For Online Publication

Appendix for
"Pricing Regulations in Individual Health Insurance: Evidence from Medigap"

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A   Appendix

A.1   Medicare Data

The Centers for Medicare and Medicaid Services (CMS) administrative data contain enrollment and claims information for all Medicare beneficiaries who are enrolled in Medicare from 2006 through 2010. The main administrative files used to construct the data are the Enrollment Data Base (EDB) and the Common Medicare Enrollment (CME) file. These files contain the following information for every Medicare beneficiary: date of birth, date of death, gender, and ZIP code. The files also include monthly data on whether an individual is enrolled in Part A, Part B, or Part C (Medicare Advantage (MA)), as well as whether the individual is dually eligible for Medicare and Medicaid. These data are used to create a yearly denominator file of all Medicare beneficiaries.

The sample is restricted to individuals who entered Medicare at age 65, since these are the individuals for whom Medigap pricing regulations are most relevant. The study makes the following additional restrictions:

1. The sample is restricted to individuals who are enrolled in Part A and Part B or in Part C during any month of the observation year.

2. The sample is restricted to individuals who qualify for Medicare on the basis of age, i.e., the sample excludes those who qualify or originally qualified for Medicare based on disability or End-Stage Renal Disease (ESRD).

3. The sample excludes those with a non-Medicare primary payer.

4. The sample is restricted to those residing in the 50 states and the District of Columbia.

Each individual's risk score is constructed using an administrative file called the Risk Adjustment Processing System (RAPS). The RAPS file also includes indicators for each Hierarchical Condition Category (HCC) that is used for the MA risk adjustment model. The HCCs are observed for all Medicare beneficiaries, including MA enrollees.

For Medicare enrollees in Parts A and B, the data include all health care claims from 2006 through 2010. These consist of seven different types of claims: inpatient, outpatient, Skilled Nursing Facility (SNF), home health, durable medical equipment, physician, and hospice. Total out-of-pocket costs are constructed as the sum of all out-of-pocket costs from these claims (deductibles and coinsurance). This out-of-pocket spending may be covered by supplemental private insurance such as Medigap or an employer-sponsored supplemental insurance plan.

A.2 ZIP Code Characteristics

ZIP-code-level characteristics are constructed using the 2011 American Community Survey (ACS) 5-Year Estimates by 5-digit Zip Code Tabulation Area (ZCTA), downloaded from the United States Census Bureau's American FactFinder website on May 12, 2016. Because the study sample is from 2006 through 2010, the most appropriate year to use is 2011 (the 2010 ACS 5-Year Estimates are not available by ZCTA). ZIP code-level variables are constructed as follows:

- *Household Income:* This is based on Table B19049, which is called "MEDIAN HOUSE-HOLD INCOME IN THE PAST 12 MONTHS (IN 2011 INFLATION-ADJUSTED DOLLARS) BY AGE OF HOUSEHOLDER." This variable is defined as HD01_VD06·

1.06. This is the median household income in the past 12 months among households where the head of household is at least 65 years old (in 2016 inflation-adjusted dollars).

- *Educational Attainment:* This is based on Table B15001, which is called "SEX BY AGE BY EDUCATIONAL ATTAINMENT FOR THE POPULATION 18 YEARS AND OVER."

  - *Less Than High School:* This variable is defined as $(HD01\_VD36 + HD01\_VD37 + HD01\_VD77 + HD01\_VD78)/(HD01\_VD35 + HD01\_VD76)$. This is the proportion with less than a high school education among those ages 65 and over.

  - *High School Graduate:* This variable is defined as $(HD01\_VD38 + HD01\_VD79)$ divided by $(HD01\_VD35 + HD01\_VD76)$. This is the proportion of high school graduates among those ages 65 and over.

  - *College Graduate:* This variable is defined as $(HD01\_VD40 + HD02\_VD41 + HD01\_VD42 + HD01\_VD81 + HD01\_VD82 + HD01\_VD83)$ divided by $(HD01\_VD35 + HD01\_VD76)$. This is the proportion of college graduates among those ages 65 and over.

- *Poverty:* This is based on Table B17001, which is called "POVERTY STATUS IN THE PAST 12 MONTHS BY SEX BY AGE." This variable is defined as $(HD01\_VD15 + HD01\_VD16 + HD01\_VD29 + HD01\_VD30)/(HD01\_VD15 + HD01\_VD16 + HD01\_VD29 + HD01\_VD30 + HD01\_VD44 + HD01\_VD45 + HD01\_VD58 + HD01\_VD59)$. This is the proportion with income in the past 12 months below the poverty level among those ages 65 and over.

- *Veteran (among Men):* This is based on Table B21001, which is called "SEX BY AGE BY VETERAN STATUS FOR THE CIVILIAN POPULATION 18 YEARS AND OVER." This variable is defined as $(HD01\_VD20 + HD01\_VD23/HD01\_VD19 + HD01\_VD22$. This is the proportion who are veterans among men ages 65 and over.

- *Labor Force Participation:* This is based on Table B23004, which is called "WORK STATUS IN THE PAST 12 MONTHS BY AGE BY EMPLOYMENT STATUS FOR

THE CIVILIAN POPULATION 65 YEARS AND OVER." This variable is defined as $(\text{HD01\_VD04} + \text{HD01\_VD09} + \text{HD01\_VD15} + \text{HD01\_VD18})/\text{HD01\_VD01}$. This is the labor force participation rate among those ages 65 and over.

- *Homeowner:* This is based on Table B25007, which is called "TENURE BY AGE OF HOUSEHOLDER." This variable is defined as $(\text{HD01\_VD09} + \text{HD01\_VD10} + \text{HD01\_VD11})/(\text{HD01\_VD09}+\text{HD01\_VD10}+\text{HD01\_VD11}+\text{HD01\_VD19}+\text{HD01\_VD20}+\text{HD01\_VD21})$. This is the proportion in owner-occupied housing among those ages 65 and over.

A.3 Defining Border Segments

Each ZIP code is assigned to exactly one border segment:

1. I use a geocoded data set to identify "border ZIP codes," i.e., all ZIP codes that are along a state border. I use a ZIP code adjacency data set from the Center for Geographic Analysis at Harvard University. I am grateful to Jeffrey Blossom for sending me these data and to Nate Hilger for granting permission to share these data with me.

2. Border segments are assigned state by state, starting with community rating states.

3. For each community rating state, I designate the "initial border ZIP code" as the border ZIP code that is furthest north and furthest west based on the latitude and longitude of its centroid.

4. I group together border ZIP codes into border segments based on the total distance from the initial border ZIP code. In this manner, the regulatory boundary is divided into border segments of length 25 miles.

5. I assign each border ZIP code in a guaranteed renewal state to the border segment corresponding to its nearest border ZIP code in a community rating state.

6. Finally, each non-border ZIP code is assigned to the border segment corresponding to its nearest border ZIP code.

Once these steps have been implemented, the regulatory boundary is divided into border segments of approximate length 25 miles. Figure A5 shows border segments that lie along the border between Pennsylvania and New York.

A.4   Related Literature on Medigap

This paper is most closely related to Bundorf and Simon (2006) and Cabral and Mahoney (2019).

Bundorf and Simon (2006) compare states with and without community rating laws in Medigap using the 1992–1999 Medicare Current Beneficiary Survey (MCBS), a nationally representative survey of approximately 12,000 Medicare beneficiaries. Using a difference-in-differences estimation strategy, they find a similar overall decline in Medigap coverage between states with and without community rating laws, but a faster decline in coverage among low-risk individuals. This paper builds on this earlier work by leveraging a much more comprehensive individual-level data set on 31 million aged Medicare beneficiaries. This makes it possible to focus on a narrow segment of individuals living within 25 miles of regulatory boundaries, who are much more comparable in terms of observable characteristics and local health care markets. The new data source also makes it possible to estimate impacts not only for low risks versus high risks, but across a broader range of pre-existing health conditions. The current paper examines a later time period, 2006–2010, which means the market is more likely to have settled into an equilibrium after the implementation of community rating laws. Finally, the richer administrative data allow for an examination of additional outcomes such as Medigap purchase delay and the probability of purchasing Medigap at various ages.

Cabral and Mahoney (2019) show that Medigap exerts substantial fiscal externalities on the public Medicare program, as having Medigap coverage increases an individual's Medicare spending by 22.2 percent. Their empirical strategy is closely related to the one used in this paper. They also focus on Medicare beneficiaries living near state borders, though instead of examining differences in pricing regulations, they use border-spanning Hospital Service Areas (HSAs) to construct average uncovered Medicare costs for all Medicare beneficiaries outside an individual's HSA but within her state of residence, which they use as an instru-

mental variable to estimate the price sensitivity of Medigap demand. Although they use CMS data to construct Medicare costs, they do not have administrative data on Medigap enrollment, so they rely on survey data, combining the MCBS for 1992–2005 with the National Health Interview Survey (NHIS) for 1992–2005. Lemieux et al. (2008) also examine the fiscal externality associated with Medigap.

I find large estimated impacts of community rating on Medigap enrollment. Relative to guaranteed renewal, community rating leads to a decrease in Medigap enrollment of 9.70 percentage points (29.7%). I find similarly large impacts across a wide range of pre-existing health conditions, with slightly smaller impacts for those with lung disease or kidney disease. In comparison, Bundorf and Simon (2006) find relatively small impacts that differ for low-risk versus high-risk individuals. They find that community rating decreases Medigap enrollment by 2.5 percentage points for low risks and increases Medigap enrollment by 2.8 percentage points for high risks.

One possible reason for these differences is that Bundorf and Simon (2006) estimate an effect of several types of community rating regulations in 5 states, whereas I focus on the 3 states with the most stringent community rating regulations, which also implemented guaranteed issue requirements. Differences in findings could also be attributed to different data sources (CMS administrative data versus MCBS in Bundorf and Simon (2006)), a different study design (border discontinuity versus difference-in-differences in Bundorf and Simon (2006)), a different time period (2006–2010 versus 1992–1999 in Bundorf and Simon (2006)), or a slightly different sample (Bundorf and Simon (2006) exclude 65-year-olds). I find no evidence of substitution between Medigap and MA, either overall or among those with pre-existing conditions. This is similar to the findings of Cabral and Mahoney (2019) for all individuals and Bundorf and Simon (2006) for low-risk individuals, although Bundorf and Simon (2006) find evidence of substitution for high-risk individuals.

A.5 Related Literature on Community Rating and Guaranteed Renewal

Some industry and policy experts have argued that community rating can lead to an "adverse selection death spiral," where younger consumers react to premium increases by dropping coverage, expected costs for the remaining covered group rise, and the cycle continues until only those consumers with the highest expected costs retain coverage (Hartnedy, 1994; Gradison, 1995; Matthews, 1997). On the other hand, economists have pointed out that an adverse selection death spiral does not arise from the simplest economic models of health insurance (Buchmueller and DiNardo, 2002), and that evidence on death spirals has mainly been from case studies documenting adverse selection against specific employer-sponsored health plans (Cutler and Zeckhauser, 1998; Cutler and Reber, 1998), results that may not generalize to individual health insurance markets. Initial conditions can also have lasting effects on equilibrium outcomes in individual health insurance markets (Scheuer and Smetters, 2018).

