Does Right to Work Hinder Your Right to Safety? The Effect of Right to Work Laws on Workplace Injuries

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Abstract

A resurgence in right to work laws has occurred with six states adopting this legislation in the twenty-first century. While previous research focused on how right to work laws impact labor unions and the economy, little is known about how recent policy adoptions can influence workplace injury rates. Using a difference-in-differences approach on U.S. panel data from 1992 to 2018, I examine the impact of right to work enactments on fatal and nonfatal workplace injury rates. Further, I study this relationship in the private and public sectors as well as within seven different private industries. My findings suggest that a right to work passage leads to a small increase in fatal injuries while also decreasing nonfatal injuries, primarily nonfatal injuries which result in days away from work. These results are further bolstered through a generalized synthetic control technique. When analyzing each sector and industry, results show that they can have large magnitude differences across these groups. Analysis from state case-studies concur but placebo tests show that these are insignificant. I conclude that right to work laws may decrease average safety standards while increasing the incentive to misreport costly nonfatal injuries.

1 Introduction

Each day in 2018 in the US, 14 people died from a fatal workplace injury and over 8000 suffered from a nonfatal workplace injury. The level of safety within a workplace environment and the worker's ability to avoid error are the factors which determine the rate at which these injuries occur. These two factors have been shown by previous research to be influenced by labor unions, the economy, and other mechanisms. Discussions about whether or not to pass a right to work law revolves around its impact on these same mechanisms, labor unions and the economy. Yet, there is little discussion about how right to work laws impact workplace injury rates.

A right to work (RTW) law prohibits labor unions from requiring financial support from workers as a condition of employment. These state laws were primarily adopted following the Labor Management Relations Act in 1947 which allowed their passage. A recent resurgence in RTW support has led to six more states to adopt this law bringing the total number of supporting states to 27. Previous findings indicate that RTW laws decrease unionization, increase the number of non-paying employees in a union workplace (free-riders), and increase industrial growth within a state (Moore [1998]). Both labor unions and industrial growth have been studied extensively with regards to workplace injury rates and both have been shown to have significant impacts. However, no study has been conducted to analyze the potential impact right to work laws have on a state's workplace injury rate. The estimated average cost of a nonfatal injury which resulted in time away from work is $41,000 while the estimated average cost of a worker fatality is $1.2 million (NSC 2019 & Biddle 2011). Hence, estimating the effect RTW laws have on workplace injuries can be used to inform a policy maker's decision to adopt this law within their state or be used to understand if additional safety measures should be put in place following a RTW passage.

The purpose of this paper is to study the effect that right to work law adoptions may have on workplace injury rates in today's economy using the six recent adopters of this law. In order to avoid any issues regarding multicollinearity or endogeniety, a reduced form analysis is conducted leaving out any control variables related to labor unions or economic growth. Because RTW laws are shown to have differing economic and union impacts by industry and because most RTW laws are only for the private sector, individual analyses will be conducted for the private and public sectors as well as the following private sector industries: construction, manufacturing, wholesale trade, retail trade, transportation and warehousing, financial activities, and services. These separate analyses not only can bolster national findings but can show that some industries may be more or less influenced by RTW passages with regards to workplace injury rates than others.

Using US panel data from 1992 to 2018, I estimate the effect of a right to work law passage on five different measures of workplace injury rates for the total workforce, private and public sectors, and seven industries using a difference-in-differences estimation. The use of five different outcome measures, four nonfatal injury outcomes and a fatal injury outcome, helps illustrate which types of injuries are changing as a result of a RTW adoption. The four types of nonfatal injuries studied are all nonfatal injuries, nonfatal injuries which result in lost workdays, nonfatal injuries which result in job transfer or restriction, and nonfatal injuries which do not result in time away or job restriction or transfer. To avoid bias resulting from violations in the parallel trends assumption and uncorrelated treatment assumption, I use a generalized synthetic control method. Unlike a traditional synthetic control setting, this generalized synthetic control allows for differences in treatment timing allowing me to take advantage of the full sample. Due to the small amount of treatment states within the time period studied, the results can be biased if the six treatment states are inherently different than other states. Hence, six individual difference-in-differences case studies are conducted along with a synthetic difference-in-differences method to check for any bias occurring from the small amount of treatment.

Findings from the multi-state difference-in-differences estimation show that a RTW passage is associated with an increase in the rate of fatal workplace injuries by 11.9% and decreases the rate of lost workday nonfatal workplace injuries by 13.9%, significant at the 5% and 1% level respectively. Total nonfatal injuries are shown to decrease by 8.0%, significant at the 5% level. These results are bolstered through the generalized synthetic control method which shows an increase in fatal injuries and similar decreases in lost workday injuries. I argue that these results indicate a decrease in the average workplace safety level following a RTW passage and increase a firm's incentive to under-report or dissuade employees from reporting injuries which could result in workers' compensation claims. Results from studying different industries and sectors show that changes in workplace injury rates can differ drastically in response to a RTW passage.

2 Background

2.1 Right to Work Laws

In 1935, the National Labor Relations Act (NLRA) established an employee's right to organize and form a labor union. Once formed, a labor union acts as a mediator between the members of the unionized workforce and its employers. Labor unions can even bargain on behalf of the employees who are not members of the union through a process called collective bargaining. When a labor union collectively bargains, they bargain on behalf of all employees giving them the most bargaining power possible. In order to fund the union, dues are typically required from its members and can even be required from non-members. By federal law, the dues required from non-members is only meant to cover the costs of union representation through collective bargaining. Hence, paying dues to a labor union can be unavoidable. To stop this, the NLRA was amended by the Taft-Hartley Act in 1947 which allows states to pass Right to Work (RTW) laws. A RTW law prevents unions from collecting any dues from non-members.[1] However, the non-members can still obtain benefits from unions collectively bargaining such as safer work environments or better health insurance options. Twenty-seven states have passed a RTW law. As seen in Table 1, twenty-one of these states adopted a RTW law in the 20th century with most being in the 40's and 50's. Five states have passed a RTW law within the last decade showing a resurgence in its popularity.

Supporters of right to work laws argue that the law enhances personal freedom and employer flexibility leading to better economic performance within the state. Econometric evidence is mixed but somewhat supports the conjecture of industrial growth (Moore [1998]). Opponents of RTW laws argue that these laws restrict necessary union funding by incentivizing employees to stop paying dues and free ride the benefits received from collective bargaining (Sobel [1995]). Without proper funding, unions can become ineffective or be forced to disband (Ichniowski and Zax [1991]). Previous research is somewhat mixed but primarily shows that RTW laws lead to less labor union representation and increase the number of labor union free riders, as seen in Table 2. The enactment of the Taft-Hartley Act marks the beginning of a continual decline in private sector labor union representation.

As summarized by Moore and Newman [1985] and Moore [1998] in their right to work law literature reviews, RTW laws have been shown to decrease union formation, encourage free riding, and increase industrial growth and economic development.[2] It is through these types of mechanisms that a RTW law can impact workplace injury rates. However, whether or not these hold true for recent right to work adopters is unknown as research on right to work laws since

[1] In a non-RTW state, the labor union does not necessarily have to require dues from all employees. Rather, requiring dues in a non-RTW state is optional and requiring dues is prohibited in a RTW state.

[2] They further argue that RTW laws are shown to have no impact on wages.

the 1990's is lacking. How labor unions and economic growth impact workplace injuries will be discussed in the next sections along with a section discussing other impacts on workplace injuries which are likely exogenous to RTW.

2.2 How Right to Work Laws Impact Workplace Injuries Through Unions

The National Labor Relations Board states that mandatory bargaining subjects between a labor union and employers include wages, hours, pensions, healthcare and working conditions. Theoretically, a workplace with a labor union which collectively bargains for higher workplace safety standards should have less risk of an injury when compared to the same workplace whose employees individually bargain with less power for higher workplace standards. Research has shown that unionized workplaces are more likely to be compliant with safety regulations than nonunion workplaces (Weil [1991], Weil [1996], Weil [2001], and Gray and Mendeloff [2005]). If labor unions do increase workplace safety, then right to work laws, which reduce unionization, should decrease workplace safety. However, empirical literature has shown mixed results on a labor unions impact on workplace injuries. More specifically, the literature agrees that labor unions reduce fatal workplace injuries, but the impact labor unions have a nonfatal injuries is unclear. Findings from previous research is summarized in Table 3.[3] Donado [2015] gives five reasons why researchers have found that unions may increase nonfatal workplace injuries. These are: 1) Reporting, 2) Selection 3) Wages for Safety, 4) Moral Hazard, and 5) Distribution Shifting. Understanding these and the impact labor unions have on workplace injuries is meant to improve our understanding of how right to work laws can impact workplace injuries. For a brief summary of the ways in which labor unions can influence workplace injury rates, see Table 4.

The first plausible reason why previous literature overwhelmingly shows that labor unions increase nonfatal injuries is because researchers only have access to injuries which are reported. When an injury is reported, the firm can experience costs through time spent filing an injury, lost workdays from the employee, and even workers' compensation to cover missed wages and hospital bills. Because the reporting of a workplace injury is costly to a firm, firms have an incentive to under-report workplace injuries or dissuade its employees from reporting injuries. Employees may feel more comfortable reporting an injury in a unionized workplace because the union protects them from any management retaliation such as "disciplinary action, denial of overtime or promotion opportunities, stigmatization, drug testing, harassment, or job loss" (Azaroff *et al.* [2002]). If this misreporting is more likely to occur in a nonunionized workplace, it would help explain why labor unions are shown to increase reported nonfatal injuries. To avoid this reporting bias, previous research has used fatal or severe nonfatal injuries and have found that labor unions are successful at reducing these types of injuries (Morantz [2013], Boal [2009], Donado [2015]). Any large differences between how a RTW law impacts fatal and less severe nonfatal injuries could be because of this same reporting bias.

The next reason why researchers believe labor unions have shown a positive relationship with nonfatal workplace injuries is because of selection bias. Employees working in a riskier work environment may be more likely to form a labor union. Hence, it might not be that unions are causing more injuries, but unionized workplaces are inherently more risky. This selection issue or reverse causality problem may produce biased estimates leading to false conclusions. It is repeatedly cited by previous researchers as the main flaw of their paper. The inclusion of a union rate control is not only highly correlated with RTW leading to a possible classic multicollinearity problem but is arguably endogeneous to injuries because of this selection issue. However, this selection problem is avoided when studying a reduced form of how right to work

[3] This table is similar to Donado's Table 1. However, I have excluded papers whose primary focus is not unions vs health/safety and have updated the table with more recent literature.

laws impact workplace injuries because of the exclusion of a union control variable. Further, any reverse causality concern regarding large decreases in workplace injuries leading to RTW passages is unlikely.

Some researchers have argued that unions directly increase workplace injury rates because labor unions are able to negotiate higher wages as a trade-off for workplace safety. Employee interviews conducted by Brown *et al.* [1984] have shown that some labor unions do behave in this manor. Hence, if right to work laws decrease labor union representation then a RTW passage may stop this trade-off from occurring at some unionized workplaces leading to a decrease in injuries. This idea of wages for safety directly contradicts the concept that labor unions bargain for higher safety standards. While it may be true that some unionized workplaces trade away safety for higher wages, findings that unionized workplaces are more likely to be following OSHA standards is evidence against wages for safety for most labor unions.

Moral hazard is another reason why labor unions may not be effective at reducing workplace injuries. Employees in a safer work environment may exhibit riskier work practices which offsets any attempt the union makes to create a safer environment. Further, because unions can increase job security when injured, workers could be less worried about getting injured knowing that, if they do, their job is secure. These two ideas behind moral hazard can hinder the ability of labor unions to decrease injuries and may instead increase them.

