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The Relationship of Right-to-Work Status and Health Insurance Outcome

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THE RELATIONSHIP OF RIGHT-TO-WORK STATUS AND HEALTH INSURANCE OUTCOME

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ABSTRACT

This paper addresses the relationship between state level right-to-work (RTW) legislation and employer provided health insurance coverage. The effects of right-to-work policy are debated among researchers with some suggesting it leads to a positive effect on wages and non-wage benefits and others suggesting the opposite. The main concern and goal of this study is to isolate the effect RTW laws have on employer provided health coverage. This study incorporates demographic and firm characteristics that prior research found to be significant control variables for isolating the effect of RTW status on employee health insurance coverage. Based on a series of linear probability models and difference-in-differences models, a worker residing in a state that has implemented a RTW policy is less likely to obtain health insurance than their non-RTW counterpart. In addition to RTW status, demographic and firm characteristics affect the likelihood of an employee having health benefits.

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CHAPTER ONE

INTRODUCTION

Right-to-work legislation is best explained as an extension of a federal court ruling stating that union membership cannot be required of workers as a contingency of employment. State legislators decide whether to implement a right-to-work policy that exempts employees from paying union membership dues but requires unions to represent non-paying workers. Once enacted, unions have less available funding to address worker grievances. This policy has resulted in a decline in union membership.

The effect of right-to-work legislation on worker wages and benefits is contested among researchers. A variety of control variables have been used in prior research to understand the impact that economic factors such as cost-of-living and other state-level economic conditions have on employee health insurance in RTW states. The decision to obtain health insurance has been studied as it relates to union status and the decline in union presence since the 1980s, but few studies have focused on the RTW effect.

Wage decreases negatively impact employee ability of workers to pay the employee share of health benefits. Thus, it is essential to determine what effect RTW policy has on employee compensation. The following research focuses on whether RTW status is related to health insurance coverage after controlling for demographic and firm characteristics.

CHAPTER TWO

LITERATURE REVIEW

The decision to obtain health insurance is a complex choice for workers and their families. It is difficult to know the reasons why one chooses to acquire insurance or to decline it. Such decisions can come down to individual differences that are difficult to observe and vary widely by personal situation and perceived need. Prior research has attempted to estimate the factors that explain employee choice.

One such study examined the role of employee cost and firm characteristics (Cooper & Vistenes, 2003). That is, whether employee out-of-pocket expense, and employer characteristics effect a worker's decision to accept an employer offer for health insurance. Results showed that the larger the required employee contribution, the less likely employees were to purchase an insurance plan. This finding, while unsurprising, suggests that the level of employee contribution factors into the decision to obtain coverage. In a simulation study, the percentage of employees covered increased when employee contributions decreased to zero. However, even with a zero-employee contribution rate, the coverage rate was less than 100% (Cooper & Vistenes, 2003). uWorkers are more price sensitive to their contribution when their wages are within lower and middle wage rates (Cooper & Vistenes, 2003).

Research has consistently shown that as the employee share increased fewer individuals choose to enroll in health coverage as healthcare costs

increase. Chernew (2005) measured the association between rising employee health insurance cost and the tendency for insurance coverage rates to decrease in several metropolitan areas among nonelderly employees. After controlling for economic and demographic factors, an increase in insurance premiums explained more than one half of the decrease in coverage rates in the 1990's (Chernew et. al., 2005).

Health care coverage is an option most would elect to have under favorable conditions such as low premiums. Some common reasons workers forgo insurance may reflect a difference in age or socioeconomic status. Over time, non-wages benefits have become a more significant percentage of total wage compensation. Fringe or non-wage benefits include pensions, vacations, holiday pay, and life/accident/health insurance. This change in the significance of non-wage benefits helps to explain the increasing gap between wages and total compensation as salaries have decreased over time. Prior research found that low-skilled workers are less likely to maintain coverage than high-skilled workers in periods of economic downturn. Lower skilled workers are forced to choose between higher take home pay or health insurance, and generally choose the former. (Chung, 2003).

Under the Taft-Hartley amendment of 1947, states were given the right to prevent unions from requiring workers to pay union dues even when under contract. Right-to-work (henceforth denoted RTW) legislation offers workers the privilege of union membership benefits without having to pay dues. For unions,

this is problematic if an employer gives cause for a worker to seek redress; the union must represent the employee regardless if the individual pays union dues. Since workers will not elect to pay for a service that can be received for free, unions are left with less funding to represent workers while allowing non-members to benefit from union negotiations. This plan undermines the ability of unions to leverage better benefits and wages for workers (Gould & Kimball, 2015).

Differing studies have expanded how RTW status effects wages and the amount of fringe benefits. One such study (Gould & Kimball, 2015) found wages in RTW states are lower, on average, than non-RTW state wages. The researchers discuss the difficulty of capturing the effect of RTW status in their regression equation because it is hard to isolate the effect of the law. Wages between states may be impacted by factors such as employee skill level and/or available technology and need to be accounted for to avoid biasing the impact of RTW. The Gould and Kimball study used a cross-sectional approach and included cost-of-living indicators and other state-level factors to account for differences in wages among states, to more precisely estimate the relationship between RTW status and wage rates.

The Gould and Kimball study sample consisted of 304,157 workers selected from the Bureau of Labor Statistic CPS Outgoing Rotation Group data set for years 2010-2012. This sample included individuals living in RTW states and non-RTW states, with 38% residing in RTW states. As of 2012, 25 states

had adopted RTW laws. A list of these states can be found in Appendix G. The ages of the sampled individuals ranged from 18 to 64 and all were salaried employees. Demographic variables were included to control for individual differences in age, race, sex, education, and marital status. Worker characteristics were (hourly, full-time, union/union contract, average and median hourly wage) and state characteristics (unemployment rate and three cost-of-living variables). These variables were used to control for differences between non-RTW and RTW states.

Gould and Kimball incorporate the variables described above in addition to a RTW indicator variable (1=if RTW, 0= otherwise) in four regression models. Their dependent variable in each model was the log of wages. The first regression controls for fixed-effects across years. The second adds demographic variables and individual-level labor controls (full-time status, hourly status, union status, and occupations and industries). State-level controls and two cost-of-living measures are added to the third regression model. The final model adds a third cost-of-living index, replacing the earlier two cost-of-living indices from the third model. The coefficient for the RTW indicator variable in explaining the log of wages (the dependent variable) was consistently negative but decreased with each respective model, supporting the hypothesis that wages are lower in RTW states. The final model estimated the average annual wages to be $1,558 less in RTW states than non-RTW states for full-time workers. In addition, they found educational and racial differences between RTW and non-RTW states (Gould &

Kimball, 2015). Non-RTW states have a better-educated workforce, a larger percentage of white workers. and greater union participation in RTW states. (Gould & Kimball, 2015).

Gould and Kimball included a series of robustness tests to determine which worker characteristics and demographic variables should be included in their regression models. These alternative model specifications did not change the significance or sign of the RTW coefficients, but the removal of union status significantly decreases the difference between state types. The researchers argue it is important to include appropriate control variables to avoid establishing a biased relationship between wages and RTW status. Removal of these controls variables confound the estimate of the effect of RTW legislation (Gould & Kimball, 2015).

