Can Public Health Insurance Make People More Productive?

Chandler Zachary
ECON 7661
CU Denver

Submitted May 11, 2020

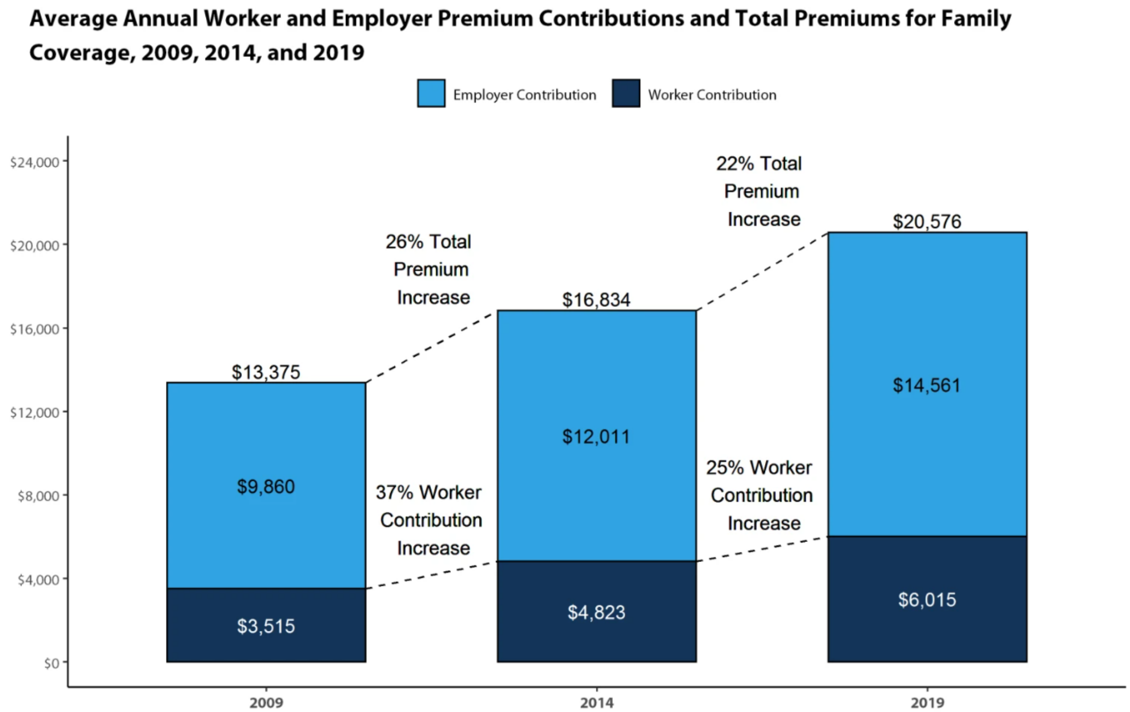
1 Introduction

Labor productivity is a major indicator of economic activity. Measures of labor productivity and costs are published by the Bureau of Labor Statistics eights times each year, and individual firm data on productivity can be used to project activity at every level of the economy. Labor productivity measures output per hours worked and indicates efficiency of labor at converting resources and intermediate goods into products and services. Holding output constant, reducing hours worked improves productivity. Holding hours worked constant, improving efficiency increases output. Holding wages constant, increasing productivity can reduce labor costs. If labor costs are allowed to increase, increasing productivity can offset the increase in wages and reduce inflationary pressure.[1] These dynamics are not fully visible when considering partial effects on labor supply but nevertheless are important determinants of economic activity. Therefore, understanding changes in productivity is important for evaluating the full range of effects on a whole economy when its labor market changes, such as in response to a nationwide health policy, the subject of the present proposal.

Labor productivity is affected by human capital investments and expenditures. If health investments and healthcare costs translate into improvements in human capital or reductions in human capital depreciation, then it becomes important to understand the link between healthcare and labor productivity. Figure 1 is an illustration of the price magnitude of this link for firms. The Kaiser Family Foundation reports that firms' contributions to employee health insurance premiums are not only larger than employees', they are increasing at twice the rate of employee contributions since 2009. Undoubtedly, some portion of this increase beyond rising costs of insurance is attributable to the Patient Protection and Affordable Care Act (ACA) which compelled employer contributions to health insurance through increased premiums in group plans and subsidized premiums in the state exchanges in the absence of a group plan. Firms may respond by hiring fewer full-time workers or reallocating resources to more capital and higher skilled workers, thereby reducing overall firm size and the premium

[1] Cost-push inflation

Figure 1



Source: KFF Employer Health Benefits Survey, 2019; Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 2009 and 2014.

payments and tax incidence. By contrast, viewed as an investment in human capital, if firms know that their investment will show improving returns in productivity, they may be more favorably disposed to public health insurance policy expansion.