The last way in which labor unions may impact workplace injury rates is through distribution shifting. If increased safety from a union only decreases the severity of workplace injuries, then fatal or severe nonfatal injuries may decrease while the amount of less severe injuries may increase. Donado [2015] finds distribution shifting to be true but argues that it explains only a small portion of why unions are shown to increase less severe nonfatal injuries.

Reporting, selection, wages for safety, moral hazard, and distribution shifting are the argued reasons why labor unions are shown to increase nonfatal injuries. Morantz [2018] states that "the existing literature is fraught with empirical biases that may mask unions' true health and safety impact" and only suggests possible solutions leaving a unions true effect on less severe workplace injuries unknown. Hence, a right to work law's impact on less severe workplace injuries through its effect on unions is also ambiguous.

The most recent literature which studies the impact of labor unions on fatal workplace injury rates comes from Zoorob [2018] who finds that a one percentage point increase in the unionized workforce leads to a 4.9% decrease in the workforce fatality rate. This research goes a step further than previous studies by attempting to relieve the selection bias through the use of an instrument. Zoorob [2018] uses RTW passages as an instrumental variable for unionization. Because RTW laws may influence things other than union rates such as expansion of riskier firms, increased number of large firms, or changes in industry composition, using RTW laws as an instrument for state unionization could lead to a biased result. No attempt is made to see how labor unions impact nonfatal injuries. While not the main focus of the paper, Zoorob [2018] also runs a reduced form equation of RTW laws and workplace fatalities. He finds that the passage of a RTW law increases the fatal workplace injury rate by 14.2% which he attributes to its impact on labor unions.

This paper improves upon this previous literature in several ways. First, I study not only fatal injuries but four additional nonfatal injury measures which vary in average severity level. Second, I use multiple estimation strategies to account for possible biases naturally formed by the data set. Lastly, I study the impact of RTW on workplace injuries for the entire workforce, make a comparison between the private and public sectors, and study seven different private sector industries in order to show any differences RTW may have on these different groups. Zoorob [2018] attributes a RTW law's impact on fatal workplace injuries to changes in unionization. However, the economic signal that RTW laws send to expanding and newly forming firms may have just as large of an impact on workplace injuries.

2.3 How Right to Work Laws Impact Workplace Injuries Through An Economic Signal

Supporters of right to work legislation claim that its passage leads to a "favorable business climate" (Moore [1998]). The idea is that a RTW passage is a signal to businesses that opening a new location or expanding a current location within that state is less likely to result in a labor union formation compared to if they had opened the same business in a non-RTW state. If true, a RTW law would indeed lead to economic growth. Increases in production have been shown to have a direct impact on nonfatal injury rates and some researchers have found the same for fatal injuries as well (Davies *et al.* [2009], Boone and Van Ours [2006], Boone *et al.* [2011], and Amuedo-Dorantes and Borra [2013]). Theories as to why economic growth can affect workplace injuries can be found in Table 5. Assuming previous literature is correct in finding a direct relationship between economic growth and workplace injuries, it is reasonable to believe that a RTW passage can increase workplace injury rates through its ability to encourage economic growth.

If RTW leads to large amounts of new businesses within the state then this may also lead to increases in new hires which are unfamiliar with their work environment. This unfamiliarity or environment inexperience would lead to higher rates of injury as inexperienced workers are more liable to injury. Hence, RTW may increase injuries through increases in inexperienced workers. Further, it is plausible that businesses which see a RTW passage as a "favorable business climate" are the same businesses which offer below average safety standards causing a selection issue. This selection would further a RTW law's ability to increase workplace injury rates.

Firm size is another factor when considering workplace injury rates. Larger firms have a lower safety education cost per worker than smaller firms due to economies of scale. This can help larger firms have a lower injury rate than smaller (Conway and Svenson [1998]). However, larger firms also have higher bargaining power which can lead employees as individuals unable to bargain for higher safety. Recent large firms such as Amazon have been associated with high workplace injuries and fatalities due to unsafe working conditions (Wich and Magee [2020]). If the passage of a RTW law leads to changes in firm size composition within a state, then this is yet another way RTW can influence workplace injury rates.

Each theory in this section implies that RTW will lead to increases in workplace injury rates through its impact on economic factors. The economic factors occur due to a right to work law signaling to businesses that the new RTW state is favorable for their business expansion. For a brief overview of all the ways in which RTW can influence workplace injuries, see Table 6. When considering every mechanism, the impact RTW has on workplace injuries becomes ambiguous which creates the need for empirical evidence. Because a RTW passage influences more than just union rates, this paper focuses on using a reduced form strategy to estimate the effect right to work laws have on different measures of workplace injury rates.

2.4 Exogenous Workplace Injury Rate Factors

The two previous subsections discussed workplace injury rate factors which are correlated with a RTW passage. There are several other factors which determine workplace injury rates which are likely independent to RTW passages. The Occupational Health and Safety Administration (OSHA) has implemented federal health and safety regulations which act as a mechanism to entice firms to invest more into safety. OSHA enforces its regulations through safety inspections without advanced notice. Failure to follow safety guidelines can lead to fines for the firm. Twenty-eight states have adopted their own state run OSHA's with regulations which are more strict than the federal regulations put in place. Many states have also put safety mandates into place which require all or high risk workplaces to have a written safety plan or have a safety committee. These state run OSHA's and safety mandates have been shown to be effective in reducing workplace injuries.[4] However, because a RTW adoption should have no influence on OSHA inspection rates or safety standards and vice versa, controlling for these will not result in an endogeniety issue.

Before large fraudulent reforms in the 1980's and 1990's, workers' compensation benefits were thought to increase workplace injuries. As benefits increase, the incentive to fraudulently obtain these benefits increases leading to higher reported workplace injuries (Ruser [1985], Ruser [1991], Chelius [1982], Krueger [1990], Smitha *et al.* [2001]). However, recent studies find no evidence that workers' compensation benefits have any effect on workplace injuries ruling out any workers' compensation moral hazard (Huet-Vaughn and Benzarti [2020]). These reforms along with the formation of OSHA in 1971 are considered to be the driving force behind the large decline in occupational injury rates over the last several decades.

Other factors which can impact workplace injury rates that are exogenous to RTW passages are age, education, and weather. Younger workers are typically found to be less experienced and less risk averse leading to higher workplace injuries among them (Mitchell [1988]). Results for education are consistent at showing that a more educated population leads to less workplace injuries (cite). Rainfall and heat exposure are positively related to injury rates for outside workplaces (Varghese *et al.* [2018]). Other factors or policies may exist which influence workplace injury rates. However, their inclusion should have no impact when studying the effect of RTW on injuries due to them being exogenous to RTW passages.

3 Empirical Strategy

As discussed above, right to work laws can impact union rates and economic signaling within a state which, in turn, influence both fatal and nonfatal workplace injuries. Due to opposing theories, it is unclear what effect RTW laws have on fatal and nonfatal workplace injuries. The primary estimation strategy, multi-state difference-in-differences, takes full advantage of the pooled cross-sectional data obtained. This approach allows a comparison of a state before and after it implements a RTW law, while differencing out trends from control states who experience no change in law. A generalized synthetic control method is used to bolster results found and to correct any bias resulting in failed parallel trends.

To compare potential differences between the private and public sector as well as differences between private sector industries, the multi-state difference-in-differences strategy will be run for each of these. Because of the volatile nature of workplace injuries from year to year, splitting the data creates smaller n's and less precise estimates. This precision is further diminished when performing case studies making inference difficult. Hence, case study analyses will forgo analysis of separate sectors and industries and will only focus on the complete workforce.

3.1 Multi-State Difference-in-Differences

My primary difference-in-differences equation which estimates the reduced form impact of RTW laws on workplace injury outcomes is the following:

$$I_{st} = \alpha + \beta_1 \text{RTW}_{st} + \beta_2 \mathbf{X}_{st} + \sigma_s + \tau_t + \epsilon_{st} \tag{1}$$

The dependent variable, I_{st}, represents the natural log of fatal injuries, all nonfatal injuries, nonfatal injuries which resulted in days away from work, nonfatal injuries which resulted in

[4]See Gray and Scholz [1989], McCaffrey [1983], Weil [2001], Bartel and Thomas [1985], Weil [1996], Gray and Jones [1991], Scholz and Gray [1990], Ruser and Smith [1991], Curington [1986], Gray and Mendeloff [2005], Marlow [1982], Ruser and Smith [1988], Viscusi and others [1979], Viscusi [1986], Lanoie [1992], Robertson and Keeve [1983], Rea [1981] and Smitha *et al.* [2001].

job restriction or transfer, and all other nonfatal injuries within state s and year t. RTW_{st} is an indicator for if a state s is a right to work state in year t. The state fixed effect σ_s is used to absorb unobserved time-invariant state characteristics such as a state's anti-union sentiment. Similarly, τ_t represents year fixed effects which capture unobserved national trends. The usage of these fixed effects can be thought of as a higher level difference-in-differences model. The vector $\mathbf{X}_{st}$ is comprised of the following time-varying state-specific variables: fraction male, age groupings, race variables, marital variables, fraction of lower house Republican, the number of inspections done by OSHA, and weather variables regarding temperature and precipitation. The error term ϵ_{st} is clustered at the state level to allow for intrastate correlation. Variables such as union rates, industry composition, firm size, and unemployment have been left out of equation 1 for multicollinearity and endogeniety concerns and to estimate a reduced form.

There are two issues with the suggested difference-in-differences design in my setting. First, the assumption of parallel trends in the pre-treatment period may be violated. That is, the trends in workplace injury rates within a treatment state before treatment may be different than the trends in the control states. Results from a DiD design can be completely driven by trends in pre-treatment which are not parallel. As seen in Figures 5a - 5e, parallel trends hold in some cases but fails in others. Second, the assumption that treatment is randomly assigned may be potentially violated. This can be seen in Figure 1 as the five newest adopters of Right to Work are in the Midwest region. These states may have felt pressure to adopt RTW laws in order to stay relevant with firms seeking to expand. The generalized synthetic control (GSC) method does not require random treatment, allows for differences in treatment timing, and is a solution for dealing with violations in the parallel trends assumption.

3.2 Generalized Synthetic Control

Abadie and Gardeazabal [2003] and Abadie *et al.* [2010] introduced a technique which they called synthetic control. This technique creates a control for a treated unit by using a weighted average of the controls. The weights are chosen such that the mean squared prediction error of the outcome variable in the pre-treatment period is minimized. By doing so, the synthetic control unit has a similar pre-treatment trend to the treated unit. This is useful in cases when the parallel trends assumption is weak or fails to hold in the typical difference-in-differences framework. The original synthetic control technique was created for individual case studies with a treatment dummy. Studies with multiple treatment units who have identical treatment timing have used a synthetic control approach on each individual treatment unit and then aggregated the results for each treated unit. However, in this paper, treatment timing differs from state to state meaning a simple aggregation of individual synthetic case studies can lead to biased results.

