Becoming Dual: Measuring the Impact of Gaining Medicaid Coverage For Medicare Beneficiaries *

Gina Li

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Abstract

This paper studies how Medicare and Medicaid jointly shape patients' access to healthcare, by estimating the effect of gaining additional Medicaid coverage for Medicare beneficiaries. While dual coverage eliminates out-of-pocket costs, providers face lower reimbursement rates and higher administrative burdens associated with Medicaid. I leverage an expansion in dual-Medicaid eligibility and find that dual enrollment increases patients' total health care utilization by 51 percent, largely driven by a higher use of the emergency department. Dual enrollment simultaneously leads to a 24 percent decline in the number of physician visits, concentrated among providers with a low share of Medicaid patients.

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I Introduction

Since 1965, Medicare has been the central program providing public health insurance coverage to individuals aged 65 and older and those with disabilities in the United States, covering one-in-five Americans. Medicare beneficiaries face out-of-pocket costs, such as premiums and coinsurance, when receiving healthcare services, with the average Medicare out-of-pocket cost amounting to $5,460 in 2016 (Cubanski et al., 2019). These costs can constitute a substantial financial burden for low-income enrollees. To address this concern, the means-tested Medicaid program – which provides public health insurance coverage to low-income populations – allows eligible Medicare beneficiaries to become dual Medicare-Medicaid enrollees (or "dually enrolled"), covering out-of-pocket costs for these patients. In 2019, 12.2 million individuals were dually enrolled in Medicare and Medicaid, representing 10 percent of the combined Medicare and Medicaid populations. These patients represent some of the most vulnerable people in the country and account for a disproportionate share, 31 percent or $440 billion, of total combined annual Medicare and Medicaid healthcare spending (MACPAC, 2022).

As of 2022, 16 states and the District of Columbia have expanded their Medicaid programs to cover additional Medicare enrollees beyond the federal minimums (NCOA, 2022). These expansions are often lauded as helping seniors access high-quality and affordable healthcare coverage (Lyons, 2020). Yet despite this enthusiasm, there is limited empirical evidence on how dual enrollment affects access to healthcare services for this important and vulnerable population.[1]

In this paper, I offer new evidence on the causal effect of dual enrollment on the healthcare utilization of Medicare beneficiaries. Although policymakers posit that dual enrollment improves healthcare access for low-income individuals, it is not clear that this is the case. While this dual system eliminates out-of-pocket costs for patients, I document and identify a crucial tradeoff: having dual Medicare-Medicaid coverage may reduce the set of providers available and willing to treat them. This is because providers are paid based on Medicaid

[1]This is in stark contrast to the broad literature examining the consequences of Medicaid (e.g. Currie and Gruber (1996b), Finkelstein et al. (2012)) and Medicare coverage (e.g. Finkelstein (2007), Finkelstein and McKnight (2008), Card et al. (2009)).

payment rates when they treat dually enrolled patients, and these rates are often significantly lower than Medicare rates.[2] They also face high administrative hurdles, such as frequent claim denials (Dunn et al., 2021). For both of these reasons, providers may be less willing to treat dually enrolled patients than they are to treat Medicare-only patients.

To identify the causal impact of dual enrollment, I study a substantial dual-Medicaid eligibility expansion in the state of Connecticut in October 2009, which increased dual enrollment in the state by 73 percent. This policy change created both cross-state and within-state variation in dual eligibility, where neighboring states did not experience any policy changes, and regions within Connecticut experienced different treatment intensities based on baseline demographic differences. I use the change in eligibility thresholds in an instrumental variables (IV) framework to isolate the effect of dual enrollment for the marginal Medicare beneficiaries who enrolled due to the expansion.

I use ten years of administrative Medicare claims and enrollment data covering the period from 2006 through 2015. Employing detailed information on healthcare utilization and spending for the same individual over time, I track how individual healthcare utilization changes as people gain dual status. I further use the annual American Community Survey to obtain information on household income by sub-state geographical location (Public Use Microdata Area). I construct an instrument that captures the treatment intensity of the Connecticut policy change, through simulating the share of individuals who are eligible for dual enrollment by sub-state location, based on the pre-policy demographic composition of a local area. This instrument therefore captures cross-state and within-state variation in eligibility for dual enrollment, driven by the policy expansion.

I find that while becoming dually enrolled increases total quarterly healthcare utilization by 51 percent (41 percentage point increase in log spending), patients shift away from physician visits and toward the emergency department (ED). The number of physician visits decreases by 1.0 visit per quarter or 24 percent relative to the sample mean. The decline in the usage of primary care services drives this decrease, as the probability of having at least one visit to a primary care provider falls by 19 percentage points. The type of care received changes as well, where dual enrollment induces significant declines in preventive care use.

[2] In 2019, Medicaid reimbursement rates were 72 percent of Medicare rates (Zuckerman et al., 2021).

In contrast, the probability of having at least one ED visit increases by 8 percentage points for the new dually enrolled. Overall, new dually enrolled patients end up using the ED for healthcare services but are less likely to see a primary care physician. These findings suggest that although Medicaid enrollment (and the associated reduction in out-of-pocket costs faced by Medicare beneficiaries) increases the demand for healthcare services, there is an offsetting force coming from the supply side as physicians become less available.

I formally test this hypothesis, through investigating whether the physicians' reluctance to accept Medicaid patients drives the observed reduction in physician services among dually enrolled patients. First, I study how the effects of dual enrollment vary across providers with different propensities to accept Medicaid as a form of insurance.[3] I show that patients with primary care providers (PCPs) who are least likely to accept Medicaid have a 23 percentage point decline in having any primary care visits in a quarter. At the same time, this effect disappears for individuals with PCPs with a high likelihood of treating Medicaid patients. Furthermore, patients with PCPs unlikely to treat Medicaid patients (presumably the same ones who lose access to their PCP) are more likely to end up in the ED, suggesting substitution from physician services to the ED. Next, I categorize physician specialties by their willingness to accept Medicaid, as measured through the National Ambulatory Medical Care Survey, and show that dual enrollment increases the usage of specialties associated with higher propensities to accept Medicaid patients, such as ophthalmologists and general surgeons. However, the dually enrolled are less likely to visit specialists with a low probability of treating Medicaid patients, such as dermatologists and psychiatrists.

The changes in physician visits suggest that the consequences of becoming dually enrolled might differ by the patient's medical needs. To investigate this conjecture, I estimate how the effect of dual enrollment differs by patient characteristics. I show that those with Social Security Disability Insurance experience more pronounced reductions in physician usage than the overall population where they are 8 percentage points less likely to have at least one visit to a specialist. These beneficiaries are more likely to have medical conditions (such as mental illness) treated by doctors with low Medicaid acceptance rates.

[3]Specifically, I use Medicare claims and identify the share of a provider's claims that belong to patients with dual status.

Lastly, having documented that dual Medicare-Medicaid enrollment affects healthcare utilization, I ask whether these changes translate into impacts on patient health. The effects on health are theoretically ambiguous; while dual coverage may decrease health through loss of physician access, dual coverage can improve health through non-physician channels. For example, dual enrollment eliminates Medicare-associated financial costs and increases access to non-Medicare Medicaid covered services. I find evidence that average mortality rates were reduced slightly due to the Connecticut expansion. Although this result points to net mortality gains, more work is needed to explore the broader health and welfare consequences, particularly in light of the demand and supply responses documented in this paper.

This paper contributes to several strands of literature. A substantial body of work estimates the effects of Medicaid enrollment and Medicaid expansions on health and healthcare utilization, largely focusing on the previously uninsured (e.g. Finkelstein et al. (2012), Taubman et al. (2014), Wherry and Miller (2016)). In my setting, the Medicaid expansion applies to new enrollees who were already insured under Medicare, making the findings from this existing literature on Medicaid less applicable. Indeed, I find the opposite effect compared to the previous literature; here, Medicaid enrollment decreases physician usage for Medicare beneficiaries as opposed to the increases in access and usage of physician services that the literature has found for the previously uninsured. My results highlight that the experiences of those affected by Medicaid expansion differ by population and baseline insurance coverage.

Providers are responsive to prices and costs, through adjusting the supply of healthcare services (Chen (2014), Clemens and Gottlieb (2014), Haber et al. (2014), Polsky et al. (2015), CMS (2015), Zheng et al. (2017), Callison and Nguyen (2018), Alexander and Schnell (2019), Cabral et al. (2021), Dunn et al. (2021), Hayford et al. (2023)). Notably, for individuals already dually enrolled, Cabral et al. (2021) show that temporary increased payments due to the Affordable Care Act increased usage of physician evaluation and management services and Hayford et al. (2023) illustrate that the dually enrolled in states with more restrictive payment policies saw decreased utilization.[4] I focus on a different margin – patients' shift into dual status – and find that the supply-side drivers are so large that care utilization

[4]Meanwhile, Roberts and Desai (2021) and Fung et al. (2021) show limited provider responses to the same ACA policy change, suggesting some physicians might not be responsive to transitory payment changes.

might decrease upon dual enrollment, despite the reduction in out-of-pocket costs.

