

How Dual-Eligible Medicaid Spending Affects Health Outcomes and Utilization

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Abstract

Previous studies have found that for the overall Medicare population higher spending on health care does not result in more effective care at the margin and does not appear to improve health outcomes or quality of life for Medicare beneficiaries. This paper seeks to examine whether higher spending on health care results in more effective care for low-income elderly in particular. This study uses a difference-in-differences estimation strategy to analyze the effects of regional generosity of Medicaid spending on health outcomes and utilization for community-based dual eligibles. The results indicate that Medicaid spending has essentially no effect on health outcomes or utilization for this population, supporting the notion that Medicaid spending has reached the flat of the curve.

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I. Introduction

Since the 1950's, the United States has experienced more than a five-fold increase in health care spending. At this rate, health care expenditures are expected to account for 38% of the nation's GDP by 2075 (Gruber, 393). Many health economists attribute the increase in spending to technological advances in the health care sector (Finkelstein, 2005; Fuchs 1996; Newhouse 1992; and Cutler 2003). In addition, some argue that the increase in access to health insurance has impacted people's decisions to adopt new technology, therefore indirectly causing the increase in spending (Finkelstein, 2005; Weisbrod, 1991).

Even though the United States health care system is considered to be private in nature, the government funds nearly half of all health care spending (Gruber 2005, 393). Two of the main public health insurance programs funded by the United States government are known as Medicare and Medicaid. Medicare is a federally administered program which provides health insurance for the elderly and disabled. Medicaid, on the other hand, is administered at the state level and provides health insurance for the impoverished. Within federal guidelines, states have the power to choose their specific Medicaid packages and payment policies. Therefore, variation in state eligibility standards, differing benefits, and variation in expenditures exist across the nation. Such variation raises questions about the equity of the Medicaid program as well as questions concerning whether such disparities actually result in different health outcomes.

Because health care spending is expected to put further fiscal strain on government budgets, Medicare and Medicaid have been under serious scrutiny in recent years. Federal and state governments have debated over which level of government is

responsible for providing health care coverage for the dually eligible population, those covered by both Medicare and Medicaid. Despite the debate over which level of government should provide health services to this vulnerable population, the goal of these two programs is to provide the low-income elderly with adequate health care services.

I examine the impact of variations in Medicaid spending on dually eligible individuals who live in the community (i.e. not in nursing homes) and evaluate whether the money spent on this population is distributed efficiently across the nation. Specifically, I employ a difference-in-differences estimation model to identify whether regions with higher Medicaid spending have dually eligible residents with different health outcomes or health care utilization patterns than regions with lower spending. To control for unmeasured differences across areas, I compare a sample of community-based¹ dually eligible individuals to a control group consisting of low-income, community-based individuals who just miss the eligibility requirements for any Medicaid benefits. Using data from the 2002 Health and Retirement Study (HRS) and from the 2003 Kaiser Foundation Study of Medicaid spending for dual enrollees, I find little, if any, evidence that regions with greater Medicaid spending experience better health outcomes for dual eligibles.

II. Background on Medicare, Medicaid, and the Dual Eligible Population

Medicare, one of the largest health insurance programs in the world, provides medical care coverage to over 55 million Americans over the age of 65 and disabled individuals of all ages (Holahan and Ghosh, 2005). Financed by a federal payroll tax, Medicare comprises one-eighth of the federal budget and two percent of U.S. GDP

¹ Community-based individuals are those not residing in long term care facilities.

(Finkelstein, (2005); Gruber, (392)). For the majority of its history, Medicare has consisted of two programs, Medicare Part A, and Medicare Part B. Medicare Part A is a form of hospital insurance, which pays for inpatient and outpatient hospital care. Medicare Part B is a supplementary medical insurance which pays for physician services, lab work, x-ray services and various other benefits (CMS, 2005). Under the Medicare Modernization Act (MMA) a third Medicare program, Medicare Part D ,was established in 2006. Medicare Part D pays for a portion of prescription drug costs of everyone with Medicare Part A or Part B (CMS, 2005).

Nearly all elderly are covered by Medicare. Over 95% of the elderly are covered by Medicare Part A and 98% of those covered by part A are covered by Medicare Part B (Ettner, 1997). However, traditional fee-for-service Medicare covers only half of total health expenditures for the elderly.² In addition, Medicare provides only basic benefits, and the recipients are subject to relatively high deductibles and a 20% co-insurance rate for most services (Gruber 2005, 430). Further price uncertainty exists because physicians implement “balanced billing” by charging a Medicare patient up to 15% more than the program’s reimbursements. Moreover, Medicare does not cover the costs of important health care services such as long term nursing home care. Prior to 2006, Medicare also did not cover the costs of prescription drugs. Due to the costly and unpredictable nature of out-of-pocket expenses, many Medicare recipients rely on supplemental insurance to cover such expenses. Over 75% of elderly Medicare beneficiaries purchase private insurance that supplements Medicare, which is referred to as Medigap (Yelowitz, 2000b).

² Under fee-for-service Medicare, Medicare reimburses either the health care providers or the patient a set amount for each service provided. Fee-for-service Medicare is distinct from Medicare Managed Care. Under Medicare Managed Care, Medicare contracts with HMO providers to provide unlimited services to beneficiaries enrolled in the organization for a negotiated a monthly rate, called the capitation rate. (Gruber, 2000).