Empirical evidence on community rating in the context of individual health insurance markets or the small group market is mixed. Lo Sasso and Lurie (2009) use the Survey of Income and Program Participation (SIPP) and the NHIS to examine state regulations in the individual health insurance market in the 1990s. They find that community rating led to 20–30 percent increases in uninsurance for young and healthy people, with little evidence of effects on uninsurance for older and sicker people. Buchmueller and DiNardo (2002) use the Current Population Survey (CPS) to examine community rating regulations in the small group market in New York, using Pennsylvania and Connecticut as comparison states. They do not find evidence of any effect on uninsurance. Monheit et al. (2004) examine the individual health insurance market in New Jersey, which implemented community rating and guaranteed issue in 1993. They find sharp declines in enrollment and large increases in premiums over time, consistent with an adverse selection death spiral, though they do not conclusively attribute these effects to community rating. Simon (2005) examines pricing restrictions in the small group market and finds very small impacts on coverage levels. Clemens (2015) finds evidence that community rating led to severe adverse selection in the

individual health insurance market during the early 1990s, resulting in substantial declines in private coverage. Hackmann et al. (2012) and Hackmann et al. (2015) find evidence consistent with adverse selection in the pre-2006 Massachusetts individual health insurance market, which had community rating and guaranteed issue but no individual mandate.

There is a theoretical literature on guaranteed renewal, and, more generally, on how to ensure access to coverage for sicker individuals. Consumers in long-term individual health insurance markets face the possibility of rejection or premium increases due to the onset of a chronic health condition, which is known in the economics literature as "reclassification risk." Community rating fully insures reclassification risk, but may raise premiums for all consumers. Guaranteed renewal is associated with lower premiums, but may not fully insure reclassification risk. Due to these trade-offs, which pricing regulation enhances consumer welfare is an empirical question. However, there is limited empirical evidence comparing community rating and guaranteed renewal. Although nearly all plans in the pre-Affordable Care Act (ACA) individual health insurance market were required to be guaranteed renewable (Herring and Pauly, 2006), comprehensive individual-level data were unavailable. Researchers relied on national surveys (Auerbach and Ohri, 2006; Marquis and Long, 1995; Marquis et al., 2004), which were underpowered to allow meaningful effects to be detected among subgroups of consumers, such as those with pre-existing health conditions.

A.6 Medicare Cost Sharing Rules

Figure A2 summarizes Medicare cost sharing for inpatient spending, which is part of Medicare Part A, in 2010. There is a $1,100 deductible for the first time a Medicare beneficiary is admitted to the hospital. This is followed by $0 daily coinsurance for the first 60 inpatient days. After that, there is $275 daily coinsurance for inpatient days 61–90. The daily coinsurance rate then increases to $550 for up to 60 lifetime reserve days. Medicare beneficiaries are responsible for all costs beyond these lifetime reserve days. Another component of Medicare Part A is SNF spending. For SNF spending in 2010, Medicare covers days 1–20, there is a daily coinsurance rate of $137.50 for days 21–100, and Medicare beneficiaries are responsible for all costs beyond day 100. Figure A3 summarizes Medicare cost sharing for physician and outpatient spending, which are part of Medicare Part B, in 2010. There is

a $155 deductible, followed by a 20 percent coinsurance rate and no out-of-pocket maximum.

A.7 Medigap Insurance Market Structure

The Medigap market is highly concentrated (Starc, 2014) and insurers are required to meet minimum Medical Loss Ratios (MLRs). During 2006–2010, Medigap insurers were required to meet a minimum MLR of 0.65 in the individual market (Office of the Assistant Secretary for Planning and Evaluation, 2011), which corresponds to average mark-ups of 54 percent. Office of the Assistant Secretary for Planning and Evaluation (2011) reports that the average Medigap MLR for individual policies during 2001–2010 was 0.80, which corresponds to mark-ups of 25 percent. Starc (2014) examines Medigap using National Association of Insurance Commissioners (NAIC) data from 2004–2008 and MCBS data from 2005 and finds mark-ups of 30 percent. Table A2 shows the market shares for the largest and second-largest insurers in the 9 states used in the paper's main analysis. The market shares are based on average state-level market shares for 2006–2010 according to reports from the NAIC. United Healthcare is the largest insurer in Connecticut, Maine, New Jersey, New York, and Vermont, and the second-largest insurer in Massachusetts, New Hampshire, and Pennsylvania. Anthem is the largest insurer in New Hampshire and the second-largest insurer in Connecticut and Maine. Blue Cross Blue Shield is the largest insurer in Massachusetts and the second-largest insurer in Vermont. In 6 of the 9 states, C2—the total market share of the top 2 insurers—exceeds 75 percent. In 5 of the 9 states, C3—the total market share of the top 3 insurers—exceeds 90 percent. Overall, the Medigap market is dominated by a small number of large insurers.

A.8 Medigap Pricing Legislation

The Omnibus Budget Reconciliation Act of 1990 (OBRA-90) made amendments to Section 1882 of the Social Security Act. OBRA-90 established minimum standards and requirements for Medigap policies. Starting in July 1992, when OBRA-90 was enacted, Medigap plans were required to conform to 10 regulated plans, designated by letters A through J. More recently, CMS has adjusted the exact plan offerings, shown in Table A3. Medigap plan

standardization reduces complexity for Medicare beneficiaries selecting among the plans and applies to all states, with the exception of 3 states (Minnesota, Massachusetts, and Wisconsin) that have waivers and allow fewer plans than the federal limits. Table **??** shows a timeline of pricing regulations that applied to the aged Medicare population. Additional pricing regulations were enacted that applied only to those who qualified for Medicare on the basis of disability. The first state-level pricing regulations, enacted in 1990, were an age rating ban in Arkansas and attained age rating bans in Georgia and Washington. The age rating ban prohibited insurers from varying Medigap premiums on the basis of age. The attained age rating bans prohibited insurers from varying Medigap premiums on the basis of age (or "attained age") but did allow insurers to vary Medigap premiums on the basis of "issue age," or the age at which a Medicare beneficiary first purchased his Medigap plan.

A.9   Definition of Pre-Existing Conditions

The CMS administrative data contain indicators for 70 HCCs that were included in the MA risk adjustment model in 2010. These HCCs are based on claims-based diagnoses from the previous year. The HCCs are defined to be clinically meaningful as well as predictive of health care costs, as they are used to rescale capitated payments for MA plans. Individuals are assigned to pre-existing condition categories based on their observed HCCs. This assignment is based on the classifications in Table 3-34 of Pope et al. (2011), which groups HCCs into HCC categories. Table A5 shows the assignments from HCCs to pre-existing conditions for the top 10 most common pre-existing conditions. The table also shows HCC weights and the mean percent of Medicare beneficiaries for each HCC. For instance, about 1.3 percent of Medicare beneficiaries have HCC 7, which is for "Metastatic Cancer and Acute Leukemia." This has an HCC weight of 2.276, which means that Medicare beneficiaries with this HCC are predicted to have health care costs that are 2.276 times as high as for a standard Medicare beneficiary. Table A6 shows the assignments from HCCs to pre-existing conditions for the remaining pre-existing conditions, which are much less common and are classified as "other" in the main analysis. If a Medicare beneficiary has more than one pre-existing condition based on her HCCs, she is assigned to the pre-existing condition with the highest mean Medicare uncovered costs. Thus, each Medicare beneficiary is assigned to exactly one

pre-existing condition.

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Figure A1: Total Medigap Enrollment over Time
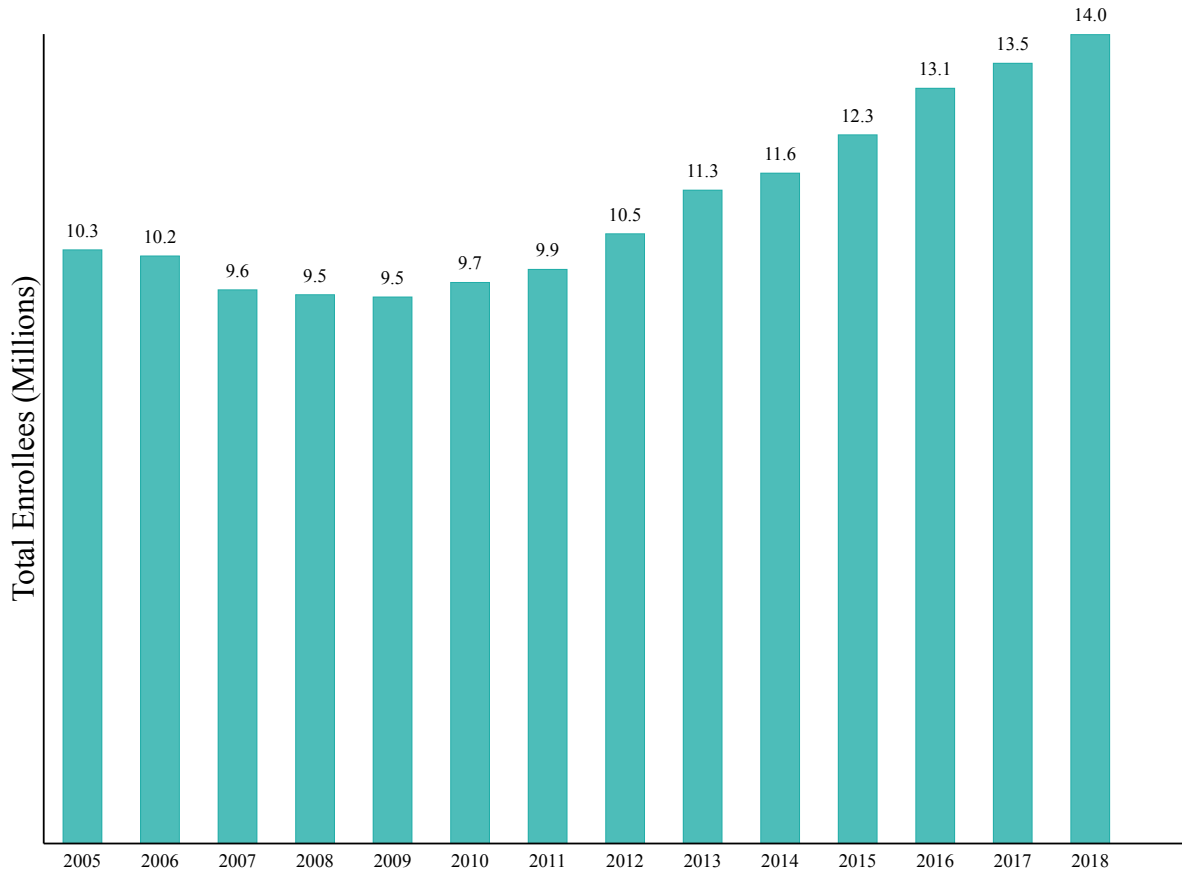
Notes: The figure shows total Medigap enrollment over time. The source for Medigap enrollment in 2005–2012 is annual reports from the National Association of Insurance Commissioners (NAIC) (National Association of Insurance Commissioners, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013) as well as financial summary data from California Department of Managed Health Care (2020) for 2012. The source for Medigap enrollment in 2013–2018 is Figure 1 in America's Health Insurance Plans (2020), which is based on reports from the NAIC and California's Department of Managed Health Care (DMHC). Medigap enrollment includes all covered lives from California for 2012–2018 but not for 2005–2011 because data on covered lives reported to the California DMHC are not available before 2012.

