospitals and community health centers, and longer consequences of delayed care.

Second, the decline in employer-coverage associated with Medicare eligibility depended on plan ownership. There are numerous possible reasons for a discrepancy in decline of employer plans. The most likely explainer is cost. Self-owned employer-plans for non-working individuals are typically more expensive as the employer is paying less, or none, of the premium. This is the case when an employee is using COBRA to maintain benefits. Plans owned by another individual who is still working might be more expensive relative to covering solely the worker, but less expensive in family budgets if the premium is covered mostly by the employer and the plan pays for out-of-pocket costs that Medicare does not. The discrepancy could also be a function of private contract design—employers maintain offer retirement or disability health plans, but these are contracted to expire, or change in price, with Medicare eligibility.

Third, the large increase in double coverage is striking. Prior studies of the age-65 Medicare transition find much smaller incidence of double private and Medicare coverage. This could suggest that individuals prefer private coverage to public coverage, or that either in isolation is insufficient (or perceived to be inefficient) for the amount of care required by disabled or dying individuals. The relatively small estimated crowd out, compared to large increases in multiple forms of coverage, motivates further work on the adequacy of coverage for the very sick, and the size of out-of-pocket costs.

In sum, individuals in this study are transitioning from employment and wages to reciprocity and cash transfer, under the special case that they are either chronically sick or dying. This paper documents one part of the concurrent transition from private insurance to public health coverage. The findings suggest that this process is inefficient. Not only are there gaps in coverage, but there are large increases in double public and private coverage. Although the DI population is small and the waiting period policy is unique to them, this inefficiency in delivery of coverage is still notable in the problems it identifies for the efficiency in the health insurance system as a whole.

The implications of these efficiency issues are beyond the scope of this paper, but have been discussed in Livermoore et al. (2009), Riley (2006), and Gruber and Kubik (2002), which examine how health insurance coverage, or lack of coverage, affects health behavior, health consumption, or the DI application decision. In addition, the effect of Medicare on health is documented in various papers (Currie and Gruber, 1996) (Meyer and Wherry, 2012), so it is reasonable to conclude that the DI population alters their health behavior, and could experience worse health outcomes. On the other hand, relatively understudied for this population is the effect on family budgets of the inefficiencies documented in this paper. For families with an uninsured disabled individual, this could be the cost of out-of-pocket medical expenses. For families with a worker who maintains coverage of the disabled individual, this could be the price of the higher premium.

These inefficiencies, and others, point to larger issues of the efficacy of the public insurance system that the disabled individual is progressing through, if the health and welfare outcomes depend more on what families can provide and pay for, rather than the government.

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Table 1. Sample means of demographic, educational attainment, program participation, and insurance variables by DI tenure.

Years on DI	(1) Medicare Wait 0-1 year N=2276		(2) Transition 2 years N=1442		(3) Medicare Eligible 3-6 years N=2997	
	Mean	SD	Mean	SD	Mean	SD
<i>Demographics</i>						
Age DI began	48.74	12.08	48.66	11.60	46.98	11.31
Current age	49.29	12.10	50.66	11.60	51.47	11.30
Male	50.61%	0.500	49.35%	0.500	51.10%	0.500
Black	17.86%	0.383	17.77%	0.382	17.47%	0.380
White	76.90%	0.422	76.74%	0.423	77.00%	0.421
Hispanic	9.97%	0.300	11.94%	0.324	10.64%	0.308
Asian	1.85 %	0.135	2.08 %	0.143	1.63%	0.127
Married	47.07 %	0.499	46.64 %	0.499	48.37%	0.500
Divorced or Separated	26.45%	0.441	24.88%	0.432	24.39%	0.429
Family Size	2.44	1.517	2.40	1.504	2.34	1.422
<i>Education</i>						
Less than high school	17.43%	0.379	17.50%	0.380	16.98%	0.375
High school	34.13%	0.474	32.35%	0.468	34.31%	0.475
Some college	30.23%	0.459	31.08%	0.463	30.82%	0.462
Bachelor's or higher	11.72%	0.322	10.69%	0.309	11.90%	0.324
<i>Income and Programs</i>						
Any paid employment	13.86%	0.346	10.91%	0.312	9.99%	0.300
Family monthly income	3,512	3,716	3,394	3,322	3,300	3,063
Food Stamps	19.77%	0.398	19.43%	0.396	19.24%	0.394
Other need-based assistance	5.75%	0.233	6.18%	0.241	6.04%	0.238
Federal SSI	14.43%	0.351	16.55%	0.372	16.60%	0.372
<i>Health Coverage</i>						
Medicaid	31.07%	0.463	36.07%	0.480	36.88%	0.482
Medicare	27.77%	0.448	55.04%	0.497	75.36%	0.431
Military coverage	3.91%	0.194	3.03%	0.172	3.64%	0.187
ESI	35.62%	0.479	29.90%	0.458	29.49%	0.456
ESI, owned by other	18.71%	0.390	16.19%	0.368	17.34%	0.379
ESI, owned by self	16.91%	0.375	13.72%	0.344	12.15%	0.327
Privately Purchased	8.49%	0.279	9.78%	0.297	10.33%	0.304
Uninsurance	17.21%	0.377	9.57%	0.294	4.05%	0.197

Notes: Author's calculations of SIPP 2001-2008 data. Table presents the mean of individuals observed in the data at the time of interviews; for health coverage variables, individuals reporting multiple types of coverage are reported for every type. It is possible that an individual was uninsured, has private coverage, and then Medicare, or even double coverage; that individual would be included in the averages of each.

†Other need-based assistance includes transportation, clothing, food, childcare, welfare, and WIC.