In another study (Reed, 2003) a significant negative relationship between RTW states and the wage rate was also estimated. Similar to the Gould and Kimball study, these researchers also controlled for differences in state-level economic conditions between state type as well as changes in economic conditions before and after RTW laws were implemented in RTW states. Prior economic conditions in each state were controlled because it was hypothesized that the RTW states were worse off than non-RTW before the adoption of the law. States that changed RTW status between 1944 and 2001 were excluded in the study (Reed, 2003). The excluded states are Idaho, Louisiana, and Wyoming. Oklahoma was retained because it adopted RTW after 2001.

The Reed study developed three regression models to investigate the relationship between wage rate and RTW states. The dependent variable, log of wage rate is regressed against RTW status (0=no, 1=yes) for model 1, the successive models added controls for demographic differences (model 2) and economic conditions (model 3) between non-RTW and RTW states to explain any differences due to state status for the log of wage rate.

Model 1

When using average state-level the log of wages is the dependent variable and regressed against RTW status, without including past conditions estimates a significant negative coefficient and associated with lower wages.

Model 2

The researcher then adds demographic variables to control for differences in wages at the state-level, with no information available before 1958, Per Capita Personal Income (PCPI) is used as a substitute for average state-level salaries. This proxy increases the coefficient of the RTW variable, but wages are still low overall.

Model 3

In his third model, separate variables for agricultural and manufacturing share of gross state product were added to account for these possible state level effects with RTW laws in 1945. He also added variables for the U.S. southern region, education level, and state population density in 1945. The added variables significantly increased the value of the RTW coefficient. The large

change in the RTW dummy variable (specifically with the inclusion of farm and PCPI variables) suggests that past economic conditions should not be overlooked when measuring the effect on RTW status has on wages (Reed, 2003).

The effect of union status helps explain the wage effect for individuals in a non-RTW state where they benefit from a spillover effect . This effect occurs when non-unionized employees see an increase in their wages designated by employers to prevent them from joining a union. Conversely, in RTW states with a smaller proportion of union workers, workers may also benefit if employers pay a higher wage to prevent unionization. Lower wages can impact the affordability of essential non-wage benefits for workers such as health insurance.

A study on the effect of RTW law is analogous to a study that estimates union membership density and individual wages across states. The decrease in density explains a quarter of the decline in health care coverage from the earlier 1980s to late 1990s (Buchmueller, 2002). The decline in union density may be a contributing factor to the disparity in the income and wages of the wealthiest and poorest as well as the divergence in worker productivity and pay for middle-class workers (Mishel, 2012). Without collective bargaining agreements, workers often lack the leverage needed to secure higher wages and better benefits. This includes not just members of unions, but those who benefit from the spillover effect attributed to a union presence (Mishel, 2012).

A study measuring the effects of unionization on health benefits utilized information on firm characteristics, specifically how firm size effects health coverage for firms with and without union affiliation. A regression model explored the hypothesis that unions had an important influence on health benefits and included four equations; the log of the mean of premiums and contributions per employee, percent paid by employer the and whether a firm provides health insurance. A union status dummy variable was included in each equation as were industry, region, size, percentage part-time workers, and percentage of employees earning at or close to minimum wage (Rossiter & Taylor, 1982).

Results suggested that employees in firms with a union presence were not more likely to have employer-sponsored insurance than their non-union counterpart. However, firm size has a significant effect and larger firms are much more likely than smaller businesses to offer health insurance. The higher the percentage of workers making minimum wage the less likely health insurance will be offered. Conversely, among specific regions, the Northeast and North Central the probability of health insurance provision was larger than other national regions. The union variable was highly significant for the mean premium, contributions, and percent paid by employer, suggesting that firms with a union presence have higher health insurance expenditures than those without unions. In addition, the premium per employee and dollar and percentage amount paid out by employers for eligible employees is higher in firms with unions (Rossiter & Taylor, 1982).

Freeman and Medoff's "What Do Unions Do?" is widely considered to be the most detailed and rigorous assessment of the union effect on wages and fringe benefits. Employed to predict the impact of unionization are two facets of unionism described as the monopoly response and the collective response. Unions achieve monopoly power by leveraging increases in wages and benefits through tactics likely to be costly to the employer such as threat of strike which lead to wages above the equilibrium or competitive wage rate. Further, increase in salaries and benefits make workers more expensive to employ, forcing unionized firms to hire less and substitute new technology. The collective face of unionism allows better information to be gathered concerning worker preference to ensure union behavior is responsive to employee needs. Union decisions often reflect the inclination of the average worker instead of the marginal worker who is indifferent between staying at one firm or leaving. The former is more likely to prefer more benefits and will accept lower wages to get them. Unlike the monopoly effect which distorts the competitive equilibrium by allowing employee benefit increases, the collective voice effect does not affect the competitive hiring levels of the firms as this aspect represents a restricting to the total compensation package.

Researchers for this study replicate Freeman and Medoff's study but added a component to the union effect. The facilitation effect increases awareness of the availability of plans rather than expanding the number of workers covered. In addition, this effect highlights the likelihood that there is a

difference between union and non-union workers that reflects levels of awareness concerning health coverage benefits rather than an availability of coverage.

There were two measurements of interest in this study, the difference in coverage between union and non-union workers and the variation in coverage among individuals covered under union contract but not members compared to those with membership. After including control variables for demographic and establishment differences between workers in each probit model, researchers found that in both areas of interest, union members are more likely to have health benefits offered by the employer. For individuals covered under union contract, but not dues paying members the difference between the two groups is linked to a facilitation effect where individuals who are union members are more likely to receive information about health care plans and have access to union representatives that can provide them with additional material (Budd, 2004).

One study highlights a departure from other related studies by stating that most RTW research has focused on the influence unions have on the likelihood that employers provide health insurance at all (Fichtenbaum & Olson, 2002). Half to two-thirds of the union-non-union wage differential is said to be explained by the differences in labor market characteristics that are present among union workers. These components include bigger firm size, higher income, and more extended work hours and when present indicated a greater probability of employer provided health insurance. Another avenue of consideration is whether

unionization results higher expenditures for non-wage benefits. Evidence suggested that there was both an increase in likelihood of procuring insurance and a greater amount of spent towards it by firms that were unionized.

Researchers of the Fichtenbaum and Olson study aimed to illustrate the importance of including fringe or non-wage benefits to estimate the impact of union status and to determine whether unionization increases expenditures levels for benefits. The sample consists of private sector, full-time, year-round workers. The dependent variable for the models was the amount the employer contributed to health insurance expense. A Tobit model was used to offset the observations where the amount provided by the employer was zero which would result in unbiased results. A dummy variable was created for union status for those a member of a union or under a collective bargaining agreement. Education variable (at eight levels), age, location, city size, firm size, marital status, race, occupation, industry and year were included as controls for the model.

Results show that, on average, unionized male workers receive more annually ($384) from employer-sponsored insurance than do non-unionized men. Women earn less per year ($296) than men, but still more than women who are not unionized or under contract. This difference was due to women having a lower probability of having employer-sponsored insurance. The union-non-union differential was nearly the same among men and women who work full-time, year-long and have health benefits (Fichtenbaum & Olson, 2002).