Figure A2: Medicare Cost Sharing: Inpatient Spending
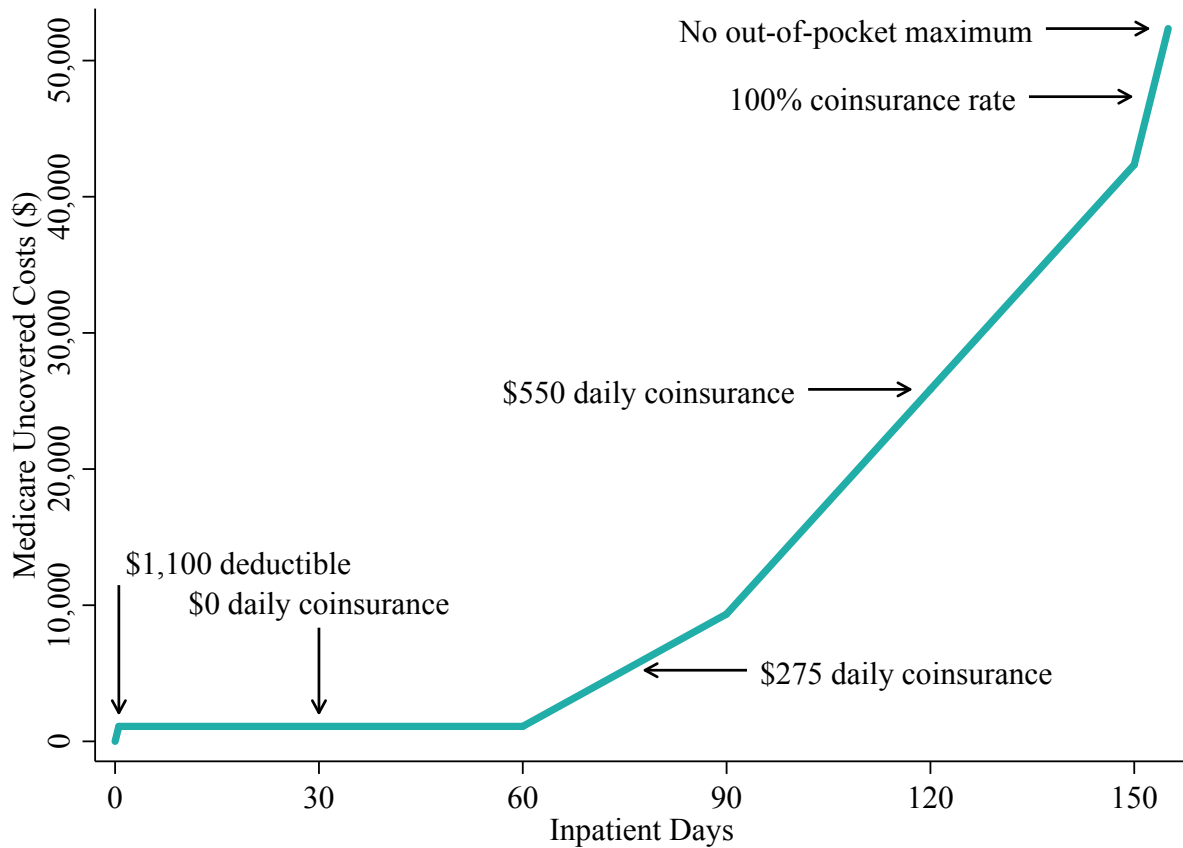
Notes: The figure shows uncovered costs based on the cost sharing requirements in 2010, the last year of the study period, for standard Medicare coverage for Part A. Part A covers inpatient spending. There is a $1,100 deductible for the first time a Medicare beneficiary is admitted to the hospital, followed by a $0 daily coinsurance for the first 60 inpatient days. There is $275 daily coinsurance for inpatient days 61 through 90. The daily coinsurance rate then increases to $550 for up to 60 lifetime reserve days. Medicare beneficiaries are responsible for all costs beyond these lifetime reserve days. All costs are reported in inflation-adjusted dollars for 2016.

Figure A3: Medicare Cost Sharing: Physician and Outpatient Spending
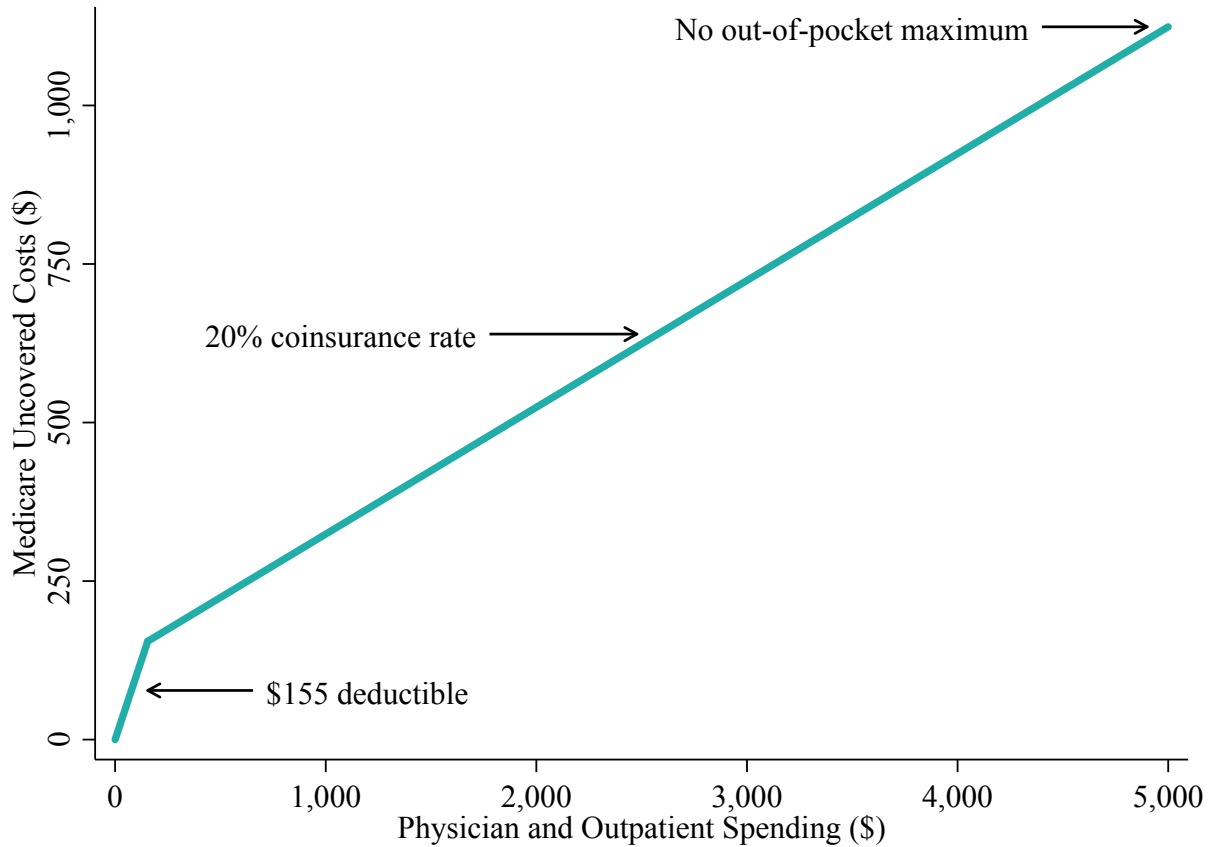
Notes: The figure shows uncovered costs based on the cost sharing requirements in 2010, the last year of the study period, for standard Medicare coverage for Part B. Part B covers outpatient and physician spending. There is a Part B deductible of $155, a 20 percent coinsurance rate past $155, and no out-of-pocket maximum. All costs are reported in inflation-adjusted dollars for 2016.

Figure A4: Medigap Purchase Age
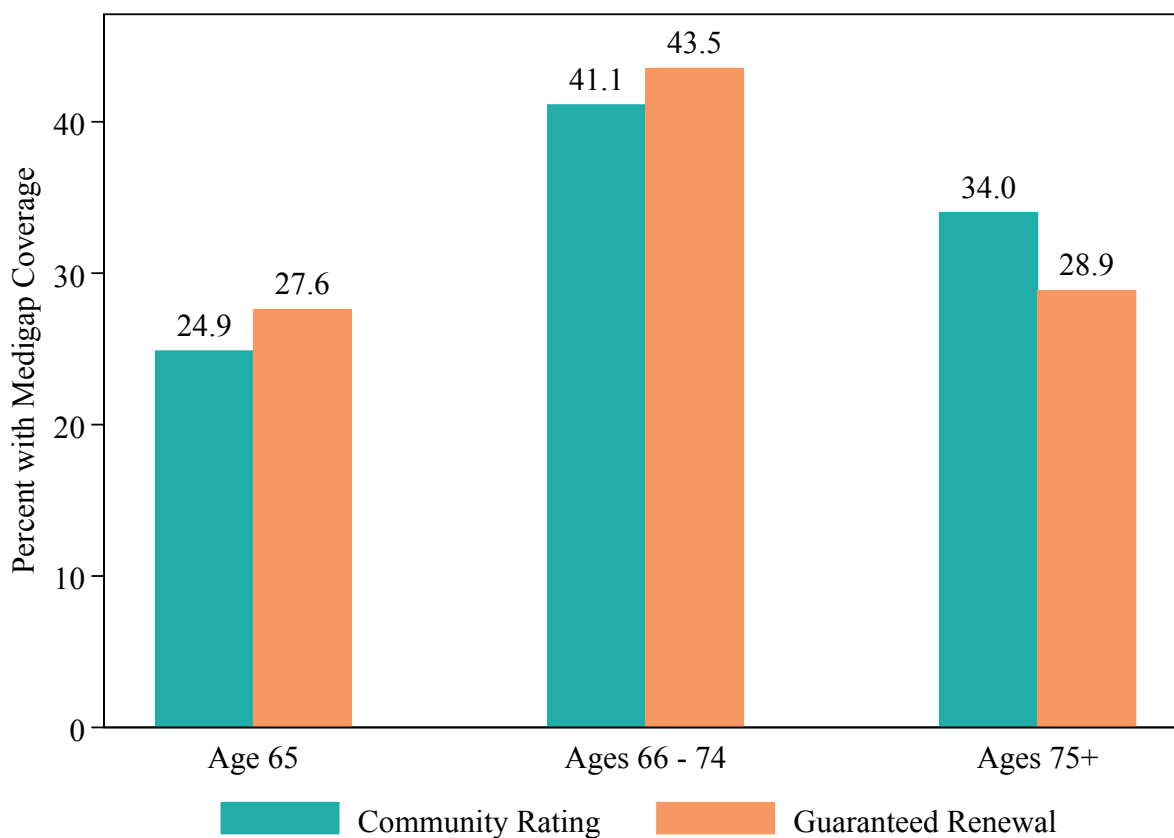
Notes: The figure shows the percent, among those enrolled in Medigap plans, who first purchased a Medigap plan at ages 65, 66–74, or 75+. The "age 65" category only includes those who purchased Medigap plans during the initial 6-month open enrollment period after joining Medicare; those who purchased Medigap plans at age 65 after the initial 6-month open enrollment period are included in the "ages 66–74" category. These percentages are shown separately for the 3 states with community rating (and guaranteed issue)— Connecticut, Maine, and New York—and 6 comparison states with guaranteed renewal (and an initial open enrollment period)—Massachusetts, New Hampshire, New Jersey, Pennsylvania, Rhode Island, and Vermont.