Similarly, those who meet certain financial criteria can rely on Medicaid to supplement Medicare.

The other main public health insurance program, Medicaid, is aimed at providing adequate health insurance to the impoverished. The program is a joint state and federal program which was enacted in 1967 under amendments to the Social Security Act (Pracht and Moore, 2003). Although Medicaid is administered at the state level, the federal government pays for a large portion of the costs. Poor states receive proportionately more federal funding than affluent states. The federal government finances between 50 percent of the costs in 11 relatively high-income states and 76 percent of the costs in Mississippi (Holahan, 2002). The remaining costs are funded at the state level. Medicaid spending makes up on average 20% of a state's budget, only second to elementary and secondary education (Finkelstein, 2005). In general, Medicaid is targeted at various categorically eligible groups: low-income mothers and children, low-income pregnant women, low-income elderly, and the medically needy.³ Medicaid eligibility for the elderly is closely tied to eligibility for the federal Supplemental Security Income (SSI) Program. SSI is a welfare program which provides cash benefits to underprivileged elderly individuals with household countable income and assets under a certain threshold.⁴ Even though the poor, elderly population only accounts for around 30% of the Medicaid beneficiaries, this population accounts for over two-thirds of the costs.

³ In forty-one states, individuals can qualify for full or near-full Medicaid benefits if they are deemed "medically needy" through the Medically Needy (MN) Program within their states of residence. Medically needy individuals meet the majority of the criteria to receive welfare, but have gross incomes above the typical SSI threshold. However, these individuals incur large medical expenditures (Gruber, 2000).

⁴ Currently, an individual with an income below \$603 per month and assets below \$2000 or a couple with an unearned income of \$904 per month and resources below \$3000 was eligible to receive federal SSI benefits (SSA, 2006).

Individuals who are entitled to Medicare Part A and/or Part B and are eligible for some form of Medicaid benefit are known as dual eligibles (CMS, 2005). Since the U.S population is aging and low-income individuals have higher per capita health costs than other Medicare beneficiaries, public health insurance as it relates to dual eligibles is of particular interest. In 2003, approximately 7.5 million elderly or disabled Americans were dually enrolled in Medicare and Medicaid. Sixty-five percent of these individuals (4.9 million) were elderly (Halohan and Ghosh, 2005).

The impoverished elderly who have full Medicaid benefits are covered for the services guaranteed by the federal Medicare program and are additionally covered for the services delineated in the Medicaid program of their state of residence. Currently, some services that are covered by Medicaid but not Medicare include dental services, expanded home care services, and long term care. Before 2006, Medicaid also covered the costs for prescription drugs. Services that are covered by both programs are first paid by Medicare and, if costs remain, are paid by Medicaid up to the state's limit (CMS, 2005). Medicaid also covers Medicare co-payments and deductibles for full dual eligibles as well as individuals with slightly higher incomes who qualify for partial coverage under the Medicaid Savings Programs (MSPs)

Individuals with household incomes under 135% of the Federal Poverty Level (FPL) and limited assets meet the eligibility qualifications for these MSPs which are also known as Medicaid-buy-in-programs. Individuals covered by MSPs fall into two categories: Qualified Medicare Beneficiaries (QMBs) and Specified Low-Income Beneficiaries (SLMBs). The QMB program, made mandatory under the Medicare Catastrophic Coverage Act of 1988, covers Medicare Part A and Medicare Part B

premiums as well as Medicare co-payments and deductibles for the elderly who have a household income below 100% of the federal poverty level (FPL) and assets less than two times the SSI standard. The SLMB program covers the Medicare Part B premiums for the elderly who have assets less than twice the SSI standards and an income level of between 100% and 135% of the FPL.⁵

III. Literature Review

A. Medicaid, Medicare, and Generosity of Care

A large number of studies have examined how Medicaid and Medicare policy affects beneficiaries. Prior to the shifting of drug coverage from Medicaid to Medicare in 2006 under the Medicare Modernization Act (MMA), some of the literature focused on variation in expenditures on pharmaceutical drugs. For instance, Pracht and Moore (2003) found that before the change in policy, substantial disparities existed across states in the extent of Medicaid coverage of prescription drugs. Their findings support the argument that interstate variation of Medicaid policies results in inequitable health care coverage, potentially affecting health outcomes.

Additionally, there has been substantial literature concerning the dual eligible population. Many studies have noted the vulnerability of dual eligibles in relation to other Medicare beneficiaries and have discussed the relatively expensive health care expenditures associated with this population (KMCU, 2004; Komisar et al, 2005; Rupp and Sears, 2000). Komisar et al (2005) finds that the dual eligibles residing in the

⁵ SLMB also pays a portion of the Part B premium for those who have assets below 200% SSI standard and income between 135% and 175%FPL (Gruber, 2000). However, since the benefits are very limited, individuals in this population are not officially considered to be Medicaid beneficiaries.

community (i.e. not in nursing homes) are on average sicker, poorer and more likely to live alone in comparison to other elderly, community-based Medicare beneficiaries. Hence, dual eligibles not only have limited income, but also potentially have higher medical costs than other elderly persons.