The generalized synthetic control (GSC) method is an extension of Abadie *et al.* [2010] and Bai [2009] created by Xu [2017] of which difference-in-differences is a special case. The GSC method works in three steps. First, it estimates an interactive fixed effects (IFE) model derived by Bai [2009] in order to obtain a fixed number of latent factors. The model is

$$I_{st} = \beta_1 \text{RTW}_{st} + \beta_2 \mathbf{X}_{st} + \beta_3 x_{st} + f_t \lambda_s + \epsilon_{st} \tag{2}$$

where x_{st} represents for a fixed effect for every state/year pair, f_t is a vector of unobserved time-varying latent factors, λ_s is a vector of state-specific factor loadings, and ϵ_{st} is the independent stochastic error term. The set of dependent and independent variables used in the IFE model are identical to equation 1. The first step estimates the parameters β_3, λ_s and the vector f_t using the control group data only. Second, the factor loadings, λ_s, are then estimated by linearly projecting the treated outcomes in the pre-treatment period onto the space spanned by the factors, f_t, found in step one. In other words, similar to the idea behind Abadie *et al.* [2010]'s synthetic control method, factor loadings are chosen such that the mean squared error of the predicted treated outcomes is minimized in the pre-treatment period. Third, the synthetic control in the post-treatment period, $\widehat{I}_{st}$, is imputed based on the latent factors and factor loadings from steps one and two.

Let $\mathcal{T}$ be the set of treatment states and N be the number of treatment states. The average treatment effect on the treated can then be calculated for each period as follows:

$$ATT_t = \frac{1}{N} \sum_{s \in \mathcal{T}} \left[I_{st} - \widehat{I}_{st} \right] \tag{3}$$

Results from this estimation strategy are likely the least bias and result in the most accurate estimation of a RTW laws' affect on workplace injury outcomes. However, due to the few pre-treatment periods for Oklahoma when considering nonfatal workplace injury outcomes, the GSC method drops Oklahoma as a treatment state. However, results will show that estimates for nonfatal injury outcomes remain nearly identical between the difference-in-differences analysis and GSC method.

3.3 Case Study Analyses

Due to the lack of treatment states, the two previous estimation methods may be biased if the six treatment states studied are inherently different than the control states. To check for this bias and to bolster the results from a multi-state analysis, I will also conduct a difference-in-differences case study on every state that changes treatment status. When performing a case-study analysis on a specific treatment state, all other treatment states are dropped. Equation 1 will be adapted for case study analysis as follows:

$$I_{st} = \alpha + \beta_1 POST_t + \beta_2 State_s + \beta_3 Post \times State_{st} + X\beta_4 \mathbf{X}_{st} + \epsilon_{st} \tag{4}$$

The variables $POST_t$ and $State_s$ are indicator variables for if the treatment year has occurred and if the state is the case-study treatment state, respectively. The difference-in-differences variable that is of interest is the interaction term $Post \times State_{st}$. The controls contained in $\mathbf{X}_{st}$ are identical to those found in equation 1. All other states are used as controls including those who have already passed a RTW law. As a robustness check, previous adopters of RTW laws will be dropped as well. Inference becomes difficult in this setting for two reasons. One, in this state-year clustering framework, the assumption that the number of states is large enough to allow correlation within cluster is violated (Wooldridge [2006]). Two, the use of a single treatment state shrinks the degrees of freedom leading to a larger sampling variance. To alleviate such concerns, I will implement a randomization test similar to Buchmueller *et al.* [2011]. This test reruns equation 4 for all control states. The results from the additional placebo estimates are then used as the sampling distribution for the treatment state. Hence, rather than using the asymptotic standard error, the results from the placebos are used to calculate much more conservative confidence intervals than those given by standard clustered errors.

Similar to the multi-state analysis, each case study analysis relies on the assumption of parallel pre-trends. Because this is likely violated and to bolster results, case-study synthetic difference-in-differences will be used. This new estimation strategy produced by **?** is similar to Abadie and Gardeazabal [2003] and Abadie *et al.* [2010]'s synthetic control method in that it re-weights and matches pre-treatment trends to alleviate failings in the parallel trend assumption. This new synthetic difference-in-differences method further estimates time weights which balance pre-treatment time periods with post-treatment periods. From here, it uses these weights in a basic difference-in-differences estimation. The use of weights emphasizes control units which are most similar to the treated state and pre-treatment periods which most closely match post-treatment periods allowing for a more ideal comparison. Again, inference is near impossible when considering a single treatment unit. I use the placebo variance estimation when performing synthetic difference-in-differences which calculates confidence intervals based on placebo estimates from the untreated units. Results from case-study analyses should not be used for inference but rather is a way to check that no individual state appears to drive the results for the multi-state analyses.

4 Data

The primary data sources for this research come from the Bureau of Labor Statistics (BLS). They provide both the Survey of Occupational Injuries and Illnesses (SOII) and the Census of Fatal Occupational Injuries (CFOI). Employers are required to report injuries, illnesses, and fatalities under the Occupational Safety and Health Administration (OSHA) guidelines. It is important to note that not all states are participants in SOII. Participation varies from year to year. If a state has full participation, then data ranges from 1996 to 2018. Table 7 and Figure 2 shows state participation by year. The Census of Fatal Occupational Injuries has full participation from all states in all years. This data has a slightly larger time span running from 1992 to 2018.

The SOII and CFOI publish both counts and rates of workplace injuries. However, rate calculations are not available for every year. To keep a consistent workplace injury rate, I divide workplace injury counts by total hours worked estimates obtained from the Current Population Survey (CPS).[5] This is then multiplied by 200,000 (100 workers working 40 hours per week for 50 weeks a year) to generate rates as injuries per 100 full-time workers. This generates five injury outcomes rates: Fatal, all nonfatal, lost workday nonfatal cases, job restriction or job transfer nonfatal cases, and nonfatal cases which do not result in lost workdays or job restriction or transfer which I have labeled "other" nonfatal injuries. Any injuries which were the result of some outside force, such as the Oklahoma City bombing in 2005, are excluded. I argue that, on average, injuries which result in days away from work are more severe than injuries which result in job restriction or transfer which are more severe than injuries which result in neither. Table 8 supports this claim showing that severe injuries such as amputations, punctures, and fractures are more common with lost workday cases and injuries such as sprains or bruises are more common with job restriction or transfer cases. The separation of these nonfatal injuries gives insight into how RTW laws impact injury severity.

Each of these outcome variables are collected for the public and private sectors as well as the following seven private industries: construction, manufacturing, wholesale trade, retail trade, transportation and warehousing, finance and real estate, and services. Due to changes in industry classification from the Standard Industrial Classification (SIC) to the North American Industrial Classification System (NAICS) in 2003, it is not possible to use the rate data from BLS for the transportation and warehousing, finance and real estate, and services industries. However, collecting injury counts and using correspondence tables comparing the SIC to the NAICS allows me to keep consistent industry rates despite the swap of classification. Depending on the type of injury and industry studied, some injury counts are zero. In order to allow for log transformation, these zero values are replaced with one one-thousandth. Changing this value to a different small number has a negligible impact on the results found.

The CPS is used to estimate the following state labor force demographic variables: fraction male, age, race, marital status, and education. Males may have riskier work practices leading a work force population with more males to have higher injury rates. Age variables are broken into the fraction of the working population who is between the ages of 15 and 24, 25 and 34, 35

[5] Injury counts for all workers, the private sector, the public sector, and each private sector industry studied within each state and year are divided by the total hours worked within the same sector/industry, state, and year. For example, the number of nonfatal workplace injuries in the construction industry in Georgia in 2007 is divided by the total hours worked by construction workers in Georgia in 2007.

and 44, 45 and 54, and 55 and 64.[6] This is done because younger, new workers are likely less experienced and are at higher risk of a workplace injury than a middle-aged worker. Hence, it is important to control for any labor force age differences between states. The CPS breaks race variables into 28 separate categories. I have chosen to control for three of the larger ones which are white, black, and asian. Marital status is split into the fraction of the working population who is single, married, or divorced. The two education variables are the fraction of workers who have at least a highschool diploma and the fraction who have at least a bachelor's degree. Since the CPS is individual level data and the individual's industry and sector is recorded, I am also able to obtain the same set of control variables by sector and for each type of private sector industry.

Data on which states have implemented a state run OSHA plan and data on the number of workplace inspections is obtained directly from OSHA. State run OSHA programs either cover private and state/local government workplaces or just state/local government workplaces. A state which is covered by a federal OSHA program (no state program) only covers the private sector and does not cover state and local government workers. This helps explain why some states implement state OSHA programs which only cover state and local government workers. Within the time period studied, New Jersey (2001), Illinois (2009), and Maine (2015) implemented state OSHA program which cover state and local government workers only. For a full list and map of state run OSHA programs, see Table 9 and Figure 3. This small amount of variation in state OSHA program adoptions only occurs in control states making its inclusion in the analysis of little value. However, controlling for the workplace inspection rate better captures OSHA's impact on workplace safety within a given state and year. This rate is calculated using the number of OSHA inspections in a state and year divided by the number of firms. The log transformation is taken for this control variable as well.

Since previous research has shown that outside temperature and inclement weather increase workplace injuries, data on the average maximum temperature and precipitation levels are collected from the National Oceanic and Atmospheric Administration.

Lastly, data on when each state began enforcing their RTW law is collected from the National Right To Work Committee. For a map and table of when states passed a RTW law, see Figure 1 and Table 1. Right to work legislation is fairly identical from state to state with the exception of Michigan whose RTW law covered both private and public sector employees. One interesting component of RTW laws is that they do not cover the railroad and airline industries. This is because employees in the railway and airline industries are covered by the Railway Labor Act (RLA). Hence, results when studying the transportation and warehousing industry are less likely to be influenced by changes in union representation.

The aggregated dataset results in a strongly balanced panel of 1,350 observations with respect to fatal injuries and an imbalanced panel of 943 observations for nonfatal injuries. The full participation for fatal injuries holds true when analyzing the private and public sectors as well as the different private industries. However, this is not the case for nonfatal injuries as some industry counts are not reported resulting in lower observation levels. These observation levels for each sector and industry are included in the table of results. Summary statistics for the nation and for each treatment state are provided in tables 10 and 11 averaging the years from 1992 to 2018. Summary statistics for the treatment states show that some states such as West Virginia are more prone to fatal injuries but have lower rates of nonfatal injuries. Overall, treatment states do not appear to be wildly different than the average control state or the average state which was an early adopter of RTW legislation.

[6]The omitted age group are those between 15 and 24. Therefore, this age group is the reference group.

5 Results

5.1 Multi-State Difference-in-Differences

Table 12 contains the results formed by equation 1. The outcome variables in columns (1) and (2) are both the log of fatal injuries. However, the sample is column (2) is identical to the sample for nonfatal injuries. This robustness check is done to allow for proper comparison between fatal and nonfatal effect estimates and to check that estimates from column (1) are not a result of the larger sample size. The outcome variables in columns (3) - (6) are the log of all nonfatal injuries, log of nonfatal injuries resulting in days away from work, log of nonfatal injuries resulting in job restriction or transfer, and log of nonfatal injuries resulting in neither lost workdays nor job restrictions or transfer. Results for the right to work variable should be interpreted as treatment is associated with a percent increase or decrease in a workplace injury outcome and results for the control variables should be interpreted as a one percentage point increase in the control variable leads to a percent increase or decrease in the workplace injury outcome.

The results from Table 12 show that, on average, the passage of a RTW law leads to a 11.9% increase in the fatal occupational injury rate within the treated state, significant at the 1% level. This estimate is similar to the one found by Zoorob [2018]. Column (2) gives a similar estimate to column (1) which gives confidence that the results in columns (3) - (6) are not simply a factor of the difference in sample size. Column (3) shows that, on average, the passage of a RTW law leads to a 7.95% decrease in all reported nonfatal injuries, significant at the 5% level. This appears to be primarily driven by lost workday cases which is shown to decrease by 13.9% following a RTW passage, significant at the 1% level. Both job restriction or transfer cases and other cases are found to be non-positive and insignificant signifying a small or null impact.