Figure A5: Map of Border Segments along Border between New York and Pennsylvania
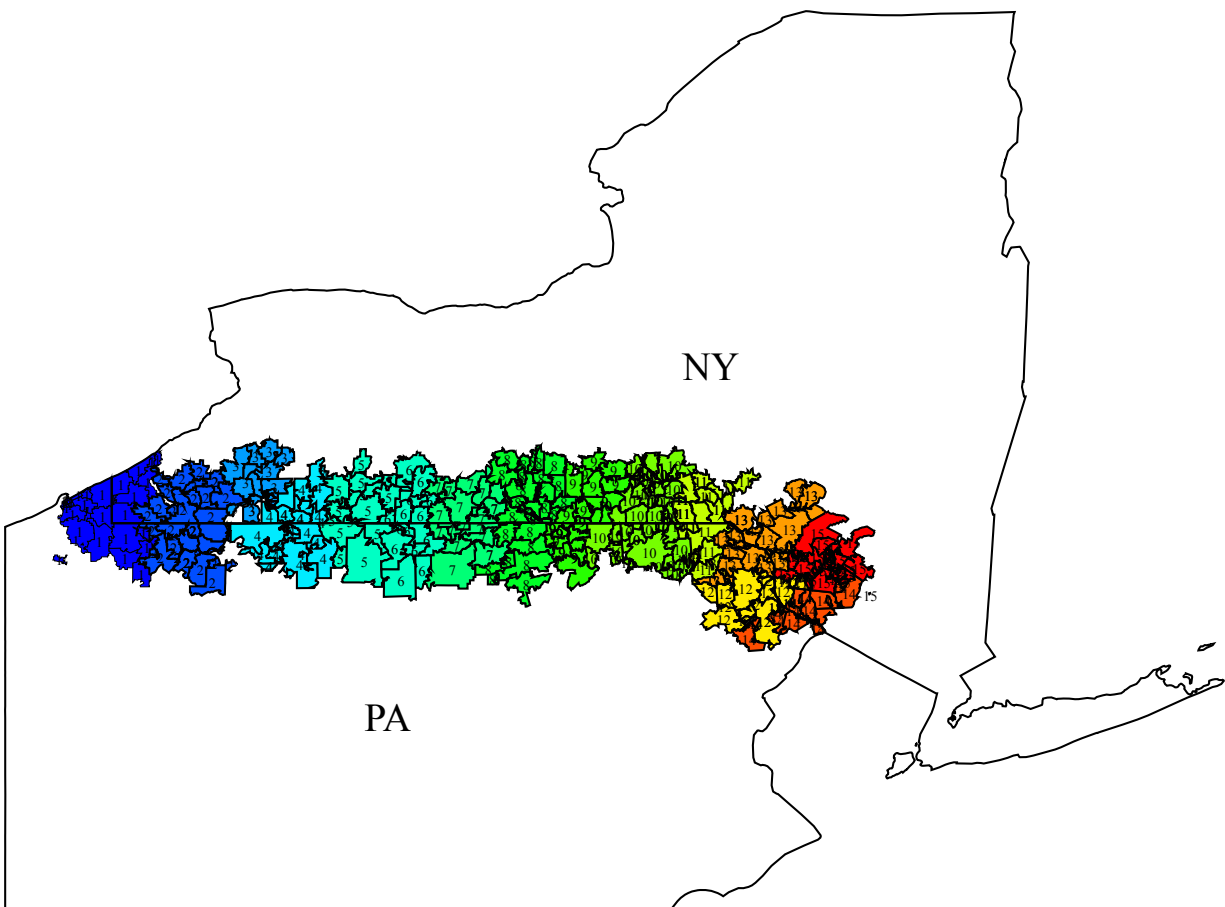
Notes: The figure shows a map of the border segments along the border between New York and Pennsylvania. Each border segment is of approximate length 25 miles, is designated by a unique number, and is represented by a different color. The ZIP codes are within 25 miles of the border between New York and Pennsylvania, with each ZIP code assigned to exactly one border segment. New York is a state with community rating (and guaranteed issue) and Pennsylvania is a state with guaranteed renewal (and an initial open enrollment period).

Figure A6: Medigap Premiums in Guaranteed Renewal and Community Rating States
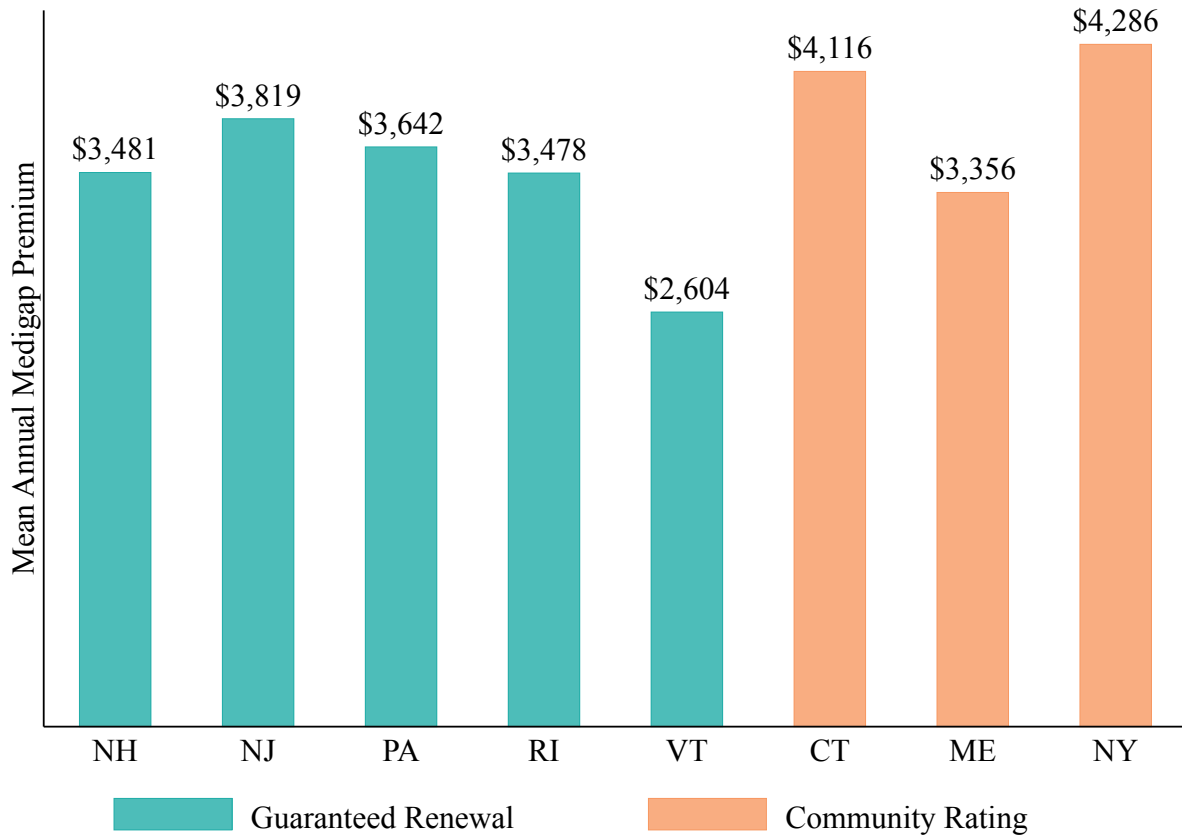
Notes: The figure shows mean annual Medigap premiums in guaranteed renewal and community rating states. The figure is based on Weiss Ratings data from 2006–2010 on annual premiums for each combination of ZIP code, year, insurer, sex, and age. Within each combination of ZIP code, year, insurer, sex, and age, the premium is constructed as a simple average of the premiums offered for plan A (the least generous plan) and plan F (the most generous plan) (for the 88% of observations for which both of these plans are offered). Each observation is weighted by the population of Medicare beneficiaries in the ZIP code, year, sex, and age combination. The sample is limited to insurers with at least a 1% state-year-level market share based on data from the National Association of Insurance Commissioners (NAIC).

Figure A7: Marginal Tax Rates in Guaranteed Renewal and Community Rating States
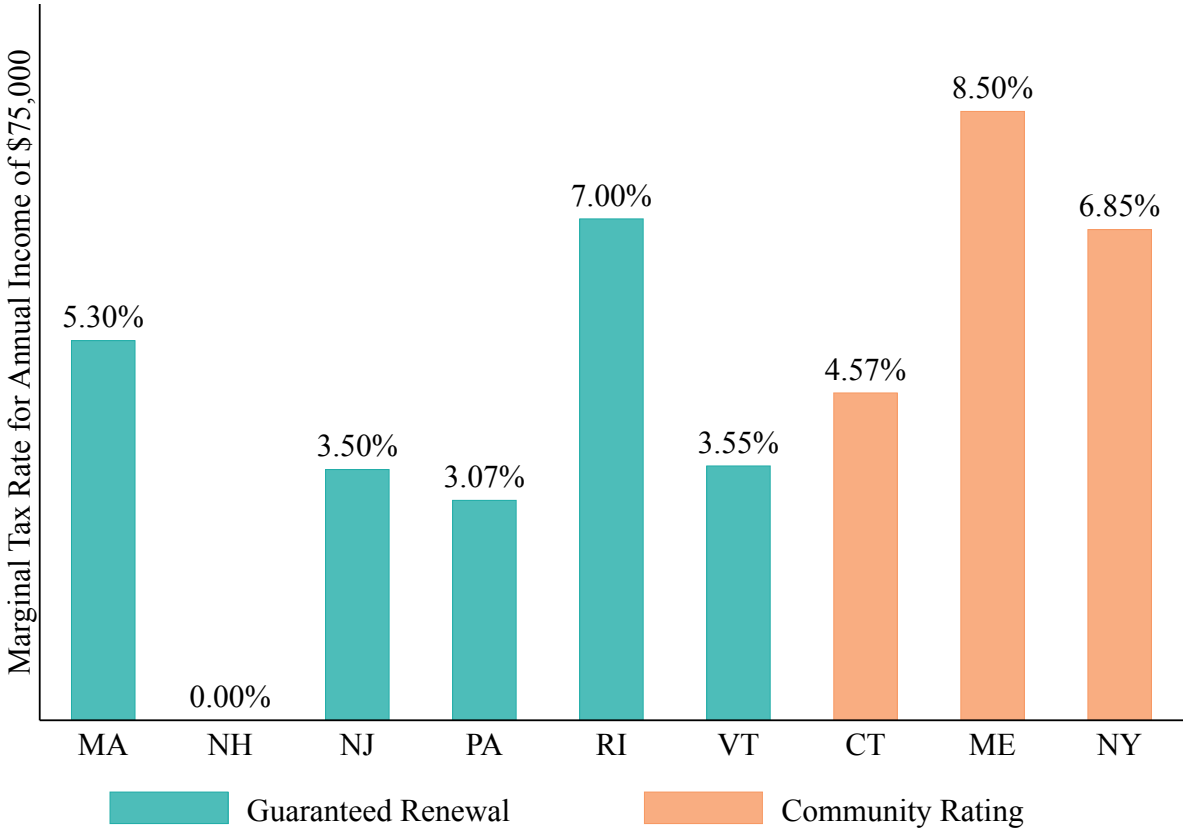
Notes: The figure shows marginal tax rates for an annual income of $75,000 in 2010 (compiled by the National Bureau of Economic Research (NBER)) in guaranteed renewal and community rating states.