The effects among individuals in response to the ACA are muddied by underlying individual preferences for health insurance, health behaviors, preferences for full- and part-time work, and preferences for changing jobs. One channel for translating health insurance into worker productivity enhancements is the resorting of individuals into better skill matches when cutting the tether to employer-sponsored health insurance enables job mobility. Protection from financial risk may encourage people to search for jobs more suited to their current skills or to shift their financial resources to improving their skills. These actions can translate into greater productivity. This points to a phenomenon the literature calls "job lock." Job lock occurs when a person wants to leave a job to search for a better skill match or take extended leave but is prohibited by the need for health insurance which is usually provided by the employer. A sufficient number of individuals suffering job lock constrains productivity if they could otherwise find better skill matches without the tether to a particular employer for health insurance.

My research question is to uncover the aggregate effects on productivity of expanded health coverage via the ACA. I propose that, in light of decreased financial risk from the cost of health care by making health insurance available without an employer will cause people to seek to improve skills and skill matches. This result can be seen in improved productivity throughout the economy. My research can further illuminate the literature on job lock, which I will discuss in more detail below. I assert that, if employers recognize that their investment in the human capital of workers translates into greater productivity, they will be more receptive to subsidizing insurance premiums via group plans or state exchanges whether it benefits them directly or indirectly.

My research fills a gap in the literature on the labor market effects of the ACA. To date, Congressional Budget Office (2014) and Harris and Mok (2015) model the long-term effects of expanded health insurance on labor supply based on tax penalties and subsidies incurred by employers. These estimates have been improved by other researchers, for instance Gallen and Mulligan 2018, who use a general equilibrium model of households and firms, but this still relies solely on taxes. Kolstad and Kowalski (2016) offer a retort to tax elasticities by building a detailed labor market model to demonstrate that the combined individual and employer mandates in the ACA are more efficient at reducing deadweight loss relative to tax policy. A wealth of other literature, which I discuss below, explores the effects on labor supply and job mobility of health insurance expanded by the ACA and other federal and state programs. However, none of this work, to my knowledge, attempts a view toward an economy-wide measure of impact such as productivity. As I have outlined above, because productivity exerts such an influence on economic activity, plenty remains to be explored here.

2 Literature Review

A good way to begin establishing context is with a discussion of Madrian (1994) and job lock. Broadly speaking, whenever an individual would like to leave one job for another but can not because the health insurance in the subsequent job is inferior or because there would be no coverage during a period of unemployed job search, this individual experiences job lock. Madrian (1994) tests for the presence of job lock by examining cohorts of individuals who are likely to stay at their jobs to keep their employer-sponsored insurance even if they believe a better skill match is available. These cohorts are men with no alternative coverage to their employer plans, married men with children, and married men with pregnant wives and no children.

Using data from the 1987 National Medical Expenditure Survey and a random effects probit model, the author estimates the degree of job lock as the percent reduction in job mobility in the treatment group relative to the control group in each cohort. The data observe respondents' employment at baseline, seven, and 15 months. Job mobility is determined by whether the respondent is voluntarily at a different job from the previous observation month. Random effects are used to control for unobserved job- changing preferences that may result in correlated errors. The author estimates 26% reduction in job mobility among men with no alternative coverage options to their employer plans and a 31% reduction in job mobility among married men with no children whose wives are pregnant. The result for family size is easier to interpret at a comparison of family sizes. For instance, the author estimates a 25% reduction in mobility of a married man with four children compared with a married man with two children. These findings suggest a non-trivial degree of job lock in the absence of alternative coverage. It is important to consider that the treatment and comparison groups may not be representative of working people in the decade from 2010 to 2020 (i.e. - post ACA). Changes in technology, employment preferences, preferences for marriage and family size, and geographic mobility to obtain employment, among other things, are potentially different enough from the 1987 data that this study is less representative. My research question will update these findings, albeit in the setting of productivity and not necessarily with respect to these subgroups.

