CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

HOW WOULD REDUCING THE PRICE OF OLDER WORKERS IMPROVE LABOR MARKET OUTCOMES BY SOCIOECONOMIC STATUS? EVIDENCE FROM HEALTH INSURANCE PREMIUM RESTRICTIONS

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Abstract

Older workers are increasingly realizing that extending their careers helps them improve their retirement preparedness, but they cannot work longer if employers do not hire or retain them. This study examines one way in which public policy has potentially made older workers more attractive to employers: the adoption of premium restrictions in the market for small-group employer-sponsored health insurance. The study uses data from the *Current Population Survey* from 1989-2013 to compare employment, small-firm employment, and earnings in states with varying degrees of premium regulation, and among workers of different educational backgrounds. The results indicate that employment of older workers is higher in states with stricter regulation, especially among those with at least a high school degree, but not primarily at small firms. Furthermore, the earnings gap between employees at large and small firms closes by more in tighter-regulated states, especially among the least-educated, but the gap closes for workers of all ages, not just older employees. These results suggest that policy reforms that act as wage subsidies may be effective in increasing job opportunities for older workers, but the spillover effects onto unintended targets – into large-firm employment, and among prime-age workers – make the effect of this regulation hard to evaluate conclusively.

Introduction

Older workers appear to be getting the message that they need to work longer; the average retirement age has increased by about two years over the last two decades (Munnell 2015). Even in the Great Recession, which saw a greater proportion of older Americans out of work, and for longer spells, than ever before, labor force participation rates for older individuals continued to climb (Munnell and Rutledge 2013). But participation rate increases without employment increases indicate excess supply for older workers at prevailing wages. Will these workers looking to extend their careers be able to find jobs? The question is particularly relevant for less-educated workers. These workers are already less able to find middle-skill jobs in their prime (Autor 2014). What can policymakers do to ensure that less-educated workers looking to stay in the workforce are attractive to potential employers?

Some economists have proposed policies that make older workers less expensive than younger workers, such as making Medicare a primary payer or allowing workers with 40 years of contributions to Social Security to be considered "paid up," which might encourage employers to hire older people (e.g., Goda, Shoven, and Slavov 2007, 2009). These policies sound promising, but have yet to be tried in the United States, and are not particularly targeted toward older workers of lower socioeconomic status.

One policy that has been tried in the United States is restricting premiums on health insurance. Hiring older workers, with their greater expected health costs, can raise employers' health benefit expenditures. This concern is especially acute at small firms, where adding one high-risk employee to the pool has a more substantial effect on average costs, and hence the firm's premiums, than at large firms.

Partly with this concern in mind, nearly every state passed regulations in the 1990s restricting how much premiums could vary across employees – which, by extension, restrict any one worker's effect on health insurance expenditures by employers. These regulations were expected to boost labor demand for older workers by lowering their benefit costs, and to increase labor supply by improving access to employer-sponsored health insurance.

This study examines the effect of these premium restrictions on employment overall, small-firm employment, and earnings at large and small firms, for workers of different educational backgrounds. The rollout of these regulations was gradual, and the regulations differed substantially between states, providing a natural experiment to evaluate how employers

(and their potential employees) respond to exogenous changes in the price of older workers. This evaluation required painstaking collection of nearly 25 years of state premium regulations from state commercial codes and disparate policy analyses. This database of premium regulations is merged with household data from the *Current Population Survey* (CPS) *Annual Social and Economic Supplement* conducted each March.

The results indicate that stronger premium restrictions are associated with higher overall employment among older individuals, but by only a precisely estimated small amount, and not primarily at small firms. Small-group premium regulation helps close the gap in earnings between workers at large and small firms but, contrary to expectations, workers of all ages appear to benefit; the evidence that the gap closes by more for older workers is fairly weak.

The estimated effects differ by educational attainment. Older individuals with only a high school degree appear to benefit most from premium restrictions – they see increases in both overall employment rates and small-firm earnings (relative to workers at large firms). Older high school dropouts at small firms are able to substantially close the earnings gap with their counterparts at large firms, but the effect on their employment rate is slightly negative. The opposite is true for college graduates: their employment rate increases (though not especially at small firms) while their large-to-small-firm earnings gap appears unaffected.

The paper is structured as follows. Section 2 provides background on premium restrictions. Section 3 reviews two spheres of the economic literature: studies that examine how the price of older workers affects their labor market outcomes, and studies that review the effects of premium restrictions and community rating. Section 4 describes the data and outlines the econometric model. Section 5 reviews the results. Section 6 concludes that small-group health insurance premium restrictions may help make older workers more attractive to potential employers. But spillover effects beyond the intended target of the regulation – higher employment overall but not at small firms in particular; relative earnings growth at small firms among workers of any age, not just older employees – make evaluating the overall impact difficult.

Employer-Sponsored Health Insurance Premium Regulations

One of the main deterrents in hiring an older worker is the possibility of an increase in health care premiums by insurance companies. Age and health status are commonly used to

increase premium costs as older and less healthy people are more likely to need and use medical services. Historically, insurance companies have been able to increase group premium costs based on demographic characteristics. However, over the years, state and federal restrictions have been imposed that reduce the degree to which this discrimination can occur.

Given the large role that employer-sponsored health insurance plays in the private sector, it is essential to consider when discussing discrimination against older workers. The popularity of employer-sponsored insurance is largely due to its ability to spread health costs and risk among a group of people. A subset of employer-sponsored insurance is the small-group market, consisting of employer groups ranging from 2 to 50 employees. Due to their size, employers in the small-group market are less able to spread risk among employees, thereby increasing the cost of insurance. This smaller, and more volatile, risk pool makes insurance companies less inclined to offer coverage to employers, and employers less inclined to provide benefits to their employees. Federal and state governments have enacted regulations in the small-group market to make health coverage more accessible and affordable. Yet smaller employers remain less likely to offer health benefits to their employees.

Early age discrimination laws focused on protecting older workers in interactions with employers more generally, rather than focusing on health costs in particular. The federal government passed the Age Discrimination in Employment Act (ADEA) in 1967, which prohibited employers from making hiring, discharging, and compensation decisions based on employee age.[1] Initially the ADEA applied to employees ages 40-65; was expanded in 1978 to include employees up to age 70; and extended to all workers ages 40 or older in 1987. The ADEA was enacted with the goal of reducing long-term unemployment among older workers. Notwithstanding the progress made by the ADEA, it did not impose any requirements on employee benefits, such as health insurance.

The 1990 Older Workers Benefit Protection Act (OWBPA) amended the ADEA to include an "equal cost or equal benefit" provision.[2] Under this provision, employers do not violate the ADEA if they pay the insurance provider the same amount per employee, even if that causes the older worker's premium contribution to increase or to have lesser benefits than a

[1] 29 U.S.C. § 621
[2] 29 U.S.C. §§623, 626, 630

younger employee.[3] In other words, employers must offer older workers the same benefits offered to younger workers, unless there is a cost justification.

The Health Insurance Portability and Accountability Act (HIPAA), passed on a federal level in 1996, mandated an employer charge all individuals in a group health plan the same premium regardless of health status.[4] In addition, HIPAA required small-group employer-sponsored health plans to adopt guaranteed issue and guaranteed renewal provisions. Guaranteed issue policies require insurance companies to offer access to health plans to all employers, regardless of the group's health status. Without a guaranteed issue policy, commercial insurers could refuse to cover groups with greater medical needs. Guaranteed renewal policies prevent insurers from cancelling coverage for a group based on their past medical claims or new diagnoses. By 1999, all states (except California) had adopted policies that complied with HIPAA.[5]

One limitation of HIPAA is that the regulation did not protect an employer from an overall group premium increase based on the presence of unhealthy employees in the group. Up until the 1990s, insurance companies set premiums for employer-sponsored health insurance plans using the characteristics of the firm's employees. Firms with a history of, or the prospect for, greater costs were charged more. Between 1990 and 1994, 45 states passed legislation to prevent drastic premium increases caused by medical underwriting.