More broadly, there is considerably less research on individuals who are covered by both Medicare and Medicaid simultaneously, especially in understanding the effects of dual enrollment itself.[5] Studies that compare the dually enrolled with those enrolled in Medicare-only find that dual status is associated with increased usage and access to medical services (Ozminkowski et al. (1997), Parente and Evans (1998), Rudolph and Haber (2003), Federman et al. (2005), Moon and Shin (2006)), while others (Haber et al. (2014), Cabral et al. (2021)) show the opposite. Given that individuals might select into dual enrollment, I contribute to this literature by using an empirical approach that leverages a plausibly exogeneous policy change as a natural experiment that allows for a causal interpretation of the estimates. Existing studies leveraging quasi-experimental research designs also point to mixed effects with dual coverage increasing physician visits or producing no effect (Roberts et al. (2023), Roberts et al. (2021), Berman (2021b)).[6]

This paper contributes and extends the previous work on the effects of dual enrollment in several dimensions. First, my research design allows me to follow the same individual through time (thus holding individual characteristics fixed) to disentangle the effects of dual enrollment from other concurrent factors that affect utilization. Furthermore, I estimate effects for the newly enrolled, such that these results are generalizable to the policy-relevant populations of interest as states are increasingly expanding their dual-Medicaid programs. Second, I uncover heterogeneous effects depending on the type of service and nature of the provider (e.g. degree of Medicaid acceptance), highlighting the role of the supply-side in determining the usage of care and uncovering mechanisms driving the differential direction of effects. These provider-driven changes in healthcare usage can also produce spillovers onto other forms of care, such as the emergency department. Lastly, my analysis illustrates

[5]Existing studies often use the dually enrolled population as a setting to study a variety of other questions (Basu et al. (2010), McInerney et al. (2017), Gross et al. (2020), Carey et al. (2020), Ding et al. (2021), Neprash et al. (2021)).

[6]Roberts et al. (2021) and Roberts et al. (2023) use a regression discontinuity design around the Medicaid eligibility income threshold and find that the dually enrolled use more physician services. Berman (2021b) focus on the CT expansion finding no effects on the number of outpatient claims. Lastly, Vabson (2014) examines the consequences of losing dual status in Tennessee due to a mandatory dis-enrollment, finding dis-enrollment decreases utilization in outpatient services. The consequences of losing dual status are likely not symmetric with gaining dual status.

how the effects of dual enrollment might mask important differences by characteristics of the patient, especially the patient's medical conditions and healthcare needs.

This paper not only provides insights on individuals with dual enrollment in Medicare and Medicaid, but also generates broader implications and lessons for the design of public insurance systems for low-income populations. These programs typically limit out-of-pocket costs for patients, but policymakers impose costs in other ways to lower expenditures, such as low payment rates to providers or frequent claim denials. As this paper shows, the supply-side responses may be so strong that patients have trouble accessing providers upon gaining coverage, even when out-of-pocket costs are no longer a concern. Given these results, government cost-saving measures may affect the quality of care these vulnerable patients receive.

The paper proceeds as follows. Section II introduces the background and institutional setting of Medicare, Medicaid, and the dual Medicare-Medicaid program. Section III describes the main data set, while section IV discusses the empirical design and the Connecticut policy change. The effects of Medicaid enrollment are shown in Section V. Section VI discusses the implications of these findings while Section VII concludes.

II Background and Institutional Setting

II.A Medicare and Medicaid

The two major public health insurance programs in the United States are Medicare and Medicaid, which have a combined annual spending (as of 2019) of 1.4 trillion dollars, accounting for 37 percent of national health expenditures (CMS, 2019b). Medicare, covering 61.5 million beneficiaries in 2019 (CMS, 2019a), is a federally administered health insurance program that provides coverage to individuals age 65 or over and to individuals with disabilities (through Social Security Disability Insurance (SSDI)). Medicaid, on the other hand, is a state administered health insurance program targeted at low-income populations, with 71.4 million enrollees in the same year (CMS, 2020).

Medicare and Medicaid broadly overlap in covered services for individuals,[7] but differ in

[7]These services include inpatient hospital care, outpatient hospital care, and physician services. In tra-

out-of-pocket costs to beneficiaries. For Medicare, there are monthly premiums ($135.50 for coverage of medical services in 2019), annual deductibles that have to be met before insurance coverage begins, and coinsurance for specific services. For example, services such as doctor's visits require a $185 annual deductible, followed by a 20 percent coinsurance for each visit. These out-of-pocket Medicare costs can be substantial for the individual; 27 percent of Medicare beneficiaries spent at least 20 percent of their incomes on Medicare premiums and out-of-pocket costs. This was especially pronounced for the lowest-income groups, where the proportion rises to 40 percent for low-income individuals with incomes below 200 percent of the federal poverty line (Schoen et al., 2017).In contrast, since Medicaid serves low-income communities, Medicaid beneficiaries pay very little to no premiums or cost-sharing.

Medicare and Medicaid also differ on payments to providers, which in turn affects providers' willingness to accept a certain type of insurance. Both of these programs largely pay providers on a Fee-for-Service (FFS) basis, where each service to a beneficiary is paid for in accordance to a rate schedule.[8] Medicaid traditionally has lower reimbursement rates. For example in 2019, Medicaid fees were on average 28 percent lower than Medicare fees (Zuckerman et al., 2021). Notably, for primary care, the Medicaid fee was 33 percent lower; a common 15 minute office visit with an established patient was paid a $51.57 rate, while the corresponding Medicare rate was $75.32.[9] Furthermore, providers who treat Medicaid enrollees often face substantial administrative burdens due to complicated billing processes for providers seeking payments, such as frequent denials (Dunn et al., 2021).

Given that physicians face lower payments on average for Medicaid services and incur higher administrative costs, fewer physicians choose to accept Medicaid compared to Medi-

ditional Medicare, Part A provides inpatient services while Part B includes outpatient services and requires a monthly premium. There is variation in Medicaid coverage across states. Services broadly covered by Medicaid and not Medicare include extended nursing facility care, transportation for medical services, and possibly dental care.

[8]Medicare and Medicaid also operate alternative payment systems: Medicare Advantage and Medicaid Managed Care. This project focuses on 2006-2015, where FFS was more popular for both Medicare and Medicaid. For instance, in 2006, only 12 percent of the dually enrolled were in Medicare Advantage (MMCO, 2018). Furthermore, for the relevant populations in this study (disabled or elderly), state Medicaid programs have historically reserved these groups for FFS.

[9]The HCPCS code for this service is 99213. The average Medicaid payment is derived from Appendix A.1 (Zuckerman et al., 2021). The Medicare amount is obtained from the CMS 'Search the Physician Fee Schedule', for 2019 for Non-Facility. This price reflects the National Payment Amount; exact Medicare prices varies by geographic location.

care. For example, out of the 95 percent of physicians in an office-based setting who take new patients, 84 percent reported accepting Medicare, but only 69 percent reported accepting Medicaid (Hing et al., 2015). Furthermore, these self-reported physician acceptance rates likely overstate the acceptance rate as experienced by Medicaid patients seeking doctors. Researchers called 1800 primary and specialist Medicaid providers and found that slightly less than half of the providers could offer appointments (Levinson and General, 2014).

II.B The Dual Medicare-Medicaid Program

Since the inception of the Medicare and Medicaid programs in 1965, it has been possible to be simultaneously enrolled in both, because eligibility for these programs operates on separate margins. Medicare beneficiaries qualify for Medicaid through having low incomes and assets. In return, Medicaid assists with out-of-pocket costs, including Medicare premiums and cost-sharing. The dual Medicare-Medicaid program has grown over time, with 12.2 million individuals enrolled in 2019 (MMCO, 2020).

Those who are dually enrolled are demographically distinct from the Medicare-only population and are a particularly vulnerable set of individuals. There is geographic dispersion, where dual enrollees are more concentrated in the south and northeast as opposed to the west (Appendix Figure A1). This population is also 32 percent less likely to be non-Hispanic White and is three times more likely to report having poor health than those enrolled only in Medicare (Appendix Figure A2). Given that the dually enrolled population tends to be sicker, they not only account for a large share of beneficiaries (19 percent of Medicare and 14 percent of Medicaid), but an even larger share of spending (34 percent and 30 percent, respectively) (MACPAC, 2022). Furthermore, the per capita Medicare and Medicaid combined spending for dual enrollees was $36.1 thousand, over three times greater than the $10.7 thousand in Medicare per capita spending for Medicare-only beneficiaries (MACPAC (2022), CMS (2019b)).

Financial support for the dually enrolled is provided based on income level, where those with lower incomes and assets qualify for more generous cost assistance. This paper focuses on the 8.0 million (as of 2019) dually enrolled individuals called Qualified Medicare Beneficiaries (QMBs), who have the highest level of poverty and receive complete out-of-pocket cost

elimination for Medicare services, including all deductibles, premiums, and other coinsurance.[10] In order to be eligible for QMB, the QMB federal guidelines stipulate that Medicare beneficiaries must have incomes below 100 percent of the Federal Poverty Level (FPL) and assets less than $7,730 for a single individual and $11,600 for a married couple in 2019.

Individual states can choose to have more generous QMB eligibility thresholds. As of 2017, 12 states and the District of Columbia have either removed the asset test or raised the asset threshold, but only Connecticut, Indiana, Maine, and D.C. have increased income eligibility (MACPAC, 2018). In the empirical design, I leverage differential state QMB eligibility generosity. For the rest of this paper, I use the terminology "dually enrolled" to refer to enrollment in the QMB program for simplicity, unless otherwise specified.

When an individual becomes a dual beneficiary, the provider payment system also changes because there are now two insurers paying providers for services. Medicare is considered the primary payer for covered services, while Medicaid is the secondary insurance, filling in the cost gaps of Medicare. Providers first submit their claims to Medicare to pay its share of the service and then the claim is sent to Medicaid.[11] When the claim is sent to Medicaid for payment of cost-sharing, individual states do not need to pay the full cost-sharing amount. The vast majority of states opt for the "lesser-of" policy, where Medicaid pays the difference between the Medicaid reimbursement amount and what is already payed by Medicare.

Due to the lesser-of policy, providers can end up receiving less total payment for treating a dually enrolled patient than when the individual is Medicare-only. To illustrate this concept, consider a physician visit, where the Medicare-approved amount is $100.[12] Assuming that deductibles have been met, Medicare pays $80 (recall that Medicare coverage is associated with a 20 percent coinsurance). The remaining $20 that would have been paid by a Medicare-

[10] I detail all categories of the dually enrolled population with more information on QMB and other dual types in Appendix I.A, Appendix Table A1, and Appendix I.B. In addition to gaining Medicare cost-elimination, some QMBs also gain access to their state's full Medicaid package, and to non-Medicare Medicaid services.