Table 13 gives results for equation 1 for the private and public sectors as well as the studied private sector industries.[7] Results for the private sector nearly mimic the results found for the private and public sectors combined. This is to be expected because the private sector makes up around 95% of jobs in the US. Results for the public sector show that a RTW passage increases fatal workplace injuries by 20.8% on average which is equivalent to around 3 additional deaths in an average sized state. The coefficient for lost workday nonfatal injuries is -12.5% which further supports the idea that RTW passages lead to a decrease in lost workday injuries. The coefficients for all nonfatal injuries, injuries resulting in job restriction or transfer, and other nonfatal injuries in the public sector are closer to zero and all injury measures are insignificant for the public sector.

Results for individual industries are primarily insignificant. The rate of workplace injuries can fluctuate greatly from year to year. Given a large enough sample, the fluctuations are minimized as seen by the curves in Figure 4. As the data is split by state and then by industry, the level of volatility of workplace injuries increases from year to year creating noisier estimates. Even without statistical significance, there are some interesting points to take away from these estimates. First, the coefficients for fatal workplace injuries are all positive with the exception of retail trade industry. While none of these point estimates are significant, they support the conclusion that most industries should expect an increase in the number of workplace fatalities following a RTW passage. Second, the lost workday injury estimates are all negative with the exception of the finance and real estate industry. The estimate for the manufacturing industry shows a decline of 13.1% in lost workday cases, significant at the 5% level. These estimates further confirm that most industries can expect a decline in lost workday cases following a RTW passage and this decline is somewhere around 13%. Third, there is evidence that total nonfatal workplace injuries decline. This is strongest in the manufacturing industry which

[7] To see all coefficient estimates for every industry and sector, see tables 26 - 34 in the appendix.

shows an insignificant 7.7% decrease in total nonfatal workplace injuries. Estimates for job restriction or transfer cases and all other nonfatal workplace injury cases are insignificant and mainly small with two exceptions. The Wholesale trade industry and the services industry both show a significant increase in other nonfatal injuries following a RTW passage of 9.3% and 5.4% respectively. These nuances between industries shows that industries can expect different outcomes following a RTW passage.

Fatal injuries are not subject to the reporting biases that nonfatal injuries are subject to. Firms are unlikely to under report fatal injuries but may be able to under report nonfatal injuries or even convince employees to not report nonfatal injuries. Unlike fatal injuries, employees have the choice to not report a nonfatal injury which might be done in fear of job loss. These ideas can help explain why right to work laws are shown to increase workplace fatality rates while decreasing nonfatal lost workday cases. Because the fatal injury rate is shown to increase, it is likely that the average workplace safety level within a state decreases following a right to work passage. This decrease in safety may be coming from decreases in labor union representation or increases in the number of newly hired or poorly trained employees. However, these same ideas should also increase the rate of lost workday cases. A positive coefficient for fatal injuries and a negative coefficient for lost workday cases is evidence that either firms are under reporting nonfatal injuries that would result in lost workdays (likely to avoid workers' compensation payments) or employees are purposely not reporting injuries that would result in time away from work or both. It is also possible that decreases in average safety shifts the distribution of injuries towards more fatal injuries but this does not explain the large decrease in the number of lost workday case injuries.

As a robustness check, results from tables 12 and 13 are re-estimated using a sample which excludes all states which are treated before the time period studied. This is done to make the sample of control states as similar as possible to the treatment states. As seen in tables 14 and 15, estimates are primarily unchanged.

Figures 5a-5e visually show that the assumption of parallel trends fails to hold for most treated state/outcome pairs. Rather than relying purely on an "eye-test", the following equation from Autor [2003] is estimated:

$$I_{st} = \alpha + \sum_{j=-m}^{q} \beta_j D_{st+j} + \Gamma \mathbf{X}_{st} + \sigma_s + \tau_t + \epsilon_{st}$$

where D_{st+j} is an indicator for if state s in year $t+j$ is the treatment state and if it is year $t+j$ and m and q are the number of pre-treatment periods and post-treatment periods, respectively. The indicator for the year of adoption is removed to avoid the dummy variable trap and is hence used as the baseline. If the outcome trends between the treatment state and the control group are the same, then all β's before the treatment year should be insignificant. Tables 20 - 24 give the results for these estimations. These results show that there are only a few cases in which the parallel trends assumption holds.

5.2 Generalized Synthetic Control

Reduced form results of RTW laws on all workplace injury outcomes using generalized synthetic controls can be found in Table 16. The weights generated for each state to create the synthetic control state are given in tables 47 - 51 in the appendix. The ATT.Average in the first column of Table 16 is the average of all ATT's calculated from the post-treatment periods, weighted by the number of treatment states as in equation 3.[8] Similar to the multi-state difference-in-differences results, RTW laws are shown to increase fatal workplace injuries but by 9.8% rather

[8]For example, there are six states with a period immediately following treatment but only Oklahoma has an ATT 10 periods after treatment.

than 11.9%. Unlike the first analysis, the coefficient for fatal injuries is insignificant with a p-value of 0.35. Panel (a) in Figure 7 shows the six treated states averaged in black with each treated state being in light gray. There does appear to be a clear separation between the treated average (black line) and the synthetic control state (dotted blue line). The insignificance of the point estimate is clearly coming from the volatility of fatal workplace injuries in the treated states. Hence, the exact impact RTW has on fatal workplace injuries is unclear but is likely positive.

Because nonfatal workplace injuries are more likely than fatal, results for these independent variables are more precisely estimated. Panels (c) - (f) in Figure 7 show how well the synthetic control matches the pattern of the treatment average in the pre-treatment period. Unlike the results for the multi-state DiD analysis, the estimates for job restriction or transfer injuries and all other nonfatal injuries are close to zero implying a null result. An overall decrease in nonfatal workplace injuries is further confirmed with this GSC method and this decrease is primarily driven by lost workday workplace injuries. The point estimates using GSC are slightly smaller though showing that a RTW passages decreases total nonfatal injuries by 5.6% with a p-value of 0.051 and lost workday injuries by 11.8% significant at the 1% level.

5.3 Case Studies

Estimation results from equation 4 can be found in Table 18 with full results for each state being in tables 35 - 40 in the appendix. The reduction in sample size in each case study is the result of dropping the other five treated states. Oklahoma, Indiana, Michigan, and Wisconsin each give a positive result for fatal injuries while West Virginia gives a null result and Kentucky gives a large negative result. Because four of the six states have a positive estimate, it is unlikely that one state is the driving force behind fatal injury results in the multi-state analysis. Placebo tests in Figure 8a show that only results for Oklahoma and Kentucky are significant at the 5% level. Results for job restriction or transfer nonfatal injuries and for other nonfatal injuries vary from state to state with all results being insignificant in the permutation tests. For lost workday nonfatal injuries, Indiana, Wisconsin, and West Virginia each have a significant negative estimate with all states having a negative estimate. This is strong evidence that lost workday cases decline preceding a RTW adoption. Total nonfatal injuries are shown to decline due to the large effect on lost workday cases.

Results from Synthetic Difference-in-Differences in Table 19 tell a similar story as the results from Difference-in-Differences. Figure 8k graphically illustrate how the estimator is calculated, show which pre-treatment periods received weight, and the overall fit of the synthetic control in the pre-treatment period. The donor pool for these synthetic difference-in-differences estimates are all states which were never treated in the data set. Using standard errors from placebo results, results for Oklahoma, Indiana, and West Virginia are found to be negative and significant for lost workday cases. However, inference in these case studies is near impossible due to the use of one treatment variable. Instead, the results indicate that, again, no one state is behind the multi-state results.

6 Discussion

Using a difference-in-differences estimation strategy on U.S. state level data from 1992-2018, this study finds that a right to work passage increases the fatal workplace injury rate while decreasing the nonfatal workplace injury rate, primarily the nonfatal injuries which result in days away from work. The primary difference-in-differences model estimates that for the full workforce, a right to work passage increases the fatal workplace injury rate by 11.9% significant at the 5% level. This estimate is bolstered through robustness checks. A generalized synthetic control model finds a similar point estimate of 9.8% but with a larger standard error. Case study results find that this estimate is perhaps larger for some states. While fatal injuries are found to increase, nonfatal injuries are found to decrease by 7.95% in the primary difference-in-differences model for the full workforce. However, results from the generalized synthetic control model find that nonfatal injuries may instead decrease by a smaller amount of around 4.4%. Results for the effect of a right to work passage on lost workday nonfatal workplace injuries are the most consistent across each robustness check and model. The primary difference-in-differences model finds that a RTW law decreases lost workday nonfatal injuries by 13.9% significant at the 1% level. Using generalized synthetic control gives the same point estimate also being significant at the 1% level. Case study results all argue in favor of a large decrease in lost workday nonfatal injury cases and that this result is not being driven by one individual state. Results for both job restriction or transfer nonfatal cases and all other nonfatal cases are small and largely insignificant in the primary analysis. Generalized synthetic control bolsters the idea that these nonfatal workplace injury types are largely unaffected by a right to work passage.

The coefficient for fatal injuries implies that a RTW passage can lead to 13 more fatal injuries on average based on 2018 fatal injury counts. When considering a larger state such as New York which is not a RTW state, a right to work passage could lead to 38 more worker deaths per year. The average total cost of a fatal workplace injury has been estimated to be around 1.2 million dollars (NSC 2019 & Biddle 2011). Therefore, a RTW passage can increase a state's costs associated with wage and productivity loss, administrative expenses, and employer costs by about $15.6 million on average. The coefficient for all nonfatal injuries implies 4,623 less injuries on average based on 2018 nonfatal injury counts. Lost workday injuries are shown to decline by 2,720 cases on average. Finding an estimate for the average cost per nonfatal workplace injury is difficult due to the wide variety of injury types. However, the National Council of Compensation Insurance's (NCCI) estimates that the average cost of worker's compensation claims for lost-time workers was $41,000 in 2017 and 2018. Hence, a decline of 2,720 lost workday cases could potentially decrease workers' compensation spending by $111.5 million. This cost excludes other costs experienced from an injury such as current and future lost earnings and fringe benefits. Leigh [2011] estimates that workers' compensation covers less than 25 of medical and indirect costs experienced following a workplace injury. Hence, cost savings for the decrease in nonfatal injuries experienced from a RTW passage is likely much larger than the $111.5 million suggested.

Overall, the results point to a story about incentives to misreport. If right to work laws do indeed increase the number of fatalities occurring at workplaces, this is strong evidence of lower workplace safety standards following a RTW passage. This is because it is difficult to believe that these increases in fatal injuries are coming from some other mechanism. If workplace safety is truly diminished after a RTW passage, then this should also be reflected in nonfatal injury rates. However, this is not the case. In fact, it is found that the rate of lost workday nonfatal injuries decreases. The results arguably find that nonfatal injuries which do not result in days away from work are unaffected by a right to work passage. Because nonfatal injuries which result in time away from work leads to workers' compensation benefits, decreasing the number of these injury reports directly benefits businesses. This increase in misreporting could be an overall increase in misreporting from existing firms or a large amount of misreporting from newly established firms who were looking to expand in a new right to work state. Either way, if safety is indeed diminished following a RTW passage, then misreporting is the most likely mechanism to explain a decrease in lost workday cases.