Some states adopted "community rating" policies that prohibit insurers from varying premium costs due to health status or other group member characteristics. Pure community rating policies force a plan to charge the same premium to any policy holder. The insurer must apply an average of the lowest and highest group premium cost across all eligible group plans. Other states adopted modified community rating policies, which prohibit the use of medical underwriting, but permit premium variation for other group characteristics such as age, gender, tobacco use, industry class, geographic area, or family composition.

The majority of states adopted rate-band policies, which limit how much the insurer can vary premiums based on group characteristics, including health status. These provisions establish an acceptable range of premiums that an insurer can charge the most and least risky groups. For example, a rate-band ratio of 3:1 restricts the largest group premium to three times

[3] See EEOC Compliance Manual.
[4] 42 USC §702
[5] See U.S. DHHS (2000).

the base rate. Rate bands may apply to just health status factors or other group characteristics as mentioned above.

These laws were passed with the goal of standardizing health insurance premiums charged to small employer groups. When states began to pass legislation in the early 1990s, the National Association of Insurance Commissioners (NAIC) developed a model that states were encouraged to adopt. NAIC regulations prohibited rating by health status, imposed a 1.67:1 rate-band ratio for all other factors, and required guaranteed issue and guaranteed renewal provisions. A large proportion of states opted to implement NAIC provisions. However, as NAIC lacked authority to enforce any of its guidelines, legislation continued to be passed between 1990 and 2013 that further refined the laws on a state-by-state basis.

In 2014, the Affordable Care Act (ACA) standardized rating restrictions nationally by prohibiting the use of health status and restricting rating by age to a 3:1 ratio. Until this point, states held sole regulatory authority over rating restriction laws. Therefore, from 1989, when no states had enacted rating restriction policies, to 2013, the final year before federal oversight, insurance premiums varied widely depending on the state in which the insurer provided coverage.

Previous Literature

The relevant literature covers two main topics: the price of hiring and employing older workers, and the effect of premium restrictions on health insurance markets and labor market outcomes.

Price of Older Workers. Even as efforts to encourage longer worklives appear to be working, a major concern is whether demand for older workers will keep up with the growing supply. One way to increase demand is to lower the effective price of labor. Economists have proposed wage subsidies in other contexts to encourage hiring, most notably in the slow recovery from the Great Recession.[6] Adapting and extending these subsidies to other groups – in this case, older workers – who may face reluctance in the hiring market may make sense.

[6] This suggestion serves as an alternative to the more contentious prospect of raising the minimum wage, and has been championed by both left- and right-of-center economists (Blinder 2010; Delong 2010; Glaeser 2013; Pethokoukis 2013). Several tax credits were passed as part of stimulus bills during 2009-2010, including the Hiring Incentives to Restore Employment (HIRE) Act, which eliminated employers' payroll tax contribution for new employees in 2010. But take-up was limited (Klein 2010), and its nationwide implementation makes identifying its

Several countries have tried wage subsidies for older, usually lower-wage, workers with mixed results. Subsidies in Finland (Huttunen et al. 2010), Germany (Boockmann et al. 2007, Schunemann et al. 2011), and Spain (Garcia-Perez and Sanz 2009) have had minimal effects on employment. But Austria's wage subsidies – targeted at the long-term unemployed – have had more success in reducing the length of unemployment spells, with the largest effects among older job-seekers (Eppel and Mahringer 2012).[7]

Economists studying potential policies for older Americans tend to focus less on direct wage subsidies, and more on parameters of Social Security and Medicare that, if reformed, would act as a subsidy. One option is to reduce the implicit tax on wages for older workers by allowing them to opt out of the payroll tax (and associated benefit increases) after the Full Retirement Age (Burtless and Quinn 2002) or later. A slight variation of this idea is to automatically consider workers with 40 years of earnings contributions over some minimum threshold to be "paid up" (Goda, Shoven, and Slavov 2009). Beyond that point, neither employees nor employers would have to pay their share of the payroll tax. As no similar policy has been tried, the analysis in previous research is limited to simulations of the policy's potential effect, rather than an empirical evaluation in a real-world setting.

Several studies point out that Medicare's second-payer status artificially increases the price of Medicare-eligible employees, who employers nonetheless are required to include in their health insurance plan (Glied and Stabile 2001, Johnson 2003, and Goda, Shoven, and Slavov 2007). These employees would be willing to work for lower total compensation – demonstrated by the fact that the employer-sponsored insurance benefit is of only marginal value to them given the Medicare backstop, and yet they work – but the cost to the employer is the same as it is for workers who are under 65. Johnson (2003) suggests that making Medicare the primary payer would save as much as $1,500 per Medicare-eligible worker; while the savings is only about 4 percent of the median salary, the fixed cost of insurance is a much higher share of labor costs for lower-wage workers. Two studies find only mixed effects of second-payer status on employment and wages, but each study faces a substantial barrier: Glied and Stabile's (2001) results are complicated by lax enforcement of the second-payer status before 1995, and Goda, Shoven, and Slavov's (2007) estimates are confounded by coincidental earnings test changes.

impact difficult. Heaton (2012), however, finds a statistically significant increase in employment among disabled veterans eligible for hiring tax credits under the Work Opportunity Tax Credit.

[7] Taylor (2002) cites similar programs that target the near-elderly in Japan and Australia.

This study uses a different natural experiment to estimate the effects on employment and earnings directly, using a policy change that has predicted effects similar to direct wage subsidies. This natural experiment – the adoption of premium restrictions – was implemented at different times in different states and strictly enforced, and thus should be able to avoid the pitfalls faced by the two studies on Medicare as a second-payer.[8]

Effect of Premium Restrictions. The adoption of community rating and other regulations of employer-sponsored health insurance premiums have received a great deal of attention in the economics literature, because its state-by-state rollout provides the setting for a natural experiment.

Most of this literature has focused on the potential for adverse selection – that is, whether reducing the information on which insurers can set premiums has reduced coverage among low-risk groups (in this case, younger, healthier workers) or reduced coverage rates altogether (i.e., the market's "death spiral"). Buchmueller and DiNardo (2002) find that, after New York adopted pure community rating, the age distribution in the risk pool shifted more toward older employees than in the control state of Pennsylvania. Their focus is on this shift as evidence of adverse selection, but it is also consistent with greater employment among older workers. Still, their analysis of the labor market effects is limited, and they study only three states. Monheit and Schone (2003) and Simon (2005) focus on how employer-sponsored health insurance coverage rates respond to premium regulation, rather than the response in employment outcomes, but use a difference-in-differences methodology similar to ours.[9]

Though these studies do not focus on employment outcomes, their findings indicate that the differential in wage costs for older workers is potentially substantial. Adams (2007) estimates that New York's adoption of pure community rating reduced the young-vs.-old health cost gap by $2.08 per worker-hour in 1993 dollars (half of that from rising premiums for young

[8] An existing U.S. program, Alternative Trade Adjustment Assistance, provides wage subsidies to displaced workers ages 50 and over who find re-employment at jobs paying less than $50,000 per year. The subsidy is equal to half of the difference between their old and new jobs, up to $10,000, paid over a two-year period (U.S. Department of Labor: http://www.doleta.gov/tradeact/benefits.cfm). Research on the effects of the program appears to be scant (Baicker and Rehavi 2004), perhaps because the program is small.

[9] Other studies have examined how community rating affects the individual health insurance market (e.g., Lo Sasso and Lurie 2009). While individual buyers of health insurance might have a different reservation wage than those who are seeking a job with health insurance benefits, their cost to a potential employer is no different ex-ante, as the employer has to offer them health insurance if they offer plans to other employees.

workers and half from falling premiums for older workers), the equivalent of $3.35 per worker-hour in 2013 dollars, or 14 percent of the mean hourly wage of $24.15 in November 2013.

A smaller group of studies examine the employment effects of small-group health reform. Kaestner and Simon (2002) find no statistically significant effects on the number of weeks worked, wages, or employment in small vs. large firms. But this study did not focus on the higher-risk employees most likely to be directly affected by the small-group premium regulation. Kapur (2004) examines the difference in employment of unhealthy workers in small firms (relative to large firms, in a multinomial logit model) before the reforms in 1987 and after the reforms in 1996. She finds a difference in which health conditions matter: in 1987, small-firm employment is lower for workers with health conditions associated with high premiums but, in 1996, the only conditions that are associated with lower small-firm employment are those that would lead to the insurer denying coverage altogether, since the insurers lost the recourse of raising premiums for the riskiest policyholders.