Much of the recent literature on dual eligibles has focused on the effects of the 1987-1992 implementations of the Medicare Savings Programs (MSPs) (Yelowitz, 2000a). This change in policy extended public health insurance to elderly with higher income levels. Yelowitz (2000a) examines the effects of the implementation of the QMB program on participation in the SSI program for those ages 66-75. The paper finds that raising the income limit for the Medicaid program reduces SSI participation. Consequently, with the implementation of the QMB program, Medicaid and the SSI program are not as strongly linked.

A number of papers evaluate how participation rates were affected with the implementation of the Medicare Savings Programs (Yelowitz, 2000b; Ettner, 1997; Rupp and Sears, 2000). Both Yelowitz (2000b) and Rupp and Sears (2000) examine the participation rates of the population made eligible by the policy change between 1987 and 1992. Specifically, Yelowitz (2000b) studies the population newly eligible for the QMB program and finds that a large percentage of those eligible enrolled in the program. In fact, 50% of those who became eligible took up Medicaid. However, 30% of those who took up Medicaid previously had private insurance, resulting in a 60% crowd-out.⁶ Similarly, Rupp and Sears (2000) focus on individuals eligible for either the QMB

⁶“Crowd-out” refers to the substitution of public health insurance for private coverage. Expansions in public insurance programs are aimed at providing coverage to those uninsured, rather than those who have other insurance options. Therefore, crowd-out is a particular concern when changes in policy extend eligibility to higher income families who are more likely to have access to private insurance options than the poor (Cutler and Gruber, 2001).

program or SLMB program and estimate that around 63% of newly eligibles enrolled in Medicaid.

The majority of the literature that addresses the quality or scope of care received by dual eligibles concerns long term care or nursing home care, the most costly types of care covered by Medicaid. Due to the costly nature of such services, there has been much scrutiny of state-level long term care policies that affect dual eligibles. Ettner (1993) and Nyman (1989) evaluate the access to and utilization of nursing home care by elderly Medicaid beneficiaries in comparison to other Medicare beneficiaries and find that Medicaid patients have lower access to and use of nursing home facilities than patients with supplemental private insurance. Other studies focus on how Medicaid's long-term community-based care programs affect the dual eligible population (e.g. Ettner, 1994; Pezzin and Kasper, 2002). The findings from Ettner (1994) suggest that Medicaid home care subsidies tend to reduce the use of nursing homes by dual eligibles. Furthermore, Pezzin and Kasper (2002) find that generosity in terms of home and community-based long term care services tends to increase Medicaid enrollment for elderly, low income Medicaid-eligible individuals. However, they find that dual enrollment in Medicaid and Medicare does not substantially increase health care utilization, but minimally increases the use of prescription drugs and ambulatory care services.

The literature does not thoroughly evaluate whether variation in interstate Medicaid generosity impacts health outcomes of dual eligibles. However, some have analyzed the effect of payment generosity on the entire Medicaid population, and others have focused on the effects of generosity on certain subpopulations of Medicaid beneficiaries. These papers examine the equity of the Medicaid program and evaluate

whether comparable levels of health insurance are provided to the low-income populations, regardless of where they live. Currie, Gruber, and Fischer (1995) focus on the effects of payment generosity on pregnant women enrolled in Medicaid and find that higher Medicaid reimbursements to physicians result in better birth outcomes. Likewise, Cohen and Cunningham (1995) suggest that more generous physician reimbursement is associated with better access to care for child Medicaid beneficiaries. Shen and Zuckerman (2005) measure Medicaid generosity in terms of Medicaid Managed Care capitation rates.⁷ They find that higher capitation rates only minimally improve health care access and utilization for non-elderly Medicaid recipients. In the literature, there is no consensus as to whether increased generosity actually improves health outcomes.

There is very little literature that covers the impact of payment generosity on the elderly, low income population. The papers which do evaluate how generosity affects this group are solely concerned with how generosity affects utilization of nursing home care. Both Cutler and Sheiner (1994) and Hoerger, Picone, and Sloan (1996) find that greater scope of coverage and more generous reimbursement rates increase nursing home utilization for Medicaid recipients. The literature has not evaluated the effects of Medicaid generosity on overall health outcomes of the elderly population, the most expensive Medicaid recipients.

This study serves as a contribution to the large gap in the literature pertaining to dual eligibles, and it additionally adds to the literature which evaluates the impact of Medicaid generosity. Unlike previous literature that has focused on dual eligibles, I analyze the health effects of generosity for community-based individuals. Adding to the

⁷ A capitation rate is a flat dollar amount per patient that is paid to the health insurance provider regardless of the services performed.

literature that evaluates the impact of variation in Medicaid generosity, I use average regional Medicaid spending per beneficiary to proxy for the value and generosity of Medicaid. I evaluate the marginal benefit of increased intensity of care for the low income, elderly population and assess whether higher spending on health care is equated with more effective care.