Next, the researcher determined whether measuring the impact of unionization without consideration for other compensation underestimates the effect of unionization on the total compensation package difference between men and women who were unionized or covered by a union versus those who are not. To investigate that research question, the response variable is a total amount that includes both wages and contributions made by employer to health insurance. Evidence showed that when health insurance benefits were included in compensation, the union-non-union gap increased among men and women, 1.9 and 2.1 percent respectively. The implication was that union employers spend more towards health insurance benefits for their employees than did non-union ones and more likely to provide such benefits in the first place (Fichtenbaum & Olson, 2002).

CHAPTER THREE

RESEARCH DESIGN AND METHODS

Current Population Surveys (CPS) are household surveys conducted every month in conjunction with the US Census Bureau and the Bureau of Labor Statistics. In 1996, the survey questions were extended to gain information on health insurance coverage, pensions, union status and as well as demographics. Data used for this study were derived from the March Annual Social and Economic Supplement (ASEC) survey to examine if health insurance coverage differed between RTW and non-RTW states over the 2001-2013-time period. Employer-sponsored health coverage, hinsemp, is the response variable used to determine the probability that a worker is covered by insurance obtained from the employer. The dependent variable in the individual-level or original data set is defined as 1=having health insurance coverage and 0=not having health insurance coverage. The empirical data set consists of the 185,607 individuals from approximately two million individuals in the full data set. Observations with missing data were deleted from the full ASEC data set.

Summary statistics for the collected data set were generated. One interesting summary statistic is the annual difference in employee health insurance coverage rates between RTW and non-RTW states. The proportion of coverage in RTW versus non-RTW states is graphed for the years 2001 to 2013 in Appendix A. This aggregate preliminary analysis for the proportion workers covered by year for RTW versus non-RTW states status revealed a consistent

difference between the average covered proportions over time. Non-RTW states have a consistently higher proportion of insured employees than RTW states, and this difference is statistically significant in each year. The preliminary analysis spurred further analysis which seeks to explain the difference in the proportion of coverage between in RTW and non-RTW states.

To further evaluate the relationship between health insurance coverage and RTW status individual-level data was collected. The model developed includes terms for year and right-to-work (RTW) state status. An indicator variable (0=Non-RTW and 1=RTW) was created for each state. States that at any point prior to 2013 that have RTW laws are defined as a right-to-work state, and those states never adopting a RTW law are defined as non-RTW states.

Since this is an individual-level data set, demographic control variables were also included in the model. Dummy indicator variables were created for all sociodemographic variables other than age, which was treated as a continuous variable. The sociodemographic control variables were coded as follows; race: White (0), Black (1), Asian (2), Other (3). Gender: female (1), male (0), ages (18-65). Education includes 9 (0,1) categories: 12th grade no diploma (baseline), high school diploma (1), some college (2), Associate, academic (3), Associate, vocational (4), Bachelors (5), Masters (6), Doctorate (7), and professional school (8). Regional dummy variables (0,1) were created for groups of states and were coded as: East North Central division is the baseline, East South Central (1), Middle Atlantic (2), Mountain (3), New England (4), Pacific (5), South Atlantic (6),

West North Central (7) and West South Central (8). A description of the states located within regions can be found in the Appendices section (Appendix I).

Occupation and industry are categorical variables examined to investigate whether coverage differs across each and were treated as firm characteristics to examine if employee health coverage varies by industry. Dummy variables were created for the following nine aggregate industries: Manufacturing and Construction, Government, Service and Retail, Medical, Financial, Education, Agriculture, Science and Technology, Energy, and Other). By organizing them to into clear groups, differences in coverage could be examined across blue and white collar employment. Whether coverage is offered by employers depends on the status of the worker, firms with a high percentage of part-time workers will be less likely to provide it for employees due to higher fixed costs associated with such employees (Rossiter & Taylor, 1982). Workers who are employed either part-time or full-time are described by the variable fullpart (0 and 1, respectively). A dummy variable for union status (0=no, 1=yes) was included in the model as reviewed studies have shown there is higher probability of insurance coverage associated with union membership and those covered under the contract. This is in addition to the spillover effect associated with firms that have a union presence. Firm size is included with eight (0,1) categories: under 10 (baseline), 10 to 24(1), 10 to 49(2), 25 to 99(3), 50 to 99(4), 100 to 499(5), 500 to 999(6), and 1000 or higher (7). There is an overlap for some of the firm size categories due to a reorganization that occurred in the year 2010 based on the data.

Significant health care legislation change was enacted during that year, the Affordable Care Act to allowed small firms employing under 50 workers to forego the offer of employer-sponsored coverage.

Two modeling approaches were used to estimate the effect of RTW status on health coverage to deliver a more comprehensive understanding of the laws effect. A linear regression model was used to predict how the level of insurance coverage would change across demographics and differences among firms. A difference-in-differences model was implemented to isolate the RTW effect by accounting for preexisting differences in the average health insurance coverage within state.

First, a traditional linear regression model was used to predict health coverage given the ease of interpretation. The Ordinary Least Squares (OLS) method was used to estimate the parameters of the four models listed below to predict whether the probability of health insurance changes with the addition of year, demographic and firm explanatory variables, controlling for RTW status.

Linear Regression on Y:

$$Y=\beta_0+\beta_1X_1+...+\beta_KX_K+\sum$$

$$\sum \sim \text{iid } N(0,\sigma^2)$$

$$Y=\{0,1\}$$

Four models were developed with binary variable (0=no insurance coverage, 1=insurance coverage), hinsemp, as dependent variable and regressed on: (1) RTW (2) RTW and year (3) RTW, year (baseline=2013) and

RTW/year interactions (4) RTW, year, RTW/year interactions, race, education, sex and race, region, fullpart, union, firm size, and occupation (5) Less RTW/year interaction (Table 1.1).

Next, difference-in-differences (DD) models are used to eliminate any unobserved differences between states that may influence whether a state decides to implement RTW policy from states that do not and so controls for background trends. The DD method is implemented to isolate the effect of the RTW variable by accounting for pre-existing differences in the average level of health insurance coverage between states (RTW and non-RTW) to show how health insurance changes when RTW status changes. When subtracting the pre-existing means the estimated effect reflects how the RTW and non-RTW states change. By subtracting these pre-existing differences, we ensure that the effect of RTW status is not correlated with differences unobserved between states.

The dependent variable, employer-sponsored insurance (hinsemp), is estimated using Ordinary Least Squares (OLS) method as a (0,1) binary response variable. When using the DD model, the value of the dependent variable in the pre-period accounts for any term included in the error term in addition to terms in the models that determine health insurance coverage. Two models were estimated that included with control variables to examine any role the controls may have on health insurance coverage. Variable X was created to account for the change in law among three states Oklahoma (2001), Indiana (2012), and Michigan (2012) for the year after their law was enacted and those

subsequent in the DD models for period 2001-2013. Variable X is equal to 1 for any state with RTW law change during the interval studied (2001-2013) and 0 if otherwise. This change was only accounted for in one direction, from non-RTW to RTW state as no state has yet, chosen to get rid of their RTW law. Data was not available for the following recent RTW states and so were considered as non-RTW states: Wisconsin (2015), West Virginia (2016), Missouri (2017), and Kentucky (2017).

Variable X interpretation: $E[Y|RTW=1, X=1] - E[Y|RTW=1, X=0] - (E[Y|RTW=0, X=1] - E[Y|RTW=0, X=0])$

This contrast is set for each state that changed policy to become a RTW state during the 2001-2013 time period and were labeled as non-RTW states for each year prior to the law adoption.