[11] This also determines how the claims are reported in the administrative data; Medicare administrative claims databases include the full universe of beneficiaries' claims for services covered by Medicare. Thus, the Medicare claims can be used to reliably document patterns in duals' healthcare usage patterns for the types of utilization I focus on.

[12] Example adapted from MACPAC Report to the Congress on Medicaid and CHIP, Chapter 4: Medicaid Coverage of Premiums and Cost Sharing for Low-Income Medicare Beneficiaries. It is illegal for providers to ask QMBs to pay for services should Medicaid not pay up to the Medicare amount and providers are subject to sanctions otherwise.

only beneficiary will be sent to Medicaid for payment. If the state Medicaid payment rate is $80 or less, Medicaid would consider the bill already paid in full, pay nothing else, and the provider would have to accept $80 as the full payment for the service. If the Medicaid rate is $90, for example, Medicaid would pay $10. Medicaid will pay at most $20 should the Medicaid rate exceed the Medicare rate, which is seldom the case. In addition to the lesser-of policy, high administrative costs associated with filing Medicaid claims (such as frequent claim denials) also prevent providers from seeking or receiving payment even when entitled to such payment (Cabral et al., 2021). In Connecticut in 2009, of the total Medicare cost-sharing portion, Medicaid only covered 11.3 percent for evaluation and management services (Haber et al., 2014).

III Data

I use administrative Medicare claims and enrollment data from the Centers of Medicare and Medicaid Services (CMS). The CMS data is a 20 percent random sample of Medicare beneficiaries from 2006 through 2015. For each individual, I observe demographics and all Medicare utilization and spending claims through time. In this section, I summarize the creation of key variables for analysis and discuss the sample restrictions, with greater detail documented in Appendix II.

Beneficiary Demographics

This data contains demographic information on the beneficiary, including age, sex, reason for Medicare entitlement (aging or disability), zip code of residence, and date of death. I observe dual enrollment status for each individual each month and produce an indicator for dual enrollment if the individual is enrolled as a dual beneficiary for at least one month in the quarter. I also identify the overall health level, which is used in one of the heterogeneity analyses. This summary measure of health is the number of comorbidities, defined as the number of chronic conditions that an individual has in a calendar year, following Maciejewski and Hammill (2019). One major limitation of Medicare claims is that it does not contain information on income or assets that would allow me to identify each individual's eligibility

for dual enrollment. Therefore, I supplement CMS claims with Census data on income and assets, as described in Section IV.

Medicare Spending and Usage

Total Medicare spending is the sum of Medicare paid amounts on inpatient and outpatient services. Inpatient services are services performed in an inpatient setting (excluding Skilled Nursing Facilities), while outpatient services include the sum of spending from physicians, outpatient services such as ED visits, home health, and durable medical equipment.[13] To capture measures of healthcare utilization, I focus primarily on hospitalizations, emergency department (ED) visits, physician visits, and usage of preventive care services.[14] I also classify ED visits into emergent or nonemergent care (Billings et al. (2000), Johnston et al. (2017), Miller (2012), Taubman et al. (2014)), based on whether immediate care within 12 hours was necessary. For physician visit claims, I observe the physician specialty and individual physician identifiers (NPI or National Provider Identifier). I map physician specialties into primary care (General Practice, Internal Medicine, Family Practice, or Geriatrics), while the rest of the physician visits are considered specialist visits (Zhang et al., 2021). Lastly, I identify five measures of preventive care usage: flu shots, mammograms, and for diabetes patients, HbA1c test, lipid test, and retinal eye exam.

Physician Medicaid Acceptance

I categorize physicians into their Medicaid acceptance level or their propensity to accept Medicaid as a form of insurance in two ways. First, I create $PCPMedAccept_i$, a measure of the willingness of individual i's main primary care provider (PCP) to take on a Medicaid patient (see Appendix II.G for detail on variable construction). Two individuals with similar

[13]For spending, I focus solely on what Medicare pays for on each claim, and do not include other costs, such as potential copays. This way, spending between the dually enrolled and Medicare-only populations are comparable, since Medicare pays the same amount for each service (conditional on the patient deductible) regardless of the dual status of the individual. What does differ is how much of the individual coinsurance is paid for by Medicaid to providers, but this amount is not included in the spending measure.

[14]In other words, I focus on services from Medicare Part A and Medicare Part B. My data does not contain non-Medicare covered services, including Medicaid-only services such as dental care and transportation. Therefore, I do not capture utilization for non-Medicare covered Medicaid services. However, these services are unlikely to interact with the set of Medicare covered services, which are the focus.

beneficiary demographics might nonetheless experience different dual enrollment effects, because one individual has a doctor who happens to take Medicaid as a form of insurance, while the other individual has a doctor who does not accept Medicaid. I focus on the PCP given emphasis of the PCP as a key figure in the typical patient's management and coordination of care. Specifically, $PCPMedAccept_i$ is the fraction of the main PCP's Medicare claims that belong to Medicaid patients (specifically, dually enrolled patients, as observed by the dual status in the Medicare claims data), prior to the Connecticut Medicaid expansion. In Appendix Figure A3, I plot the histogram of $PCPMedAccept_i$, where each observation is a patient. The histogram shows that accepting few Medicaid patients is common; over 20 percent of patients have main PCPs where only zero to 5 percent of their claims came from Medicaid patients. The overall mean is 19 percent.

Second, I map physician specialties into three categories, high, medium, and low Medicaid acceptance, based on the fraction of physicians in the specialty who claim to accept Medicaid as a form of payment. These fractions are produced from the National Ambulatory Medical Care Survey (NAMCS). NAMCS is a national survey of office-based physicians in an outpatient setting. Conditional on stating that they are accepting new patients, physicians are asked whether they accepted Medicaid as a form of payment. This mapping is shown in Appendix Table A2; fewer than half of those in dermatology and psychiatry who accept new patients accept new Medicaid patients, while almost all cardiologists and ophthalmologists accept Medicaid.

Sample Restriction and Descriptive Statistics

From the full Medicare data set, I make a series of sample restrictions to arrive at the main sample. The details of the sample restrictions are outlined in Appendix Table A3. First, given that claims are only observed for Fee-For-Service (FFS) Medicare, I restrict to individuals who are always enrolled in FFS (and enrolled in Medicare Part A and Medicare Part B) for all years in the data. Second, for the empirical design, which is described in the next section, I focus on a substantial policy change that occurred in Connecticut. Therefore, I restrict the sample to Connecticut and the surrounding states of Massachusetts, New York, and Rhode Island. Given that the Connecticut policy change occurred in late 2009, this

data set allows me to track usage patterns for 3 years pre-policy and 6 years post-policy. The final sample includes 16.4 million individual-quarter level observations across 653,000 unique individuals.[15]

Table I: Summary Statistics

	Medicare-Only	**Duals**
Panel A: Demographics		
Age 65+	0.93	0.63
SSDI	0.12	0.45
Male	0.43	0.37
White	0.93	0.68
# Comorbidities	2.85	3.45
Panel B: Health Usage & Spending		
Any Hospitalization	0.06	0.09
Any ED	0.09	0.16
# Physician Visits	4.11	4.76
Any Specialist	0.72	0.72
Any Primary Care	0.54	0.60
Total Medicare Spending	2170	3184
Observations	5415307	706040

Source: 2006-2009Q3 CMS FFS (CT, RI, NY, and MA) in 2011 dollars. Each observation is an individual-quarter.

Table I shows baseline demographic and Medicare usage and spending averages, split by Medicare-only or dually enrolled, for quarters prior to the policy change at baseline. Panel A makes evident that individuals with dual status are substantially different from those enrolled only in Medicare; this population is more likely to be female and non-White. In particular, they are much younger on average, with only 63 percent aged 65 or older, compared with 93 percent in the sample of beneficiaries enrolled only in Medicare. This gap arises because the dually enrolled are more likely to be entitled to Medicare through Social Security Disability Insurance, as opposed to the aging pathway. Those who have dual status

[15] As discussed in the previous section, there are several categories of dually enrolled patients and this paper focuses on the QMB duals. I also restrict to individuals who were enrolled in QMB or only in Medicare prior to the Connecticut policy change, because my focus is on transitions from Medicare-only into QMB. This excludes individuals who were ever dually enrolled but not enrolled in QMB (those who were receiving some other type of Medicaid assistance) prior to the policy, removing 12.6 percent of the individual-month observations. This panel of individuals is also unbalanced; individuals enter the sample through Medicare enrollment and leave the sample due to deaths.

also have 21 percent more comorbidities. Given that they have worse health on average, it is perhaps unsurprising that they also use more Medicare services. Panel B of Table I presents average utilization and spending for hospitalizations, emergency department visits, and physician visits. The dually enrolled have higher utilization across all of these measures. The average total Medicare spending on inpatient and outpatient services among the dually enrolled is $3,184 in a quarter, which is 47 percent more than that of the population only enrolled in Medicare.

IV Empirical Strategy

IV.A Setup

Consider a model estimating the effect among Medicare recipients of enrolling in Medicaid (becoming dually enrolled) on healthcare spending and usage using the following regression for individual i in geographic location l (Public Use Microdata Area, or PUMA) and quarter t:

$$Y_{ilt} = \alpha_i + \tau_t + \delta_l + \beta Dual_{ilt} + \nu_{ilt}, \tag{1}$$

where Y_{ilt} includes a set of individual level Medicare spending and usage variables, such as the number of physician visits or the usage of the emergency department, and $Dual_{ilt}$ is an indicator for individual dual enrollment status in quarter t. The coefficient of interest is β, which captures the average effect of dual enrollment on outcomes Y_{ilt}. I control for individual level fixed effects α_i to account for time invariant individual factors that affect health care usage, such as baseline underlying health and preferences for seeking care. Time quarter fixed effects, τ_t, capture time quarter specific usage patterns, while PUMA fixed effects, δ_l, absorb baseline differences across PUMAs in healthcare availability, preferences, and provision.[16]

The main challenge for estimation is that individuals who are dually enrolled are likely different compared with those who are not, in ways unobservable in the data. Even con-

[16]I include both individual FE and PUMA FE, since I allow for individuals to move across PUMAs. 10 percent of individuals move PUMAs across my sample. Fewer than 1 percent move across states.

trolling for time, individual, and PUMA specific variables, there are likely other unobserved time-varying factors that affect both propensity to enroll as a dual beneficiary and health-care usage, such as learning about the Medicaid program or adverse health or income shocks. For example, bad health events can lead to the depletion of resources that affect eligibility or to individuals searching for Medicare cost-saving measures and learning about the dual Medicare-Medicaid program (reverse causation). To overcome these endogeneity concerns, I exploit a change in state dual-Medicaid eligibility through an instrumental variables (IV) design. I first discuss the policy change before turning to the creation of the instrument.