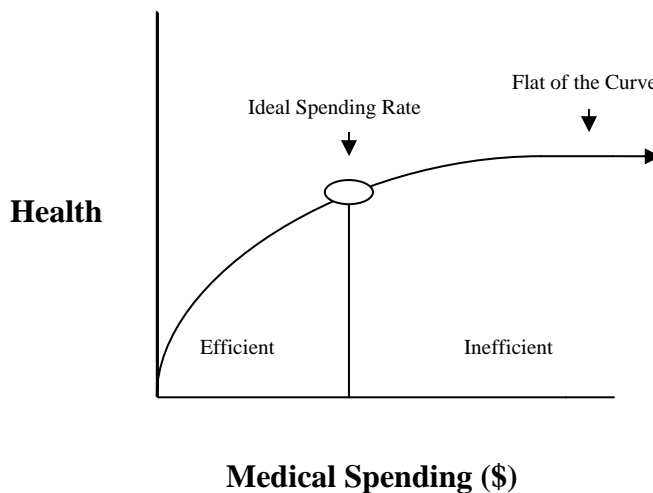
B. Theory of the Flat of the Curve

Large disparities in health care spending exist across the nation, even after correcting for differences in cost-of-living. Health care spending tends to be higher than average in metropolitan areas in the Northeast, and additionally it tends to be higher in rural areas in the South (Wennberg et al, 2002). Even though health expenditures have a propensity to be higher in regions that are characterized by poorer health, the majority of the variation in medical spending is unrelated to variations in demographics. In fact, Skinner et al (2001) estimate that variation in health conditions only account for about 27% of the variation in medical expenditures across regions of the United States. Skinner et al (2001) argue that instead, the majority of the geographical variation in health care expenditures exists due to variation in the standards of medical practice within communities - essentially the level of intensity of care.

With the large overall increases in medical expenditures and the large disparities in spending across the United States, it is important to analyze the marginal benefit of medical spending on health outcomes. The “flat of the curve” theory suggests that initially there is a large marginal benefit of medical spending on health outcomes, but as spending increases the marginal benefit decreases (See Figure 1 on the next page)

(Gruber,407). According to the theory, there exists an ideal spending rate for which every additional dollar of medical spending results in one dollar's worth of improved health outcomes. Beyond such a spending rate, the increases in spending are no longer efficient in terms of providing improved health conditions. Eventually, additional spending does not affect health outcomes at all (Gruber, 330). When this occurs, medical spending has reached the “flat of the curve,” meaning that increased spending is no longer effective.

Figure 1:



The findings of Skinner et al (2001) suggest that the United States Medicare spending is already on the flat of the curve. Therefore, higher spending on health care is not equated with more effective care and does not appear to improve health outcomes or quality of life for Medicare beneficiaries (Skinner et al 2001; Guadagnoli, 1995).

In my analysis I attempt to determine if increased medical spending on low income Medicare beneficiaries has the same results as spending at the margin for all Medicare beneficiaries. To answer this question I examine whether increased Medicaid spending (excluding long term care costs) on dual eligibles results in improvements in

health. Since dual eligibles are poorer and less healthy than the rest of the Medicare population, one might predict that increased Medicaid spending (and increased intensity of care) on these individuals could have a positive effect on health. However, as Skinner et al (2001) find, increased spending does not necessarily mean better or more efficient care. Therefore, just because dual eligibles are poor and medically vulnerable, increases in medical spending and intensity of care do not necessarily result in health improvements.

IV. Data and Methods

I use data from the 2002 wave of the Health and Retirement Study (HRS) to test the effect of Medicaid generosity on elderly dual eligibles.⁸ The HRS is a publicly available, longitudinal data set which serves as a nationally representative sample of aged individuals. This survey contains information on individuals' self-reported health and utilization of health services. The HRS also includes detailed information on individuals' income and asset levels, which I use to determine Medicaid eligibility status. Since I am only interested in how generosity of spending affects the dual eligible population, I restrict the sample to those who are above the age of 65 and are covered by Medicare. Furthermore, in order to best examine the effect of Medicaid generosity on health outcomes for the low income elderly, I follow the approach used in Yelowitz (2000a) and restrict the sample to individuals ages 66 to 75. Individuals in this age group are old

⁸ I use the RAND HRS data set, created by the RAND Center for the Study of Aging with support of the Social Security Administration (SSA) and the National Institute on Aging (NIA). Since the measure of generosity used in my analysis is based on information from 2003, I would have liked to use a 2003 wave of the HRS. However, the HRS is only performed every other year. Because the 2002 HRS wave begins in 2002 and ends in 2003, it is the best wave to use in my analysis.

enough to be covered by both Medicare and Medicaid, but they are not too old where Medicaid generosity would have little impact on health outcomes.

Various strategies of measuring generosity are established in the literature. Hanson (1984) uses a self-computed measure for generosity of the Medicaid program which combines average spending per recipient and a measurement of the scope of eligibility. However, after recent expansions in the Medicaid program, measuring the scope of eligibility by state is difficult and potentially inaccurate due to the fact that some states cover a broad clientele for some services but not others. Halohan and Zuckerman (1998) use variation in Medicaid managed care capitation rates to proxy for Medicaid generosity. However, since only a few states are enrolling the elderly or the disabled in Medicaid managed care plans, it is not appropriate to use this approach in my analysis. Other studies have used average Medicaid expenditures per beneficiary to proxy for generosity or value of the Medicaid program. Blank (1989) and Winkler (1991) use this measure of Medicaid generosity to evaluate how Medicaid affects female-headed households. Yelowitz (1998) uses average Medicaid expenditures of disabled Medicaid SSI recipients in order to evaluate the effect of Medicaid generosity on SSI participation.

Following these previous studies, I use average Medicaid expenditures for the elderly dual eligible population to proxy for Medicaid's generosity. I use state-level data on Medicaid spending for the dual eligible population in 2003. This information was obtained from Holahan and Ghosh (2005), a study sponsored by the Henry J. Kaiser Family Foundation.