For the first model, hinsemp was regressed on variables X, statefip (Alabama=0, Alaska=1, etc.), dummy variables for each year (2001=baseline) and demographic controls race, education, gender and age. The second model estimated included the same model above plus the inclusion of industry and occupation categorical variables. Each model is clustered by state which removes the assumption of random distribution of errors between each observation and instead assumes independence of errors between states.

CHAPTER FOUR

RESULTS AND DISCUSSION

Linear Probability Models

Five linear probability models were estimated to investigate the relationship between RTW legislation and the probability an employee would have employer provided health insurance. The sample size for linear models I-III include all observations in the individual dataset (185,607). With the addition of the industry variable to linear models IV and V some observations were excluded when industry codes were organized into eight categories due to changes to the CPS data on how the industry variable was coded across different time intervals (years) and the complexity in incorporating each different set of industry coding (147,495). Moreover, combining each coding set would result in different designations for the same industry.

Model I

The first model regresses the dependent variable (coverage) on the indicator variable RTW and estimates the average difference in having health insurance in RTW versus non-RTW states. Results for this model show that health insurance coverage is .6 percentage points less likely, on average, in RTW states than for non-RTW states and is significant at the 0.01 alpha level (Appendix B). R^2 value, 0.0002, for this model explains very little variation in the response variable around the mean at around 0%.

Model II

The second model adds dummy variables for year (2001=0, etc.) to the previous model. The inclusion of the year variable controls for national trends in health insurance coverage in both RTW and non-RTW states. After controlling for RTW status, results show that, on average, health insurance coverage after 2002 decreases across years in comparison to year 2001 and are all significant at the 0.01 level (Appendix C) for RTW states. Health insurance coverage is .7 percentage points less likely, on average, in RTW states than for non-RTW states and is significant at the 0.01 alpha level. These results support findings found in Appendix A since the parameters from 2002-2013 show a decreasing or less positive average coverage level each year. Inclusion of year dummy variables results in a slight increase of the R^2 value of to 0.0042.

Model III

The third model includes an interaction term for RTW and year with dummy variables. This model was constructed to determine whether the relationship between year on health coverage was different for RTW states versus non-RTW states. That is, if there is a difference or divergence in the decline across years for insurance coverage in RTW versus non-RTW states. The RTW effect for year 2001 is the coefficient for RTW status, -0.0028, which says on average for year 2001, health insurance coverage is .2 percentage points less likely, in RTW states than for non-RTW states. When adding the

RTW/Year interaction to the model, RTW status is not statistically significant. The effect of the interaction term for year 2002 on coverage in a RTW state, is the RTW coefficient, (-.002) *1(RTW=1) + (-0.0028) (RTW/year 2002=1), meaning in year 2002 coverage is -0.48 percentage points in RTW states or about half of a percentage point less than in non-RTW states. In addition, the full year effect (year plus interaction) is reported to capture the effect across time between the two state types.

Results show that the effect of year on health coverage declines for non-RTW (which is the year coefficient) and RTW states at a similar rate. This result is confirmed by the graphic in Appendix A that shows no difference in rate. The full effect of RTW status (RTW plus RTW/Year interaction) and year effect (Year plus RTW/Year interaction) is reported in Appendices, section D. The addition of the interaction term increases R^2 value to 0.0044, only furthering the explanation of variation slightly.

Model IV

The final model includes firm characteristics and demographic variables in addition to those in the three models above**.** The purpose of this model is to determine whether firm and demographic variables influence the effect of having health coverage after controlling for RTW status, year, and interaction between RTW policy and year**.** According to the results, there is an influence on coverage across firm and demographic variables as the probability of having health coverage on average in a RTW state decreases nearly 1.7 percentage points,

but this is not statistically significant. Each firm and demographic variable across every category returned a statistically significant result except for the medical industry variable which. For firm size and education, the probability of having health insurance increases the bigger the firm and the higher the education level. This may be because bigger firms tend to employ more full-time workers who earn higher wages and so are able to substitute wages for health insurance benefits. Higher education is associated with higher wages and so a greater probability of obtaining health insurance. Previous review of literature confirms that union members are more likely to have health insurance versus non-union workers. In this case, union workers, all else constant, are on average, 7 percentage points more likely to be covered than non-union workers. When compared with white worker's blacks, Asians and Others those having health coverage decreased, but the decrease is less among Asians. This may be because Asian workers typically have higher paying jobs that offer health coverage or that they may place more emphasis on obtaining it. Lastly, in comparison to the East North Central region (includes: Illinois, Indiana, Michigan, Ohio, Wisconsin) those having health insurance decrease both in regions predominantly RTW and regions non-RTW. This is surprising as previous research has shown states located in historically RTW regions are associated with lower health insurance coverage rate due to lower wages in conjunction with high medical costs. The full effect of RTW status (RTW plus RTW/Year interaction) as well as demographic and firm characteristics is reported in

Appendices, section E. When adding firm and demographic variables, the R^2 value increases to 0.1602, explaining about 16 percent of the variation in the dependent variable around the mean. Model IV explains more variability than the other linear models and difference-in-differences model I.

Model V

The final model incorporates all variables from Model IV, but eliminates the RTW/Year interaction term. The RTW effect is statistically significant and becomes more negative, at about 2 percentage points, than in previous models upon dropping the interaction. Results for firm and demographic parameters and statistical significance do not show much change from Model IV. Year coefficients were decreasing, showing a downward trend across years for health insurance coverage as revealed in the initial analysis in Appendix A. Full results listed in Appendix F. The removal of the interaction term decreases the R^2 term very slightly to .1600, down from .1602, but this is not unexpected as the interaction variable did not contribute to a large increase in response variation in model III.

Table 1.1: OLS Regression: Coefficient Results for RTW Effect

Model	I	II	III	IV	V
Variable	No Controls	Year Controls	RTW/Year	Firm/Demographics	Final
RTW Indicator	-0.0063***	-0.0067***	-0.003	-0.0168223	-0.019432***
	(-0.00183)	(-0.00183)	(-0.0052734)	(-0.0343977)	(-0.0021697)
Year 2002			0.0213001	0.001	
Year 2003			-0.0290238	-0.0074	
Year 2004			-0.0260287	-0.0098	
Year 2005			-0.0478185	-0.0255	
Year 2006			-0.0553849	-0.0331	
Year 2007			-0.0616117	-0.0377	
Year 2008			-0.0671714	-0.0391	
Year 2009			-0.0727339	-0.0457	
Year 2010			-0.0986936	-0.0753	
Year 2011			-0.086956	-0.0599	
Year 2012			-0.1021527	-0.0714	
Year 2013			-0.1108748	-0.0839	

Note: *** denotes significance at the 0.01 level, **significance at the 0.05 level. Robust standard error shown in parentheses.

Difference-in-Differences Models

For models I and II, the original industry variable is included in lieu of the industry categories used in the linear models since the measure of industry effect across different sectors was not a focus point for these models. The original variable includes all industry coding regardless of CPS changes, so all 185,607 observations from the individual-level data are used.

Model I & II

The first model includes demographic control variables to explain any alternative differences between individuals that may influence health care coverage rate that is not the effect of RTW laws. The next model incorporates industry and occupation control variables to the model above to explain additional differences in health care coverage among individuals. Industry and occupation coefficients are not reported, but their inclusion in the model results in a decrease in outcomes associated with RTW policy (Table 1.2). In both models, after accounting for pre-existing differences that explain may the decision to implement RTW policy among states, we see that there is an effect of RTW policy on health care coverage (significant at 0.01 level), Appendix G. The R^2 values for model I and II were .08 and .17, respectively. The addition of industry and occupation variables to model II increased the variation explained in the response variable to 17%.