IV.B Connecticut Dual-Medicaid Expansion

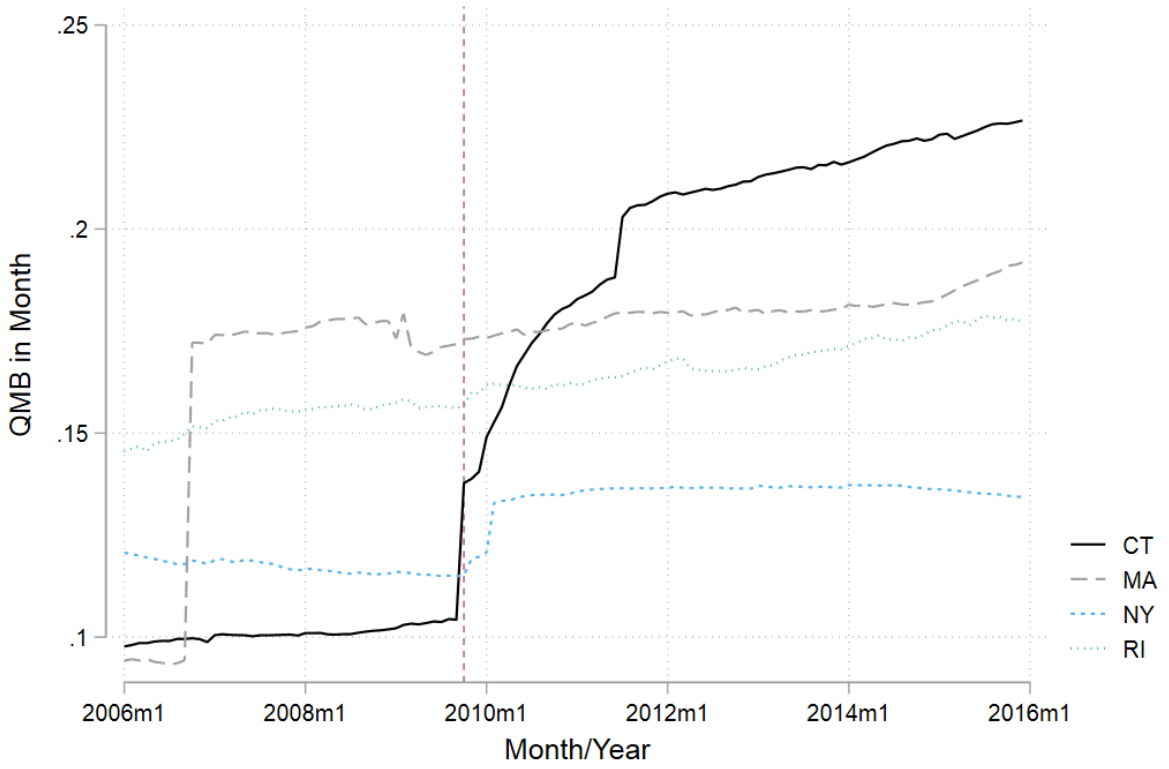
In October 2009, Connecticut expanded the income eligibility for the dual-Medicaid (specifically, QMB) program from 100 percent of the Federal Poverty Line (FPL) to 197 percent of the FPL and entirely eliminated the asset test ($4,000 for a single individual or $6,000 for a couple in 2009; see Appendix III.A for more policy background) (Caswell and Waidmann, 2017). This expansion led to an immediate increase in dual enrollment that has grown over time. 50,861 individuals in Connecticut were enrolled in the dual (QMB) program as of December 2008, almost a year before the policy change. By December 2010, enrollment jumped to 98,502, and then grew to 142,768 by 2015, increasing 2.8 times since before the policy (MMCO, 2021).

In this paper, I focus on the Connecticut setting because it is an early income expansion state with a large policy change. While the policy affected eligibility both through income and assets, I limit attention to the change in income eligibility due to data constraints in measuring assets. Assets are difficult to capture in the data, and self-reported assets are especially prone to measurement error. Furthermore, there is limited ability of assets alone in shifting eligibility, as shown in the case of New York in the paragraph below. For low-income populations, assets are highly correlated with income, so changing assets without shifting income is unlikely to produce large gains in eligibility and enrollment. Of the older Americans who qualified to become dually enrolled due to income, two-thirds also qualified based on assets and 43 percent had no countable assets (Summer and Thompson, 2004).

In Figure I, I graph the fraction of Medicare FFS beneficiaries dually enrolled by month

and state for Connecticut and the surrounding states of Massachusetts, Rhode Island, and New York.[17] The neighboring states did not experience any concurrent change in dual-Medicaid income or asset eligibility. Like Connecticut prior to the policy change, all neighboring states had the federal income threshold of 100 percent of FPL, and Massachusetts and Rhode Island had the federal asset limit. New York did eliminate its asset test in April 2008, but this had little, if any, effect on dual enrollment, as shown in this graph.

Figure I: Fraction Dually Enrolled by State



Source: 2006-2015 CMS FFS Claims (CT, NY, RI, NY). This graph shows the fraction of all FFS Medicare beneficiaries enrolled as duals (QMB) by month and state. Note that in contrast to the main sample, I do not restrict to those who were non-QMB dual prior to the policy, to visually illustrate the overall effects of the policy among all FFS Medicare beneficiaries.

Figure I shows that the Connecticut dual-Medicaid expansion produced an immediate and sustained increase in dual enrollment over time. This is in contrast to the neighboring

[17]Note that in contrast to my main analysis sample, I include all categories of dually enrolled patients to illustrate the size of the overall dually enrolled population relative to all FFS beneficiaries.

states, where dual enrollment shares had been broadly steady or perhaps slightly increasing over time.[18] I find that the Connecticut policy change led to a 73 percent increase in dual enrollment (see Appendix Figures A4, A5, and Appendix III.B).

IV.C Research Design

I create an instrument for individual dual status, $Dual_{ilt}$, called $SimulatedEligibility_{lt}$ to alleviate endogeneity concerns when estimating β from Equation (1). Through an IV design, I estimate the causal effect of dual enrollment on healthcare usage for Medicare beneficiaries made eligible for dual enrollment given the policy change. The instrument isolates the portion of dual enrollment that is driven by changes in state eligibility rules, thereby shutting down channels that are driven by endogeneous individual factors, such as worsening health or changing knowledge of the program. The instrument captures changes in the eligibility generosity for dual-Medicaid by simulating the proportion of individuals eligible for dual status based on the laws of the time period.

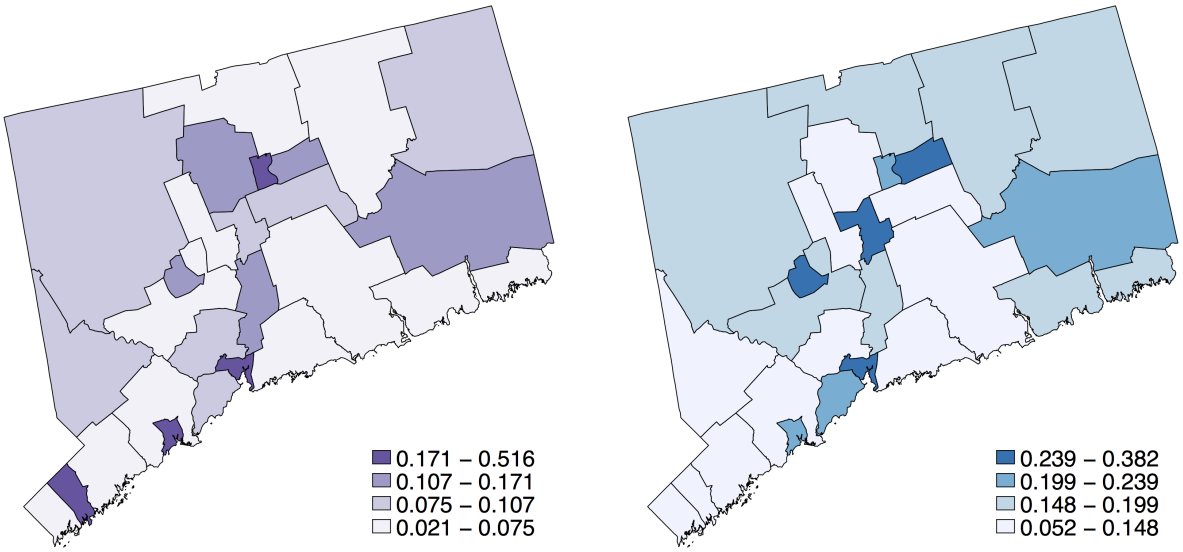
I leverage two sources of policy-induced variation. First, there is *cross-state* variation in eligibility because Connecticut has a different income eligibility threshold compared with the neighboring states due to the expansion. Second, despite the fact that the dual-Medicaid policy is at the state level, there is *within-state* variation in policy treatment intensity, because of pre-policy characteristics of locations within Connecticut.