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Table 1: Right-to-Work States

State Name	Year
Alabama	1953
Arizona	1946
Arkansas	1947
Florida	1944
Georgia	1947
Idaho	1985
Indiana	2012
Iowa	1947
Kansas	1958
Kentucky	2017
Louisiana	1976
Michigan	2012
Mississippi	1954
Nebraska	1946
Nevada	1951
North Carolina	1947
North Dakota	1947
Oklahoma	2001
South Carolina	1954
South Dakota	1946
Tennessee	1947
Texas	1947
Utah	1955
Virginia	1947
West Virginia	2016
Wisconsin	2015
Wyoming	1963

States not in table do not have a right to work law enacted.
The six treatment states in the study are Indiana, Kentucky, Michigan, Oklahoma, West Virginia, and Wisconsin.
Several of the passages occur in the 1940's and 1950's because the Taft-Hartley Act enabled RTW in 1947.

Table 2: Studies of the Impact of Right-to-Work Laws on Unionization

Study	Years Studied	Cross-sectional Unit	Union Variable	Effect	Significant
Lumsden and Peterson (1975)	1939, 53, 68	States	Unionization	Neg.	No
Moore and Newman (1975)	1950, 60, 70	States	Flows into Unions	Neg.	Yes
Warren and Strauss (1979)	1972	States	Unionization	Neg.	Yes
Hirsch (1980)	1973-75	SMSA[a]	CBA[b] Coverage	Neg.	Yes
Wessels (1981)	1970	States	Nonagricultural Unionization	Neg.	No
Farber (1983)	1977	Individuals	Unionization and Union Demand	Neg.	Yes
Hunt and White (1983)	1973-75	SMSA	Membership Dummy	Pos.	No
Carroll (1983)	1964-78	States	Unionization	Neg.	Yes
Koeller (1985)	1970	States	Unionization	Undetermined	No
Moore et al. (1986)	1964-78	States	Unionization	Pos.	No
Ichniowski and Zax (1991)	1980	Departments[c]	Many[d]	Neg.	Yes
Davis and Huston (1995)	1991	Individuals	Membership Dummy	Neg.	Yes
Sobel (1995)	1989, 91	Individuals	Free-Riders[e]	Neg.	Yes

[a] Standard Metropolitan Statistical Area
[b] Collective Bargaining Agreement
[c] Five public departments are police, fire, sanitation, public welfare, and highways
[d] 1) Percent of employees in department who are members of a union 2) Dummy variable for the presence of a nonbargaining association 3) Dummy variable for the presence of a bargaining union
[e] Data only includes union members and non CBA covered nonmembers. This allows the author to capture the union free-rider problem.

Table 3: Studies of the Impact of Unions on Fatal and nonfatal Occupational Injuries

Study	Country	Industry	Years	Data Type	Cross-sectional unit	Union Variable	Injury Variable(s)	Results	Possible Bias
Leigh (1982)	US	Many	1977	Cross-sectional	Blue Collars	Member Dummy	Survey Questions	Union members report more hazardous working conditions	Union strength not measured Actual injuries not measured Reverse Causality
Worrall and Butler (1983)	US	Many	1978	Cross-sectional	Blue Collars	Member Dummy	Survey Questions Injury Rate Lost Workday Rate	Union members report more accidents and hazardous conditions and experience higher Injury and Lost Workday rates	Actual injuries not measured Reverse Causality
Appleton and Baker (1984,1985)	US	Coal Mining	1979	Cross-sectional	Coal Mines	Member Dummy	Reported Injuries	Union mines experience higher reports of injuries	Job bidding system, low productivity, labor characteristics, other institutional factors
Fairris (1992)	US	Private, nonagricultural sector	1969-70	Cross-sectional	Blue Collars	CBA[d] Dummy	Injuries per million employee hours	Industries in union setting have slightly higher injury rates	Job bidding system, trading wages for safety
Reilly et al. (1995)	UK	Manufacturing	1990	Cross-sectional	Establishments	Many[a]	Severe Injury Rate	Establishments with joint consultative committees for health and safety saw a reduction in injuries compared to manager dealt health and safety	Small establishments are excluded from dataset Many zeroes in count data
Reardon (1996)	US	Coal Mining	1986-1988	Panel	Coal Mines	Membership Dummy	Injury type and count	Union mines experience lower probability of severe injuries	Selection Other institutional factors
Litwin (2000)	UK	Many	1998	Cross-sectional	Workplaces	Membership Dummy Union monotonic increases	Likelihood of Injury Injury Rate	Trade unions appear in more accident-prone workplaces but then proceed to reduce injury rates except when density exceeded 80 but without a closed shop	Wage for safety Non-unions mimic unions in order to deter union organization

Studies of the Impact of Unions on Fatal and nonfatal Occupational Injuries (Continued)

Fenn and Ashby (2004)	UK	Many	1998	Cross-sectional	Workplaces	Union Density Safety Committee Dummy	Injury Counts Establishment Size	Large establishments have lower probability of injury Higher union density and safety committees led to higher reported injuries	Poor instruments Unions have higher reporting
Nichols, Tasiran, Walters (2007)	UK	Manufacturing	1990	Cross-sectional	Establishment	Many[b]	Injury count	Trade unions reduced injuries when safety committees are assigned by unions	Unions over reporting
Boal (2009)	US	Coal Mining	1902-29	Panel	US States	Union Rate	Fatal Injuries	Unions decrease fatal injuries	Reverse Causality
Boal (2009)	US	Coal Mining	1897-28	Panel	Coal Mines	Member Dummy	Fatal injuries	Unions decrease fatal injuries	Reverse Causality
Morantz (2013)	US	Coal Mining	1993-2010	Panel	Coal Mines	Union Status	Fatal, severe, and non-severe injuries	Union mines have less fatal and severe injuries. Non-severe are higher pointing to higher reporting by unions	Age differentials Mine profitability differentials
Donado (2015)	US	Many	1988-2000[c]	Panel	Individual	Membership Dummy	nonfatal Injury/Illness occurred Coverage Dummy	Unions have a non-negative affect on nonfatal injuries	Moral Hazard Distribution Shifting
Amick et al.(2015)	Canada	Construction	2006-12	Panel	Firms	Union Status	Reported claims	Unions increase injury reports and reduce severe injury reports	Misclassification of union status
Li et al. (2019)	US	Many	1965-2010	Panel	Establishment	Union Election Passings	DART case rate	Unions have no detectable effect on workplace safety Did shift case rate distribution down	Reporting Non-random sorting
DeFina and Hannon (2019)	US	Many	1999-2016	Panel	US States	Union density	Drug death rates	Decreases in state unionization led to increases in drug deaths	Omitted variables Reverse causality

[a] The independent variables are split into eight groups depending on how the safety committee is constructed

[b] Similar to Reilly et al., the independent variables are 1) Unions select some safety committee members 2) Unions select no safety committee members 3) there are representatives only 4) management alone decides

[c] Years 1991, 1995, 1997, and 1999 were not included.

[d] Collective Bargaining Agreement

Table 4: Theories For the Ways Unions Affect Workplace Injuries

Theory	Direction	Explanation
Bargaining for Safety	Decrease	Labor unions can bargain for workplace safety better than individuals due to increased bargaining power. Research shows that unionized workplaces are more likely to follow OSHA standards.
Firms Under Reporting	Increase	Because injuries are costly to a firm, firms have an incentive to under report injuries. Unionized workplace may be better at preventing this under reporting.
Employees Under Reporting	Increase	Employees are more likely to lose their job after reporting an injury. However, labor unions can increase job security meaning employees are more likely to report injuries when unionized.
Wages for Safety	Increase	Labor unions may bargain for higher wages and trade-off workplace safety
Distribution Shifting	Increase & Decrease	Through increased safety measures provided by labor unions, fatal or severe injuries become less severe injuries.
Selection	Increase	Riskier work environments are more likely to unionize
Moral Hazard	Increase	Labor unions provide a sense of higher safety leading employees to have riskier behavior.

Table 5: Theories For the Ways the Economy Affects Workplace Injuries

Theory	Direction	Explanation
Keeping Workers Safe When Needed	Decrease	High levels of production increase the value of workers to the firm. Hence, the firm increases safety precautions to reduce risk of losing an employee.
Production Per Worker	Decrease	When unemployment is high, the level of production per worker increases leading to higher rates of injury and vice versa.
Firm's Underreporting	Decrease	High levels of production increase the value of workers to the firm. Hence, the firm dissuades reporting in order to keep employees working.
Switching Industries	Decrease	When unemployment is high, workers may be forced to seek employment in industries with which their experience is low. Inexperienced workers are more at risk of injury.
The Safety Production Trade-off	Increase	When production is high, the relative cost of safety increases. Hence, a firm may decrease safety to focus on the high production.
New Hires	Increase	When unemployment is low, there may be an influx of new and inexperienced employees. Inexperienced employees are at higher risk of injury.
Employee's Underreporting	Increase	Reporting an injury increases the chance of job loss. Hence, when unemployment is high, employees underreport injuries to avoid job loss during a recession.

Table 6: Theories For the Ways Right to Work Laws Affect Workplace Injuries

Right to Work Impacts	Direction	Explanation
Labor Unions	Unknown	Right to work laws are shown to decrease union member rates, decrease the rate at which unions form, and increase the number of union free riders. Each of these hinder the effectiveness of a labor union and their ability to provide safety to the workplace. However, previous research is unclear if labor unions reduce workplace injuries.
Economic Signal	Unknown	A RTW passage can act as a signal to businesses that the state has a favorable "business climate". This signal may lead to industrial growth, increase the number of new hires, and decrease average workplace safety through selection bias. While industrial growth has been shown to decrease injury rates, new hires and a dangerous firm selection could increase injury rates making the effect of this economic signal on injury rates ambiguous.

Table 7: States With Missing Nonfatal Injury Data

State Name	**Excluded Years**
Colorado	Excluded
Florida	2011-2018
Idaho	Excluded
Illinois	1996-1997
Massachusetts	2003 & 2009
Mississippi	Excluded
New Hampshire	Excluded
North Dakota	Excluded
Ohio	1996-2011
Oklahoma	2013-2018
Pennsylvania	1996-2010
Rhode Island	2008-2018
South Dakota	Excluded
Vermont	1996
West Virginia	1996-1997
Wyoming	1996-2001

States not in table are available for years 1996 to 2018.
States which are "Excluded" are not available for any year
Nonfatal injury data begins in 1996 and is available until 2018.

Table 8: Lost Workday and Job Restriction or Transfer Nonfatal Injury Causes

Injury Type	Lost Workday	Job Restriction or Transfer
Sprains, strains, tears	34.3%	43.6%
Soreness, pain	17.7%	11.5%
Fractures	8.8%	3.4%
Bruise, contusions	8.8%	12.7%
Cuts, lacerations	8.6%	15.2%
Multiple traumatic injuries	2.6%	2.4%
Punctures (excluding gunshot wounds)	1.7%	0.9%
Amputations	0.7%	0.08%
Carpal tunnel syndrome	0.6%	0.2%
Chemical burns and corrosions	0.4%	0.1%
Tendonitis	0.2%	0.5%
Other	14%	6.8%

Percentages calculated using 2018 data from the Bureau of Labor Statistics.