The closest study to ours is Kapur (2003), which finds that small firm hiring rose for workers with an unhealthy family member (not necessarily themselves), but that these outcomes fell for older workers. Our study differs from Kapur's in several important ways. Kapur's study uses data from 1990-1998; ours updates the database of premium regulations through just prior to the implementation of the ACA in 2013. Kapur also discretizes health insurance regulations into categories based on strength; our econometric specification allows for a continuous relationship between the premium rate band and labor market outcomes. In addition, our econometric model focuses on older workers rather than the unhealthy – though the results for health presented in the robustness check section are similar –and includes state fixed effects to capture time-invariant differences between states that passed regulations of various strength.[10] Importantly, our study examines the potential consequences of premium restrictions on total employment and earnings, not just small-firm employment.[11] Our study also includes an analysis of the heterogeneity of the relationship between premium regulation and labor market outcomes by educational attainment.

[10] Kapur (2003) reports that her results are robust to the inclusion of state-specific trend variables; it is not clear if this specification duplicates the state fixed effects in our model.

[11] Kapur (2003) focuses on small-firm hiring, not small-firm employment more generally. That study also includes job mobility as a dependent variable, to determine whether premium restrictions eased "job lock" – the idea that workers stay in a suboptimal job to avoid putting their health insurance coverage at risk. Kapur finds evidence that job mobility is eased for workers with unhealthy family members, but not for older workers.

Data and Methodology

The paper uses data from the March Annual Social and Economic Supplement (ASEC) of the *Current Population Survey* (CPS) for 1999-2014, covering the 1989-2013 calendar years. The analysis is limited to individuals between ages 25-61 to capture the working-age population. It also excludes respondents living in Hawaii (a sample of 31,161 individuals), due to the state's unique health insurance legislation.[12] These criteria cut our CPS sample from 8,292,837 to 2,180,797 observations.

The research questions pertain to whether residents of states with small-group premium restrictions have better labor market outcomes; whether those outcomes differ for workers at small vs. large firms; and whether those outcomes by firm size differ for workers by socio-economic status (SES). The proxy for SES is a categorical variable for educational attainment: 1) less than a high school degree; 2) a high school degree and no more; 3) some college experience without a 4-year degree; or 4) at least a college degree. Some studies point out that the falling share of the population with less than a high school degree over the 20th century has altered the underlying health and, thus, the employability of this group (Bound, Geronimus, and Rodriguez 2014; Sanzenbacher et al. 2015). But most of the change in educational attainment occurred for earlier cohorts than ours; the share of our sample with less than a high school degree is roughly constant at 4-7 percent throughout the 1989-2013 period.

To examine how small-group premium restrictions relate to employment outcomes, our study requires comprehensive data on state rate-restriction laws. We compiled a dataset tracking the active premium restriction policies in each state and year between 1989 and 2013. The laws govern small-group fully-insured health plans, which are plans covered by a commercial insurance company.[13] The small-group market generally applies to employers with 50 or fewer employees, but may be restricted to groups with 25 employees or fewer, depending on state law.

The state rate-restriction data was collected from state legislative histories, legal databases, communication with state insurance departments, academic articles, and other

[12] Hawaii passed its Prepaid Health Care (PHC) Act in 1974, the first piece of state legislation that set minimum standards for employee health care coverage. In short, the Act required employers to provide health insurance to all eligible employees. Due to its PHC Act, Hawaii is the only state which has been exempted from ERISA provisions. For this reason, any amendments to Hawaii's state health insurance laws must go through federal court.

[13] Self-insured health plans, in which the employer assumes the cost and risk of covering medical claims, are governed by federal legislation and are not the focus of this study. Between 1996 and 2011, approximately 12 percent of employers with fewer than 50 employees opted to self-insure (EBRI 2012).

sources. We used annual data published by other organizations that documented state policies in individual years to cross-reference the data that we collected.[14] But, for most years in our sample period, the data were not available through previously published sources.

The analysis focuses on rate bands that proscribe the maximum ratio of premiums of unhealthy policyholders to healthy policyholders. Some states also set a maximum ratio of premiums of older to younger workers, as the ACA does (at 3:1) from 2014 onward, but these bands are rarer, and the record of the actual proscribed ratio is spottier. Only one state prohibited rate differences by age before the ACA made it illegal nationwide: New York, as part of adopting pure community rating in 1993 (Adams 2007). Regardless, because older workers are generally less healthy than younger workers, they stand to gain more from restrictions on unhealthy workers' premiums.

In addition to documenting whether or not states have active rate band laws (i.e., the extensive margin), we track the rate-band ratios permitted under state law (i.e., the intensive margin). A rate-band ratio of 1 (1:1) is the most restrictive policy, as the maximum premium is limited to the same value as the minimum. A rate-band ratio of 0 indicates that the state has no rate band law, and is therefore the least restrictive. Yet a rate-band ratio of 4:1, although larger in value, is less restrictive than a ratio of 2:1. Rather than using a measure that is non-monotonic in the strength of the restriction, our key variable is this ratio's inverse. A 4:1 ratio is exchanged with its inverse (0.25) and the 2:1 ratio with its inverse (0.5), so that a larger value reflects a more restrictive law. Taking the inverse of the ratio also constrains it within the [0, 1] range.

For most states, we were able to document when a rate band was adopted, but often the specific ratio could not be identified. In this instance, the ratio itself is marked as missing (and therefore not part of the regression sample), but the state and year is flagged as having a rate band. In other instances, we were able to identify a year that a state had a particular rate-band ratio, as well as a year it did not have that ratio, but the exact year in which the law itself was passed is unknown. For these states, we randomized the year between the two known dates to approximate the date it was enacted.

Table 1 lays out the timeline for when these small-group premium restrictions were implemented. In 1989, no state restricted small-group health insurance premiums, but by 1991,

[14] These sources include NAIC (2000; 2012), the Health Policy Tracking Service (1996-2000), Kaminsky (2008), Politico (2009), Kofman and Pollitz (2006), GAO (1992; 1995), Markus et al. (1995), National Women's Law Center (2008), and Kaiser (2013).

17 states had adopted some level of restriction, including 2 that prohibited any premium variation by health (Massachusetts and Vermont). By 1995, 46 out of the 50 states (not including Hawaii, but including DC) had adopted some restriction; at that point, the average ratio of highest to lowest premiums was 1.56:1. Thereafter, though some states changed their ratio, the national average ratio stayed fairly constant. In 2013, every state has some premium restriction in the small group market, but we categorize 16 of them as "weak" – a ratio between 1.86:1 and 4:1 – and the national average ratio is just over 1.5:1.[15]

The regression analysis – in which rate band is the key independent variable – focuses on three outcome variables. For the first outcome, an indicator for employment, we estimate a linear regression for individual *i* living in state *s* in year *t*:

$$Y_{ist} = \alpha_0 + \alpha_1 Band_{st} + \alpha_2 Ratio_{st} + \alpha_3 Age50_{it} + \alpha_{23} Ratio_{st} Age50_{it} \quad (1)$$
$$+ \gamma X_{it} + \psi_s + \tau_t + \varepsilon_{ist}$$

$Band_{st}$ is an indicator equal to one if state *s* has any rate band in year *t*. $Ratio_{st}$ is the maximum allowable ratio of healthy enrollees' premiums to unhealthy enrollees' premiums (and zero if the state lacks a rate band); a ratio closer to 1 implies a stronger restriction. The variables are controlled for separately to allow states that had made the decision to establish a weak rate band (i.e., with $Ratio_{st}$ close to zero), thereby permitting great variation in premiums by health, to differ from states that have not yet established a definitive policy on premium variation.

$Age50_{it}$ is an indicator equal to one if individual *i* is ages 50-61, which is also interacted with $Ratio_{st}$ in some specifications. Conceptually, older workers benefit more from restrictions on the cost of hiring unhealthy workers, so α_{23} is predicted to be positive and statistically significant. Younger workers might also benefit if they have health limitations, so the sign and significance of α_2 is ambiguous.