Another contribution to the health insurance and labor supply literature is Gruber and Madrian (1997). This study uses two- and three-difference estimation on panel data from the 1984-1988 Survey of Income and Program Participation (SIPP) to estimate the effects of continued health insurance coverage mandated by the Consolidated Omnibus Reconciliation Act of 1985 (COBRA). Passed in 1985, COBRA denied tax advantages to employers who did not make health insurance available to employees upon separation. Among the authors' findings relevant to my research question is an increase in job mobility. The authors find a 14% increase in the likelihood of separating in a given wave.[2] With their fully specified three-difference model using people who are ineligible for continuing coverage because their employers did not have health insurance plans as the unaffected group, they find weak evidence of a reduction in unemployed individuals dropping coverage between jobs. The authors speculate that mandated continuation coverage may show stronger effects if it were more affordable.

On a sample restricted to individuals who find work after various intervening periods of unemployment, the authors present a variety of findings. For individuals who are unemployed longer than one year, the effect of mandated coverage is an increase of 9.4 percentage points (19% relative to baseline) in the likelihood of continued insurance, and the effects are nearly zero and insignificant for individuals with 12 months or less of unemployment. Since COBRA legislation mandates coverage for up to 18 months after separation, the authors take these findings as evidence that the mandate targeted the correct population: the longer-term unemployed. The authors find an average 6.92% increase in re-employment earnings, conditioned on being re-employed, for 1-15 months of unemployment with an 8.11% increase at 8-11 months and a 10.7% increase at 12-15 months after separation, respectively. Taken together, these provide evidence that productivity is throttled by job lock, and publicly

[2] The SIPP collects data from individuals in four-month waves.

available health insurance can increase productivity when people use unemployment periods for job searching targeted to better skill matches.

Before moving away from the job lock literature, the work of Bailey and Chorniy (2015) merits attention. This paper attempts to directly measure the presence of job lock in response to the ACA using the Current Population Survey (CPS) and a two-difference estimation strategy. The ACA increased the age for health insurance coverage of dependents to 26. In light of this, these authors used a sample of adults age 19-25 to test the effect of the increase of dependent coverage on the likelihood of changing jobs during the four-month period an individual was included in the CPS sample from 2008 to 2012. They find an imprecisely estimated 4% decrease in job mobility among this age cohort, suggesting that job lock is not a concern. However, I find their results suspect because their research makes no mention of the concurrent aftermath of the financial crisis in 2008. They provide no justification that their results control for people who may not be switching jobs because they are concerned about unemployment during the so-called Great Recession. Furthermore, there are good a priori reasons to think that the population of young adults is not representative of the larger population of all working adults. Young adults may still be in a stage of skill development or may have different preferences for health insurance and job switching that make them incomparable to older working adults.

Transitioning to the research on Medicaid and labor supply, Garthwaite, Gross, and Notowidigo (2014) examine the employment effects of 170,000 individuals in Tennessee losing Medicaid coverage. They employ both two- and three-difference models, first comparing Tennessee with other southern states, then using adults with and without children as a comparison because childless adults were the most affected by the loss of coverage in Tennessee. They find significant effects on employment among Tennessee childless adults, signifying that these individuals sought work in response to losing Medicaid coverage. The authors speculate that these individuals sought employment solely to obtain employer-sponsored health insurance. The increase in employment occurred mainly in people working between 20 and

35 hours weekly. The authors note that, at the time, employers such as Starbucks and Costco were offering health insurance to part-time workers in this hour range.

When examining results along age, the 40- to 64-year-old cohort seeks employment at greater magnitude than the younger cohort. This may be consistent with a higher expected need for medical spending among the older adults. Regression results provide weak evidence of employment seeking behavior among less educated people, and strong evidence of employment seeking behavior for individuals with poor self-reported health status. The authors further note that there was a statistically significant increase in "being in the labor force" and weak evidence of an increase in private insurance in response to disenrollment. These results suggest that people sought work primarily to maintain health insurance coverage,[3] demonstrating that lack of alternatives to employer-sponsored health insurance may compel unproductive skill matching.