Table A1: Distribution of Medicare Uncovered Costs by Pre-Existing Condition

	Medicare Uncovered Costs					Preva-lence (%)	Risk Score	Medi-care Costs	An-nual Mor-tality (%)	No. of Pre-Existing Condi-tions
	Mean (1)	p50 (2)	p90 (3)	p95 (4)	p99 (5)	Mean (6)	Mean (7)	Mean (8)	Mean (9)	Mean (10)
None	845	366	2,094	3,110	7,103	43.626	0.457	5,062	1.465	0.000
Diabetes	1,184	595	2,735	3,936	8,475	6.948	0.711	7,499	1.731	1.100
Other	1,446	752	3,290	4,774	10,369	1.908	0.988	9,559	3.046	1.123
Heart	1,569	838	3,550	4,979	10,140	7.808	1.060	11,180	4.096	1.711
Psychiatric	1,609	890	3,613	5,120	10,502	0.833	1.009	10,722	2.669	1.601
Vascular	1,744	941	3,940	5,607	11,471	6.410	1.238	12,576	4.641	2.052
Musculoskeletal	1,818	1,000	4,171	5,812	11,316	2.446	1.195	12,248	2.729	2.019
Cerebrovascular	1,885	990	4,323	6,364	12,822	1.457	1.455	14,317	6.710	2.694
Lung	2,016	1,125	4,562	6,440	12,918	7.197	1.524	14,788	6.807	2.590
Neurological	2,217	1,258	4,987	7,198	14,500	3.861	1.649	16,541	6.188	3.045
Cancer	2,443	1,209	5,753	8,948	17,443	11.922	1.583	16,242	7.657	2.525
Kidney	2,823	1,680	6,409	9,326	17,488	5.584	2.539	22,329	13.080	4.387

Notes: The table shows the prevalence rate, mean risk score, mean Medicare total cost, mortality rate, mean number of health conditions, and the distribution of annual health care spending not covered by Medicare by disease category based on all aged Medicare beneficiaries in 2006–2010. The mean, median, 90th, 95th, and 99th percentiles of uncovered Medicare costs are included. All costs are reported in inflation-adjusted dollars for 2016.

Table A2: Insurer Market Shares

	Largest Insurer (1)	Second-Largest Insurer (2)	C1 (%) (3)	C2 (%) (4)	C3 (%) (5)
Connecticut	UnitedHealthcare Ins Co	Anthem Hlth Plans Inc	45.4	90.8	93.3
Maine	UnitedHealthcare Ins Co	Anthem Hlth Plans of ME Inc	46.8	85.0	91.5
Massachusetts	BCBS of MA	UnitedHealthcare Ins Co	83.6	96.7	98.9
New Hampshire	Anthem Hlth Plans of NH	UnitedHealthcare Ins Co	40.3	75.9	90.5
New Jersey	UnitedHealthcare Ins Co	Horizon Hlthcare Serv Inc	57.2	85.7	91.4
New York	United Hlthcare Ins Co Of NY	Empire Healthchoice Assur Inc	62.6	79.4	85.8
Pennsylvania	Highmark Inc	UnitedHealthcare Ins Co	34.8	52.8	62.1
Vermont	UnitedHealthcare Ins Co	BCBS of VT	48.4	68.1	79.7

Notes: The table shows Medigap insurer market shares for 3 states with community rating (and guaranteed issue)—Connecticut, Maine, and New York—and 6 comparison states with guaranteed renewal (and an initial open enrollment period)—Massachusetts, New Hampshire, New Jersey, Pennsylvania, Rhode Island, and Vermont. The market share is the average state-level market share for 2006–2010. The source for Medigap enrollment is annual reports from the National Association of Insurance Commissioners (NAIC) (National Association of Insurance Commissioners, 2007, 2008, 2009, 2010, 2011).

Table A3: Medigap Plan Standardization

	A	B	C	D	F	G	K	L	M	N
Part A coinsurance and hospital costs up to an additional 365 days after Medicare benefits are used up	×	×	×	×	×	×	×	×	×	×
Part B coinsurance or copayment	×	×	×	×	×	×	50%	75%	×	×
Blood (first 3 pints)	×	×	×	×	×	×	50%	75%	×	×
Part A hospice care coinsurance or copayment	×	×	×	×	×	×	50%	75%	×	×
Skilled nursing facility care coinsurance			×	×	×	×	50%	75%	×	×
Part A deductible		×	×	×	×	×	50%	75%	50%	×
Part B deductible			×		×					
Part B excess charge					×	×				
Foreign travel exchange (up to plan limits)			80%	80%	80%	80%			80%	80%

Notes: The table shows information about the different benefits covered by Medigap plans in 2020. The symbol × indicates that the plan covers 100 percent of the benefit, a blank indicates that the plan does not cover the benefit, and a percentage indicates that the plan covers that percentage of the benefit. In 2020, plans K and L also include out-of-pocket limits of $5,880 and $2,940, respectively. The source for the table is Centers for Medicare and Medicaid Services (2020).

	2007	2008	2009	2010	2007-2010
Table A4: MCBS Validation	(1)	(2)	(3)	(4)	(5)
Medigap: MCBS survey	21.6	20.6	19.9	19.5	20.4
Medigap: CMS data	17.3	18.5	19.8	19.9	18.9
Medigap: MCBS survey = CMS data	83.9	84.6	85.2	84.7	84.6

Notes: The table shows a tabulation of Medigap enrollment indicators from the Medicare Current Beneficiary Survey (MCBS) and an administrative file on supplemental insurance from the Centers for Medicare & Medicaid Services (CMS). MCBS is a survey of a representative national sample of Medicare beneficiaries. The table shows a tabulation for a subset of Medicare beneficiaries who are in the MCBS survey and therefore have Medigap enrollment indicators from the MCBS and from CMS administrative data. Columns 1–4 show results for each of the years 2007 through 2010, and column 5 pools the results for 2007–2010. The first row reports the mean of the Medigap enrollment indicator from the MCBS survey. The second row reports the mean of the Medigap enrollment indicator from the CMS data. The third row reports the mean of an indicator that the MCBS survey measure and the CMS data measure coincide.

Table A5: Definitions of Most Common Pre-Existing Conditions

	HCC Weight (1)	Pre-Existing Condition (2)	Mean (%) (3)
Metastatic Cancer and Acute Leukemia (7)	2.276	Cancer	1.3
Lung, Upper Digestive Tract, and Other Severe Cancers (8)	1.053	Cancer	0.9
Lymphatic, Head and Neck, Brain, and Other Major Cancers (9)	0.794	Cancer	1.6
Breast, Prostate, Colorectal and Other Cancers and Tumors (10)	0.208	Cancer	9.4
Diabetes with Renal or Peripheral Circulatory Manifestation (15)	0.508	Diabetes	2.9
Diabetes with Neurologic or Other Specified Manifestation (16)	0.408	Diabetes	2.2
Diabetes with Acute Complications (17)	0.339	Diabetes	0.2
Diabetes with Ophthalmologic or Unspecified Manifestation (18)	0.259	Diabetes	1.7
Diabetes without Complication (19)	0.162	Diabetes	13.2
Bone/Joint/Muscle Infections/Necrosis (37)	0.535	Musculoskeletal	0.6
Rheumatoid Arthritis and Inflammatory Connective Tissue Disease (38)	0.346	Musculoskeletal	3.9
Schizophrenia (54)	0.524	Psychiatric	0.1
Major Depressive, Bipolar, and Paranoid Disorders (55)	0.353	Psychiatric	2.0
Muscular Dystrophy (70)	0.395	Neurological	0.0
Polyneuropathy (71)	0.327	Neurological	3.4
Multiple Sclerosis (72)	0.599	Neurological	0.1
Parkinsons and Huntingtons Diseases (73)	0.592	Neurological	1.1
Seizure Disorders and Convulsions (74)	0.267	Neurological	1.2
Coma, Brain Compression/Anoxic Damage (75)	0.415	Neurological	0.1
Congestive Heart Failure (80)	0.410	Heart	10.6
Acute Myocardial Infarction (81)	0.359	Heart	0.9
Unstable Angina and Other Acute Ischemic Heart Disease (82)	0.284	Heart	2.2
Angina Pectoris/Old Myocardial Infarction (83)	0.244	Heart	4.8
Specified Heart Arrhythmias (92)	0.293	Heart	13.0
Cerebral Hemorrhage (95)	0.324	Cerebrovascular	0.3
Ischemic or Unspecified Stroke (96)	0.265	Cerebrovascular	2.7
Hemiplegia/Hemiparesis (100)	0.437	Cerebrovascular	0.5
Cerebral Palsy and Other Paralytic Syndromes (101)	0.180	Cerebrovascular	0.1
Vascular Disease with Complications (104)	0.610	Vascular	1.7
Vascular Disease (105)	0.316	Vascular	12.9
Cystic Fibrosis (107)	0.399	Lung	0.0
Chronic Obstructive Pulmonary Disease (108)	0.399	Lung	11.0
Aspiration and Specified Bacterial Pneumonias (111)	0.703	Lung	0.5
Pneumococcal Pneumonia, Emphysema, Lung Abscess (112)	0.249	Lung	0.3
Dialysis Status (130)	1.349	Kidney	0.0
Renal Failure (131)	0.368	Kidney	5.4
Nephritis (132)	0.125	Kidney	0.2

Notes: The table shows definitions of the 10 most common pre-existing conditions based on individual-level data on chronic conditions. Individuals are assigned to pre-existing condition categories based on their observed Hierarchical Condition Categories (HCCs), using the classifications in Table 3-34 of Pope et al. (2011). Column 1 shows the HCC weight, which is the weight on the HCC in the Medicare Advantage risk adjustment formula in 2011, implying that Medicare beneficiaries with the HCC have predicted costs equal to the predicted costs for a standard Medicare beneficiary, multiplied by the HCC weight. Column 2 shows the pre-existing condition category. Column 3 shows the prevalence of the HCC, based on all aged Medicare beneficiaries in 2006–2010.