Equation (1) also includes a vector of personal characteristics, X_{it}: categorical variables for education and race: indicators for Hispanic ethnicity, marital status, and gender; and continuous variables for household income and the average state unemployment rate over year *t*.

Most specifications of the model also include state fixed effects, ψ_s, to capture time-invariant differences in states that adopted premium restrictions early or late. We report the

[15] A ratio of 1.86:1 is a rating restriction where the maximum premium variation is 30 percent above or below the average – hence, a 1.3/0.7 ratio, or 1.86.

earnings results separately without and with state fixed effects because states with strong premium restrictions differed substantially in their average earnings compared to states with weak premium restrictions. We do not report separate results without and with state fixed effects because these states' differences in employment rates were small. The model also includes year fixed effects, τ_t, to capture nationwide fluctuations in employment or earnings.

The second outcome variable reflects the increased incentive for small firms in particular to hire and retain older and/or less healthy workers, and for these workers to accept offers from smaller firms. One issue with small firm employment as the outcome variable is that the alternative is not clear: is the comparison group only workers at large firms, or is it both workers at large firms and the non-employed? To account for both alternatives, we estimate two different models.

The first approach estimates a multinomial logit regression to reflect the idea that workers may choose large employers, small employers, or non-employment.[16] The Y_{ist} variable in this case is a categorical variable with small-firm employment and non-employment as separate options; employment at a large firm is the reference condition. Small-firm employment is defined as working for an employer with fewer than 100 employees. Although most small-group rate restriction laws apply to employers with 50 employees or fewer, the firm-size variable in the CPS is not structured in a way that allows us to identify that subgroup without losing observations.[17] Due to the non-linearity of the multinomial logit model, we report marginal effects (i.e., mean derivatives of Y_{ist} with respect to each variable) and their standard errors; interaction effects also account for this non-linearity (Ai and Norton 2003).

The second approach estimates a model identical to equation (1), except that the dependent variable is $Small_{it}$, an indicator for working at a small firm at time *t*. In this approach, the sample is limited to the employed; because of this restriction, the only alternative to small-firm employment in this model is working at a large firm.

[16] We use multinomial logit rather than ordered logit because we do not assume that one firm size category is universally preferred to another. Kapur (2003) also uses multinomial logit for her main specification.
[17] The CPS ASEC grouped together all firms with 10 to 24 employees, and another category with 25 to 99 employees until March 2010. Starting in March 2011, these groups were reassigned: 10 to 49 employees in one category, 50 to 99 in another. Therefore, the only time-consistent firm size definition for the 1989-2013 period groups together all employers with 99 or fewer employees.

In either approach, small-firm employment should increase relative to large-firm employment by more when the rate-band ratio is stronger ($\alpha_2 > 0$), and this effect should be especially large for older workers ($\alpha_{23} > 0$).

The third outcome variable is log real annual earnings; if premium restrictions make older workers more attractive to employers, their wage offers should rise. The model is similar to equation (1), except that it is supplemented with further interactions with the indicator for small-firm employment, $Small_{it}$:

$$Y_{ist} = \beta_0 + \beta_1 Band_{st} + \beta_2 Ratio_{st} + \beta_3 Age50_{it} + \beta_4 Small_{it} \quad (2)$$
$$+ \beta_{23} Ratio_{st} Age50_{it} + \beta_{24} Ratio_{st} Small_{it}$$
$$+ \beta_{234} Ratio_{st} Small_{it} Age50_{it} + \gamma X_{it} + \psi_s + \tau_t + \varepsilon_{ist}$$

Conceptually, β_{24} should be statistically significant and positive – workers in small firms should benefit from higher wage offers by virtue of being less expensive to their employers. Also, because rate bands are binding only for the small group health insurance market, β_2 should be statistically indistinct from zero; otherwise, the estimate suggests a spillover effect onto large firms. The model also includes a triple interaction of $Ratio_{st}$, $Small_{it}$, and $Age50_{it}$; its coefficient, β_{234}, is expected to be positive and statistically significant, as older workers in small firms are particularly likely to benefit from strong premium restrictions.

Additional specifications include an indicator variable for bad health and its interaction with $Ratio_{st}$; in some specifications, the bad health indicator replaces $Age50_{it}$, and in others, both are included with a triple interaction of bad health, $Age50_{it}$, and $Ratio_{st}$. The earnings regressions in the robustness check section also include a quadruple interaction between fair or poor health, $Ratio_{st}$, $Small_{it}$, and $Age50_{it}$, to determine whether workers at small firms who are both older and less healthy earn more when the rate-band ratio is more restrictive. Bad health is defined as reporting fair or poor health on a five-point scale.[18] Unfortunately, these questions were added to the ASEC only in March 1996, so specifications that include this variable (and its interactions) are limited to 1995-2013; this period restriction eliminates the years when most of the rand bands were being introduced. Unhealthy workers are expected to benefit the most from strong premium restrictions, especially if they work in small firms and/or are 50 or older. But

[18] Results are similar when bad health's definition includes work limitations.

employers that fear the cost of compliance with premium restrictions may subtly discriminate against potentially unhealthy workers, which would lower their probability of being employed and their earnings; some researchers find a similar phenomenon after the Americans with Disabilities Act, for example.[19]

Results

Descriptive Statistics. Table 2 provides means for each variable for the full sample, and for residents of states with varying degrees of premium restriction: none, weak, strong, or community rating (i.e., prohibition on differences in premiums by health; not necessarily pure community rating). About half of the CPS sample is covered by employer-sponsored health insurance, and that proportion is roughly constant across the premium restriction categories. Approximately 26 percent of the sample is 50 or older; the average age and proportion ages 50 and older is similar in each of the three groups of states with premium restrictions, but the states with no restrictions are somewhat younger, likely because those observations are from earlier in the time period when the Baby Boomers were still fairly young.

The states that adopted community rating are better educated – 34 percent of all sample members from community rating states have college degrees, versus 26 percent of those with no rating restriction. This difference in college graduates is even greater at older ages (34 percent versus 22 percent). The healthiest residents are in states that adopted community rating, with a more pronounced difference among older individuals. Community rating states also have higher household income and earnings, including earnings at a small firm. The differences between states with strong (excluding community rating) and weak restrictions in health, education, and income are quite small, however. Gender and marital status are almost exactly equal across all restriction categories, but strong and community rating states are more diverse, in particular in their proportion of residents with Asian or Hispanic heritage.

The final section of Table 2 displays the differences in employment variables, one of our outcomes of interest. Overall, employment is similar across states regardless of the rate band category, but small firm employment is somewhat higher in states with strong restrictions or community rating. Similarly, full-time employment is constant across premium restriction

[19] For example, see DeLeire (2000) and Acemoglu and Angrist (2001), though subsequent researchers have found positive effects of the ADA and similar legislation on employment of the impaired (Kruse and Schur 2003; Jolls and Prescott 2004; Button 2016).

categories, but modestly higher in states in the strong or community rating categories. But the aforementioned summary statistics imply that states that adopted varying degrees of premium restrictions differ in some key characteristics. These differences motivate the regression analysis.

Employment. Table 3 reports the results of linear regressions for employment and small-firm employment. Each of these models includes state fixed effects to capture unobservable but time-consistent differences across states that adopted stronger or weaker premium restrictions. Results without state fixed effects are similar, because the correlation between employment rate and rate-band ratio is very small (a correlation coefficient of 0.07); these results are available upon request.

The first column of Table 3 presents estimates where the dependent variable is an indicator for employment. The estimates indicate that states with a rate band have a 1-percentage-point lower employment rate. Given that the mean employment rate is 77 percent, this estimate is a precisely-estimated small number, as expected. The magnitude of the ratio also does not appear to affect employment at younger ages – the point estimate for the ratio without interactions is small and statistically insignificant despite a small standard error. The interaction effect indicates that employment is, however, statistically significantly more likely among older individuals, but by only about 3 percentage points (from a mean of 70 percent) for a full-point increase in the ratio – the equivalent of moving from no rate band (ratio of zero) to community rating (ratio of one).[20] Furthermore, the R^2 is quite small.