In Figure II, I map the fraction of Medicare beneficiaries in 2008 who have family incomes below 100 percent of FPL by location within Connecticut in Panel (a). I use the American Community Survey, which I discuss in the next paragraph. Panel (b) shows the fraction with incomes between 100 and 197 percent of FPL in the same year. Before the policy, locations within Connecticut greatly varied in income distribution, with some wealthier areas having

[18] There is a noticeable discrete jump in Massachusetts (and a smaller one in New York), despite no changes in eligibility. In Appendix Figure A6, note that the increase in dual enrollment in Connecticut is accompanied by a large decline in the fraction of individuals who are Medicare-only. This is in contrast to Massachusetts and New York, where there were no major changes in the fraction of Medicare-only people around these jumps (Appendix Figures A7 and A8). These figures also show that these states switched individuals into QMB from other types of dually enrolled patients. However, these switches likely do not reflect true changes to individuals' cost-sharing, since they paid very little or nothing before the switch. This further motivates why I restrict the main sample to Medicare-only or QMBs prior to the policy, to not capture shifts from other types of dual status into QMB.

poverty rates of less than 10 percent, and others having substantially higher rates. The same locations with high rates of poverty are not necessarily the places with the most people between 100 percent and 197 percent of FPL. I leverage this differential distribution of income prior to the policy; if, for example, a wealthier area had relatively few people between 100 percent and 197 percent of FPL, then the dual-Medicaid expansion would have had less of an impact compared to a lower-income area with a greater concentration of individuals just above the poverty line.

Figure II: Income Distribution in Connecticut 2008



(a) Fraction Less than 100% FPL (b) Fraction Between 100 and 197% FPL

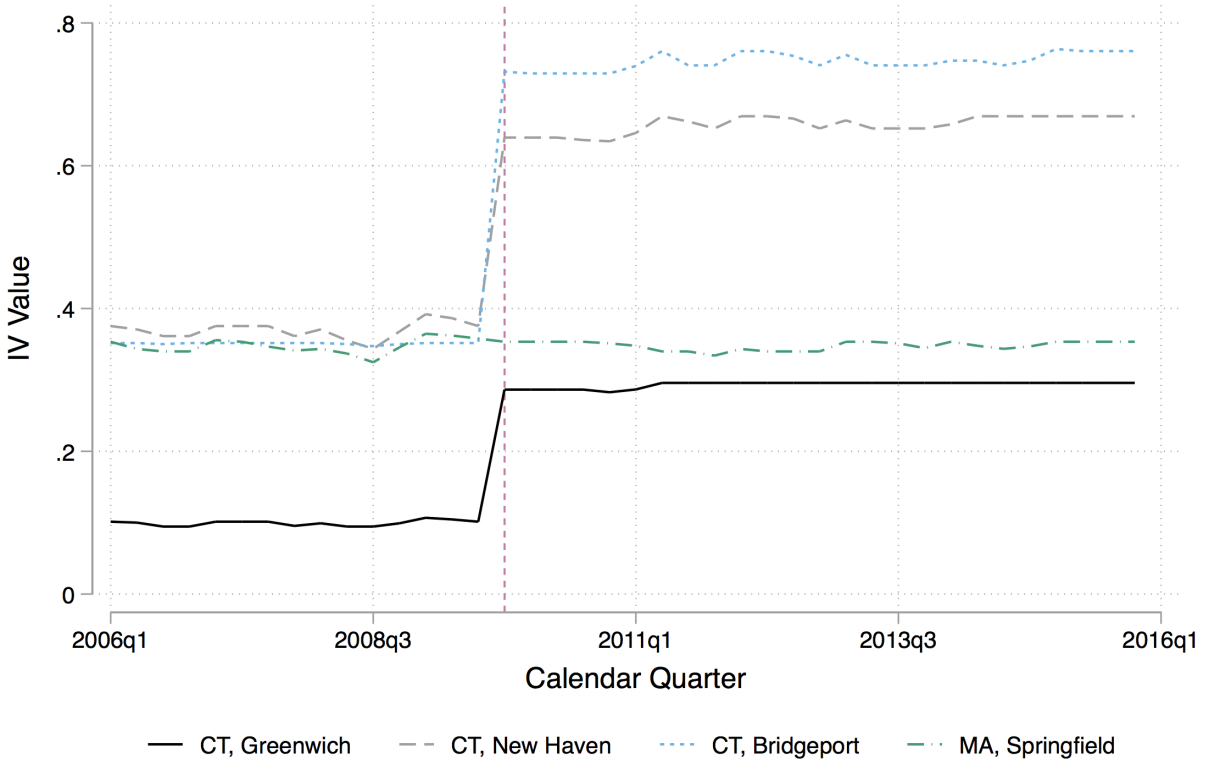
Source: 2008 American Community Survey for Medicare beneficiaries aged 18 and over. These maps depict the fraction of Medicare beneficiaries with family income within a certain range relative to the federal poverty level (FPL).

To leverage these sources of variation, I obtain information on individual income and location from the American Community Survey (ACS), since the Medicare claims dataset does not contain income information. The ACS is an annual survey of households conducted by the U.S. Census Bureau and it has several key features that make it useful for this study. This dataset allows me to identify sources of income that can be linked within a household, as well as Medicare insurance status. Furthermore, the public use version includes sub-state geographic identifiers, called Public Use Microdata Areas (PUMAs). PUMAs do not cross state boundaries and must contain at least 100,000 individuals. There are 25 PUMAs across

Connecticut, for a total of 227 PUMAs across all four states.

To create $SimulatedEligibility_{lt}$, for each PUMA prior to the policy, I take a fixed population of individuals. Using their pre-policy income and marital status, I simulate their income eligibility in each time period given the state's income laws and disregard the asset rules. Specifically, I take Medicare beneficiaries aged 18+ in the 2008 ACS as the fixed base population and inflate income by CPI-U to obtain their inflation-adjusted income through time. Using the state eligibility rules in their state of residence in a given time period, I determine the share of Medicare beneficiaries in a PUMA eligible for dual enrollment given the rules in effect (See Appendix Section IV for details).

Figure III: Instrument Values for Select Locations



Source: 2008 American Community Survey for Medicare beneficiaries aged 18 and over.

Figure III visually illustrates the instrument by presenting $SimulatedEligibility_{lt}$ across select locations and time. For each time period, there is cross-sectional variation in a local area's income distribution; Greenwich, Connecticut, is substantially wealthier compared to

New Haven, Connecticut, or Bridgeport, Connecticut, and has a lower simulated fraction eligible for dual enrollment prior to the policy. In fact, Connecticut as a whole is particularly interesting in the stark juxtaposition of highly wealthy areas such as Greenwich where the median household income is $152,577, in contrast to Bridgeport which is located 29 miles away and has a median family income of $46,662 (Census (2019a), Census (2019b)). Following the policy, there is a larger increase in simulated eligibility in Bridgeport compared to New Haven or Greenwich, thus capturing within-state variation. Meanwhile, Springfield, Massachusetts, did not experience any eligibility change, and so the value of the instrument remains flat over time, demonstrating cross-state variation.

For $SimulatedEligibility_{lt}$ to be a valid instrument, it needs to satisfy assumptions, including first stage relevance, monotonicity, independence, and exclusion. I show the first stage in Table II; the instrument is a strong predictor of individual dual enrollment. Given that no group loses eligibility from the dual-Medicaid eligibility expansion (individuals previously eligible are still eligible), monotonicity is unlikely to be violated. A violation of independence and exclusion is if the instrument, $SimulatedEligibility_{lt}$, is correlated with other factors that might drive health care usage in a PUMA over time.[19]

I perform a balance test of whether the instrument is correlated with possible PUMA-level confounders that might matter for the outcome variables of interest as a check of the exclusion restriction. Specifically, I first predict PUMA-level spending and utilization using the fitted values of a regression of the outcome variable (e.g., average number of physician visits) on PUMA-level demographics. This captures the predicted spending or utilization based on the demographic characteristics of the PUMA. In Appendix Table A4, I show that there is no relationship between the predicted spending and utilization and $SimulatedEligibility_{lt}$.

[19]Given that the Connecticut dual-Medicaid expansion occurred in the backdrop of the Great Recession, one possible concern is that the recession differentially impacted low-income communities and affected healthcare usage over time. However, Social Security is the primary source of income for this population, which is stable across time. Furthermore, I show the balance test holds with inclusion of the local unemployment rate, which proxies for macroeconomic conditions (Appendix Table A4). Another possible concern is that the dual-Medicaid policy produced spillovers onto non-targeted populations, such as those with other forms of insurance. Recent literature do not find evidence of spillovers due to the ACA fee bump for the dually enrolled on non-dual Medicare populations (Cabral et al. (2021)).

V Results

V.A Main Results

Table II presents the coefficient estimates β in equation (1) for a set of Medicare spending and usage outcome variables. While the focus of the discussion will be on the IV results of column (3), I also present the OLS estimates in column (2) for completeness. Dual enrollment increases overall Medicare spending by 51 percent (=exp(0.409)). The increase in total spending shows individuals are using more care on average.

While total Medicare spending increases, the probability of whether an individual has at least some Medicare spending (extensive margin) in a quarter is not statistically significant. Furthermore, this point estimate is negative, which is suggestive of even a decreased propensity of having at least some healthcare usage. To explore this further, I break down overall extensive margin spending into spending by setting and find large increases in ED usage. Dual enrollment increases the propensity of having at least one ED visit in a quarter by 8 percentage points, or 83 percent of the mean. However, I do not find statistically significant effects on the share of beneficiaries who have at least some inpatient usage or outpatient spending in the quarter.

In contrast with the large rise in individuals having at least one ED visit, enrolling as a dual beneficiary produces declines in physician visits, as shown in the last four rows of Table II. On average, individuals have 4.0 visits to physicians in a quarter, and dual enrollment decreases the number of physician visits by 1.0 visits or 24 percent of the mean.[20] These decreases in physician visits are especially prevalent in primary care usage, where dual enrollment decreases the probability of having at least one primary care visit in a quarter by 19 percentage points (33 percent of the mean), with negligible effect on any usage of a specialist.[21]

[20]Note that visits with physicians in the ED are included in these measures. In Appendix Table A5, physician visits in the ED are excluded. There is a slightly stronger decrease in total physician visits (29 percent), while the other coefficients remain unchanged.