Variation in Medicaid expenditures exists because of three issues: variation in state reimbursements for physicians and other services, variation in quantity of care, and

variation in the health of those who receive Medicaid. The first two issues are a sign of variation in generosity or intensity of care, whereas the third issue is not related to the generosity of the state-level Medicaid programs. Since I account for regional variation in characteristics of Medicaid recipients in my estimation strategy, Medicaid spending is a reasonable proxy for the value or generosity of Medicaid coverage.

Using the Kaiser data, I compute a weighted average of Medicaid expenditures for elderly dual eligibles within Census Divisions to estimate Medicaid generosity.⁹ Ideally, I would use state-level variation in Medicaid spending to measure generosity. However, in compliance with health privacy laws, state level indicators are not provided in the public-use version of the HRS. Nevertheless, the HRS allows me to identify the Census Division of the respondent.¹⁰ Therefore, I analyze the effect of regional variation of Medicaid spending on elderly community-based Medicaid-eligibles. Even though long-term care expenditures make up a large portion of Medicaid spending for dual enrolled beneficiaries in 2003, I exclude these expenditures from my regional measures of Medicaid spending since generosity in long-term care is not a measure of intensity of care for all dual eligibles. Additionally, many dual eligibles who reside in nursing homes are individuals defined as Medically Needy. Since the HRS does not have state indicators and eligibility for Medically Needy individuals varies tremendously by state, I am not able to determine whether one is eligible for full or near-full Medicaid benefits under the Medically Needy Program. For these two reasons, I exclude all individuals who reside in a nursing home from my sample and study only community-based dual eligibles.

⁹ See Table 1 for detailed information on generosity by Census Division.

¹⁰ see Table 1 for breakdown of Census Divisions

Simultaneously, I exclude long term care spending from my measures of regional Medicaid spending.

I use a difference-in-differences estimation strategy to compare the health of dual eligibles to low-income elderly who are not eligible for any Medicaid coverage.¹¹ Such a strategy controls for unobserved differences across areas and therefore properly identifies the marginal benefits of Medicaid spending on health outcomes and utilization. The treated population consists of dual eligibles who are eligible for full Medicaid benefits and therefore are affected by variation in generosity of Medicaid spending on acute care. The control group consists of low-income elderly who have incomes just above the Medicaid eligibility threshold.

Determining Medicaid eligibility is a complex process. Some of the literature has used simplified methods of determining Medicaid eligibility. Pezzin and Kasper (2002)¹² disregard asset limit tests and only perform income level tests to estimate eligibility. They use the income threshold of 100% of the Federal Poverty Level (FPL) to determine those who are eligible for some Medicaid benefits under the QMB program. I define my treatment group as those who meet the federal household incomes threshold for eligibility for full Medicaid benefits (below 75% FPL for a single individual and approximately 82% FPL for couples).¹³ The control group consists of individuals who have relatively

¹¹The difference-in-differences model is most often used to analyze the effects of health care policies by observing the experimental population over time, but many have used difference-in-differences models to compare the effects of health policy on an experimental sample population in relation to a control sample population (Shen and Zuckerman, 2005).

¹²Pezzin and Kasper disregard the asset test and also do not take into account that some states are more generous than the federal standard.

¹³Yelowitz (2000b) states that a nationwide floor on eligibility for full Medicaid benefits for the elderly exists at household incomes at approximately 75% FPL for a single individual (and around 82% FPL for couples). If an individual is below these income thresholds, they are guaranteed to receive federal SSI

low incomes but are not eligible for any Medicaid benefits. Therefore, I include individuals who have household incomes between 135% of the FPL and 350% FPL.¹⁴ In order address the possibility of unobservable differences between low income and high income populations, the control group consists of individuals who narrowly miss the cutoff for eligibility. The use of a comparison group accounts for various unmeasured regional factors that affect both the eligible and non-eligible populations and could impact the amount of spending per region.

One potential concern in my empirical analysis is the inability to control for possible migration of individuals to states with more generous Medicaid benefits. Since Medicaid is administered at the state level, interstate variation in eligibility, access, and generosity exists and states compete in terms of the scope of Medicaid offered to recipients. The fear that states which offer more generous welfare benefits might become “welfare magnets” was a particularly large concern when implementing the federal-state program, Aid to Families with Dependent Children (AFDC).¹⁵ However, Levine and Zimmerman (1998) find little evidence that welfare generosity affects migration decisions. Since the poor, elderly population is on average feebler and has fewer resources than the rest of the poor population (including those who meet the AFDC requirements), welfare-induced migration does not seem to be a widespread phenomenon for the dual eligible population.

supplement, and thus full Medicaid benefits is most states. This is the best method to approximate eligibility at the regional level.

¹⁴ At above 135% of the poverty level, the control group is not eligible for any Medicaid benefits (including QMB and SLMB benefits). The only potential exceptions are those who are deemed Medically Needy. However, most elderly Medically Needy individuals reside in nursing homes or utilize nursing homes. Since my sample does not include those who are in nursing homes, most Medically Needy individuals are eliminated from the analysis.