The DD models indicate that RTW policy increases health insurance coverage by about 7 percentage points in each of the two models. An estimate of average health insurance coverage in Appendix A shows that states with RTW laws typically have a lower incidence of coverage than those in non-RTW states. In addition, the trend for both type of states exhibited a downward trend across each year. For the states that underwent a change in RTW laws during the 2001-2013-time period, the results of the DD models suggest that coverage increased more among the states that changed their law than for states that did not even

though initial analysis showed an overall decrease (Appendix A). In other words, the adoption of a RTW law decreased the rate of decline in health insurance coverage. This decrease in trend may have been less among states that adopted a RTW law because the policy change increased the affordability for businesses to offer health insurance coverage to employees (Appendix H).

Table 1.2: Difference-in-Differences Coefficient Results

Model	I	II
Variable	Demographic Controls	Industry and Occupation
Var. X	0.0704492***	0.0675146***
	(0.0016739)	(0.0030688)

Note: *** denotes significance at the 0.01 level, **significance at the 0.05 level

Limitations

Using a linear probability for a model with a dependent variable with 0,1 response can return predictor and predicted values that are greater than one or negative. Because the error term can take on only two values, the variance changes for all observations and so is heteroscedastic and consistent standard errors need to be computed needed to address this issue. In addition, as a predictor value increases or decreases in unit change there is a consistent change in probability. That is, the probability does not reflect the change expected or intuitive upon unit change.

There are two limitations to using the difference-in-differences model approach. The first is the parallel trends assumption which assumes that the

change in the untreated group (non-RTW) is the same as the change the treated group (RTW) would have experienced had it not undergone treatment (policy change). Or, that the trend in both groups would have continued to be the same had the study group not experienced a policy change. If this assumption is not true and each type of state was significantly different from one another prior to policy change, then the DD model would yield biased results.

The common shocks assumption states that the control group and study group will be equally impacted by an unpredictable event (not concerning RTW policy) before or after policy implementation. Under this assumption, the only difference between RTW and non-RTW states would be that one had been exposed to policy and the other had not. It is difficult to assume that no other differences exist between the two types of states that lead them to decide to implement RTW policy.

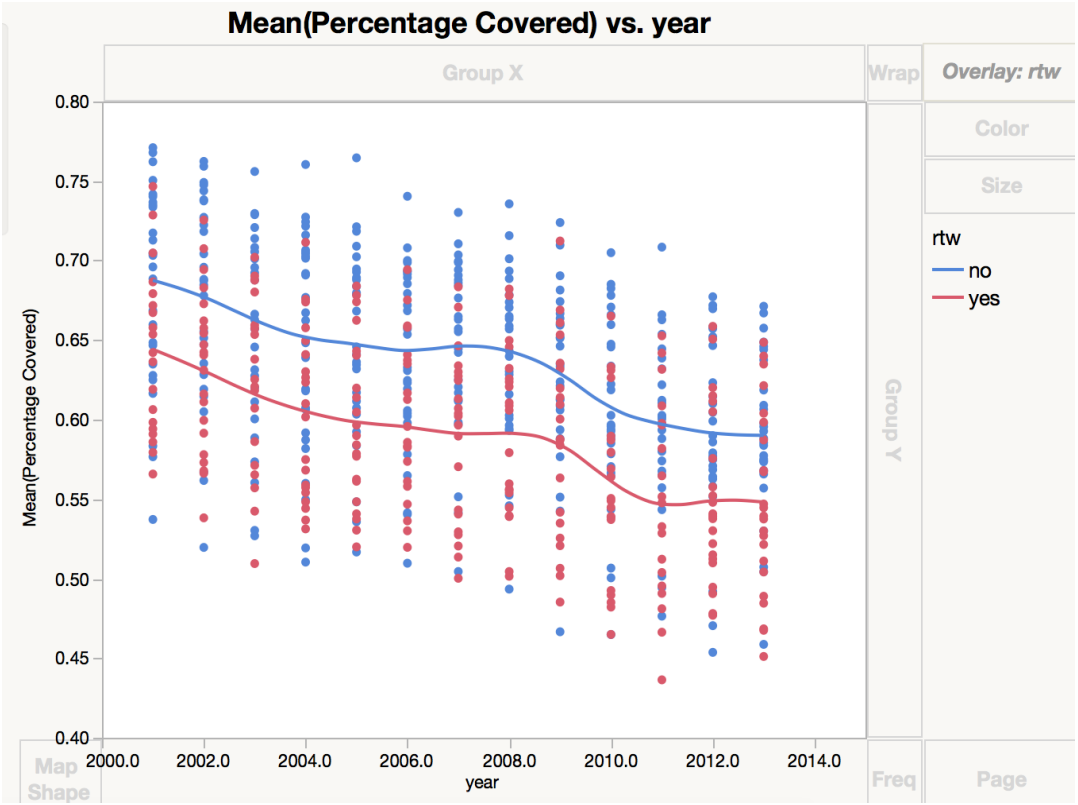
CONCLUSION

The long-term relationship between right-to-work legislation and employee health benefits needs to undergo more extensive research to understand why so many full-time workers lack health insurance. However, measuring the long-term effect of RTW legislation on health coverage is difficult because it is hard to isolate the many confounding socio-demographic factors that impact employee coverage. Failure to account for these socio-demographic variables will bias the estimate of the impact RTW status has on employee insurance coverage. Knowledge of how state level RTW legislation impacts employee health coverage allows policy makers to better understand the relationship between RTW status and health insurance coverage.

APPENDICES

Appendix A

Average Health Insurance Outcome by Year Between RTW and Non-RTW States



Appendix B: Model I

Full Results from OLS Regression, No Controls

hinsemp	Coefficient	Robust S.E.	Significance
RTW	-.00633	.00183	0.001***
Constant	.8097	.00127	0.000***
Sample Size	185,607		
R-Squared	0.0002		
Adjusted R-Squared	0.0002		

Note: *** is significant at the 0.01 level, ** at 0.05

Appendix C: Model II

Full Results from OLS Regression for Year and RTW

hinsemp	Coefficient	Robust S.E.	Significance
RTW	-0.00667	0.00183	0.000***
Year			
2002	0.00245	0.00375	0.513
2003	-0.00968	0.00382	0.011**
2004	-0.01503	0.00385	0.000***
2005	-0.02766	0.00438	0.000***
2006	-0.03105	0.00442	0.000***
2007	-0.0378	0.00445	0.000***
2008	-0.03061	0.0044	0.000***
2009	-0.03873	0.00451	0.000***
2010	-0.06248	0.0046	0.000***
2011	-0.05965	0.00464	0.000***
2012	-0.06989	0.00468	0.000***
2013	-0.07521	0.00471	0.000***
Constant	0.84034	0.0028	0.000***
Sample Size	185,607		
R-Squared	0.0042		
Adjusted R-Squared	0.0042		