[21]Furthermore, I investigate whether an individual has an office visit with a new provider or established provider. In Appendix Table A6, I find substantial declines in whether an individual has any new office visits while there is no change in whether an individual has any established office visits. This suggests dually enrolled patients have greater difficulty initiating interactions with new providers.

Table II: Effect on Dual Enrollment on Medicare Spending and Usage

Dependent Variable	(1) Mean Dep. Var	(2) OLS	(3) IV
Log(Spending+1)	5.32	0.465	0.409
		(0.019)	(0.150)
Any Spending	0.84	0.058	-0.024
		(0.003)	(0.023)
Any Inpatient	0.06	0.011	0.005
		(0.001)	(0.008)
Any Outpatient	0.84	0.058	-0.024
		(0.003)	(0.023)
Any ED	0.10	0.021	0.083
		(0.001)	(0.018)
# Physician Visits	3.98	0.339	-0.968
		(0.024)	(0.321)
Any Physician Visit	0.83	0.056	-0.025
		(0.003)	(0.021)
Any Specialist	0.73	0.056	0.027
		(0.003)	(0.026)
Any Primary Care	0.56	0.045	-0.185
		(0.003)	(0.049)
Observations	16375484		

Source: 2006-2015 CMS FFS Claims (CT, NY, RI, NY) and 2008 ACS for construction of the instrument. Regressions include controls for quarter FE, individual FE, and PUMA FE. Robust standard errors clustered at the PUMA level in the parentheses. Mean Dep. Var is the mean of the dependent variables for individuals enrolled only in Medicare in CT. "Any" refers to at least one such visit in a quarter or the extensive margin usage. The first stage produces coefficient is 0.254 (s.e. 0.011) with F-statistic of 533.0.

The decline in physician visits, especially to primary care doctors, suggests that individuals are changing the medical services they receive. I investigate this by estimating the effect of dual enrollment on the usage of different types of preventive care services. Changes in preventive care use provide an indication of how the quality of care might change with dual status. Table III shows dual enrollment decreases the receipt of an annual flu shot by 30 percent and the receipt of a mammogram in the past 2 years by 39 percent. Furthermore, dual enrollment is correlated with high rates of diabetes complications compared with individuals with other forms of insurance (Zhang et al., 2009). Given the prevalence of diabetes complications, I focus on diabetes management and find that dual enrollment also decreases diabetes preventive care services across all measures, with drops in HbA1c tests, lipid (cholesterol) tests, and retinal eye exams.

V.B Mechanisms: Physician Medicaid Acceptance

I examine the role of providers in driving changes in healthcare utilization by exploring how healthcare usage changes when physicians have different propensities to accept Medicaid as a form of insurance ("Medicaid acceptance"). This analysis is motivated by the institutional setting, where providers are less likely to accept patients with Medicaid insurance and receive less payment for treating the dually enrolled compared to those who are Medicare-only. I capture Medicaid acceptance in two ways.

First, I track individuals and their main primary care provider (PCP). Two individuals who are otherwise similar while enrolled only in Medicare might experience very different usage patterns after becoming dually enrolled depending on whether their PCPs accept Medicaid patients. $PCPMedAccept_i$ is a continuous variable that captures the share of claims from the main PCP that belongs to Medicaid (specifically, dual) patients. I interact the indicator for dual enrollment with terciles of $PCPMedAccept_i$ (where, for example, $PCPMedAcceptQ1_i$ refers to the lowest tercile of Medicaid acceptance) to estimate the effects of dual enrollment differentially by the main PCP's Medicaid acceptance level. For

Table III: Effect of Dual Enrollment on Preventive Care Usage

Dependent Variable	(1) Mean Dep. Var	(2) IV
Panel A. Sample: Age 65+		
Flu Shot	0.62	-0.183
		(0.063)
Observations	3415820	
Panel B. Sample: Women Age 50-74		
Mammogram	0.59	-0.230
		(0.071)
Observations	706532	
Panel C. Sample: Diabetes		
HbA1c Test	0.74	-0.270
		(0.063)
Cholesterol Test	0.80	-0.155
		(0.036)
Retinal Eye	0.67	-0.091
		(0.047)
Observations	1226141	

Source: 2006-2015 CMS FFS Claims (CT, NY, RI, NY) and 2008 ACS for construction of the instrument. Observations at the individual-year level. The relevant samples are labelled; for example, flu shots are estimated only for those aged 65+. Regressions include controls for year FE, individual FE, and PUMA FE. Robust standard errors clustered at the PUMA level in the parentheses. Mean Dep. Var is the mean of the dependent variables for individuals enrolled only in Medicare in CT.

individual i in PUMA l in quarter t, I estimate:

$$\begin{aligned} Y_{ilt} = \alpha_i + \tau_t + \delta_l + \theta_1 Dual_{ilt} \cdot PCPMedAcceptQ1_i + \\ \theta_2 Dual_{ilt} \cdot PCPMedAcceptQ2_i + \theta_3 Dual_{ilt} \cdot PCPMedAcceptQ3_i + \epsilon_{ilt}. \end{aligned} \tag{2}$$

I instrument for the interaction terms by the instrument, $SimulatedEligibility_{lt}$, interacted with terciles of $PCPMedAccept_i$. The lowest tercile encompasses values from zero to 8 percent, while the highest tercile includes 21 to 100 percent. Variation in $PCPMedAccept_i$ can arise from differences in provider willingness to contract with Medicaid or differences in likelihood of treating Medicaid patients, even conditional on contracting with Medicaid; thus, the lowest tercile includes PCPs who are unlikely to contract with Medicaid at all or accept Medicaid patients. Furthermore, variation can also reflect differences in location and supply of Medicaid patients in a local area. The inclusion of PUMA FE allows for the comparison between physicians in the same local area. The θ coefficients capture the effect of dual enrollment for an individual whose main PCP had the corresponding tercile of Medicaid acceptance.[22] Differences across the θ coefficients show whether dual enrollment differ by the Medicaid acceptance of the main PCP.

I find that providers most reluctant to treat dually enrolled patients drive declines in primary care usage. The first row of Table IV shows that the dually enrolled with main PCPs at the lowest tercile of Medicaid acceptance (Q1) have a 23 percentage point decrease (36 percent) in having at least one visit to a PCP. When the main PCP is more accepting of Medicaid, the reduction upon dual enrollment diminishes. For beneficiaries with PCPs at the highest tercile of Medicaid acceptance, there is no statistically significant effect of dual enrollment on primary care usage. Furthermore, Appendix Table A9 shows that the largest declines in preventive care usage occur in settings where the individual has a main PCP who is least likely to accept Medicaid as a form of insurance. This illustrates that PCPs play important roles in preventive care take-up and management of chronic illnesses.

Next, I explore whether the main PCP's Medicaid acceptance has spillover effects onto

[22] As a robustness check, I additionally control for PUMA by post-policy FE, to account for changes in PUMAs that might occur around the policy, with results shown in Appendix Table A7. I also interact Dual with the continuous $PCPMedAccept_i$ variable (Appendix Table A8) for robustness. Both tables show that results are in line with the main analysis.

other types of care in the subsequent rows of Table IV. There are no pronounced effects on the likelihood of having at least one specialist visit upon dual enrollment, and it does not vary by the main PCP's Medicaid acceptance. Access to an individual's main PCP does, however, create spillovers onto the ED. Dual enrollment for those at the lowest tercile of $PCPMedAccept$ increases the likelihood of having at least one visit to the ED by 12 percentage points, suggesting that these individuals are twice as likely to have any visit to the ED. However, for beneficiaries with PCPs at the highest level of Medicaid acceptance, dual enrollment has no statistically significant effect on ED usage. To the extent individuals lose access to their providers due to a lack of Medicaid acceptance, they seek out care from the ED, a setting where individuals cannot be turned away due to insurance status.

Table IV: Effect of Dual Enrollment by Main PCP Medicaid Acceptance Level

Dependent Variable	(1) Mean Dep. Var	(2) Dual $\cdot PCPMed$ $AcceptQ1$	(3) Dual $\cdot PCPMed$ $AcceptQ2$	(4) Dual $\cdot PCPMed$ $AcceptQ3$
Panel A. Any Physician Visit				
Primary	0.64	-0.226	-0.073	0.024
		(0.069)	(0.060)	(0.039)
Specialist	0.78	0.023	0.027	0.010
		(0.033)	(0.029)	(0.025)
Observations	7078671			
Panel B. Any ED Visit				
All ED	0.11	0.124	0.114	0.003
		(0.028)	(0.024)	(0.021)
Emergent	0.07	0.057	0.045	0.011
		(0.024)	(0.014)	(0.017)
Non-Emergent	0.04	0.022	0.025	0.002
		(0.022)	(0.016)	(0.012)
Observations	6908818			

Source: CMS 2008-2015 and 2008 ACS, restricted to those with a main PCP (see text for more details on sample restriction). ED outcomes do not include 2015Q4. "Any" refers to at least one such visit in a quarter or the extensive margin usage. IV results from instrumenting Dual interactions with the instrument interacted with Medicaid Acceptance variable(s). Regressions include controls for quarter FE, individual FE, and PUMA FE. Robust standard errors clustered by PUMA in the parentheses.

I further break down ED visits into categories of emergent or non-emergent care in the

bottom rows of Table IV to understand the nature of these spillover visits. Those with the lowest access to their PCP have an increased likelihood of having at least one emergent ED visit in a quarter by 6 percentage points, while this effect diminishes for the highest tercile of PCP Medicaid acceptance. Furthermore, the point estimates for non-emergent ED care suggest that there is some evidence of spillovers onto non-emergent care, but I cannot reject that there is no statistical difference across estimates.