¹⁵ AFDC is a welfare program which was closely tied to Medicaid eligibility for low income, single parent families

I estimate the following equation:

$$(1) \quad \text{Health}_{ir} = \beta_0 + \beta_1 \text{Eligible}_i + \beta_2 \text{Generosity}_r + \beta_3 \text{Generosity}_r * \text{Eligible}_i + \beta_4 \mathbf{X}_i + e_{ir}$$

where:

Health_{ir} = various measures of health outcomes and utilization

Eligible_i = 1 if individual is eligible for full Medicaid benefits (household income below 75% FPL if respondent is single and household income below 82% if the respondent is married or partnered) and 0 if individual is not eligible for any form of Medicaid benefits (above 135% FPL).

Generosity_r = the average number of dollars spent by Medicaid per dual enrollee in the Census Division in which the respondent lives

\mathbf{X}_i = vector of individual characteristics: age dummies, race, marital status, highest level of education dummies, supplemental insurance information, and behavioral health information (smoking habits, exercises habits, and drinking habits)

and,

e_{ir} = a random error term.

Summary statistics are shown in Table 2. In comparison to the average non-eligible in the sample, the average dual eligible is less educated, about two times as likely to be Hispanic or black, slightly more likely to be female, and about two times more likely to be unmarried. These results are consistent with what is expected because the dual eligibles are on average less wealthy. Dual eligibles on average tend to have slightly greater use of acute care services and tend to be less healthy.

I use a variety of health care utilization measures and health status variables in order to evaluate the impact of generosity of Medicaid spending on the dual eligible population. Utilization measures of health care services employed include aggregate hospital nights in the past two years, hospital stays in the past two years, as well as

aggregate doctor visits in the past two years. Even though it is unclear as to whether variation in utilization directly reflects one's health status or one's access to care, it is established in the literature that examining the effect of variation on both utilization and health status measures provides insight to the availability of care and the overall health of individuals.

I also use a two health status indicators, including a self-report of the individual's health status¹⁶ and the aggregate number of physical limitations based on reported difficulties with activities of daily life (ADLs). ADLs are basic, every day activities, including walking, dressing, eating, getting in/out of bed, bathing, and using the toilet. To account for variations in perceptions of how to gauge one's own health status, the self-reported health variable is coded as 1 if the respondent reports having excellent health, very good health or good health and 0 if the respondent reports having fair health or poor health. The ADL variable is a count of the number of reported difficulties with ADLs. Therefore, a respondent with a larger ADL indicator would tend to be less healthy. The literature supports using ADLs as means of evaluating one's health status (Weiner et al, 1990). Since ADLs have been found to be fairly accurate predictors of mortality and morbidity, I use the indicator which is based on the aggregate of difficulties with ADLs to assess the health effects of variation in generosity.

V. Results: Effect of Generosity on Health Outcomes and Utilization

I run OLS on variations of Equation 1 in order to measure the impact of Medicaid generosity on health care utilization and health outcomes for community-based dual

¹⁶ For the self report of health indicator, a non-linear estimation strategy may be preferable to OLS in this case, however such a strategy is beyond the scope of this analysis.

eligibles. To account for heteroskedasticity, I use robust standard errors when necessary. The coefficient of interest is β_3 , the coefficient associated with the independent variable generosity*eligibility. β_3 can be interpreted as the marginal effect of generosity on the health outcomes/utilization for the dual eligible population after controlling for regional variation in health.

Results for the effect of Medicaid generosity on utilization are found in Table 3. All of the coefficients have magnitudes extremely close to zero which indicates that the generosity of Medicaid spending has essentially no effect on dual eligible utilization, although only the coefficient of interest in Column C (the indicator for the number of doctor visits in the past two years) is significant.¹⁷ For every extra dollar of Medicaid spending per dual enrollee, the number of doctor visits of the average dual eligible decreases by .002. More clearly, an increase in spending by one standard deviation, around \$1184, would only decrease the number of doctor visits in two years by 2.4 visits. Therefore, there is essentially no measurable effect of generosity on doctor visits over a two year period. In addition, greater Medicaid spending for community-based dual eligibles does not result in any significant increase or decrease in utilization, measured by the number of hospital nights and the number of hospital stays. Even though the estimators in columns A and B are not precise, the extremely small magnitudes of the coefficients allude to the fact that generosity of dual eligible Medicaid spending does not effect health care utilization.

Results for the effect of Medicaid generosity on health outcomes are found in Table 4. Both coefficients of interest indicate that the generosity of Medicaid spending

¹⁷ It is significant at the 6% level.

also has no important effect on health outcomes of community based dual eligibles, although only the coefficient in column B (the indicator for the self report of health) is significant.¹⁸ An additional dollar of Medicaid spending per dual enrollee only results in a 0.00006 percentage point decrease in the probability that the average dual enrollee is in excellent, very good, or good health. On average, an increase in spending by one standard deviation, around \$1184, would only decrease the self-reported health of the average dual eligible by approximately .02%, indicating that there is essentially no important effect of generosity on one's self reported health. Additionally, regional Medicaid spending for dual eligibles does not result in any significant increase or decrease in the number of ADLs the average dual eligible reports to have difficulties with (Column A). However, the magnitude of the estimator is extremely close to zero, suggesting that regional generosity of dual eligible Medicaid spending does not affect health outcomes. Overall, the results are consistent with the findings of Skinner et al (2001) for Medicare spending and likely indicate that we have reached the flat of the curve for Medicaid spending on the elderly Medicare beneficiaries as well.