Baicker et al. (2014) take advantage of the randomized control trial in the Oregon Health Insurance Experiment (OHIE) to examine the effects of Medicaid enrollment on labor supply and enrollment in other government safety net programs. In prior studies of the OHIE, estimates on labor force participation were too imprecise to be evidence of an increase in labor force participation (Finkelstein et al., 2012 Appendix). This left a lingering question about the labor market effects of expanded access to public health insurance. With winning the lottery as an instrument for Medicaid coverage, Baicker et al. (2014) validate the previous OHIE findings that enrollment had no significant effect on overall employment, working 20 or more hours, or income. In the Oregon context, this is evidence that public health insurance does not impact labor supply, but the authors note that their 95% confidence intervals allow for as much as a 4.4% decrease in employment. Furthermore, the authors are able to link Medicaid enrollment from the lottery to an increase in receiving Supplemental Nutrition Assistance Program (SNAP) benefits. These results potentially reinforce Garthwaite, Gross, and Notowidigdo (2014) that expanding health insurance encourages exiting the labor force.

[3] The authors call the phenomenon "employment lock" to distinguish it from job lock.

It warrants attention that the CBO projection of the ACA impact on the labor market cites these studies as evidence of negative partial effects in the labor supply. However, the Medicaid recipient population may not be representative of the whole population of adults eligible for the labor force. My research will concern that expanded population.

Forthcoming research from Buchmueller, Levy, and Valletta (2019) advances the literature on the question of Medicaid and labor outcomes by taking advantage of publicly available data, specifically the American Community Survey (ACS) and the CPS, with a two-difference identification strategy to consider the effect of Medicaid expansion provisions of the ACA on labor force participation. Motivated by ambiguous prior findings on the moral hazard effects of unemployment insurance benefits, their research attempts to address the magnitude of moral hazard in the labor market of Medicaid recipients. Because the ACA changed the percent of Federal Poverty Level (FPL) income threshold for Medicaid enrollment, there are various incentives to changing one's labor supply to qualify for benefits. Specifically, some people may work more because the increase raises their income potential before losing benefits, and some may work less to qualify for the new income level to receive benefits. This shifting incentive structure is the source of moral hazard in Medicaid expansion because it may cause more people to alter their labor supply contrary to the spirit and intention of Medicaid.

The authors first document that Medicaid had a larger effect on insuring unemployed individuals, a decline of 8 percentage points,[4] relative to employed individuals, an increase of 3.5 percentage points which, arguably, may have been people transferring out of non-group and employer-sponsored plans. In investigating labor market outcomes, the authors find no statistical evidence of labor force exit in either their whole sample or in subgroups defined along age, race, and gender dimensions. They found parents and individuals employed for less than one year were, in fact, statistically less likely to exit the labor force. Their conclusion, contrary to the two studies previously discussed, is that Medicaid expansion had

[4] The authors show that this can be anywhere between a one-fifth and a one-third reduction in uninsured individuals depending upon the baseline chosen.

no substantial effect on making people less likely to work – evidence against moral hazard.

I reference Buchmueller, Levy, and Valletta (2019) because, like them, I plan to use publicly available data aggregated to the county level, and their controls are relevant to my research. Specifically, their research shows that I need to control for labor force participation because people who have exited the labor force may bias my point estimates toward finding no effect. These authors also control for employment growth. This is important since the ACA is passed in the post-2008 labor market environment when employment is gradually increasing as more people return to work from crisis-induced unemployment. Controlling for employment growth allows me to discern the effect of employment due to skill matching in response to public health coverage from the general trend in employment. Finally, setting this research in conversation with Gruber and Madrian (1997) also underscores the important question of whether to control for income. On the one hand, it may be good to control for income because it could be correlated with underlying preferences for health insurance, job switching, and productivity. On the other hand, leaving a job for a skill match that results in higher income may be along the causal pathway, and income may be a bad control. I address this in my empirical strategy discussion.

3 Empirical Strategy

To estimate the effect of the ACA on productivity, we can begin with a simple comparison of people who do and not have alternative coverage outside of employer-sponsored insurance (ESI). Consider the matrix:[5]

	HIX	
	Before	After
No ESI access	M_{00}	M_{01}
ESI access	M_{10}	M_{11}

[5]This notation is borrowed from Madrian 1994.