Table A6: Definitions of Least Common Pre-Existing Conditions

	HCC Weight (1)	Pre-Existing Condition (2)	Mean (%) (3)
HIV/AIDS (1)	0.945	Infection	0.0
Septicemia/Shock (2)	0.759	Infection	0.9
Opportunistic Infections (5)	0.300	Infection	0.2
Protein-Calorie Malnutrition (21)	0.856	Metabolic	0.6
End-Stage Liver Disease (25)	0.978	Liver	0.1
Cirrhosis of Liver (26)	0.406	Liver	0.2
Chronic Hepatitis (27)	0.406	Liver	0.1
Intestinal Obstruction/Perforation (31)	0.311	Gastrointestinal	1.2
Pancreatic Disease (32)	0.403	Gastrointestinal	0.9
Inflammatory Bowel Disease (33)	0.241	Gastrointestinal	0.8
Severe Hematological Disorders (44)	1.015	Blood	0.8
Disorders of Immunity (45)	0.912	Blood	0.8
Drug/Alcohol Psychosis (51)	0.274	Substance Abuse	0.2
Drug/Alcohol Dependence (52)	0.274	Substance Abuse	0.2
Quadriplegia, Other Extensive Paralysis (67)	1.011	Spinal	0.1
Paraplegia (68)	0.993	Spinal	0.0
Spinal Cord Disorders/Injuries (69)	0.558	Spinal	0.4
Respirator Dependence/Tracheostomy Status (77)	1.867	Arrest	0.1
Respiratory Arrest (78)	1.082	Arrest	0.0
Cardio-Respiratory Failure and Shock (79)	0.578	Arrest	2.4
Proliferative Diabetic Retinopathy and Vitreous Hemorrhage (119)	0.252	Eye	0.7
Decubitus Ulcer of Skin (148)	1.153	Skin	0.6
Chronic Ulcer of Skin, Except Decubitus (149)	0.449	Skin	2.1
Extensive Third-Degree Burns (150)	1.416	Skin	0.0
Severe Head Injury (154)	0.415	Injury	0.0
Major Head Injury (155)	0.106	Injury	0.3
Vertebral Fractures without Spinal Cord Injury (157)	0.443	Injury	1.0
Hip Fracture/Dislocation (158)	0.429	Injury	1.0
Traumatic Amputation (161)	0.678	Injury	0.1
Major Complications of Medical Care and Trauma (164)	0.296	Complications	2.2
Major Organ Transplant Status (174)	0.705	Transplant	0.1
Artificial Openings for Feeding or Elimination (176)	0.662	Openings	0.4
Amputation Status, Lower Limb/Amputation Complications (177)	0.678	Amputation	0.1

Notes: The table shows definitions of the least common pre-existing conditions based on individual-level data on chronic conditions. Individuals are assigned to pre-existing condition categories based on their observed Hierarchical Condition Categories (HCCs), using the classifications in Table 3-34 of Pope et al. (2011). Column 1 shows the HCC weight, which is the weight on the HCC in the Medicare Advantage risk adjustment formula in 2011, implying that Medicare beneficiaries with the HCC have predicted costs equal to the predicted costs for a standard Medicare beneficiary, multiplied by the HCC weight. Column 2 shows the pre-existing condition category. Column 3 shows the prevalence of the HCC, based on all aged Medicare beneficiaries in 2006–2010.

Table A7: Summary Statistics

	Mean (1)	SD (2)	p10 (3)	p50 (4)	p90 (5)	p99 (6)
Female (%)	57.5	49.4				
Ages 65-66 (%)	9.4	29.2				
Ages 67-74 (%)	36.5	48.1				
Ages 75+ (%)	54.1	49.8				
Any health condition (%)	56.4	49.6				
Community rating state (%)	39.7	48.9				
Distance to border (miles)	13.8	6.4	4.8	14.1	22.6	24.7
Died during year (%)	4.0	19.6				
Medicare costs	10,138	21,540	274	2,842	27,961	102,777
Medicare uncovered costs	1,486	2,497	158	662	3,546	11,922
Median household income	42,745	16,072	26,779	39,607	61,902	93,339
Urban zip code (%)	82.1	38.3				
Medigap (%)	28.7	45.2				
Medicare Advantage (%)	17.4	37.9				
Medigap purchase age	71.5	7.3	65.0	70.0	82.0	91.0
Pre-existing conditions:						
None (%)	43.6	49.6				
Other (%)	1.9	13.7				
Diabetes (%)	6.9	25.4				
Cerebrovascular (%)	1.5	12.0				
Cancer (%)	11.9	32.4				
Heart (%)	7.8	26.8				
Kidney (%)	5.6	23.0				
Lung (%)	7.2	25.8				
Musculoskeletal (%)	2.4	15.4				
Neurological (%)	3.9	19.3				
Psychiatric (%)	0.8	9.1				
Vascular (%)	6.4	24.5				
Number of health conditions	1.3	1.8	0.0	1.0	4.0	8.0
Risk score	1.0	0.9	0.4	0.7	2.0	4.5
Unique individuals	894,013					
Observations	3,448,525					

Notes: The table shows summary statistics for the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. Columns 1–6 show the mean, standard deviation, and 10th through 99th percentiles.

Table A8: Additional Summary Statistics

	Mean (1)	SD (2)	p10 (3)	p50 (4)	p90 (5)	p99 (6)
Medicare insurer costs	8,652	19,420	121	2,159	24,229	92,323
Zip code education level:						
< HS (ages 65+) (%)	21.5	11.1	9.4	20.0	36.8	57.7
HS graduate (ages 65+) (%)	37.8	9.2	26.3	38.4	48.6	58.9
College graduate (ages 65+) (%)	27.5	47.4	11.4	22.3	42.4	97.9
Zip code poverty rate (ages 65+) (%)	7.8	5.8	2.2	6.9	13.8	29.6
Zip code veteran rate (ages 65+) (%)	52.8	13.4	35.6	54.8	66.4	81.0
Zip code labor force participation rate (ages 65+) (%)	17.6	6.2	10.9	17.1	25.0	35.3
Zip code homeownership rate (ages 65+) (%)	76.4	14.5	58.6	77.6	93.4	100
Distance to border zip code	9.0	6.3	0.0	8.9	18.0	21.1
Border zip code (%)	18.3	38.7				
Race/ethnicity: White (%)	93.5	24.6				
Race/ethnicity: Black (%)	3.9	19.3				
Race/ethnicity: Hispanic (%)	0.6	7.8				
Race/ethnicity: Asian (%)	0.7	8.4				
Race/ethnicity: Other (%)	1.3	11.2				
Enrolled in Part D (%)	46.2	49.9				
Enrolled in Part D LIS program (%)	3.2	17.6				
Employer-sponsored supplemental insurance (%)	30.7	46.1				
Any supplemental insurance (%)	51.1	50.0				
Age	76.2	7.6	67.0	75.0	87.0	95.0
Born in Community Rating state (%)	43.0	49.5				
Unique individuals			894,013			
Observations			3,448,525			

Notes: The table shows additional summary statistics for the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. Columns 1–6 show the mean, standard deviation, and 10th through 99th percentiles.

Table A9: Medicaid Eligibility for Older Adults

	Pricing Regulation (1)	Income Limit (% FPL) (2)	Asset Limit - Individual (3)	Asset Limit - Couple (4)	Monthly Income Disregard (5)
Connecticut	Community Rating	63	$1,600	$2,400	$339
New Hampshire	Guaranteed Renewal	74	$1,500	$1,500	$13–$20
Vermont	Guaranteed Renewal	74	$2,000	$3,000	$20
New York	Community Rating	83	$2,000	$3,000	$20
Massachusetts	Guaranteed Renewal	100	$2,000	$3,000	$20
Pennsylvania	Guaranteed Renewal	100	$2,000	$3,000	$20
Maine	Community Rating	100	$2,000	$3,000	$75
New Jersey	Guaranteed Renewal	100	$4,000	$6,000	$20
Rhode Island	Guaranteed Renewal	100	$4,000	$6,000	$20

Notes: The table shows Medicaid eligibility requirements in 2018 for older adults ages 65 and above. The table lists income limits as well as asset limits. The source for these eligibility requirements is Musumeci et al. (2019). The states are listed in order from most restrictive eligibility requirements to least restrictive eligibility requirements. In New Hampshire, the "Monthly Income Disregard" is $13 for an individual and $20 for a couple.

Table A10: Tests for Balance on Observable Health Characteristics

	GR Mean (1)	CR Coeff. (2)	Pct. Diff. (3)	p-value (4)
Pre-Existing Health Conditions				
None	48.688	-3.256	-6.687	0.090
Diabetes	5.916	0.660	11.157	0.007
Other	1.498	0.139	9.267	0.226
Heart	7.312	1.144	15.650	0.000
Psychiatric	0.409	0.157	38.385	0.048
Vascular	6.296	-0.590	-9.373	0.125
Musculoskeletal	1.820	0.202	11.091	0.118
Cerebrovascular	1.211	0.093	7.710	0.332
Lung	7.554	0.916	12.120	0.044
Neurological	3.211	0.308	9.604	0.120
Cancer	12.290	0.230	1.870	0.502
Kidney	3.716	0.116	3.135	0.901
Predicted Health Risk				
Out-of-Pocket Spending	1,420	30	2.146	0.271
Total Spending	9,583	245	2.556	0.293
Risk Score	0.936	0.026	2.762	0.337
Mortality Rate	3.738	0.113	3.026	0.417
Number of Health Conditions	1.180	0.068	5.765	0.262
Ages 65-74	50.219	1.039	2.069	0.114
Ages 75-84	34.453	-0.309	-0.897	0.268
Ages 85+	15.328	-0.730	-4.765	0.080

Notes: The table reports results from testing balance on observable characteristics in community rating versus guaranteed renewal states. Column 1 reports the mean in guaranteed renewal states. Column 2 reports the coefficient on an indicator for community rating from a linear regression model where the variable listed in the row is the dependent variable. The sample is the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. The model includes border segment fixed effects and year fixed effects. Column 3 reports the percent difference in community rating states, compared to the mean in guaranteed renewal states. Column 4 reports the p-value of the difference.