Table 9: State OSHA Plans

State Name	Initial Approval Date	Public Sector Only
Alaska	1973	No
Arizona	1974	No
California	1973	No
Connecticut	1978	Yes
Hawaii	1974	No
Illinois	2009	Yes
Indiana	1974	No
Iowa	1973	No
Kentucky	1973	No
Maine	2015	Yes
Maryland	1973	No
Michigan	1973	No
Minnesota	1973	No
Nevada	1974	No
New Jersey	2001	Yes
New Mexico	1975	No
New York	1984	Yes
North Carolina	1973	No
Oregon	1972	No
South Carolina	1972	No
Tennessee	1973	No
Utah	1973	No
Vermont	1973	No
Virginia	1976	No
Washington	1973	No
Wyoming	1974	No

States not in table are covered by the OSHA federal plan as of 1970.
All state plans cover the public sector. Federal OSHA covers only the private sector.
Plans which cover the private sector are more strict than the federal plan.
Because only Illinois, Maine, and New Jersey enacted state plans within the data time frame and each of these cover the public sector only, the inclusion of a state plan control of little benefit.
Differences in strictness of state plans are controlled for by the state fixed effect.

Table 10: Total Workforce Summary Statistics 1992 - 2018

	mean	sd	min	max
Fatal Injuries per 100,000	5.568	3.253	0.981	40.97
Nonfatal Injuries per 100	4.025	1.300	1.596	8.751
Lost Workdays Cases per 100	1.243	0.454	0.506	2.943
Job Restriction/Transfer Cases per 100	0.729	0.324	0.100	1.991
Other Cases per 100	2.054	0.762	0.687	4.990
Right to Work	0.450	0.498	0	1
OSHA Inspection Rate	0.0149	0.0114	0.00284	0.187
Aged 15-24	0.156	0.0221	0.101	0.265
Aged 25-34	0.223	0.0245	0.157	0.300
Aged 35-44	0.236	0.0313	0.164	0.331
Aged 45-54	0.214	0.0227	0.142	0.279
Aged 55-64	0.130	0.0335	0.0621	0.218
Fraction Male	0.532	0.0127	0.494	0.582
Fraction White	0.838	0.124	0.196	0.991
Fraction Black	0.0956	0.0896	0.000698	0.366
Fraction Asian	0.0401	0.0864	0.00164	0.735
Fraction Single	0.281	0.0330	0.188	0.384
Fraction Married	0.572	0.0326	0.478	0.668
Fraction Divorced	0.108	0.0161	0.0688	0.165
Obtained HS Degree Only	0.604	0.0478	0.435	0.708
Obtained Bachelor's Degree	0.282	0.0610	0.143	0.504
all_unionmemr	0.117	0.0571	0.0169	0.288
all_unioncovr	0.132	0.0575	0.0261	0.318
Fraction of Lower House Republican	0.539	0.317	0	1
Maximum Temperature	85.99	6.346	58.80	102.9
Monthly Precipitation	3.119	1.237	0.377	6.148

Fatal and nonfatal injury rates are calculated by dividing counts by total working hours. Therefore, Fatal injuries here represent the number of fatal injuries per 100,000 full-time employees.
OSHA Inspection Rate is calculated by taking the number of OSHA inspections performed divided by the number of firms within a state.
Control variable rates (excluding the political and weather variables) are calculated by dividing by the number of employees.
Fraction of Lower House Republican is calculated by taking the number of Republican representatives in the House of Representatives in the state and dividing by the total number of representatives in that state's house. Temperature is in Fahrenheit.
When using fatal injuries as an outcome, data is a balanced panel of 1,350 observations.
When using nonfatal injuries, data is an unbalanced panel of 943 observations.
Means are not national averages but rather the average of the states over the period 1992-2018.

Table 11: Treatment States Summary Statistics 1992 - 2018

	Oklahoma mean/sd	Indiana mean/sd	Michigan mean/sd	Wisconsin mean/sd	West Virginia mean/sd	Kentucky mean/sd	Early Adopters mean/sd	Never Treated mean/sd
Year RTW Adpoted	2001	2012	2012	2015	2016	2017	1952.7	.
	(0)	(0)	(0)	(0)	(0)	(0)	(10.25)	(.)
Fatal Injuries per 100,000	6.256	5.402	3.742	4.158	8.686	7.114	6.523	4.612
	(0.633)	(0.721)	(0.452)	(0.648)	(2.362)	(1.770)	(2.652)	(3.694)
Nonfatal Injuries per 100	3.997	4.853	4.646	4.933	3.923	4.796	3.784	4.076
	(0.691)	(1.643)	(1.761)	(1.815)	(0.851)	(1.488)	(1.298)	(1.180)
Lost Workdays Cases per 100	1.240	1.144	1.134	1.425	1.703	1.425	1.019	1.406
	(0.332)	(0.465)	(0.388)	(0.536)	(0.512)	(0.464)	(0.345)	(0.446)
Job Restriction/Transfer Cases per 100	0.805	1.130	1.148	0.957	0.343	0.970	0.764	0.646
	(0.109)	(0.244)	(0.456)	(0.238)	(0.0364)	(0.266)	(0.264)	(0.328)
Other Cases per 100	1.952	2.579	2.363	2.550	1.879	2.401	2.001	2.023
	(0.358)	(0.971)	(0.944)	(1.060)	(0.366)	(0.783)	(0.785)	(0.698)
Right to Work	0.667	0.259	0.259	0.148	0.111	0.0741	1	0
	(0.480)	(0.447)	(0.447)	(0.362)	(0.320)	(0.267)	(0)	(0)
OSHA Inspection Rate	0.00848	0.0159	0.0275	0.0110	0.0127	0.0152	0.0129	0.0167
	(0.00172)	(0.00689)	(0.00585)	(0.00212)	(0.00272)	(0.00413)	(0.00882)	(0.0138)
Aged 15-24	0.158	0.155	0.167	0.170	0.146	0.159	0.163	0.148
	(0.0146)	(0.0180)	(0.0171)	(0.0128)	(0.0179)	(0.00833)	(0.0259)	(0.0166)
Aged 25-34	0.224	0.219	0.215	0.214	0.216	0.226	0.227	0.220
	(0.0153)	(0.0211)	(0.0218)	(0.0239)	(0.0134)	(0.0196)	(0.0227)	(0.0265)
Aged 35-44	0.228	0.246	0.238	0.235	0.240	0.240	0.233	0.237
	(0.0282)	(0.0287)	(0.0291)	(0.0334)	(0.0284)	(0.0274)	(0.0291)	(0.0336)
Aged 45-54	0.210	0.214	0.223	0.213	0.219	0.215	0.209	0.219
	(0.0166)	(0.0254)	(0.0224)	(0.0226)	(0.0163)	(0.0201)	(0.0223)	(0.0224)
Aged 55-64	0.132	0.128	0.122	0.131	0.138	0.121	0.126	0.134
	(0.0238)	(0.0331)	(0.0339)	(0.0380)	(0.0356)	(0.0283)	(0.0307)	(0.0358)
Fraction Male	0.541	0.533	0.534	0.526	0.541	0.531	0.535	0.529
	(0.00637)	(0.00568)	(0.00744)	(0.00615)	(0.0124)	(0.00815)	(0.0134)	(0.0120)
Fraction White	0.806	0.906	0.841	0.919	0.953	0.908	0.831	0.832
	(0.0423)	(0.0182)	(0.0160)	(0.0180)	(0.0105)	(0.0147)	(0.104)	(0.149)
Fraction Black	0.0685	0.0746	0.118	0.0455	0.0313	0.0733	0.127	0.0738
	(0.00579)	(0.00857)	(0.00470)	(0.00571)	(0.00465)	(0.00830)	(0.109)	(0.0694)
Fraction Asian	0.0167	0.0107	0.0264	0.0177	0.00619	0.0110	0.0222	0.0630
	(0.00528)	(0.00573)	(0.00879)	(0.00736)	(0.00259)	(0.00446)	(0.0180)	(0.122)
Fraction Single	0.225	0.257	0.304	0.302	0.235	0.250	0.270	0.297
	(0.0199)	(0.0232)	(0.0186)	(0.0156)	(0.0202)	(0.0280)	(0.0279)	(0.0291)
Fraction Married	0.606	0.589	0.556	0.565	0.604	0.594	0.580	0.561
	(0.0309)	(0.0236)	(0.0199)	(0.0177)	(0.0318)	(0.0384)	(0.0341)	(0.0269)
Fraction Divorced	0.126	0.119	0.108	0.103	0.121	0.117	0.109	0.104
	(0.0107)	(0.00729)	(0.00505)	(0.00636)	(0.0145)	(0.00972)	(0.0162)	(0.0161)
Obtained HS Degree Only	0.633	0.650	0.634	0.637	0.677	0.636	0.618	0.582
	(0.0190)	(0.0202)	(0.0222)	(0.0214)	(0.0197)	(0.0116)	(0.0380)	(0.0493)
Obtained Bachelor's Degree	0.250	0.234	0.271	0.262	0.216	0.238	0.257	0.315
	(0.0309)	(0.0407)	(0.0442)	(0.0374)	(0.0401)	(0.0357)	(0.0492)	(0.0582)
Fraction of Lower House Republican	0.840	0.602	0.513	0.508	0.370	0.744	0.664	0.409
	(0.205)	(0.165)	(0.115)	(0.0919)	(0.350)	(0.154)	(0.267)	(0.325)
Maximum Temperature	94.80	85.22	80.39	80.61	83.67	87.67	89.40	83.04
	(3.173)	(2.702)	(2.789)	(2.882)	(2.021)	(2.482)	(4.684)	(6.324)
Monthly Precipitation	2.988	3.644	2.792	2.791	3.913	4.154	3.005	3.154
	(0.510)	(0.428)	(0.231)	(0.288)	(0.533)	(0.562)	(1.481)	(1.082)
Union Member Rate	0.0725	0.130	0.198	0.149	0.141	0.107	0.0716	0.155
	(0.0154)	(0.0312)	(0.0337)	(0.0362)	(0.0208)	(0.0140)	(0.0307)	(0.0474)
Unionized Workforce Rate	0.0865	0.142	0.209	0.159	0.154	0.124	0.0874	0.170
	(0.0163)	(0.0332)	(0.0351)	(0.0373)	(0.0231)	(0.0146)	(0.0347)	(0.0473)

Means are reported with standard deviations in parenthesis.

Early Adopters are states who adopted a right to work law before this dataset began in 1992. Never Treated are states who have not enacted a RTW law. Fatal and nonfatal injury rates are calculated by dividing counts by total working hours. Therefore, Fatal injuries here represent the number of fatal injuries per 100,000 full-time employees.

OSHA Inspection Rate is calculated by taking the number of OSHA inspections performed divided by the number of firms within a state.

Control variable rates (excluding the political and weather variables) are calculated by dividing by the number of employees.

Fraction of Lower House Republican is calculated by taking the number of Republican representatives in the House of Representatives in the state and dividing by the total number of representatives in that state's house. Temperature is in Fahrenheit.

When using fatal injuries as an outcome, data is a balanced panel of 1,350 observations.

When using nonfatal injuries, data is an unbalanced panel of 943 observations.

Means are not national averages but rather the average of the states over the period 1992-2018.