Note: *** is significant at the 0.01 level, ** at 0.05

Appendix D: Model III

Full Results from OLS Regression, RTW/Year Interactions

hinsemp	Coefficient	Robust Std. Err.	Significance
RTW	-0.0029848	0.0052734	0.571
Year			
2002	0.0038311	0.0052254	0.463
2003	-0.0118858	0.0053393	0.026**
2004	-0.0201972	0.0054062	0.000***
2005	-0.0296531	0.0061174	0.000***
2006	-0.0290847	0.0060962	0.000***
2007	-0.0377699	0.0061758	0.000***
2008	-0.0227332	0.0060343	0.000***
2009	-0.0321638	0.0062155	0.000***
2010	-0.0504482	0.0063637	0.000***
2011	-0.0593856	0.006449	0.000***
2012	-0.0684036	0.0064899	0.000***
2013	-0.0668777	0.0064867	0.000***
RTW/Year			
1 2002	-0.0028268	0.0075014	0.706
1 2003	0.0044853	0.0076385	0.557
1 2004	0.0104373	0.0076962	0.175
1 2005	0.0041083	0.0087666	0.639
1 2006	-0.0040477	0.0088431	0.647
1 2007	0.0000216	0.0089248	0.998
1 2008	-0.0163896	0.0088178	0.063
1 2009	-0.0135489	0.0090297	0.133
1 2010	-0.0248605	0.009293	0.007**
1 2011	-0.0005122	0.0092925	0.956
1 2012	-0.0030295	0.0093643	0.746
1 2013	-0.0170292	0.0094262	0.071
Full RTW Effect (RTW+ RTW/Year)	**RTW**	**Interaction**	**Full Effect**
1 2002	-0.0029848	-0.0028268	-0.0058116
1 2003	-0.0029848	0.0044853	0.0015005

1 2004	-0.0029848	0.0104373	0.0074525
1 2005	-0.0029848	0.0041083	0.0011235
1 2006	-0.0029848	-0.0040477	-0.0070325
1 2007	-0.0029848	0.0000216	-0.0029632
1 2008	-0.0029848	-0.0163896	-0.0193744
1 2009	-0.0029848	-0.0135489	-0.0165337
1 2010	-0.0029848	-0.0248605	-0.0278453
1 2011	-0.0029848	-0.0005122	-0.003497
1 2012	-0.0029848	-0.0030295	-0.0060143
1 2013	-0.0029848	-0.0170292	-0.020014

Full Year Effect (Year + RTW/Year)	**Year**	**Interaction**	**Full Effect**
1 2002	0.0038311	-0.0028268	0.0010
1 2003	-0.0118858	0.0044853	-0.0074
1 2004	-0.0201972	0.0104373	-0.0098
1 2005	-0.0296531	0.0041083	-0.0255
1 2006	-0.0290847	-0.0040477	-0.0331
1 2007	-0.0377699	0.0000216	-0.0377
1 2008	-0.0227332	-0.0163896	-0.0391
1 2009	-0.0321638	-0.0135489	-0.0457
1 2010	-0.0504482	-0.0248605	-0.0753
1 2011	-0.0593856	-0.0005122	-0.0599
1 2012	-0.0684036	-0.0030295	-0.0714
1 2013	-0.0668777	-0.0170292	-0.0839
Constant	0.8385427	0.0036713	0.000***
Sample Size	185,607		
R-Squared	0.0044		
Adjusted R-Squared	0.0042		

Note: *** is significant at the 0.01 level, ** at 0.05

Appendix E: Model IV

Full Results from OLS Regression, Firm and Demographic Characteristics

hinsemp	Coefficient	Std. Err.	Significance
RTW	-0.0168223	0.0343977	0.625
Year			
2002	0.0012405	0.0354519	0.972
2003	-0.0293417	0.0246649	0.234
2004	-0.0398854	0.0246728	0.106
2005	-0.0527361	0.0248073	0.034**
2006	-0.0540567	0.0248062	0.029**
2007	-0.0683907	0.024819	0.006**
2008	-0.0550978	0.0247965	0.026**
2009	-0.0638832	0.0248153	0.010**
2010	-0.0789442	0.0248431	0.001**
2011	-0.0836426	0.0248908	0.001**
2012	-0.0946157	0.0248996	0.000***
2013	-0.0959012	0.0249134	0.000***
RTW#year			
1 2002	0.0200596	0.0468473	0.669
1 2003	0.0003179	0.0347606	0.993
1 2004	0.0138567	0.0347732	0.69
1 2005	0.0049176	0.0349761	0.888
1 2006	-0.0013282	0.0349968	0.97
1 2007	0.006779	0.0350097	0.846
1 2008	-0.0120736	0.0349925	0.73
1 2009	-0.0088507	0.0350172	0.8
1 2010	-0.0197494	0.0350754	0.573
1 2011	-0.0033134	0.0350809	0.925
1 2012	-0.007537	0.0350944	0.83
1 2013	-0.0149736	0.0351072	0.67
Age	0.0044579	0.0000879	0.000***
Race			
Black	-0.0783918	0.0036322	0.000***
Asian	-0.0235556	0.004877	0.000***
Other	-0.0610471	0.0065444	0.000***

Educ			
H.S. Diploma	0.1187474	0.0114795	0.000***
Some College	0.1659315	0.0115408	0.000***
Associate, Academic,	0.1976913	0.0119697	0.000***
Associate, Vocational	0.1940017	0.0119976	0.000***
Bachelors	0.2251171	0.0114897	0.000***
Masters	0.2314243	0.0116618	0.000***
Doctorate	0.2369108	0.0126638	0.000***
Professional School	0.2213146	0.013073	0.000***
Sex(1)	-0.0096408	0.0021282	0.000***
Region			
East South Central	-0.01303	0.0049966	0.009**
Middle Atlantic	-0.0196584	0.0039473	0.000***
Mountain	-0.0196584	0.0042344	0.000***
New England	-0.0691172	0.0038066	0.000***
Pacific	-0.0582686	0.0041046	0.000***
South Atlantic	-0.036545	0.0035856	0.000***
West North Central	-0.0275976	0.0036744	0.000***
West South Central	-0.0636549	0.004642	0.000***
Fullpart	0.1542956	0.0034463	0.000***
Union	0.0662851	0.0023594	0.000***
Firm size			
10 to 24	0.0943596	0.005652	0.000***
10 to 49	0.0972707	0.007383	0.000***
25 to 99	0.1726748	0.0048392	0.000***
50 to 99	0.164957	0.0088447	0.000***

100 to 499	0.2125847	0.0043585	0.000***
500 to 999	0.2249844	0.0050262	0.000***
1000+	0.2317048	0.0039258	0.000***
Indnew			
Government	0.0040278	0.0036514	0.27
Service & Retail	-0.0745321	0.0030153	0.000***
Medical	-0.0065629	0.0036658	0.073
Financial	0.0334373	0.0039084	0.000***
Education	-0.0295241	0.0038016	0.000***
Agriculture	-0.0481726	0.0078004	0.000***
Science & Technology	0.0187312	0.0048734	0.000***
Energy	0.0331187	0.0058256	0.000***
Other	-0.1812404	0.015579	0.000***