Small-Firm Employment. The results in the first column of Table 3 indicate that employment increases by a small but precisely-estimated amount for older workers. But conceptually, the small-group premium restrictions should primarily affect small-firm employment; large firms, and their employees, are affected by the restrictions only indirectly, through changes in the relative attractiveness of large-firm employment or through spillover effects on their health insurance premiums.

The middle panel of Table 3 presents the multinomial logit estimates, where the base outcome in each case is large-firm employment. This model specification accounts for any potential changes in the likelihood of being unemployed, which the results in the leftmost

[20] More accurately, the model projects that moving from no rate band to community rating would increase employment by only 2 percentage points: 3 percentage points from the interaction of rate-band ratio and age-50-plus, plus essentially zero from the ratio coefficient itself, minus 1 percentage point for the rate band indicator.

column of Table 3 indicate are small but precisely-estimated. The multinomial logit estimates in the middle panel of Table 3, though, do not indicate a greater increase in small-firm employment than in large-firm employment.[21] The results are similar in a simpler one-equation model where small-firm employment is the dependent variable (rightmost column of Table 3), relative to large-firm employment (limiting the sample to the employed). As with the multinomial logit results, the simpler model indicates that small firm employment is not statistically significantly different in states with strong rate bands. Furthermore, the difference in small firm employment by rate band is no different for older or prime-age workers.

Figure 1 summarizes the results for employment in small and large firms by rate band strength. The full height of each bar is the predicted employment probability when every variable other than rate-band ratio and either age and/or health are at the sample mean. The height of the red area represents the predicted probability of working in a small firm; the remainder of the bar (the gray area) is the predicted probability of working in a large firm. The results are based on the multinomial logit estimates in the middle panel of Table 3.

The left panel of Figure 1 indicates that the predicted employment rate for older individuals increases as the strength of the premium restrictions increases, but only slightly: from 69 percent with no rate band to 72 percent with community rating. Small firm employment among individuals 50 and older also increases, but by even less: from 25 percent with no rate band or a weak ratio to 26 percent with either a strong ratio or community rating.

Prime-age individuals in the right panel of Figure 1 see no increase in employment as the ratio increases, and are actually more likely to be employed when the state has no rate band, though by only an extra percentage point. Small firm employment for prime-age people follows the same pattern. The lack of increase fits with the prediction of the model: employers are less likely to be concerned about how prime-age employees would affect their health insurance costs, so small-group insurance regulation has little effect on their employment prospects.

In summary, stronger premium restrictions are associated with statistically significantly higher overall employment for older individuals. This group is the most likely to benefit from regulation aimed at limiting the negative effect of hiring or retaining workers with high expected health costs, so the estimated increase provides some evidence of the effectiveness of rate

[21] The estimates in the unemployed equation of the multinomial logit model are consistent with the overall employment results: older workers are less likely to be non-employed when premiums are more restricted.

restrictions in encouraging employment. But the projected increase in employment is quite small – only a few percentage points. Moreover, the regulations directly impact only the small-group health insurance market, but the analysis finds no evidence of an increase in small-firm employment among potentially expensive individuals.

Earnings. Table 4 presents results from the regression of log earnings on the controls for premium restrictions and the interactions with indicators for age-50-plus and working at a small firm. The estimates are presented both without and with state fixed effects to show how accounting for time-invariant unobservable differences across states that implemented varying levels of restriction in premium setting alters the results. Employment rates did not differ between states with stronger or weaker premium restrictions; hence, we do not present the no-fixed-effects results for employment. But their earnings do: the correlation between a state's average earnings and its rate-band ratio is 0.32, and 0.39 excluding states without any rate band.

The importance of controlling for the non-random rollout of rate bands is evident in the first two rows of Table 4. The estimates without state fixed effects (column 1) imply a check-mark shape: residents of states with no rate band have fairly high earnings, as do those in states with community rating (where the ratio equals one), but earnings are lowest for states with very small ratios (such as 4:1, which translates to a ratio of 0.25). With state fixed effects, however, the rate band indicator's coefficient is small and statistically insignificant, while the ratio's coefficient is statistically significant and negative – the opposite sign from column 1. The fact that the check-mark shape disappears when we add fixed effects reinforces the pattern from Table 2: earnings are lowest in states that did implement rate bands, but only weak versions. After accounting for the underlying difference in states' implementation, the end result is that earnings have a modest but statistically significant negative correlation with earnings for prime-age workers at large firms.

Of greater interest, however, is how rate band regulation affects earnings for its intended target: workers at small firms, in particular older workers at those firms. Workers at small firms generally earn less, as seen in the coefficient of -0.34 for small firms (without interactions). The coefficient on the small-firm interaction is virtually the same magnitude as the coefficient on ratio without an interaction, but of opposite signs, suggesting that, overall, the ratio has no effect on the earnings of workers at small firms. But as the rate-band ratio gets larger, earnings at small firms improve on a relative basis: the earnings difference between large- and small-firm workers

closes by a statistically significant margin as the ratio increases. Older workers at small firms see a further increase in earnings as the ratio increases, but judging from the triple interaction coefficient, that boost is not statistically significant. Still, workers at small firms (of all ages) see no downward slope for earnings – or even a small positive one – as the premium restrictions gain strength, in contrast to the negative impact on earnings for workers at large firms. The R^2 is also larger than in the employment regressions.[22]

Figure 2 summarizes these results in graphical form (using the fixed effects results from column 2 of Table 6). Workers at large firms earn more across the board; the height of each bar shows the gap between large- and small-firm employees, which is always positive. But this gap shrinks as the rate band increases, and at a faster rate for older workers. The gap between large- and small-firm earnings for older workers is $13,400 with no premium restriction, and falls to $9,980 with community rating, a decrease of $3,420, or 26 percent of the no-rate-band gap. The gap for prime-age workers falls from $10,670 to $8,150, a decrease of only $2,520, though the percent change (23 percent) is only a little smaller because the gap for younger workers is generally smaller.

In summary, in states with stricter premium restrictions, earnings are lower for prime-age workers in large firms; these results contrast with the employment analysis, which saw no change for this group that was expected to be unaffected by the regulation. The gap in earnings between large- and small-firm employees shrinks for all workers – appropriately, for a regulation that reduced health care cost variation for small firms. The decrease in the gap was even larger for older workers who would have raised those firms' premiums the most, though not by a statistically significant margin. The rate band regulations modestly improved the earnings of its intended beneficiaries, in comparison to the declining earnings for prime-age workers.

Results by Socioeconomic Status. Table 5 presents the results of the employment, small firm employment (in a single equation, relative to large-firm employment), and earnings regressions separately by educational attainment, which is our proxy for socio-economic status. These results reveal some interesting patterns. Stricter premium regulation is associated with employment declines among older high school dropouts but increases among older members of the other three groups. In states with higher rate-band ratios, small firm employment is lower on

[22] These results do not differ with and without state fixed effects, suggesting that the states that passed stricter regulations had greater earnings overall, but not specifically for workers in a particular age or health group.

net for individuals with some college, while high school graduates and college graduates miss out on increases enjoyed by their prime-aged counterparts. The full sample estimates indicate that earnings are higher for small-firm employees in states with more restricted premiums, but lower for workers in large firms; the relative advantage for small-firm workers is greatest among the least-educated, and gets smaller with more education, culminating with no statistically significant difference in earnings for college graduates.

In summary, the group of older workers that benefits most from premium restrictions is high school graduates, who see increases in both earnings at small firms (relative to workers in large firms) and in overall employment. Individuals with some college experience see both of these increases, though to a lesser magnitude; they also see declining small firm employment. High school dropouts see employment declines but earnings increases, while college graduates see employment increases but no change in earnings.

Because premium restrictions are most likely to affect workers who are offered health benefits – who generally work full-time – we estimate separate results (available upon request) where the dependent variable is either full-time employment (relative to part-time employment) or small-firm full-time employment (relative to all other employment). For the full sample and the groups with at least a high school degree, a stricter rate-band ratio is associated with a statistically significant increase in employment, relative to prime-age workers. Older high school dropouts, however, have statistically significantly lower full-time employment, and full-time employment at small firms, in states with stricter rate bands.