Table 12: Mutli-State Analysis Full Workforce Results

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	0.119**	0.127**	-0.0795**	-0.139***	-0.0480	-0.0514
	(0.0549)	(0.0500)	(0.0356)	(0.0311)	(0.0686)	(0.0503)
Inspection Rate	1.785	1.859**	0.209	0.172	-1.399	0.822*
	(1.102)	(0.837)	(0.340)	(0.495)	(1.101)	(0.460)
Age 25-34	-0.959	-1.262	-1.608***	-2.065***	-2.119*	-1.405**
	(0.989)	(0.942)	(0.498)	(0.695)	(1.115)	(0.696)
Age 35-44	-2.033*	-1.565	-1.893**	-2.059**	-2.807*	-1.834*
	(1.189)	(1.302)	(0.720)	(0.832)	(1.463)	(0.985)
Age 45-54	0.00343	-0.151	-2.459***	-2.255**	-5.032***	-2.156**
	(1.167)	(1.484)	(0.801)	(0.926)	(1.442)	(0.949)
Age 55-64	0.154	-0.458	-1.036	-1.142	-1.483	-0.613
	(1.349)	(1.734)	(0.753)	(0.776)	(1.456)	(1.105)
Male	2.537**	1.617	0.255	-0.360	1.923**	0.301
	(1.223)	(1.215)	(0.588)	(0.806)	(0.847)	(0.771)
White	-0.242	0.0271	-0.443	-0.769	-1.288	-0.0463
	(0.697)	(0.671)	(0.508)	(0.531)	(0.907)	(0.688)
Black	0.954	1.194	0.459	0.105	-1.056	1.084
	(1.278)	(1.222)	(0.680)	(0.780)	(1.373)	(0.953)
Asian	-0.245	0.120	0.00834	-0.371**	0.0391	0.247
	(0.647)	(0.499)	(0.206)	(0.172)	(0.439)	(0.448)
Single	0.350	-0.0869	-0.767	-0.741	-1.313	-0.748
	(0.829)	(1.126)	(0.497)	(0.601)	(1.013)	(0.649)
Divorced	4.643***	2.866***	0.986*	0.625	-0.344	1.971**
	(0.780)	(0.879)	(0.500)	(0.542)	(1.267)	(0.775)
HS Degree Only	-0.640	-0.384	-0.378	-0.642	-0.846	-0.272
	(0.632)	(0.780)	(0.546)	(0.609)	(1.119)	(0.700)
Obtained Bachelor's Degree'	1.309	1.753	0.113	0.540	-0.881	-0.257
	(0.989)	(1.098)	(0.456)	(0.599)	(0.973)	(0.640)
Frac. of Lower Rep.	0.0719	-0.0293	-0.0219	-0.0537*	0.0215	0.00622
	(0.0617)	(0.0533)	(0.0305)	(0.0314)	(0.0709)	(0.0530)
Maximum Temperature	0.00360	0.00322	0.00280**	0.00167	0.00469**	0.00279
	(0.00254)	(0.00379)	(0.00132)	(0.00148)	(0.00224)	(0.00181)
Monthly Precipitation	0.0144	0.0308***	0.00290	-0.00353	0.00501	0.00733
	(0.0109)	(0.00949)	(0.00516)	(0.00514)	(0.00944)	(0.00759)
Constant	-6.404***	-6.266***	3.425***	3.216***	3.228*	2.014
	(1.633)	(1.759)	(0.851)	(0.937)	(1.723)	(1.253)
N	1350	943	943	943	943	943
r2	0.861	0.854	0.944	0.948	0.939	0.923

Standard errors clustered as state level.

Equation 1 results for the private and public sectors combined.

Outcomes are log variables.

Results for the RTW variable should be interpretted as "a RTW passage leads to a x change in the outcome variable" where x is the point estimate.

Results for other variables should be interpretted as "a 1 percentage point increase leads to a x change in the outcome variable" where x is the point estimate.

Column (1) gives results for the log fatal workplace injury rate. Column (2) is the same outcome variable but using the sample in which nonfatal injuries are available.

Columns (3) - (6) represent All Nonfatal workplace injuries, nonfatal workplace injuries which resulted in days away from work, nonfatal workplace injuries which resulted in job restriction or job transfer, and nonfatal injuries which did not result in either lost workdays or job restriction or job transfer.

For a description of the control variables, see Table 10.

Table 13: Right to Work Coefficient Comparison From Multi-State Analyses

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
All	0.119**	0.127**	-0.0795**	-0.139***	-0.0480	-0.0514
	(0.0549)	(0.0500)	(0.0356)	(0.0311)	(0.0686)	(0.0503)
N	1350	943	943	943	943	943
r2	0.861	0.854	0.944	0.948	0.939	0.923
Private	0.107*	0.121**	-0.0655***	-0.119***	-0.0469	-0.0323
	(0.0560)	(0.0521)	(0.0183)	(0.0363)	(0.0623)	(0.0273)
N	1350	943	943	943	943	943
r2	0.855	0.847	0.966	0.956	0.940	0.957
Public	0.208	0.115	0.0140	-0.125	0.0347	0.0696
	(0.136)	(0.144)	(0.0580)	(0.0927)	(0.128)	(0.0621)
N	1350	762	762	762	744	762
r2	0.386	0.393	0.849	0.885	0.843	0.796
Construction	-0.0187	0.0347	-0.0680	-0.143	0.0723	-0.0292
	(0.110)	(0.0815)	(0.0812)	(0.145)	(0.214)	(0.0876)
N	1350	941	941	941	941	941
r2	0.419	0.442	0.886	0.820	0.406	0.863
Manufacturing	0.160	0.115	-0.0771	-0.131**	0.0489	-0.0338
	(0.163)	(0.161)	(0.0474)	(0.0629)	(0.135)	(0.0373)
N	1350	942	942	942	942	942
r2	0.429	0.405	0.928	0.811	0.641	0.944
Wholesale Trade	0.165	0.219*	-0.0319	-0.138	0.0803	0.0928**
	(0.112)	(0.111)	(0.0289)	(0.0882)	(0.164)	(0.0428)
N	1349	932	933	933	933	933
r2	0.374	0.422	0.683	0.613	0.616	0.520
Retail Trade	-0.0856	-0.0373	-0.0412	-0.0964**	-0.0887	0.00414
	(0.129)	(0.149)	(0.0422)	(0.0475)	(0.0907)	(0.0512)
N	1349	939	940	941	940	940
r2	0.458	0.381	0.808	0.802	0.776	0.869
Transportation and Warehousing	0.122	0.148	-0.0398	-0.0103	-0.0759	-0.0392
	(0.191)	(0.125)	(0.0726)	(0.0730)	(0.154)	(0.0737)
N	1350	936	936	934	934	936
r2	0.523	0.554	0.764	0.698	0.385	0.758
Finance and Realestate	0.132	0.134	-0.00841	0.129	0.0722	-0.0917
	(0.106)	(0.118)	(0.0839)	(0.196)	(0.339)	(0.251)
N	1350	912	912	907	903	909
r2	0.131	0.152	0.505	0.433	0.551	0.393
Services	0.0698	0.129	0.00490	-0.0677	-0.00327	0.0544*
	(0.0981)	(0.0890)	(0.0202)	(0.0523)	(0.0686)	(0.0292)
N	1350	913	913	907	909	910
r2	0.346	0.368	0.878	0.892	0.804	0.816

Standard errors clustered as state level.

Results for each sector and private industry are given in rows with columns representing log outcomes.

Controls along with state and year fixed effects are included.

Results for the RTW variable should be interpretted as "a RTW passage leads to a x change in the outcome variable" where x is the point estimate.

Results for other variables should be interpretted as "a 1 percentage point increase leads to a x change in the outcome variable" where x is the point estimate.

Column (1) gives results for the log fatal workplace injury rate. Column (2) is the same outcome variable but using the sample in which nonfatal injuries are available.

Columns (3) - (6) represent All Nonfatal workplace injuries, nonfatal workplace injuries which resulted in days away from work, nonfatal workplace injuries which resulted in job restriction or job transfer, and nonfatal injuries which did not result in either lost workdays or job restriction or job transfer.

For a description of the control variables, see Table 10.

Table 14: Mutli-State Analysis Full Workforce Results

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	0.109*	0.102*	-0.0844**	-0.140***	-0.0634	-0.0577
	(0.0551)	(0.0511)	(0.0312)	(0.0280)	(0.0582)	(0.0462)
Inspection Rate	2.880**	2.558***	0.0267	-0.0709	-1.278	0.566
	(1.141)	(0.707)	(0.337)	(0.548)	(1.077)	(0.405)
Age 25-34	-2.471**	-2.616*	-1.292	-1.349	-0.970	-1.576
	(1.181)	(1.281)	(0.810)	(0.937)	(1.998)	(0.973)
Age 35-44	-1.654	-0.617	-2.078**	-1.554*	-3.020	-2.506**
	(1.652)	(1.612)	(0.783)	(0.901)	(2.104)	(1.156)
Age 45-54	-0.212	-0.557	-2.791***	-2.121*	-5.656***	-2.899**
	(1.503)	(1.711)	(0.974)	(1.042)	(1.740)	(1.137)
Age 55-64	-1.600	-2.387	-1.346	-1.065	-1.910	-1.177
	(1.460)	(1.900)	(0.974)	(1.039)	(2.207)	(1.425)
Male	2.986	3.445*	1.005	0.205	3.195***	1.101
	(1.887)	(1.738)	(0.687)	(0.813)	(1.086)	(1.039)
White	-0.234	-0.202	-0.333	-0.691	-0.549	-0.108
	(0.652)	(0.741)	(0.600)	(0.627)	(1.079)	(0.726)
Black	1.714	2.927	0.271	-0.393	-3.270	1.403
	(1.857)	(1.825)	(0.872)	(1.006)	(2.487)	(1.168)
Asian	-0.0951	0.565	0.104	-0.293**	0.176	0.398
	(0.716)	(0.505)	(0.225)	(0.136)	(0.446)	(0.472)
Single	-0.565	-1.150	-1.100*	-1.254**	-1.541	-1.046
	(1.043)	(1.341)	(0.560)	(0.605)	(1.257)	(0.774)
Divorced	5.280***	3.697***	1.412**	0.517	-0.443	2.943***
	(1.233)	(1.223)	(0.682)	(0.717)	(2.072)	(0.960)
HS Degree Only	-0.237	0.883	-0.133	-0.0719	-2.442	0.328
	(1.108)	(1.277)	(0.698)	(0.751)	(1.809)	(0.919)
Obtained Bachelor's Degree'	1.936	3.156**	0.334	1.260**	-2.463	0.164
	(1.477)	(1.524)	(0.553)	(0.550)	(1.639)	(0.844)
Frac. of Lower Rep.	0.0682	-0.0222	-0.0607*	-0.105**	0.0463	-0.0395
	(0.0581)	(0.0498)	(0.0346)	(0.0386)	(0.0959)	(0.0599)
Maximum Temperature	-0.00142	-0.00351	0.00393**	0.00143	0.00131	0.00553**
	(0.00340)	(0.00434)	(0.00181)	(0.00196)	(0.00351)	(0.00224)
Monthly Precipitation	0.00213	0.0191	0.00494	-0.00711	0.00304	0.0140
	(0.0153)	(0.0133)	(0.00691)	(0.00735)	(0.0135)	(0.00923)
Constant	-4.872**	-6.107**	3.230***	2.896**	2.955	1.956
	(2.174)	(2.517)	(1.102)	(1.224)	(2.559)	(1.470)
N	783	566	566	566	566	566
r2	0.856	0.861	0.945	0.944	0.942	0.931

Standard errors clustered as state level.

Equation 1 results for the private and public sectors combined.
Outcomes are log variables.
Results for the RTW variable should be interpretted as "a RTW passage leads to a x change in the outcome variable" where x is the point estimate.
Results for other variables should be interpretted as "a 1 percentage point increase leads to a x change in the outcome variable" where x is the point estimate.
Column (1) gives results for the log fatal workplace injury rate. Column (2) is the same outcome variable but using the sample in which nonfatal injuries are available.
Columns (3) - (6) represent All Nonfatal workplace injuries, nonfatal workplace injuries which resulted in days away from work, nonfatal workplace injuries which resulted in job restriction or job transfer, and nonfatal injuries which did not result in either lost workdays or job restriction or job transfer.
For a description of the control variables, see Table 10.