Full RTW Effect (RTW+ RTW/Year)	**RTW**	**Interaction**	**Full Effect**
1 2002	-0.0168223	0.0200596	0.0032373
1 2003	-0.0168223	0.0003179	-0.0165044
1 2004	-0.0168223	0.0138567	-0.0029656
1 2005	-0.0168223	0.0049176	-0.0119047
1 2006	-0.0168223	-0.0013282	-0.0181505
1 2007	-0.0168223	0.006779	-0.0100433
1 2008	-0.0168223	-0.0120736	-0.0288959
1 2009	-0.0168223	-0.0088507	-0.025673
1 2010	-0.0168223	-0.0197494	-0.0365717
1 2011	-0.0168223	-0.0033134	-0.0201357
1 2012	-0.0168223	-0.007537	-0.0243593
1 2013	-0.0168223	-0.0149736	-0.0317959

Full Year Effect (Year + RTW/Year)	**Year**	**Interaction**	**Full Effect**
1 2002	0.0012405	0.0200596	0.0213001

1 2003	-0.0293417	0.0003179	-0.0290238
1 2004	-0.0398854	0.0138567	-0.0260287
1 2005	-0.0527361	0.0049176	-0.0478185
1 2006	-0.0540567	-0.0013282	-0.0553849
1 2007	-0.0683907	0.006779	-0.0616117
1 2008	-0.0550978	-0.0120736	-0.0671714
1 2009	-0.0638832	-0.0088507	-0.0727339
1 2010	-0.0789442	-0.0197494	-0.0986936
1 2011	-0.0836426	-0.0033134	-0.086956
1 2012	-0.0946157	-0.007537	-0.1021527
1 2013	-0.0959012	-0.0149736	-0.1108748
Constant	0.2718199	0.0276398	0.000***
Sample Size	143,695		
R-Squared	0.1602		
Adjusted R-Squared	0.1598		

Note: *** is significant at the 0.01 level, ** at 0.05

Appendix F: Model V

Full Results from OLS Regression, Final Model

hinsemp	Coefficient	Robust Std. Err.	Significance
RTW	-0.0194707	0.0021673	0.000***
Year			
2002	0.01252	0.0231072	0.588
2003	-0.0292636	0.0178827	0.102
2004	-0.0331262	0.0178884	0.064
2005	-0.050423	0.0179862	0.005**
2006	-0.054807	0.0179936	0.002**
2007	-0.0652628	0.0179991	0.000***
2008	-0.060985	0.0179837	0.001**
2009	-0.0682607	0.0179963	0.000***
2010	-0.0885857	0.0180277	0.000***
2011	-0.0853158	0.0180594	0.000***
2012	-0.0983289	0.018074	0.000***
2013	-0.1032044	0.0180851	0.000***
Age	0.0044596	0.0000879	0.000***
Race			
Black	-0.0783018	0.003632	0.000***
Asian	-0.0235787	0.0048777	0.000***
Other	-0.0613015	0.0065447	0.000***
Educ			
H.S. Diploma	0.1185246	0.0114806	0.000***
Some College	0.1657101	0.011542	0.000***
Associate, Academic,	0.197499	0.011971	0.000***
Associate, Vocational	0.1938054	0.0119991	0.000***
Bachelors	0.2247905	0.0114907	0.000***
Masters	0.2311239	0.0116627	0.000***
Doctorate	0.2364042	0.0126645	0.000***
Professional School	0.2210504	0.0130765	0.000***
Sex	-0.0096215	0.0021284	0.000***
Region			
East South Central	-0.0133035	0.004997	0.008**
Middle Atlantic	-0.0199598	0.0039457	0.000***

Mountain	-0.0693255	0.0042324	0.000***
New England	-0.0182776	0.0038061	0.000***
Pacific	-0.058126	0.0041038	0.000***
South Atlantic	-0.0365858	0.003585	0.000***
West North Central	-0.028015	0.0036727	0.000***
West South Central	-0.0640912	0.0046393	0.000***
Fullpart	0.1542874	0.0034467	0.000***
Union	0.0662473	0.002359	0.000***
Firm size			
10 to 24	0.0945714	0.0056521	0.000***
10 to 49	0.097286	0.007382	0.000***
25 to 99	0.172643	0.0048397	0.000***
50 to 99	0.1648024	0.0088456	0.000***
100 to 499	0.2126456	0.0043588	0.000***
500 to 999	0.2251668	0.005026	0.000***
1000+	0.2317587	0.0039259	0.000***
Indnew			
Government	0.0039884	0.0036513	0.275
Service & Retail	-0.0745655	0.003015	0.000***
Medical	-0.0065299	0.0036657	0.075
Financial	0.0333966	0.0039083	0.000***
Education	-0.0294192	0.0038019	0.000***
Agriculture	-0.0483314	0.0078	0.000***
Science & Technology	0.0187	0.0048731	0.000***
Energy	0.0329777	0.0058238	0.000***
Other	-0.1812468	0.0155852	0.000***
Constant	0.273454	0.0219225	0.000***
Sample Size	147,495		
R-Squared	0.1600		
Adjusted R-Squared	0.1597		

Note: *** is significant at the 0.01 level, ** at 0.05

Appendix G:

Difference-in-Differences Model I

hinsemp	Coef.	Std. Err.	Significance
X	.0704492	.0016739	0.000***
State			
Alabama	-.0608543	.0021002	0.000***
Alaska	-.0941065	.001183	0.000***
Arizona	-.0592497	.0009803	0.000***
Arkansas	.0007374	.0021254	0.730
California	.0277077	.0010376	0.000***
Connecticut	.0628822	.0013858	0.000***
Delaware	.0825067	.0013744	0.000***
District of Columbia	-.0125248	.0027122	0.000***
Florida	-.0756491	.0008135	0.000***
Georgia	.0480418	.0020829	0.000***
Hawaii	.141182	.0091306	0.000***
Idaho	.0097503	.0002927	0.000***
Illinois	-.0093921	.0007196	0.000***
Indiana	.0068967	.0012711	0.000***
Iowa	-.0075188	.0017054	0.000***
Kansas	.0402502	.000898	0.000***
Kentucky	-.0042437	.0013839	0.003***
Louisiana	.0272643	.0014988	0.000***
Maine	.035365	.0005232	0.000***
Maryland	.0823403	.0026124	0.000***
Massachusetts	-.0245088	.0011565	0.000***
Michigan	.0710003	.0009597	0.000***
Minnesota	-.0233354	.0013871	0.000***
Mississippi	.0578546	.0022139	0.000***
Missouri	.0639571	.0008639	0.000***
Montana	-.1407606	.0014362	0.000***
Nebraska	-.0357112	.0014478	0.000***
Nevada	.0508382	.0013594	0.000***
New Hampshire	.072834	.0008679	0.000***
New Jersey	.0558207	.0015523	0.000***
New Mexico	-.0619573	.0015691	0.000***
New York	-.0395278	.0007633	0.000***
North Carolina	-.0330701	.0004953	0.000***
North Dakota	.0240641	.0007264	0.000***
Ohio	.0167377	.001004	0.000***
Oklahoma	.019864	.0019431	0.000***
Oregon	.0162687	.0008144	0.000***
Pennsylvania	.0892435	.0007676	0.000***
Rhode Island	-.0056636	.0012664	0.000***
South Carolina	-.0274287	.0005653	0.000***
South Dakota	-.0658578	.0014533	0.000***
Tennessee	-.03973	.0008696	0.000***
Texas	-.0646366	.0008405	0.000***
Utah	.0758193	.0004888	0.000***