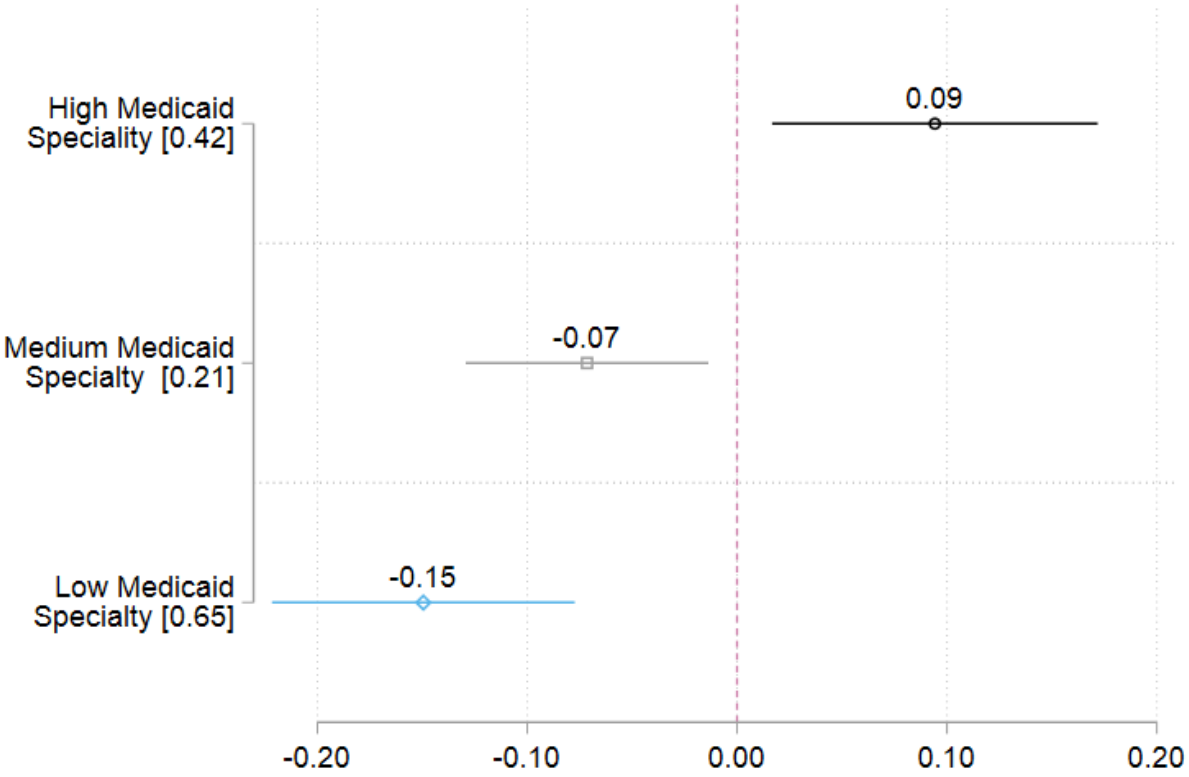
A second way to capture differences in physician Medicaid acceptance is to utilize heterogeneity by physician specialty. In contrast with the previous analysis, I categorize specialties, rather than individual physicians, by the share in the specialty who accept Medicaid. These heterogeneity effects are not based on which physicians the individual sees but rather on the specialists seen, allowing me to also expand beyond PCPs. Furthermore, this measure is derived from a separate data set (NAMCS) and thus captures Medicaid acceptance for all Medicaid patients, as opposed to the fraction of Medicare claims that belong to dually enrolled patients. I separately estimate equation (1) of the effect of dual enrollment on the usage of high, medium, or low Medicaid acceptance specialties. Figure IV shows that dual enrollment increases the probability that an individual has at least one visit to a high Medicaid acceptance specialty, such as a cardiovascular physician or opthalmologist, by 22 percent. However, the direction of the effect flips for medium and low Medicaid acceptance categories and there is a 23 percent decrease in having at least one visit to a low Medicaid acceptance specialty, such as dermatology and psychiatry.

V.C Heterogeneity

Given that utilization after dual enrollment differs by Medicaid acceptance, one would expect the consequences of dual enrollment to also differ across characteristics of Medicare beneficiaries. For example, depending on the medical needs of certain patients and their interaction with the healthcare system, enrolling as a dual beneficiary might promote the usage of care for some and decrease the usage for others. In Figure V, I plot β from Equation (1) for each of the following subgroups: those entitled to Medicare through SSDI, non-White, and those with high (above median) comorbidities.

Overall, the coefficients across all groups are very similar for the outcomes of any hospi-

Figure IV: Effect of Dual Enrollment by Physician Specialty Medicaid Acceptance

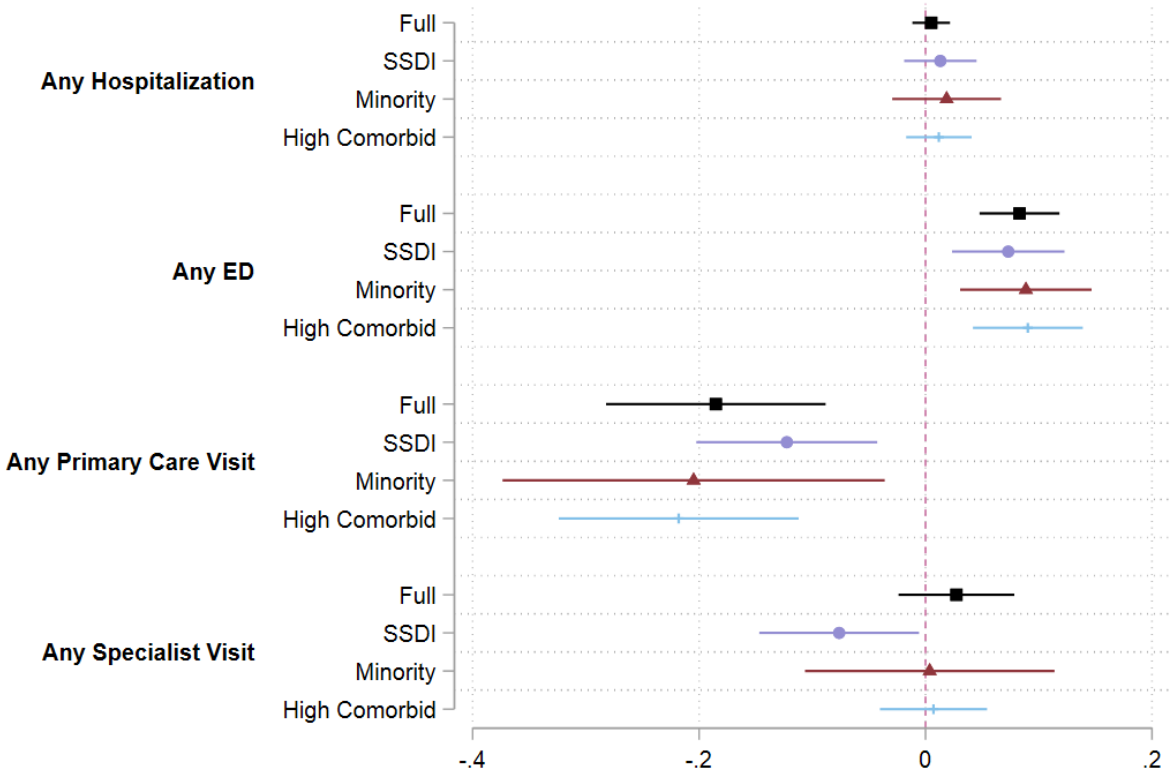


Source: 2006-2015 CMS FFS Claims (CT, NY, RI, NY), the 2008 ACS for construction of the instrument, and 2006-2008 NAMCS for classification of the Medicaid acceptance level by specialty. Each row represents a regression coefficient, with outcome variables of any visit to a High, Medium, or Low Medicaid acceptance specialty. Regressions include controls for quarter FE, individual FE, and PUMA FE. Lines denote 95% confidence intervals with robust standard errors clustered at the PUMA level. Values in the brackets denote mean of the dependent variable.

talization, any ED visit, or any primary care visit. However, SSDI recipients see decreased usage of any specialist care upon dual enrollment by 8 percentage points (12 percent decline), while all other groups, including the full sample, saw no effect. Indeed, as shown in Appendix Table A10, in contrast with the other populations, the SSDI beneficiaries see no effect on overall log Medicare spending (or even suggestive evidence of a decrease), while all other subgroups see overall increases in Medicare spending.

The consequences of dual enrollment differ by healthcare needs and whether providers who treat a particular condition are available to the patient. Those enrolled in SSDI are more

Figure V: Effect of Dual Enrollment on Medicare Usage Types, Heterogeneity Analysis



Source: 2006-2015 CMS FFS Claims (CT, NY, RI, NY) and 2008 ACS for construction of the instrument. Regressions include controls for quarter FE, individual FE, and PUMA FE. Each row is a regression coefficient on the subsample labelled. The instrument is constructed with the full sample and the same instrument is applied to each subsample. Lines denote 95% confidence intervals with robust standard errors clustered at the PUMA level.

likely to have mental disorders (twice as likely to have depression, four times as likely to have schizophrenia and other psychotic disorders), and less likely to have heart-related diseases (Appendix Table A11). In Appendix Figure A9, I show usage of physician care by specialty, where on the x-axis, the specialties are ordered by increasing Medicaid acceptance. As reflected by the differing chronic illnesses, the SSDI population is less likely to use specialties with high Medicaid acceptance, such as cardiology, and more likely to seek services from psychiatry, which has low Medicaid acceptance.