Results Using Fair or Poor Health. The above results use age as a proxy for health. For insurance contracting, older workers are seen ex-ante as bad risks, so this proxy choice is largely appropriate. But clearly not all workers age 50-61 are unhealthy, and unhealthy workers of all ages benefit from premium restrictions. Appendix Tables A1-A3 report results where the age-50-plus indicator is either replaced by an indicator for fair or poor health, or interacted with the fair or poor health indicator. In addition, because health is available only in the 1995-2013 period, each table's first column re-estimates the age-50-plus regression for the shorter period.

The estimated coefficients and interaction effects involving health exhibit similar patterns to the age-50-plus regressions. The one exception is the earnings regressions: they no longer show a downward trend in earnings for prime-age workers at large firms as the ratio increases. Instead, the gap between large and small firms stays relatively constant with changes in the ratio.

The smaller change in the 1995-2013 period may be due the fact that, by 1995, 46 states (not including Hawaii, but including DC) had already adopted some form of premium restrictions. The lesser degree of rate-band changes makes earnings changes smaller and harder to detect. Finally, in all specifications, the interaction of the rate-band ratio, fair or poor health, and age-50-plus is not statistically significant, which implies that workers who are both older and unhealthy do not have appreciably worse outcomes than workers who are either old or unhealthy.

Conclusions

The labor supply of older workers appears to be increasing, but whether labor demand will keep up remains a concern; older workers they cannot work longer if no jobs are available. While some proposed policies to increase the attractiveness of older workers remain abstract, one actually implemented policy has had the potential to improve labor market outcomes at older ages. This study examines that policy – health insurance premium regulation in the small-group market – to determine the extent to which states that imposed stricter regulation saw greater employment and earnings overall, and in small firms in particular. The study further compares how this policy affected better- and less-educated workers.

The results indicate that stronger premium restrictions are associated with higher overall employment for individuals who are either older or unhealthy, though not both. But the projected increase in employment is only a few percentage points, and it is not concentrated in small firms, as would be expected. Employment increases with the rate-band ratio at a precisely estimated small rate for older workers with a high school degree or more, but actually declines for older workers (relative to prime-age workers) with less than a high school degree.

Earnings, in contrast, respond positively to small-group premium regulation. Workers at small firms close a statistically significant and substantial amount of their earnings gap with large-firm employees as the rate-band ratio increases. In contrast to the employment results, less-educated workers see the large-versus-small earnings gap close by more. The gap closes somewhat more for older workers, but not by a statistically significant amount.

These results suggest that small-group health insurance premium regulation may help make older workers more attractive to potential employers. Older high school graduates benefit the most from the restrictions on premium setting, seeing relative increases in employment and earnings relative to prime-age workers. The regulations are a mixed blessing for older high

school dropouts, who see employment declines (relative to prime-age workers) but large earnings increases.

But the premium restrictions appear to be poorly targeted: overall employment may increase, but small-firm employment does not increase substantially, or even by a statistically significant small amount, for any group of older workers. And earnings increases (relative to large-firm employees) are enjoyed by small-firm employees of all ages, not just older workers at those firms. These results may indicate that health insurance premium regulation in one market – in this case, at small employers – spills over into workers affected by other markets, or it could indicate a limitation with the design of the natural experiment.

The nationwide rollout of further small-group premium regulation under the ACA will likely not help improve the precision of similar estimates. But its effect on employment outcomes will certainly be worth watching. The results in this paper indicate that workers at small firms – particularly the less-educated – may benefit from higher earnings, but older workers are not likely to see a disproportionate boost to their attractiveness to employers.

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Table 1. *Distribution of State Rate Restriction Policies, 1989-2013*

	1989	1991	1995	2000	2013
Community rating					
% sample	0.0%	4.8%	28.1%	23.5%	25.2%
No. states	0	2	13	11	12
Strong					
% sample	0.0	19.6	50.7	50.9	50.1
No. states	0	13	26	25	20
Weak					
% sample	0.0	5.5	11.4	18.2	24.7
No. states	0	2	7	11	16
None					
% sample	100.0	70.2	9.8	7.5	0.0
No. states	50	30	4	3	0
Total states with known ratio	50	47	50	50	48
Avg. ratio	----	4.35	1.56	1.57	1.51

Note: Totals exclude HI and includes DC. 1991 rate band data is missing for CO, CT, and OR, while 2013 rate band data is missing for DC and PA. "Community rating" refers to a 1:1 rate-band ratio, "Strong" includes ratios between 1.2:1 and 1.67:1, and "Weak" includes ratios between 1.86:1 and 4:1.
Source: Authors' calculations from the *Current Population Survey* (CPS).

Table 2. *Descriptive Statistics for Full and Rate Band Subsamples*

	Full sample	None	Weak	Strong	CR
Race					
White	83%	84%	85%	81%	83%
Black	11	12	9	11	10
Asian	4	2	3	5	5
Other	2	1	3	3	2
Hispanic origin	15%	10%	9%	20%	13%
Gender					
Male	48%	48%	48%	48%	48%
Female	52	52	52	52	52
Marital Status					
Married	67%	67%	68%	67%	66%
Not Married	33	33	32	33	34
Health Status					
Share with fair or poor health	11%	11%	12%	11%	10%
Health Status 50+					
Share with fair or poor health	18%	18%	19%	19%	16%
Education					
Less than high school	5%	6%	3%	6%	4%
High school	39	46	41	38	36
Some college	27	22	29	28	25
College graduates	29	26	26	28	34
Education 50+					
Less than high school	6%	9%	4%	7%	5%
High school	41	50	43	38	37
Some college	25	18	28	27	24
College graduates	28	22	25	28	34
Income/wealth					
Average annual earnings	$37,800	$35,718	$36,969	$36,715	$42,185
Average household income	$44,997	$42,813	$43,084	$43,783	$50,611
Average small firm earnings	$36,020	$32,130	$36,629	$35,113	$40,088
Employment					
Employed	77%	77%	77%	77%	78%
Employed- small firm	42	41	40	43	43
Employed- FT	86	86	86	86	85
Employed- small firm, FT	34	33	33	35	34
Age	41.9	40.9	42.2	41.8	42.3
Age 50+	26%	23%	27%	26%	27%
Covered by employer-sponsored health insurance	49%	52%	50%	48%	50%
Sample size	2,150,047	345,552	391,545	941,465	471,485

Note: Health status and small firm variables are based on a smaller sample size than listed above due to the availability of data. These results exclude those living in Hawaii. "CR," or community rating, refers to a 1:1 rate-band ratio, "Strong" includes ratios between 1.2:1 and 1.67:1, and "Weak" includes ratios between 1.86:1 and 4:1.
Source: Authors' calculations from CPS.

Table 3. *Regression Results Estimating Employment Outcomes, 1989-2013*

	(1)	(2)		(3)
	Employed	Multinomial logit, firm size		Small firm employment
		Small	Unemployed	
Rate band	-0.01***	-0.002	0.01***	-0.002
	(0.00)	(0.00)	(0.00)	(0.00)
Rate-band ratio	0.004	0.001	-0.01***	0.001
	(0.00)	(0.01)	(0.00)	(0.01)
50+	-0.12***	-0.02***	0.11***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Ratio*50+	0.03***	-0.002	-0.04***	-0.002
	(0.00)	(0.00)	(0.00)	(0.00)
Sample size	2,150,047	2,150,047		1,660,188
R-squared	0.06	0.04		0.03

Note: Statistically significant at 10-percent (*), 5-percent (**), or 1-percent level (***). Includes state and year fixed effects and controls for demographic variables such as gender, household income, education, race, Hispanic origin, marital status, and state unemployment rate. These results exclude observations of those living in Hawaii.
Source: Authors' calculations from the CPS.