I also evaluate whether any of the control coefficients in Table 3 or Table 4 are significant. The coefficients associated with the behavioral health indicators were consistently significant and of fairly large magnitudes across all equations measured. Elderly individuals who exercise or drink alcohol on occasion have significantly less health care utilization and better health outcomes than other elderly individuals. Those who smoke have significantly higher health care utilization patterns and worse health outcomes. In general, I also found that on average, higher levels of education are significantly associated with more utilization of health care. Specifically, on average

¹⁸ It is significant at the 10% level.

utilization patterns of individuals with a college degree is at least twice the amount of utilization of those with only a high school degree on all of the measured utilization indicators. This makes sense because higher levels of education are associated with wealthier populations. The results also show that elderly females tend to have slightly better health on average than males, but have slightly less utilization of care. These findings are consistent with other studies that have found that women live longer than elderly males tend to be on average, less healthy than elderly females (Chulis, 1993).

VI. Conclusions

Regional variation in medical spending raises various questions about whether regions with higher health care spending are associated with increased utilization and better health outcomes for the elderly, low income population. Interstate variation of Medicaid spending allows examination of this issue by determining whether regions with more generous benefits are associated with better health outcomes and higher utilization. With both federal and state-level government under severe fiscal strain, it is important to evaluate whether increased spending of public health care programs is effective.

In my analysis, I find little, if any, evidence that regions with higher acute care Medicaid spending have a community-based elderly dual eligible population that is characterized by better health outcomes. In other words, my study supports the findings of Skinner et al (2001) that higher health care spending does not necessarily mean more effective care at the margin and better health outcomes. My study suggests that even spending for the low income elderly has reached “flat of the curve” benefits.

If we are practicing flat of the curve medical spending for the dual eligible population, then current public health insurance policy is inefficient. Large regional disparities in dual eligible Medicaid spending do not result in measurable variation in health outcomes or intensity of care. Thus, such variation in Medicaid spending might be unnecessary and public dollars may be used more efficiently elsewhere.

VII. Tables

Table 1: Census Divisions and Generosity Information

Census Division	States within Division	Average Spending per dual eligible
Mid Atlantic	New York, Pennsylvania, New Jersey	\$ 9,253.21
Mountain	Montana, Idaho, Wyoming, Nevada, Utah, Colorado, New Mexico, Arizona	\$ 8,116.28
Pacific	Washington, Oregon, Alaska, Hawaii, California	\$ 7,226.74
New England	Connecticut, Rhode Island, Massachusetts, New Hampshire, Maine, Vermont	\$ 7,766.99
West North Central	North Dakota, South Dakota, Nebraska, Kansas, Iowa, Missouri, Minnesota	\$ 7,749.16
East North Central	Wisconsin, Michigan, Ohio, Indiana, Illinois	\$ 7,748.68
South Atlantic	Florida, Georgia, South Carolina, North Carolina, Virginia, West Virginia, Maryland, Delaware, D.C.	\$ 7,005.62
West South Central	Texas, Oklahoma, Arkansas, Louisiana	\$ 5,678.45
East South Central	Kentucky, Alabama, Mississippi, Tennessee	\$ 5,430.74

*Note that Census Division 10 (Puerto Rico) was taken out of the sample

**Table 2: Descriptive Statistics by Subgroup
(Eligible or Not Eligible)**

	Treatment Group:			Control Group		
	Dual Eligibles			Low Income Non Eligibles		
	Mean	St. Dev	#	Mean	St. Dev	#
Black	0.384	0.488	146	0.110	0.313	1867
Hispanic	0.137	0.345	146	0.049	0.216	1867
Female	0.747	0.436	146	0.583	0.493	1869
Male	0.253	0.436	146	0.417	0.493	1869
Married	0.219	0.415	146	0.643	0.479	1869
Not Married	0.781	0.415	146	0.357	0.479	1869
College degree	0.048	0.214	146	0.104	0.306	1865
High School degree	0.335	0.474	146	0.605	0.489	1865
No degree	0.582	0.494	146	0.260	0.438	1865
Beyond College	0.034	0.182	146	0.030	0.171	1865
Employer health insurance	0.097	0.297	144	0.237	0.425	1847
LTC health insurance	0.049	0.216	144	0.104	0.305	1851
Other health insurance	0.146	0.354	144	0.292	0.455	1847
VA health insurance	0.014	0.117	146	0.053	0.224	1866
Ever smoked	0.541	0.500	146	0.599	0.490	1859
Exercises	0.214	0.411	145	0.413	0.493	1869
Drinks	0.233	0.424	146	0.421	0.494	1869
East North Central	0.124	0.331	145	0.190	0.392	1863
East South Central	0.103	0.306	145	0.063	0.242	1863
Mid Atlantic	0.131	0.339	145	0.121	0.327	1863
Mountain	0.034	0.183	145	0.051	0.220	1863
New England	0.014	0.117	145	0.042	0.200	1863
Pacific	0.069	0.254	145	0.104	0.305	1863
South Atlantic	0.283	0.452	145	0.227	0.419	1863
West North Central	0.055	0.229	145	0.100	0.301	1863
West South Central	0.186	0.391	145	0.102	0.303	1863
Generosity	7087.4	1184	145	7371	1033	1863
Self Report of Health	0.486	0.502	146	0.703	0.457	1869
ADL indicator	0.733	1.245	146	0.267	0.793	1869
Doctor visits	11.687	17.10	131	10.653	15.36	1809
Hospital stays	0.683	1.455	142	0.534	1.754	1861
Hospital nights	4.085	12.28	141	2.554	7.745	1855
Age	69.835	2.784	146	70.34	2.906	1869

Note: Restriction: No Nursing Home residents; Ages of 65 -75, Must be dually eligible (household income under 75% FPL) or in comparison group (household income between 100% and 135% FPL).