Here, M_{00} and M_{01} are the proportion of people who would have no access to health insurance without an employer-sponsored plan (i.e. - if they quit their jobs) before and after the insurance exchanges, respectively. M_{10} and M_{11} are the proportion of people who would have access to health insurance outside of an employer-sponsored plan before and after the insurance exchanges, respectively. This suggests a difference-in-differences model where the estimator of interest is:

$$(M_{11} - M_{01}) - (M_{10} - M_{00}).$$

Coefficient estimates would thus be calculated by:

	HIX	
	Before	After
No ESI access	b_0	$b_0 + b_2$
ESI access	$b_0 + b_1$	$b_0 + b_1 + b_2 + b_3$

A simple estimating question is:

$$prod_{cst} = \alpha_0 + \alpha_1 Post_t + \alpha_2 ESI_{ct} \times Post_t + \pi_{ct} + \tau_s + \eta_{cst}, \tag{1}$$

where ESI_{ct} is the proportion of people who have an employer-sponsored plan or access via a family member in county c in year t. The indicator $Post_t$ is 1 in and after 2014 and 0 before 2014 because the ACA mandated that every state have an exchange beginning in 2014. Thus, α_0 is the marginal effect of having *no access* to employer-sponsored health insurance before the exchanges, and α_1 and α_2 are the marginal effects of having *no access* and *access* to an employer-sponsored plan after the exchanges respectively. The intent-to-treat (ITT) effect on productivity of availability of insurance via the exchanges is $\hat{\alpha}_1 + \hat{\alpha}_2$. County-year fixed effects control for invariant attributes within the county-year that may be correlated with the source of insurance coverage and productivity. This is useful because the decision to enroll in coverage is usually made annually, and tax penalties for not having coverage are assessed for the same year. Hence, county-year fixed effects absorb invariant attributes that may be correlated with the decision to insure, the decision to change jobs, and productivity. The term ESI_{ct} does not appear on the right-hand side except when interacted with $Post_t$ because it is absorbed by the fixed effect when the proportion of enrolled individuals is set at the beginning of each year.[6] Adverse shocks that affect preferences for insurance and productivity are also captured. State fixed effects control for time-invariant state attributes that may be correlated with changes in insurance coverage and productivity.

A critical threat to difference-in-differences identification is unobserved differences between people with and without ESI that are correlated with differences in productivity. While the difference-in-differences strategy is usually employed to account for unobserved differences between treatment and control individuals, the composition of these two groups may be changing in response to ACA insurance exchanges. Observe that reallocation of productive workers in response to health insurance not tied to an employer is along the causal pathway. In other words, skill matching that leads to higher productivity by individuals changing jobs is exactly the effect captured by $\hat{\alpha}_1 + \hat{\alpha}_2$ in (1), whether the channel is some portion of M_{00} moving to M_{11} or M_{10} moving to M_{01}. Expanded health insurance gives people the ability to sort themselves along the distribution of productivity demanded by firms because they are not forced to hold jobs to maintain health insurance. Because of this, I estimate an ITT effect.

In (1), I will use a different definition of productivity than previously given. I will use the ratio of labor's share of GDP to hours worked in county c in year t. I make this change because firms may alter their capital structure and distribution of skilled workers in response to tax penalties imposed by the ACA. For example, firms may reduce their low-skilled labor, improve their health insurance plans to attract high-skilled workers, and compensate for the lost labor by deepening capital. Productivity will mechanically increase

[6]Many plans allow for enrolling based on certain significant events such as marriage. I am making the implicit assumption here that there are not enough of these events in any given time period to sufficiently change ESI_{ct} in a given period.

by the previous definition even though the composition of the firm's labor has changed in a way that is correlated with ESI. This artificial inflation will bias coefficient estimates toward finding a positive effect because outcomes will look better than they may be, and the updated definition of productivity does not have these issues.