V.D Robustness

One potential concern with the results is that PUMAs with greater policy treatment intensity might be systematically different than PUMAs less affected by the policy in a time-varying way that is correlated with healthcare usage, thus violating the exclusion restriction. I construct an alternative instrument called "Demo IV" where the goal is to capture policy treatment intensity without leveraging variation driven by differences in income across sub-state location. I instead leverage differences in income distribution by demographic group prior to the policy, with the idea that different demographic groups might have experienced different policy treatment intensities. Therefore, the purpose of this instrument is to relax the assumption regarding PUMAs, use an alternative source of variation, and test whether the results still hold.

This instrument, Demo IV, is constructed in the same manner as the "simulated instrument variables" methodology (Currie and Gruber, 1996a). This methodology has been used in a variety of settings, including capturing differences in Medicaid laws (DeLeire et al. (2011), Gross and Notowidigdo (2011), Cohodes et al. (2016)), tax subsidy laws (Goda, 2011), asset exemption laws (Mahoney, 2015), and sentencing policies (Liu, 2020). I first partition individuals into pre-determined demographic groups. I then take a fixed national population for each demographic group prior to the policy and run the national population's income through the rules of each state in each time period. Therefore, within a demographic group, the value of the instrument is the same in all states and all PUMAs prior to October 2009. Variation is driven by differential Connecticut policy treatment intensity across demographic groups, given each group's baseline national income distribution and marital status. The identifying assumption is that differences in baseline demographic groups' incomes and marital status are uncorrelated with other unobserved factors that affect the outcomes of interest over time. Note that in contrast to the main instrument, the Demo IV does not rely on assumptions regarding income distributions at the local PUMA-level and offers an alternative source of variation.

My results are robust to relaxing assumptions on the exogeneity of local geographic compositions. I run an analogous set of regressions, replacing PUMA-level controls with the

level of variation of this instrument, which occurs at the demographic group by state level. The first stage has an F-statistic of 43.75, suggesting that there is decreased power compared with the main IV.[23] While the Demo IV produces larger standard errors, the estimates are in line with the main results as shown in Appendix Tables A12 and A13; for example, dual enrollment decreases the number of physician visits by 1.2 visits using this instrument as opposed to 1.0 visits in the main results.

Second, I produce event-study Difference-in-Differences (DD) versions of my analysis to complement the IV results and provide an additional check on the instrument validity. Event studies allow me to check for pre-trends, which informs us about the instrument exclusion restriction. If locations show differential trends in dual enrollment or health care usage prior to policy, then this suggests that there might be other factors that are correlated with health care usage outside of dual enrollment, and thus violate the exclusion restriction.

This is a setting where there is a clear policy change at a specific date, so I implement a DD design comparing locations in Connecticut as the treatment with control neighboring states. In this specification, I still control for individual, quarter, and PUMA FE, and the main coefficient of interest is $SimEligDiff_l = SimulatedEligibility_{l,2010} - SimulatedEligibility_{l,2006}$ interacted with each time period (see Appendix VI.B for the full specification and estimation details). $SimEligDiff_l$ captures the difference in the instrument before and after the policy, where individuals in non-Connecticut states will have a value of zero in all time periods. For individuals within Connecticut, this variable captures the size of the population gaining dual status through the income threshold change. In Appendix Figure A10, I graph the coefficients to the event studies for select outcome variables, including dual enrollment (first stage), # of Physician Visits, Any PCP, and Any ED. Overall, areas trended similarly prior to the policy change, before a noticeable change in the point estimates after the policy. These event studies further lend credence to the exclusion restriction assumptions and the results in the main analysis.

[23] Ideally, the Main IV and the Demographic IV can be combined to leverage an even greater set of variation. The main challenge is data limitation; I am restricted to the 2008 ACS (prior years do not have Medicare status, and later years would be after the policy change). When partitioning on both PUMA and demographics, the sample size within each group becomes very small, making estimates unreliable.

VI Discussion

This paper shows that the consequences of dual enrollment strongly depend on whether the patient sees providers willing to treat Medicaid patients. When the provider does accept Medicaid, this dual system operates as intended. Dual enrollment eliminates cost barriers to healthcare services, and patients can use more medical care. Indeed, individuals who gain dual status are 21 percent more likely to have at least one visit to a physician specialty who is highly likely to treat Medicaid patients. Furthermore, dually enrolled patients receive more care from EDs, where they can receive care without cost-sharing and are guaranteed treatment regardless of insurance status. Low-income individuals and those with poor health report greater difficulty seeking emergency care and increased likelihood of delaying care (Kennedy et al., 2004). Therefore, decreased cost barriers to emergency services may positively impact health to the extent that individuals no longer delay seeking care for medical conditions that require immediate treatment.

When the provider does not treat Medicaid patients, dual enrollment creates unintended barriers to care. For these patients, reduced access to care offsets the benefits of cost protection. These patients are over 30 percent less likely to see a PCP, presumably because their previous PCP dropped them as patients and they did not replace their physician with a new provider. The decline in primary care visits may be particularly concerning for this population, given that increased primary care use has been associated with fewer potentially-preventable hospitalizations among dually enrolled patients with chronic conditions (Oh et al., 2022). PCP visit declines also correspond with a decline in general preventive care use and services for monitoring diabetes, a highly prevalent condition among this population.Loss of physician access also leads to more visits to the ED, a potentially less efficient source of care for avoidable conditions or services that are treatable in an outpatient setting.

Given the various changes to healthcare usage, the natural next question is to understand the overall impact of dual enrollment on health. To do this, I utilize the same policy environment, instrument, and data, and estimate how dual enrollment affects PUMA-level mortality rates through an IV regression (see Appendix VII). At the PUMA level, I regress mortality rates on the share of duals with local area controls, and scale the coefficient by the

average increase in dual rates due to the expansion. I find a 3.9 percent average reduction in mortality rates in a given PUMA due to the Connecticut policy change.[24] This result suggests that across the periods I study, the benefits of dual enrollment exceed the adverse effects of reduced access to providers who do not accept Medicaid.

While informative of shorter-run effects, this mortality estimate ought to be interpreted with caution. Given that this analysis does not examine longer-run health changes, it is unlikely to capture the full range of mortality consequences. For example, usage changes that potentially lead to adverse health consequences, such as fewer cancer screenings or increased difficulty in finding a PCP, might have a longer time horizon than the time frame captured in the data. Furthermore, the Medicare claims dataset does not contain information on individual or population-level prevalence of physical and mental health issues.[25] Finally, there are a multitude of channels by which dual enrollment affects health; while this paper highlights healthcare access for outpatient services, other factors, such as income effects through elimination of premiums and other out-of-pocket costs (Berman, 2021a), relieving financial burdens (Baicker et al., 2013), and gaining access to non-Medicare Medicaid services such as dental care (Roberts et al., 2022), might affect health as well.[26]

VII Conclusion

Over 12 million individuals are dually enrolled in Medicare and Medicaid. Despite the size of this population, there has been limited focus on how these two forms of insurance affect healthcare access for this vulnerable population with high healthcare needs. If we only consider the patient demand side, the dual program seemingly improves patient welfare by

[24]Existing literature on the effect of Medicaid coverage on mortality generally find substantially larger effects; Miller et al. (2021) estimate a 63 percent reduction in mortality for low-income adults aged 55-64 due to the Affordable Care Act Medicaid expansions.

[25]I also investigate how dual enrollment affects diabetes-related Prevention Quality Indicators (PQIs), or hospital admissions that could have been potentially avoided had the individual received outpatient care, developed by the Agency for Healthcare Research and Quality. I examine patients with diabetes and focus on PQI93, which is a composite of short-term diabetes complications, long-term diabetes complications, uncontrolled diabetes, and lower extremity amputation among diabetes patients. Ultimately, I lack statistical power to precisely detect effects since overall PQI93 events are incredibly rare.

[26]This paper focuses on inpatient and outpatient services, while another important component is drug utilization. Appendix Table A6 shows that there is suggestive evidence of increases in Part B physician drug usage.

removing cost barriers. However, dual enrollment also changes provider incentives. Compared to treating Medicare-only patients, physicians receive lower reimbursement on average for treating dually enrolled patients and face other Medicaid-associated costs, such as administrative burdens.

This paper estimates the effect of dual enrollment for the marginal patients who enrolled due to a significant expansion in Connecticut dual-Medicaid eligibility in 2009. Contrary to the notion that dual enrollment will necessarily improve patient access to healthcare, I find that the consequences are heterogeneous. Dual status does increase access to certain services – services where providers are willing to treat dual patients. However, it also decreases access for patients who seek services from providers who presumably prefer to treat patients with other sources of insurance.

Policymakers have recently devoted significant attention to the dual Medicare-Medicaid program. In 2020, the Medicaid and CHIP Payment and Access Commission recommended to Congress ways to increase dual Medicare-Medicaid program enrollment and retention (MACPAC, 2020). A lesson from Connecticut suggests that attempts to increase dual enrollment alone without considering physician incentives can lead to unintended consequences of actually decreasing access for some patients.

To prevent these unintended consequences, a "fix" is to eliminate reimbursement differences and Medicaid administrative costs. This goal can be plausibly accomplished under the existing system by covering dually enrolled beneficiaries through Medigap instead of Medicaid. Medigap is a private supplemental insurance program that covers out-of-pocket Medicare costs after the individual pays premiums. In contrast with this dual system, Medigap pays providers the full cost-sharing amount without the Medicaid-associated administrative barriers; thus, Medigap eliminates the physician supply problem.

I produce back-of-the-envelope estimates and find that the Medicaid program would have to pay substantially more to cover individuals through Medigap than through dual enrollment (see Appendix VIII for calculation details). Average per capita expenditures for Medicaid under the current system range from $399 to $745 per quarter, depending on the fraction of cost-sharing paid by Medicaid. In contrast, average per capita expenditures for covering dually enrolled patients through Medigap plans would cost $917 to $1123 per quarter, where

the range of estimates reflects possible Medigap premium adjustment given the high-cost nature of this population. The current system, where providers receive less payment for dual patients, reduces costs for the state government. Naturally, ensuring patient access would add to expenditures, and policymakers ought to balance these additional costs with benefits to patients.

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