Table 4. *Earnings Regression Results, 1989-2013*

	(1)	(2)
	No state FE	State FE
Rate band	-0.17***	0.01
	(0.00)	(0.01)
Rate-band ratio	0.20***	-0.07***
	(0.01)	(0.01)
Small firm	-0.34***	-0.34***
	(0.00)	(0.00)
50+	0.12***	0.12***
	(0.00)	(0.00)
Ratio*Small firm	0.07***	0.07***
	(0.01)	(0.01)
Ratio*50+	0.005	0.000
	(0.01)	(0.01)
Small firm*50+	-0.05***	-0.05***
	(0.01)	(0.01)
Ratio*Small firm*50+	0.02	0.02
	(0.01)	(0.01)
Sample size	1,660,188	1,660,188
R-squared	0.21	0.21

Note: Statistically significant at the 1-percent level (***). Regression (2) includes state fixed effects. All regressions include year fixed effects and controls for demographic variables such as gender, household income, education, race, Hispanic origin, marital status, and state unemployment rate. These results exclude observations of those living in Hawaii. Does not include health status controls.
Source: Authors' calculations from CPS.

Table 5. *Regressions by Educational Attainment, 1989-2013*

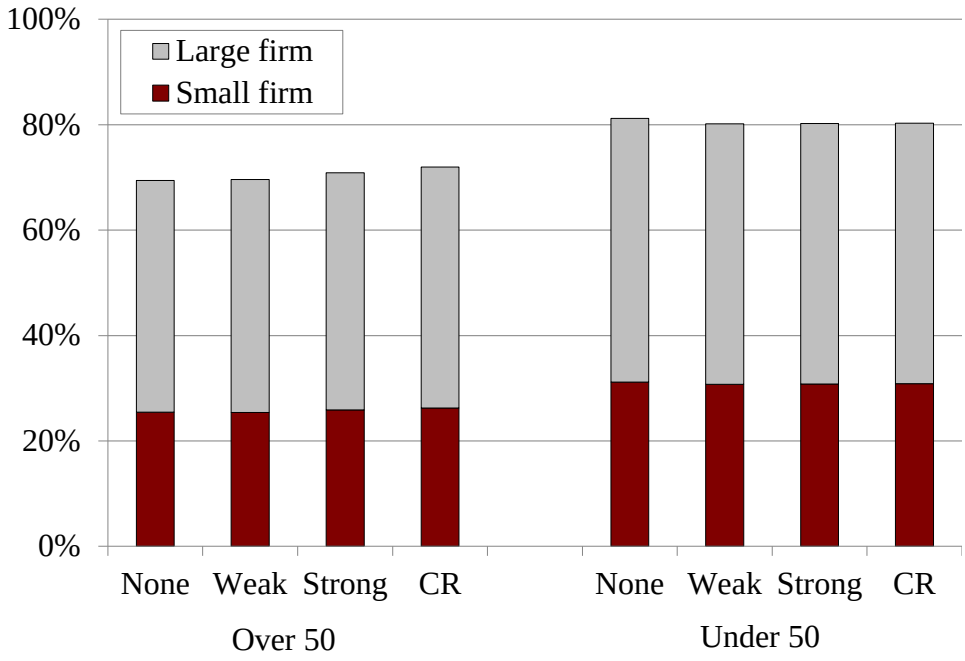
	(1)	(2)	(3)
	Employment	Small firm employment	Earnings
Less than high school			
Rate band	0.02	-0.003	0.11**
	(0.02)	(0.02)	(0.05)
Rate-band ratio	0.04**	-0.01	-0.26***
	(0.02)	(0.03)	(0.06)
50+	-0.08***	-0.05***	0.24***
	(0.01)	(0.01)	(0.03)
Ratio*50+	-0.03***	-0.01	-0.14***
	(0.01)	(0.02)	(0.05)
Small firm			-0.29***
			(0.02)
Ratio*Small firm			0.15***
			(0.03)
Small firm*50+			-0.14***
			(0.04)
Ratio*Small firm*50+			0.08
			(0.06)
Sample size	106,539	62,229	62,229
R-squared	0.14	0.04	0.12
High school only			
Rate band	-0.02***	-0.01	0.04***
	(0.01)	(0.01)	(0.01)
Rate-band ratio	0.01	0.02**	-0.14***
	(0.01)	(0.01)	(0.02)
50+	-0.14***	-0.03***	0.10***
	(0.00)	(0.00)	(0.01)
Ratio*50+	0.04***	-0.01**	0.03**
	(0.00)	(0.01)	(0.01)
Small firm			-0.36***
			(0.01)
Ratio*Small firm			0.13***
			(0.01)
Small firm*50+			-0.04***
			(0.01)
Ratio*Small firm*50+			0.002
			(0.02)
Sample size	845,890	613,963	613,963
R-squared	0.04	0.02	0.13

Table 5. *Regressions by Educational Attainment, 1989-2013* (cont'd)

	(1)	(2)	(3)
	Employment	Small firm employment	Earnings
Some college			
Rate band	-0.01	0.02**	0.002
	(0.01)	(0.01)	(0.02)
Rate-band ratio	-0.01	-0.03**	-0.08***
	(0.01)	(0.01)	(0.02)
50+	-0.11***	-0.01**	0.13***
	(0.00)	(0.00)	(0.01)
Ratio*50+	0.02***	-0.01**	0.004
	(0.01)	(0.01)	(0.02)
Small firm			-0.34***
			(0.01)
Ratio*Small firm			0.07***
			(0.01)
Small firm*50+			-0.04**
			(0.02)
Ratio*Small firm*50+			0.02
			(0.03)
Sample size	577,944	461,173	461,173
R-squared	0.03	0.01	0.12
College+			
Rate band	-0.03***	-0.02**	-0.01
	(0.01)	(0.01)	(0.01)
Rate-band ratio	0.02***	0.02**	0.01
	(0.01)	(0.01)	(0.02)
50+	-0.08***	0.02***	0.12***
	(0.00)	(0.00)	(0.01)
Ratio*50+	0.01***	-0.01*	-0.01
	(0.00)	(0.01)	(0.01)
Small firm			-0.32***
			(0.01)
Ratio*Small firm			0.02
			(0.01)
Small firm*50+			-0.05**
			(0.02)
Ratio*Small firm*50+			0.032
			(0.03)
Sample size	619,674	522,823	522,823
R-squared	0.04	0.01	0.12

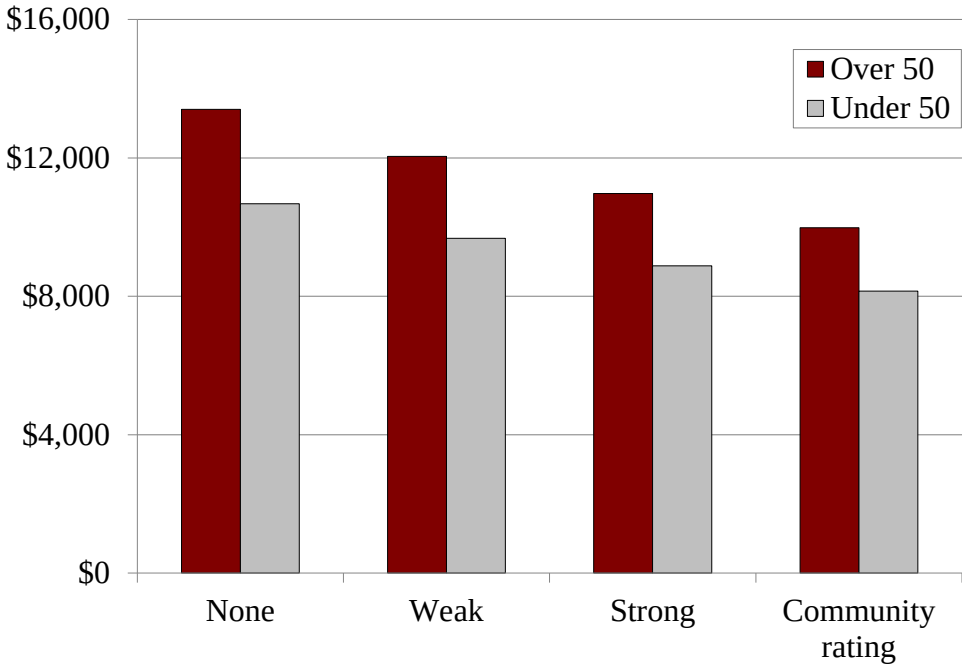
Note: Statistically significant at 10-percent (*), 5-percent (**), or 1-percent level (***).
Source: Authors' calculations from the CPS.