Control variables are necessary to modify (1) before arriving at the final specification. Estimation of the ITT effect is threatened if the least productive individuals leave the labor market entirely. This will bias coefficient estimates toward finding an effect because the lowest-productivity outcomes are unobserved. This threat can be neutralized by controlling for the labor force participation rate in each year. Additionally, based on Buchmueller, Levy, and Valletta (2019), I control for the growth in employment for reasons specified above. Ideally, I would like to observe firm-by-county data so that I can model changes in capital and skilled labor allocations and tax decisions among firms. Not only may constructing such data be a sub-optimal use of time, but it may also be the case that no such data exist. A good way to circumvent this problem is to use firms' costs of insurance at the state-year level. Kolstad and Kowalski (2016) note that, in theory, if a firm's cost of insurance outweighs the tax penalty for not providing or supplementing coverage, then firms will pay the penalty or reduce the number of employees to avoid the cost of insurance. Therefore, I include a control for firm cost of insurance in state s in year t. Since my unit of observation is the county-year, I will also include median income to control for unobserved preferences for job switching that may be correlated with differences in productivity and insurance, as referenced above. Controls for income and insurance premiums could have the added effect of controlling for unobserved correlations with factors affecting the price of insurance that are also correlated with productivity in individual counties. This updates the estimating equation to:

$$prod_{cst} = \beta_0 + \beta_1 Post_t + \beta_2 ESI_{ct} \times Post_t + \boldsymbol{X}_{fcst}^T \boldsymbol{\delta} + \pi_{ct} + \tau_s + \varepsilon_{cst}, \tag{2}$$

where $\boldsymbol{X}_{fcst}$ is the vector of controls just described. The ITT effect is $\hat{\beta}_1 + \hat{\beta}_2$. Standard errors should be clustered at the county level to correct for non-random correlations among individuals in each county.

Parallel trends may be investigated with the event study model

$$prod_{cst} = \sum_{k=-4}^{4} \theta ESI_{ct} \times I^k + \boldsymbol{X}_{fcst}^T \boldsymbol{\delta} + \pi_{ct} + \tau_s + \varepsilon_{cst}, \tag{3}$$

where I is an indicator for the year k relative to 2014, and $k = 0$ indicates 2014. The indicator I^0 is omitted so that all effects are estimated with respect to the year that health exchanges began. Estimates $\hat{\theta}$ from such a model should that are significantly different from zero prior to 2014, beyond some sampling variation, indicate a violation of the parallel trends assumption.

One way to potentially strengthen (2) and control for contamination from Medicaid expansion is to use a difference-in-difference-in-differences strategy with individuals above 138% of FPL as the affected group. Presumably, the ACA would have had the largest effect among people with a variety of skill levels, such as those with four-year degrees, who wanted to change jobs because of productivity-skill mismatches. On the assumption that people below the 138% FPL are relatively low-skilled and unlikely to have post-secondary education, we may find stronger evidence for increasing productivity by estimating:

$$prod_{cst} = \beta_0 + \beta_1 Above138_{ct} \times Post_t + \beta_2 ESI_{ct} \times Above138_{ct} \times Post_t + \boldsymbol{X}_{fcst}^T \boldsymbol{\delta} + \pi_{ct} + \tau_s + \varepsilon_{cst}, \tag{4}$$

where $Above138_{ct}$ is the proportion of people above 138% FPL in county c in year t. The estimate of interest is $\hat{\beta}_1 + \hat{\beta}_2$. The strength of this model depends upon the strength of the assumption that people above and below 138% are sufficiently comparable after the estimation strategy differences out unobserved heterogeneity, which may be suspect.

Some important factors remain to be considered. To begin, my strategy does not account for people who live and work in different counties. Ideally, I would want to match insurance enrollment and productivity at the county-year level, but if sufficient numbers of high-productivity individuals work in counties where they do not live (such as people commuting from Connecticut to New York City), then estimates will be overstated in some counties and understated in others. Since I am estimating an ITT effect, it is unclear to me exactly how threatening that is to my strategy. Neither does my model adequately address underlying health risks. Counties have greater or lesser degrees of aggregate health risks that may be correlated with variation in insurance enrollment and productivity. To the extent that median household income reflects this and the highest health risk individuals are not in the labor force, I have controlled for it, but there may be better controls that I have not contemplated. Finally, there may be a better way to directly test the channel of job lock in relation to productivity and ESI. For example, using (2) with a measure of job mobility as the outcome as an instrument, I could use instrumental variables estimation to estimate the effect of the ACA on productivity directly through the channel of job lock. Further study is needed to ascertain whether this instrument satisfies the predictability and orthogonality assumptions of instrumental variables. Overall, rather than directly testing variation with respect to the job mobility channel, my strategy removes extraneous variation, assuming that the only remaining variation is job mobility related to productivity. This is not ideal, and further interrogation of relevant data sources may yield better strategies.