Table A11: Tests for Balance on Provider Market Characteristics

	GR Mean	CR Coeff.	Pct. Diff.	*p*-value
	(1)	(2)	(3)	(4)
Medicare Wage Index				
Baseline	0.973	-0.006	-0.664	0.910
Within 10 miles	0.959	0.012	1.256	0.829
Within 5 miles	0.957	0.026	2.742	0.581
HSA fixed effects	0.988	-0.068	-6.919	0.107
HRR fixed effects	0.993	-0.092	-9.283	0.035
Medicare Geographic Adjustment Factor				
Baseline	0.980	-0.007	-0.702	0.859
Within 10 miles	0.970	0.006	0.605	0.876
Within 5 miles	0.969	0.016	1.625	0.622
HSA fixed effects	0.990	-0.048	-4.811	0.109
HRR fixed effects	0.994	-0.065	-6.505	0.034

Notes: The table reports results from testing balance on observable characteristics in community rating versus guaranteed renewal states. Column 1 reports the mean in guaranteed renewal states. Column 2 reports the coefficient on an indicator for community rating from a linear regression model where the variable listed in the row is the dependent variable. The sample is the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. The model includes border segment fixed effects and year fixed effects. For each dependent variable, the table shows estimates for several of the specifications from Table A22. Column 3 reports the percent difference in community rating states, compared to the mean in guaranteed renewal states. Column 4 reports the p-value of the difference.

Table A12: Tests for Balance on Consumer Characteristics

	GR Mean (1)	CR Coeff. (2)	Pct. Diff. (3)	p-value (4)
Household Income				
Baseline	76.279	2.101	2.754	0.627
Within 10 miles	71.438	8.501	11.900	0.045
Within 5 miles	67.087	7.713	11.497	0.081
HSA fixed effects	76.207	2.422	3.178	0.341
HRR fixed effects	77.047	-1.332	-1.729	0.714
Female				
Baseline	0.579	0.001	0.199	0.852
Within 10 miles	0.585	-0.001	-0.249	0.869
Within 5 miles	0.586	-0.006	-1.072	0.538
HSA fixed effects	0.578	0.005	0.781	0.836
HRR fixed effects	0.580	-0.002	-0.333	0.425
Age				
Baseline	76.108	-0.022	-0.029	0.912
Within 10 miles	76.132	-0.027	-0.036	0.909
Within 5 miles	76.075	-0.182	-0.240	0.667
HSA fixed effects	76.108	-0.021	-0.027	0.964
HRR fixed effects	76.115	-0.054	-0.071	0.455
Eligible for Medicaid				
Baseline	0.072	0.003	4.291	0.825
Within 10 miles	0.085	-0.015	-17.800	0.427
Within 5 miles	0.099	0.007	7.422	0.608
HSA fixed effects	0.071	0.008	11.964	0.208
HRR fixed effects	0.071	0.005	7.460	0.571

Notes: The table reports results from testing balance on observable characteristics in community rating versus guaranteed renewal states. Column 1 reports the mean in guaranteed renewal states. Column 2 reports the coefficient on an indicator for community rating from a linear regression model where the variable listed in the row is the dependent variable. The sample is the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. The model includes border segment fixed effects and year fixed effects. For each dependent variable, the table shows estimates for several of the specifications from Table A22. Column 3 reports the percent difference in community rating states, compared to the mean in guaranteed renewal states. Column 4 reports the p-value of the difference.

Table A13: Impacts on Medigap Purchase by Age 75 and Medicare Advantage Enrollment

Panel A: Medigap Purchase by Age 75

	(1)	(2)	(3)	(4)
Community Rating	-0.0162	-0.0164	-0.0152	-0.0150
	(0.0104)	(0.0105)	(0.0110)	(0.0109)
Year FEs	N	Y	Y	Y
Gender FEs	N	Y	Y	Y
Age Bin FEs	N	N	Y	Y
Disease FEs	N	N	N	Y
GR Dep. Var. Mean	0.129	0.129	0.129	0.129
CR Effect Size (%)	-12.6	-12.7	-11.8	-11.7
R^2	0.007	0.008	0.064	0.065
Clusters	44	44	44	44
Observations	3,448,525	3,448,525	3,448,525	3,448,525

Panel B: Medicare Advantage Enrollment

	(1)	(2)	(3)	(4)
Community Rating	-0.0150	-0.0142	-0.0145	-0.0146
	(0.0424)	(0.0425)	(0.0426)	(0.0426)
Year FEs	N	Y	Y	Y
Gender FEs	N	Y	Y	Y
Age Bin FEs	N	N	Y	Y
Disease FEs	N	N	N	Y
GR Dep. Var. Mean	0.174	0.174	0.174	0.174
CR Effect Size (%)	-8.6	-8.1	-8.3	-8.4
R^2	0.064	0.072	0.075	0.076
Clusters	44	44	44	44
Observations	3,448,525	3,448,525	3,448,525	3,448,525

Notes: The table reports impacts of community rating on Medigap purchase by age 75 or Medicare Advantage enrollment, using the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A14: Impacts by Pre-Existing Condition: Medigap Enrollment

Panel A: Low-Spending Pre-Existing Conditions

	None (1)	Diabetes (2)	Other (3)	Heart (4)
Community Rating	-0.1042***	-0.0975***	-0.1018***	-0.0935***
	(0.0224)	(0.0236)	(0.0245)	(0.0241)
GR Dep. Var. Mean	0.309	0.321	0.372	0.349
CR Effect Size (%)	-33.7	-30.4	-27.3	-26.8
R^2	0.029	0.031	0.035	0.028
Clusters	44	44	44	44
Observations	1,504,453	239,597	65,784	269,266

Panel B: Medium-Spending Pre-Existing Conditions

	Psychiatric (1)	Vascular (2)	Muscu- loskeletal (3)	Cerebrovas- cular (4)
Community Rating	-0.1026***	-0.0931***	-0.0991***	-0.1091***
	(0.0257)	(0.0294)	(0.0293)	(0.0244)
GR Dep. Var. Mean	0.373	0.368	0.383	0.326
CR Effect Size (%)	-27.5	-25.3	-25.9	-33.5
R^2	0.042	0.031	0.040	0.023
Clusters	44	44	44	44
Observations	28,739	221,046	84,341	50,255

Panel C: High-Spending Pre-Existing Conditions

	Lung (1)	Neurological (2)	Cancer (3)	Kidney (4)
Community Rating	-0.0688***	-0.0966***	-0.1052***	-0.0790***
	(0.0219)	(0.0257)	(0.0270)	(0.0214)
GR Dep. Var. Mean	0.314	0.333	0.352	0.297
CR Effect Size (%)	-21.9	-29.1	-29.9	-26.6
R^2	0.026	0.028	0.031	0.023
Clusters	44	44	44	44
Observations	248,200	133,142	411,122	192,580

Notes: The table reports impacts of community rating on Medigap enrollment, using the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. Estimates are reported for subgroups of beneficiaries with pre-existing health conditions, who are split into "low-spending," "medium-spending," and "high-spending" groups based on predicted costs associated with each health condition. Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A15: Impacts by Pre-Existing Condition: Medigap Purchase by Age 65

Panel A: Low-Spending Pre-Existing Conditions

	None (1)	Diabetes (2)	Other (3)	Heart (4)
Community Rating	-0.0913***	-0.0770***	-0.0765***	-0.0661***
	(0.0150)	(0.0172)	(0.0134)	(0.0128)
GR Dep. Var. Mean	0.184	0.150	0.160	0.137
CR Effect Size (%)	-49.7	-51.5	-47.9	-48.1
R^2	0.020	0.016	0.021	0.015
Clusters	44	44	44	44
Observations	1,504,453	239,597	65,784	269,266

Panel B: Medium-Spending Pre-Existing Conditions

	Psychiatric (1)	Vascular (2)	Muscu-loskeletal (3)	Cerebrovas-cular (4)
Community Rating	-0.0905***	-0.0537***	-0.0716***	-0.0579***
	(0.0205)	(0.0128)	(0.0166)	(0.0099)
GR Dep. Var. Mean	0.180	0.135	0.166	0.117
CR Effect Size (%)	-50.2	-39.7	-43.2	-49.6
R^2	0.024	0.014	0.021	0.011
Clusters	44	44	44	44
Observations	28,739	221,046	84,341	50,255

Panel C: High-Spending Pre-Existing Conditions

	Lung (1)	Neurological (2)	Cancer (3)	Kidney (4)
Community Rating	-0.0615***	-0.0725***	-0.0807***	-0.0613***
	(0.0143)	(0.0134)	(0.0157)	(0.0114)
GR Dep. Var. Mean	0.134	0.135	0.149	0.110
CR Effect Size (%)	-45.9	-53.7	-54.2	-55.7
R^2	0.014	0.015	0.017	0.013
Clusters	44	44	44	44
Observations	248,200	133,142	411,122	192,580

Notes: The table reports impacts of community rating on Medigap purchase by age 65, using the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. Estimates are reported for subgroups of beneficiaries with pre-existing health conditions, who are split into "low-spending," "medium-spending," and "high-spending" groups based on predicted costs associated with each health condition. Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A16: Impacts by Pre-Existing Condition: Medigap Purchase by Age 75

Panel A: Low-Spending Pre-Existing Conditions

	None (1)	Diabetes (2)	Other (3)	Heart (4)
Community Rating	-0.0121	-0.0092	-0.0194	-0.0222*
	(0.0081)	(0.0122)	(0.0137)	(0.0123)
GR Dep. Var. Mean	0.098	0.126	0.162	0.165
CR Effect Size (%)	-12.4	-7.3	-11.9	-13.5
R^2	0.006	0.009	0.011	0.007
Clusters	44	44	44	44
Observations	1,504,453	239,597	65,784	269,266

Panel B: Medium-Spending Pre-Existing Conditions

	Psychiatric (1)	Vascular (2)	Muscu- loskeletal (3)	Cerebrovas- cular (4)
Community Rating	-0.0231*	-0.0229	-0.0185	-0.0313**
	(0.0118)	(0.0167)	(0.0136)	(0.0151)
GR Dep. Var. Mean	0.133	0.178	0.164	0.167
CR Effect Size (%)	-17.4	-12.9	-11.3	-18.7
R^2	0.011	0.008	0.012	0.007
Clusters	44	44	44	44
Observations	28,739	221,046	84,341	50,255

Panel C: High-Spending Pre-Existing Conditions

	Lung (1)	Neurological (2)	Cancer (3)	Kidney (4)
Community Rating	-0.0101	-0.0145	-0.0224	-0.0260**
	(0.0143)	(0.0159)	(0.0138)	(0.0121)
GR Dep. Var. Mean	0.137	0.147	0.150	0.150
CR Effect Size (%)	-7.4	-9.9	-14.9	-17.4
R^2	0.008	0.007	0.009	0.008
Clusters	44	44	44	44
Observations	248,200	133,142	411,122	192,580

Notes: The table reports impacts of community rating on Medigap purchase by age 75, using the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. Estimates are reported for subgroups of beneficiaries with pre-existing health conditions, who are split into "low-spending," "medium-spending," and "high-spending" groups based on predicted costs associated with each health condition. Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A17: Impacts by Pre-Existing Condition: Medigap Purchase Delay

Panel A: Low-Spending Pre-Existing Conditions

	None (1)	Diabetes (2)	Other (3)	Heart (4)
Community Rating	1.1432***	1.2476***	1.2641**	1.3069***
	(0.3099)	(0.4382)	(0.4952)	(0.4344)
GR Dep. Var. Mean	5.204	6.161	7.001	7.556
CR Effect Size (%)	22.0	20.2	18.1	17.3
R^2	0.020	0.023	0.026	0.021
Clusters	44	44	44	44
Observations	510,436	86,738	27,104	105,310