Figure 1. *Average Predicted Employment Rate by Rate Band Strength and Age, 1989-2013*



Notes: "Community rating" refers to a 1:1 rate-band ratio, "Strong" includes ratios between 1.2:1 and 1.67:1, and "Weak" includes ratios between 1.86:1 and 4:1. Includes year fixed effects and demographic variables such as education, race, and marital status. These results exclude observations of those living in Hawaii. Does not include health status controls. All other variables are assigned their sample mean.
Source: Authors' calculations based on data from the CPS.

Figure 2. *Predicted Gap between Average Small and Large Firm Earnings, by Age Group and Rate Band Strength, 1989-2013*



Notes: "Community rating" refers to a 1:1 rate-band ratio, "Strong" includes ratios between 1.2:1 and 1.67:1, and "Weak" includes ratios between 1.86:1 and 4:1. Includes year fixed effects and demographic variables such as education, race, and marital status. These results exclude observations of those living in Hawaii. Does not include health status controls. All other variables are assigned their sample mean.
Source: Authors' calculations based on data from the CPS.

Table A1. *Regression Results Estimating Employment Outcomes, 1995-2013*

	(1)	(2)	(3)
Rate band	-0.02***	-0.02***	-0.02***
	(0.01)	(0.00)	(0.00)
Rate-band ratio	0.01	0.02**	0.01
	(0.01)	(0.01)	(0.01)
50+	-0.11***	-0.06***	-0.06***
	(0.00)	(0.00)	(0.00)
Ratio*50+	0.02***		0.01***
	(0.00)		(0.00)
Unhealthy		-0.35***	-0.32***
		(0.00)	(0.01)
Ratio*Unhealthy		0.03***	0.03***
		(0.01)	(0.01)
Unhealthy*50+			-0.06***
			(0.01)
Ratio*Unhealthy*50+			-0.02*
			(0.01)
Sample size	1,720,257	1,720,257	1,720,257
R-squared	0.06	0.12	0.12

Note: Statistically significant at 10-percent (*), 5-percent (**), or 1-percent level (***). Includes state and year fixed effects and controls for demographic variables such as gender, household income, education, race, Hispanic origin, marital status, and state unemployment rate. These results exclude observations of those living in Hawaii. CPS health status variable is only available from 1995 forward.
Source: Authors' calculations from the CPS.

Table A2. *Regression Results Estimating Small or Large Firm Employment, Conditional on Any Employment, 1995-2013*

	(1)	(2)	(3)
Rate band	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)
Rate-band ratio	-0.01	-0.01	0.00
	(0.01)	(0.01)	(0.01)
50+	-0.01***	-0.02***	-0.01***
	(0.00)	(0.00)	(0.00)
Ratio*50+	-0.01**		-0.01**
	(0.00)		(0.00)
Unhealthy		0.02***	0.03***
		(0.01)	(0.01)
Ratio*Unhealthy		-0.01	-0.01
		(0.01)	(0.01)
Unhealthy*50+			-0.01
			(0.01)
Ratio*Unhealthy*50+			-0.002
			(0.02)
Sample size	1,330,099	1,330,099	1,330,099
R-squared	0.03	0.03	0.03

Notes: Statistically significant at 10-percent (*), 5-percent (**), or 1-percent level (***). Includes state and year fixed effects and controls for demographic variables such as gender, household income, education, race, Hispanic origin, marital status, and state unemployment rate. These results exclude observations of those living in Hawaii. CPS health status variable is only available from 1995 forward.
Source: Authors' calculations from CPS

Table A3. *Earnings Regression Results, with Health Status, 1995-2013*

	(1)	(2)	(3)
Rate band	-0.04***	-0.04***	-0.04***
	(0.01)	(0.01)	(0.01)
Rate-band ratio	-0.01	-0.002	0.000
	(0.02)	(0.02)	(0.02)
Small firm	-0.27***	-0.27***	-0.26***
	(0.01)	(0.01)	(0.01)
50+	0.12***	0.12***	0.14***
	(0.01)	(0.00)	(0.01)
Ratio*Small firm	0.000	0.000	-0.004
	(0.01)	(0.01)	(0.01)
Ratio*50+	-0.01		-0.01
	(0.01)		(0.01)
Small firm*50+	-0.05***		-0.04***
	(0.01)		(0.01)
Ratio*Small firm*50+	0.01		0.02
	(0.02)		(0.02)
Unhealthy		-0.35***	-0.37***
		(0.02)	(0.02)
Ratio*Unhealthy		0.03	0.05*
		(0.02)	(0.03)
Small firm*Unhealthy		-0.07**	-0.07**
		(0.03)	(0.03)
Ratio*Small firm*Unhealthy		0.002	0.03
		(0.04)	(0.05)
Unhealthy*50+			0.06*
			(0.03)
Small firm*Unhealthy*50+			0.02
			(0.05)
Ratio*Unhealthy*50+			-0.06
			(0.05)
Ratio*Small firm*Unhealthy*50+			-0.07
			(0.08)
Sample size	1,330,099	1,330,099	1,330,099
R-squared	0.21	0.21	0.21

Notes: Statistically significant at 10-percent (*), 5-percent (**), or 1-percent level (***). Includes state and year fixed effects and controls for demographic variables such as gender, household income, education, race, Hispanic origin, marital status, and state unemployment rate. These results exclude observations of those living in Hawaii. CPS health status variable is only available from 1995 forward, therefore results are presented for 1995-2013.
Source: Authors' calculations from the CPS.

Appendix A. State Laws Pertaining to Small-Group Premium Rate Restrictions

Alabama Insurance Reg. § 482-1-116-.05
Alaska Stat. § 21-56-120
Arizona Rev. Stat. § 20-2311
Arkansas Code § 23-86-204
California Insurance Code § 10714
Colorado Rev. Stat. § 10-16-105(8.5)
Connecticut Gen. Stat. § 38a-567
Delaware Code Title 18 § 7205
District of Columbia Code § 31-3311.02
Florida Stat. § 627.6699(6)
Georgia Code § 33-30-12
Hawaii Rev Stat. § 393
Idaho Code § 41-4706
215 ILCS (Illinois Compiled Statutes) 93/25
Indiana Code § 27-8-15-16
Iowa Code § 513B.4
Kansas Stat. § 40-2209h
Kentucky Rev. Stat. § 304.17A-0952
Louisiana Rev. Stat. § 22:228.6
Louisiana Rev. Stat. § 22:1095
Maine Rev. Stat. Tit. 24-A § 2808-B
Maryland Insurance Code § 15-1205
Massachusetts General Laws Ch. 176J § 3
Michigan Comp. Laws § 500.3705
Minnesota Stat. § 62L.08
Mississippi Code § 83-63-7
Missouri Stat. § 379.936
Montana Code Ann. § 33-12-1809
Nebraska Rev. Stat. § 44-5258
Nevada Rev. Stat. § 689C.230
New Hampshire Rev. Stat. Ann. § 420-G:4
New Jersey Stat. Ann. § 17B:27A-25
New Mexico Stat. § 59A-23C
New York Insurance Law § 3231
North Carolina Gen. Stat. Ann. § 58-50-130
North Dakota Century Code § 26.1-36.3
Ohio Rev. Code § 3924
Oklahoma Code § 36-6515
Oregon Rev. Stat. § 743.737

Pennsylvania Code 31 § 89.83
Rhode Island Gen. Laws § 27-50-5
South Carolina Code Ann. § 28-71-940
South Dakota Codified Laws § 58-18B-3
Tennessee Code Ann. § 56-7-2209
Texas Insurance Code Ann. § 1501.204
Utah Code Ann. § 31A-30-106
Vermont Stat. Ann. Tit. 8 § 4080
Virginia Code § 38.2-3433
Washington Rev. Code § 48.21.045
West Virginia Code § 33-16D-5
Wisconsin Stat. § 635.05
Wyoming Stat. § 26-19-304

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