4 Data

To estimate (2), I would restrict my sample to individuals between ages 26 and 64. This removes variation from young adults who are receiving dependent coverage and from older adults who are retired and, theoretically, not contributing productive economic activity. The time period I plan to cover is four years before and four years after the introduction of the state health exchanges in 2014 (i.e. - 2010 to 2018). Observing the same counties over multiple consecutive years makes this a panel at the county level. Passage of the ACA in 2010 and media coverage of the Act and state exchanges prior to 2014 may have caused changes in behavior related to people changing employment and tax incidence in such a way that violates the pre-trends. Further investigation using the event study outlined above would aid this.

A variety of public data sources could be used. First, county-level output data are available from the Bureau of Economic Analysis (BEA). Together with county-level hours worked from the CPS, I could construct a productivity measure for the outcome of interest. Second, the ACS tracks the source of survey respondents' health insurance coverage. The variable *HINSEMP* indicates whether an individual receives health insurance coverage through his or her own employer, through a family member's employer, a former employer, or through a union. Many of the necessary control variables are also available through the ACS, and these data could be matched by county with the productivity measure, as well as race, ethnicity, and gender variables to investigate heterogeneous effects. The Medical Expenditure Panel Survey provides a number of variables that measure firm expenditures on insurance premiums for individuals and families and other variables that could be utilized to strengthen the empirical strategy. More exploration is needed here to fully understand the available data, especially since the sampling design may need to be altered to accommodate these data. The BEA also makes productivity data available by four-digit industry. Exploring heterogeneous industry effects is a potentially interesting supplement to this analysis.

References

[1] Baicker, K., Finkelstein, A., Song, J., and Taubman, S. (2014). The impact of Medicaid on labor market activity and program participation: evidence from the Oregon Health Insurance Experiment. *American Economic Review, 104*(5), p322-28. https://doi.org/10.1257/aer.104.5.322.

[2] Bailey, J. and Chorniy, A. (2015). Employer-Provided Health Insurance and Job Mobility: Did the Affordable Care Act Reduce Job Lock? *Contemporary Economic Policy, 34*(1), p173-83. https://doi.org/10.1111/coep.12119,

[3] Buchmueller, T.C., Levy, H.G., Valletta, R.G. (2019). "Medicaid Expansion and the Unemployed" NBER Working Paper No. 26553, December. https://www.nber.org/papers/w26553.

[4] Congressional Budget Office, *The Budget and Economic Outlook: 2014-2024, Appendix C* (February 2014), p. 117, https://www.cbo.gov/publication/45010.

[5] Finkelstein, et al. (2012). The Oregon Health Insurance Experiment: Evidence from the First Year. *The Quarterly Journal of Economics, 127*(3). p1057–1106. https://doi.org/10.1093/qje/qjs020

[6] Gallen, T.S. and Mulligan, C.B. (2018). Wedges, Labor Market Behavior, and Health Insurance Coverage under the Affordable Care Act. *The National Tax Journal, 71*(1). p75-120. https://doi.org/10.17310/ntj.2018.1.03.

[7] Garthwaite, C., Gross, T., Notowidigdo, M.J. (2014). Public Health Insurance, Labor Supply, and Employment Lock. *The Quarterly Journal of Economics, 129*(2). p653-696. https://doi.org/10.1093/qje/qju005.

[8] Gruber, J. and Madrian, B.C. (1997). Employment separation and health insurance coverage. *Journal of Public Economics 66*(3), p349-382. https://doi.org/10.1016/S0047-2727(96)01621-0.

[9] Harris, E. and Mok, S. (2015). *How CBO Estimates the Effects of the Affordable Care Act on the Labor Market*. Congressional Budget Office Working Paper Series. Working Paper 2015-09. https://www.cbo.gov/publication/51065.

[10] Madrian, B.C. (1994). Employment-Based Health Insurance and Job Mobility: Is There Evidence of Job-Lock?. *The Quarterly Journal of Economics, 109*(1). p27-54. https://doi.org/10.2307/2118427.