Vermont	-.0429203	.0016666	0.000***
Virginia	.0309994	.0017329	0.000***
Washington	.0384841	.0011528	0.000***
West Virginia	.0505383	.0007209	0.000***
Wisconsin	.0127071	.0015275	0.000***
Wyoming	(omitted)		
Year			
2002	-.0029018	.0036444	0.430
2003	-.0169759	.0050718	0.002***
2004	-.0249173	.0051214	0.000***
2005	-.0418681	.0056834	0.000***
2006	-.0437901	.0060688	0.000***
2007	-.0517659	.0063904	0.000***
2008	-.0495539	.0068134	0.000***
2009	-.059603	.0063565	0.000***
2010	-.0845094	.0056342	0.000***
2011	-.0837655	.0075893	0.000***
2012	-.0958	.0057566	0.000***
2013	-.1036599	.0059854	0.000***
Race			
Black	-.0526631	.0062057	0.000***
Asian	-.0421988	.0111167	0.000***
Other	-.0763344	.01509	0.000***
Age	.0055052	.0001272	0.000***
Sex (female)	.0145734	.0026127	0.000***
Education			
H.S. Diploma	.1375143	.0158766	0.000***
Some College	.1848792	.01805	0.000***
Associate, Academic,	.2423001	.0195595	0.000***
Associate, Vocational	.2292367	.0192399	0.000***
Bachelors	.2796144	.0181985	0.000***
Masters	.306119	.0211827	0.000***
Doctorate	.3039634	.0193821	0.000***
Professional School	.2833768	.0185666	0.000***
Constant	.3795964	.0197379	0.000***
Sample Size	185,607		
R-Squared	0.0767		
Adjusted R-Squared	0.0762		

Appendix H:

Difference-in-Differences Model II

hinsemp	Coef.	Std. Err.	Significance
X	.0675146	.0030688	0.000***
State			
Alabama	-.0564804	.0028286	0.000***
Alaska	-.0843862	.0017346	0.000***
Arizona	-.0556031	.0015954	0.000***
Arkansas	.0127575	.002761	0.000***
California	.0326134	.0020795	0.000***
Connecticut	.0624707	.0022653	0.000***
Delaware	.0790059	.0027331	0.000***
District of Columbia	-.0078984	.0037658	0.041**
Florida	-.0565268	.0013362	0.000***
Georgia	.0447493	.0031078	0.000***
Hawaii	.1720671	.0082325	0.000***
Idaho	.0189123	.0021701	0.000***
Illinois	-.001291	.0015091	0.396
Indiana	.0065576	.0016922	0.000***
Iowa	-.0028177	.0024475	0.255
Kansas	.0438538	.0019167	0.000***
Kentucky	-.0052351	.0016932	0.003***
Louisiana	.0222952	.0026318	0.000***
Maine	.0420795	.0023368	0.000***
Maryland	.0795453	.0029068	0.000***
Massachusetts	-.0098375	.0020666	0.000***
Michigan	.0712086	.0024571	0.000***
Minnesota	-.0142915	.0018459	0.000***
Mississippi	.0543568	.0031819	0.000***
Missouri	.0653141	.0023044	0.000***
Montana	-.1125081	.0028141	0.000***
Nebraska	-.0304724	.0020754	0.000***
Nevada	.0781106	.0054021	0.000***
New Hampshire	.0704567	.0021088	0.000***
New Jersey	.062869	.0025659	0.000***
New Mexico	-.05359	.0026819	0.000***
New York	-.0220029	.0011888	0.000***
North Carolina	-.0236779	.0012611	0.000***
North Dakota	.0323057	.0021886	0.000***
Ohio	.0213775	.0013998	0.000***
Oklahoma	.020309	.002551	0.000***
Oregon	.0293186	.0022179	0.000***
Pennsylvania	.0912425	.0024661	0.000***
Rhode Island	.0022299	.00168	0.19
South Carolina	-.0211154	.0016065	0.000***
South Dakota	-.0565055	.0024324	0.000***
Tennessee	-.0382806	.001355	0.000***

Texas	-.0649433	.0014707	0.000***
Utah	.0700648	.0020206	0.000***
Vermont	-.0296656	.0019255	0.000***
Virginia	.0323282	.0025738	0.000***
Washington	.045627	.0021468	0.000***
West Virginia	.0475338	.0018572	0.000***
Wisconsin	.0122493	.002175	0.000***
Wyoming	(omitted)		
Year			
2002	-.0005464	.0035048	0.877
2003	.0285225	.0535496	0.597
2004	.0210857	.054338	0.700
2005	.0096844	.0527796	0.855
2006	.0081832	.0534465	0.879
2007	.0014183	.0535319	0.979
2008	.003774	.0525469	0.943
2009	-.004538	.0527897	0.932
2010	-.0260501	.0527688	0.624
2011	-.0269858	.0520965	0.607
2012	-.0388268	.05461	0.480
2013	-.0454632	.0526138	0.392
Race			
Black	-.0431035	.0059949	0.000***
Asian	-.0266541	.0089652	0.005***
Other	-.0690693	.0135322	0.000***
Age	.0037771	.0001105	0.000***
Sex (female)	.000855	.0025683	0.741
Education			
H.S. Diploma	.0812739	.014141	0.000***
Some College	.101319	.0150053	0.000***
Associate, Academic,	.1187817	.0162228	0.000***
Associate, Vocational	.119197	.0162551	0.000***
Bachelors	.1365692	.0147907	0.000***
Masters	.1481822	.0166139	0.000***
Doctorate	.1624505	.0155163	0.000***
Professional School	.1334216	.0160975	0.000***
Industry included			
Constant	.2993984	.0677112	0.000***
Sample Size	185,607		
R-Squared	0.1709		
Adjusted R-Squared	0.1637		

Appendix I:

Region Categories

- **(0) East North Central Division**: Illinois, Indiana, Michigan, Ohio, Wisconsin
- **(1) East South Central Division**: Alabama, Kentucky, Mississippi, Tennessee
- **(2) Middle Atlantic Division**: New Jersey, New York, Pennsylvania
- **(3) Mountain Division**: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
- **(4) New England Division**: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
- **(5) Pacific Division**: Alaska, California, Hawaii, Oregon, Washington
- **(6) South Atlantic Division**: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
- **(7) West North Central Division**: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
- **(8) West South Central Division**: Arkansas, Louisiana, Oklahoma, Texas

Appendix J:

States with RTW Laws 2012–2013

Arizona (Constitution, State Constitution approved 1946) (adopted 1944)

Florida (Constitution, 1944, revised 1968, Article 1, Section 6)

South Dakota (adopted 1946)

Nebraska (Constitution and statute, adopted 1946)

Virginia (adopted 1947)

Arkansas (Constitution, 1947, Amendment 34)

Tennessee (adopted 1947)

Texas (adopted 1947)

North Carolina (adopted 1947)

North Dakota (adopted 1947)

Georgia (adopted 1947)

Iowa (adopted 1947)

Nevada (adopted 1951)

Alabama (adopted 1953, Constitution 2016)

Mississippi (Constitution, adopted 1954)

South Carolina (adopted 1954)

Utah (adopted 1955)

Kansas (Constitution, 1958, Article 15, Section 12)

Wyoming (adopted 1963)

Louisiana (adopted 1976)

Idaho (adopted 1985)

Oklahoma (Constitution, adopted 2001)

Indiana (State law, 2012)

Michigan (State law, 201

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