Table 3: Effects of Generosity of Medicaid Spending on Health Utilization

	(A)	(B)	(C)
	Hospital Stays in the Past two years (OLS)	Hospital Nights in Past Two years (OLS)	Number of Doctor Visits in past Two years (OLS)
Generosity*Eligibility	-8.73x10⁻⁵ (7.99x10⁻⁵)	-1.08 x10⁻⁴ (1.21 x10⁻³)	-2.30 x10⁻³+ (1.21 x10⁻³)
Eligibility	0.805 (0.622)	2.63 (8.59)	16.1+ (8.72)
Generosity	6.57 x10 ⁻⁶ (2.60 x10 ⁻⁵)	97.4 x10 ⁻⁵ (1.70 x10 ⁻⁴)	1.257 x10 ⁻⁶ + (3.64 x10 ⁻⁴)
Married	-6.146 x10 ⁻³ (0.057)	-0.413 (0.418)	-1.65+ (0.775)
Female	-0.173** (0.003)	-1.280** (0.439)	-8.92 x10 ⁻³ (0.802)
White	0.160 (0.177)	1.193+ (0.711)	-1.564 (2.08)
Black	0.0439 (0.189)	1.138 (0.872)	-1.432 (2.284)
Hispanic	0.0603 (0.171)	0.506 (0.818)	0.465 (1.65)
No degree	0.219+ (0.115)	1.31* (0.517)	-0.457 (2.15)
High School degree	0.200+ (0.106)	1.97** (0.526)	-1.23 (2.05)
College degree	0.382** (0.144)	3.10** (0.755)	4.195+ (2.28)
LTC health insurance	9.99 x10 ⁻³ (7.89 x10 ⁻²)	-0.212 (0.510)	1.20 (1.19)
VA health insurance	5.47 x10 ⁻² (0.1.29)	-0.543 (0.609)	3.63* (1.64)
Employer health insurance	7.79 x10 ⁻² (0.0687)	0.6.41 (0.518)	0.226 (0.924)
Other health insurance	5.30 x10 ⁻² (5.91 x10 ⁻²)	0.414 (0.395)	0.114 (0.852)
Exercises	-0.264** (0.046)	-1.03** (0.344)	-3.12** (0.729)
Ever smoked	0.134** (0.051)	0.776* (0.360)	1.626* (0.755)
Drinks	-0.268** (0.0515)	-1.50** (0.362)	-2.55** (0.760)
Observations	1946	1940	1892

Results are from estimating columns (A), (B), and (C) by OLS.

Dependent variables are measures of health care utilization.

Robust standard errors are reported in parentheses in columns (A) and (B). OLS standard error is reported in column (C).

Controls also include age dummies and a constant

+ significant at 10%; * significant at 5%; ** significant at 1%

Table 4: Effects of Generosity of Medicaid Spending on Health Outcomes

	(A) ADL indicator (OLS)	(B) Self Report of Health (OLS)
Generosity*Eligibility	-4.50 x10⁻⁵ (7.56 x10⁻⁵)	-5.97 x10⁻⁵+ (3.55 x10⁻⁵)
Eligibility	0.621 (0.555)	0.357 (0.256)
Generosity	2.12 x10 ⁻⁵ (1.92 x10 ⁻⁵)	3.07 x10 ^{-5**} (1.01 x10 ⁻⁵)
Married	-3.29 x10 ⁻³ (0.0417)	0.0146 (0.0219)
Female	-0.0732+ (0.0436)	0.0741** (0.023)
White	-0.259 (0.159)	0.115+ (0.066)
Black	-0.206 (0.169)	0.0321 (0.0719)
Hispanic	0.125 (0.109)	-0.0964+ (0.0513)
No degree	0.161+ (0.0884)	-0.179** (0.0517)
High School degree	7.80 x10 ⁻³ (0.0751)	-0.0380 (0.0473)
College degree	0.0623 (0.088)	-0.0780 (0.0540)
LTC health insurance	0.0176 (0.0531)	0.0201 (0.0312)
VA health insurance	-0.0605 (0.0765)	7.86 x10 ⁻³ (0.0493)
Employer health insurance	-0.0983* (0.0438)	2.21 x10 ⁻³ (0.0257)
Other health insurance	-0.0869* (0.0400)	-0.0134 (0.0232)
Exercises	-0.237** (0.0331)	0.195** (0.0196)
Ever smoked	0.0991* (0.0403)	-0.0851** (0.021019)
Drinks	-0.202** (0.0376)	0.134** (0.0209)
Observations	1956	1956

Results are from estimating columns (A) and (B) by OLS.

Dependent variables are measures of health care utilization.

Robust standard errors are reported in parentheses.

Other controls also include age dummies and a constant.

+ significant at 10%; * significant at 5%; ** significant at 1%

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