Panel B: Medium-Spending Pre-Existing Conditions

	Psychiatric (1)	Vascular (2)	Muscu-loskeletal (3)	Cerebrovas-cular (4)
Community Rating	0.9908***	1.3570***	1.1269**	1.4977***
	(0.3203)	(0.5019)	(0.4222)	(0.4206)
GR Dep. Var. Mean	5.947	7.961	6.894	8.130
CR Effect Size (%)	16.7	17.0	16.3	18.4
R^2	0.028	0.018	0.027	0.021
Clusters	44	44	44	44
Observations	11,986	90,678	35,646	18,596

Panel C: High-Spending Pre-Existing Conditions

	Lung (1)	Neurological (2)	Cancer (3)	Kidney (4)
Community Rating	1.3627***	1.5442***	1.2787***	1.5639***
	(0.4354)	(0.4023)	(0.4040)	(0.4336)
GR Dep. Var. Mean	6.943	7.131	6.880	7.987
CR Effect Size (%)	19.6	21.7	18.6	19.6
R^2	0.017	0.019	0.023	0.019
Clusters	44	44	44	44
Observations	86,765	49,646	159,359	65,341

Notes: The table reports impacts of community rating on Medigap purchase delay, using the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. Estimates are reported for subgroups of beneficiaries with pre-existing health conditions, who are split into "low-spending," "medium-spending," and "high-spending" groups based on predicted costs associated with each health condition. Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A18: Impacts by Pre-Existing Condition: Medicare Advantage Enrollment

Panel A: Low-Spending Pre-Existing Conditions

	None (1)	Diabetes (2)	Other (3)	Heart (4)
Community Rating	-0.0019 (0.0400)	-0.0170 (0.0448)	-0.0192 (0.0426)	-0.0328 (0.0414)
GR Dep. Var. Mean	0.182	0.206	0.159	0.169
CR Effect Size (%)	-1.0	-8.2	-12.1	-19.4
R^2	0.061	0.063	0.064	0.062
Clusters	44	44	44	44
Observations	1,504,453	239,597	65,784	269,266

Panel B: Medium-Spending Pre-Existing Conditions

	Psychiatric (1)	Vascular (2)	Muscu-loskeletal (3)	Cerebrovas-cular (4)
Community Rating	-0.0399 (0.0450)	-0.0263 (0.0479)	-0.0182 (0.0411)	-0.0153 (0.0507)
GR Dep. Var. Mean	0.175	0.141	0.152	0.160
CR Effect Size (%)	-22.9	-18.6	-11.9	-9.6
R^2	0.093	0.075	0.069	0.061
Clusters	44	44	44	44
Observations	28,739	221,046	84,341	50,255

Panel C: High-Spending Pre-Existing Conditions

	Lung (1)	Neurological (2)	Cancer (3)	Kidney (4)
Community Rating	-0.0447 (0.0479)	-0.0264 (0.0445)	-0.0200 (0.0469)	-0.0256 (0.0394)
GR Dep. Var. Mean	0.180	0.171	0.152	0.186
CR Effect Size (%)	-24.9	-15.5	-13.2	-13.7
R^2	0.075	0.080	0.071	0.069
Clusters	44	44	44	44
Observations	248,200	133,142	411,122	192,580

Notes: The table reports impacts of community rating on Medicare Advantage enrollment, using the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. Estimates are reported for subgroups of beneficiaries with pre-existing health conditions, who are split into "low-spending," "medium-spending," and "high-spending" groups based on predicted costs associated with each health condition. Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A19: Impacts on Selection into Medigap Enrollment

	Medicare Uncovered Costs	Any Health Condition	Number of Health Conditions	Risk Score	Mortality
	(1)	(2)	(3)	(4)	(5)
Medigap × Community Rating	77.9155***	0.0034	0.0490**	0.0363***	0.0021
	(23.9767)	(0.0076)	(0.0237)	(0.0126)	(0.0030)
Medigap	-168.6964***	0.0155**	-0.1409***	-0.1087***	-0.0474***
	(23.5701)	(0.0075)	(0.0222)	(0.0118)	(0.0030)
GR Dep. Var. Mean	1,502.0073	0.5958	1.5008	1.0897	0.0480
CR Effect Size (%)	5.2	0.6	3.3	3.3	4.4
R^2	0.0074	0.0076	0.0084	0.0074	0.0058
Clusters	46	46	46	46	46
Observations	3,448,525	3,448,525	3,448,525	3,448,525	3,448,525

Notes: The table reports impacts of community rating on several proxies for predicted health care costs: Medicare uncovered costs, an indicator for any health condition, the number of health conditions, the risk score (based on the MA risk adjustment model), and mortality (an indicator for whether the Medicare beneficiary died during the observation year). The sample is the main analysis sample, which is aged Medicare beneficiaries in 2006–2010 living within 25 miles of the regulatory boundary between community rating and guaranteed renewal states, excluding Medicaid-eligible beneficiaries and New York City residents. The main independent variables of interest are an indicator for Medigap enrollment and an indicator for Medigap enrollment interacted with community rating. The model also includes an indicator for community rating, border segment fixed effects, and year fixed effects. Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A20: Impacts on Insurer Participation and Insurer Market Concentration

Panel A: Insurer Participation

	Insurers Offering All Plans (1)	Insurers Offering Plans A and F (2)	Insurers Offering Any Plan (3)
Community Rating	-1.5377***	-6.8636***	-15.8894***
	(0.5453)	(2.3509)	(4.6044)
GR Dep. Var. Mean	4.6495	17.6228	28.3820
CR Effect Size (%)	-33.1	-38.9	-56.0
R^2	0.5566	0.6238	0.6827
Observations	3,468,995	3,468,995	3,468,995
Clusters	43	43	43

Panel B: Insurance Market Concentration

	Market Share of Top Insurer (1)	Market Share of Top 2 Insurers (2)	Market Share of Top 3 Insurers (3)
Community Rating	-6.7821	3.8897	1.9352
	(6.8868)	(3.2617)	(2.6543)
GR Dep. Var. Mean	62.1955	79.9534	86.7685
CR Effect Size (%)	-10.9	4.9	2.2
R^2	0.4977	0.7584	0.7290
Observations	4,128,345	4,128,345	4,128,345
Clusters	43	43	43

Notes: The table reports impacts of community rating on various measures of insurer participation and insurer market concentration, defined at the ZIP code and year level: the number of Medigap insurers offering all plans (A through F), the number of Medigap insurers offering plans A and F, the number of Medigap insurers offering any plan, the state-year-level Medigap market share of the top insurer, the state-year-level Medigap market share of the top 2 insurers, and the state-year-level Medigap market share of the top 3 insurers. Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A21: Impacts on Medigap Enrollment, Controlling for Insurance Market Characteristics, Provider Characteristics, and Marginal Tax Rates

Panel A: Controlling for Insurance Market Characteristics

	(1)	(2)	(3)	(4)
Community Rating	-0.0847***	-0.0932***	-0.0980***	-0.0999***
	(0.0285)	(0.0283)	(0.0261)	(0.0314)
Insurers Offering All Plans	-0.0132**			
	(0.0053)			
Insurers Offering Plans A and F		-0.0012		
		(0.0011)		
Market Share of Top Insurer			-0.0133	
			(0.0691)	
Market Share of Top 2 Insurers				0.1974
				(0.2007)
GR Dep. Var. Mean	0.3621	0.3405	0.3387	0.1674
CR Effect Size (%)	-23.4	-27.4	-28.9	-59.7
R^2	0.0853	0.0835	0.0833	0.0840
Observations	3,448,525	3,448,525	3,448,525	3,448,525
Clusters	43	43	43	43

Panel B: Controlling for Provider Characteristics and Marginal Tax Rates

	(1)	(2)	(3)
Community Rating	-0.1224***	-0.1219***	-0.0934***
	(0.0298)	(0.0292)	(0.0326)
Medicare Wage Index	0.1279		
	(0.1928)		
Medicare GAF		0.1907	
		(0.2860)	
Marginal Tax Rate			-0.2151
			(0.8961)
GR Dep. Var. Mean	0.2229	0.1602	0.3392
CR Effect Size (%)	-54.9	-76.1	-27.5
R^2	0.0889	0.0889	0.0834
Observations	3,282,751	3,282,751	3,448,525
Clusters	43	43	43

Notes: The table reports impacts of community rating on Medigap enrollment, controlling for additional covariates defined at the ZIP code and year level: the number of Medigap insurers offering all plans (A through F), the number of Medigap insurers offering plans A and F, the state-year-level Medigap market share of the top insurer, the state-year-level Medigap market share of the top 2 insurers, the Medicare Wage Index, the Medicare Geographic Adjustment Factor, and the state-level marginal tax rate. Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A22: Impacts on Medigap Enrollment, Robustness Checks

Panel A: Alternative Sample Definitions

	Border States	Including Medicaid	Birth State Instrument
	(1)	(2)	(3)
Community Rating	-0.1354***	-0.0934***	-0.0690***
	(0.0139)	(0.0263)	(0.0231)
GR Dep. Var. Mean	0.3261	0.3284	0.3283
CR Effect Size (%)	-41.5	-28.4	-21.0
R^2	0.0833	0.0774	0.0217
Clusters	46	46	46
Observations	13,534,330	3,696,819	3,448,525

Panel B: Varying Distance to Regulatory Boundary

	100 Miles	50 Miles	10 Miles	5 Miles
	(1)	(2)	(3)	(4)
Community Rating	-0.1144***	-0.1003***	-0.0631***	-0.0498***
	(0.0217)	(0.0238)	(0.0172)	(0.0181)
GR Dep. Var. Mean	0.3261	0.3289	0.3533	0.3482
CR Effect Size (%)	-35.1	-30.5	-17.8	-14.3
R^2	0.0701	0.0962	0.1122	0.0984
Clusters	46	46	45	38
Observations	10,376,206	8,071,691	1,514,954	517,449

Panel C: Alternative Fixed Effects Models

	Border-Year	None	HSA	HRR
	(1)	(2)	(3)	(4)
Community Rating	-0.0957***	-0.0718***	-0.1015***	-0.0889*
	(0.0147)	(0.0183)	(0.0303)	(0.0479)
GR Dep. Var. Mean	0.3295	0.3283	0.3283	0.3283
CR Effect Size (%)	-29.0	-21.9	-30.9	-27.1
R^2	0.0868	0.0102	0.0930	0.0816
Clusters	215	46	154	25
Observations	3,448,525	3,448,525	3,448,525	3,448,525

Notes: The table reports impacts of community rating on Medigap enrollment for the following specifications: for border states, including those eligible for Medicaid, using an instrumental variable based on birth state, for Medicare beneficiaries living within alternative distances from the regulatory boundary (100 miles, 50 miles, 10 miles, 5 miles), and with alternative fixed effects models (border segment with year, none, Hospital Service Areas, or Hospital Referral Regions). Observations are at the individual-year level. Robust standard errors, clustered by border segment, are shown in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.