Table 15: Right to Work Coefficient Comparison From Multi-State Analyses: Robustness Check

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
All	0.109*	0.102*	-0.0844**	-0.140***	-0.0634	-0.0577
	(0.0551)	(0.0511)	(0.0312)	(0.0280)	(0.0582)	(0.0462)
N	783	566	566	566	566	566
r2	0.856	0.861	0.945	0.944	0.942	0.931
Private	0.106*	0.0996*	-0.0905***	-0.135***	-0.0780	-0.0641*
	(0.0566)	(0.0549)	(0.0227)	(0.0405)	(0.0537)	(0.0327)
N	783	566	566	566	566	566
r2	0.849	0.850	0.958	0.950	0.941	0.950
Public	0.119	0.0641	-0.0134	-0.204**	0.0604	0.0581
	(0.138)	(0.160)	(0.0503)	(0.0868)	(0.139)	(0.0583)
N	783	485	485	485	467	485
r2	0.406	0.420	0.869	0.885	0.866	0.812
Construction	-0.0453	-0.00648	-0.118	-0.168	-0.0330	-0.0997
	(0.140)	(0.0876)	(0.0870)	(0.136)	(0.236)	(0.0986)
N	783	564	564	564	564	564
r2	0.438	0.419	0.857	0.781	0.406	0.836
Manufacturing	0.273	0.261*	-0.124**	-0.136*	-0.0886	-0.0919**
	(0.162)	(0.152)	(0.0467)	(0.0771)	(0.100)	(0.0389)
N	783	566	566	566	566	566
r2	0.453	0.404	0.923	0.775	0.694	0.944
Wholesale Trade	0.0889	0.0570	-0.0259	-0.128	0.0814	0.105**
	(0.108)	(0.144)	(0.0343)	(0.0992)	(0.169)	(0.0484)
N	782	559	560	560	560	560
r2	0.445	0.428	0.676	0.573	0.623	0.578
Retail Trade	-0.131	-0.162	-0.0887*	-0.158***	-0.152	-0.0496
	(0.140)	(0.153)	(0.0489)	(0.0463)	(0.101)	(0.0576)
N	782	563	564	565	564	564
r2	0.393	0.338	0.763	0.770	0.816	0.856
Transportation and Warehousing	0.244	0.188	-0.0788	-0.0298	-0.258	-0.123
	(0.169)	(0.131)	(0.0814)	(0.0703)	(0.196)	(0.0850)
N	783	562	562	562	562	562
r2	0.569	0.539	0.737	0.683	0.408	0.736
Finance and Realestate	0.130	0.0892	-0.0263	0.0277	-0.205	-0.0921
	(0.118)	(0.123)	(0.0813)	(0.236)	(0.467)	(0.232)
N	783	550	550	548	544	549
r2	0.168	0.200	0.674	0.430	0.605	0.409
Services	0.0828	0.0652	-0.0150	-0.0985*	0.00587	0.0246
	(0.103)	(0.103)	(0.0246)	(0.0519)	(0.0648)	(0.0397)
N	783	550	550	545	547	547
r2	0.371	0.382	0.869	0.886	0.798	0.807

The always treated are dropped from the sample.

Standard errors clustered as state level.

Results for each sector and private industry are given in rows with columns representing log outcomes.

Controls along with state and year fixed effects are included.

Results for the RTW variable should be interpretted as "a RTW passage leads to a x change in the outcome variable" where x is the point estimate.

Results for other variables should be interpretted as "a 1 percentage point increase leads to a x change in the outcome variable" where x is the point estimate.

Column (1) gives results for the log fatal workplace injury rate. Column (2) is the same outcome variable but using the sample in which nonfatal injuries are available.

Columns (3) - (6) represent All Nonfatal workplace injuries, nonfatal workplace injuries which resulted in days away from work, nonfatal workplace injuries which resulted in job restriction or job transfer, and nonfatal injuries which did not result in either lost workdays or job restriction or job transfer.

For a description of the control variables, see Table 10.

Table 16: Generalized Synthetic Control Estimates for Right-to-Work laws on Different Workplace Injury Outcomes

Workplace Injury Outcome Variable	Effect Size (ATT.Average)	Standard Error	p-value	ATT for Period 1	ATT for Period 3	# Factors
Fatal Injuries						
Fatal Injuries	0.098	0.115	0.35	0.012	0.099	r=1
Nonfatal Injuries						
All	-0.044	0.047	0.117	-0.051	-0.010	r=1
Lost Workday	-0.139	0.041	0.000	-0.137	-0.139	r=2
Job Restriction/Transfer	0.031	0.077	0.892	0.049	0.014	r=4
Other	-0.007	0.070	0.583	-0.029	0.030	r=1

Control variables are identical to those from equation 1. Descriptions can be found in table 10. Effect Size (ATT.Average) is calculated using equation 3.

Number of Factors is selected through cross-validation procedure. Number of factors are chosen such that the lowest mean squared prediction error is chosen. See Xu [2017] for further details.

Table 17: Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer	(5) Other Nonfatal
Oklahoma	0.239***	0.0910***	-0.0496*	0.0663	0.183***
	(0.0455)	(0.0201)	(0.0252)	(0.0419)	(0.0324)
N	1215	830	830	830	830
r2	0.864	0.944	0.950	0.939	0.922
Indiana	0.0779**	-0.133***	-0.219***	-0.0367	-0.142***
	(0.0296)	(0.0180)	(0.0206)	(0.0327)	(0.0234)
N	1215	836	836	836	836
r2	0.863	0.946	0.951	0.942	0.926
Michigan	0.201***	-0.170***	-0.107***	-0.266***	-0.153***
	(0.0260)	(0.0201)	(0.0194)	(0.0314)	(0.0248)
N	1215	836	836	836	836
r2	0.864	0.946	0.952	0.940	0.926
Wisconsin	0.143***	-0.110***	-0.149***	-0.0646*	-0.120***
	(0.0370)	(0.0183)	(0.0164)	(0.0362)	(0.0247)
N	1215	836	836	836	836
r2	0.863	0.944	0.950	0.940	0.924
West Virginia	-0.00698	-0.0531**	-0.302***	0.311***	0.0539
	(0.0452)	(0.0198)	(0.0244)	(0.0491)	(0.0324)
N	1215	834	834	834	834
r2	0.865	0.945	0.952	0.939	0.923
Kentucky	-0.340***	-0.106***	-0.122***	-0.104**	-0.0991***
	(0.0339)	(0.0231)	(0.0226)	(0.0421)	(0.0286)
N	1215	836	836	836	836
r2	0.865	0.946	0.952	0.940	0.925

Standard errors clustered as state level.

Rows represent each treatment state while columns are the log outcome variables.

Each estimation includes both control variables and state and year fixed effects.

For a description of control variables, see Table 10.

Differences in n's for case study results come from dropping all other treatment states when performing a case study.

Table 18: Case Study Results - Robustness Check

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer	(5) Other Nonfatal
Oklahoma	0.243***	0.0603**	-0.104***	-0.00665	0.162***
	(0.0441)	(0.0251)	(0.0300)	(0.0569)	(0.0340)
N	648	453	453	453	453
r2	0.854	0.946	0.947	0.941	0.934
Indiana	0.0494	-0.142***	-0.226***	-0.0102	-0.157***
	(0.0456)	(0.0211)	(0.0256)	(0.0408)	(0.0238)
N	648	459	459	459	459
r2	0.851	0.951	0.951	0.945	0.941
Michigan	0.164***	-0.190***	-0.136***	-0.241***	-0.175***
	(0.0432)	(0.0275)	(0.0276)	(0.0441)	(0.0282)
N	648	459	459	459	459
r2	0.849	0.949	0.952	0.943	0.940
Wisconsin	0.135**	-0.115***	-0.144***	-0.0750	-0.126***
	(0.0540)	(0.0228)	(0.0208)	(0.0445)	(0.0302)
N	648	459	459	459	459
r2	0.848	0.947	0.947	0.943	0.936
West Virginia	-0.0548	-0.0586**	-0.279***	0.281***	0.0408
	(0.0801)	(0.0237)	(0.0393)	(0.0835)	(0.0290)
N	648	457	457	457	457
r2	0.858	0.949	0.952	0.939	0.935
Kentucky	-0.382***	-0.136***	-0.160***	-0.109*	-0.132***
	(0.0638)	(0.0275)	(0.0266)	(0.0542)	(0.0316)
N	648	459	459	459	459
r2	0.855	0.950	0.951	0.943	0.939

States which adopted a right to work law before the sample (always treated) are removed before running results.
Standard errors clustered as state level.
Rows represent each treatment state while columns are the log outcome variables.
Each estimation includes both control variables and state and year fixed effects.
For a description of control variables, see Table 10.
Differences in n's for case study results come from dropping all other treatment states when performing a case study.

Table 19: Synthetic Difference-in-Differences Results

	Oklahoma	Indiana	Michigan	Wisconsin	West Virginia	Kentucky
Treatment Year	2001	2012	2012	2015	2016	2017
Fatal	0.222	0.117	0.143	0.049	0.077	-0.227
	(0.132)	(0.143)	(0.174)	(0.169)	(0.198)	(0.188)
Nonfatal	0.067	-0.034	-0.087	-0.017	−0.137***	-0.045
	(0.109)	(0.065)	(0.064)	(0.038)	(0.040)	(0.056)
Lost Day	-0.108	-0.107*	-0.082*	-0.049	−0.300***	-0.075
	(0.084)	(0.061)	(0.054)	(0.040)	(0.047)	(0.067)
Transfer/Restriction	0.068	0.029	-0.083	0.042	-0.030	-0.044
	(0.213)	(0.102)	(0.098)	(0.071)	(0.089)	(0.105)
Other	0.059	-0.033	-0.055	0.010	-0.050	-0.025
	(0.122)	(0.082)	(0.085)	(0.053)	(0.062)	(0.074)

Table 20: Oklahoma (2001) Case Study - Parallel Trends Test

	Fatal	All Nonfatal	Lost Workday	Job Restriction/Transfer	Other Nonfatal
Treated_X_1992	-0.467***	0	0	0	0
	(0.126)	(.)	(.)	(.)	(.)
Treated_X_1993	-0.294***	0	0	0	0
	(0.0936)	(.)	(.)	(.)	(.)
Treated_X_1994	-0.234**	0	0	0	0
	(0.0992)	(.)	(.)	(.)	(.)
Treated_X_1995	-0.352***	0	0	0	0
	(0.0820)	(.)	(.)	(.)	(.)
Treated_X_1996	-0.362***	0.0278	0.314***	-0.129*	-0.0685*
	(0.0937)	(0.0352)	(0.0339)	(0.0677)	(0.0395)
Treated_X_1997	-0.232**	0.00483	0.249***	-0.202**	-0.0493
	(0.0985)	(0.0400)	(0.0299)	(0.0837)	(0.0452)
Treated_X_1998	-0.522***	0.0449	0.176***	0.250**	-0.0569
	(0.125)	(0.0528)	(0.0419)	(0.104)	(0.0719)
Treated_X_1999	-0.240**	-0.0504*	0.0828***	0.000306	-0.124***
	(0.0936)	(0.0291)	(0.0282)	(0.0765)	(0.0351)
Treated_X_2000	-0.224***	-0.0158	-0.119***	-0.125*	0.109***
	(0.0769)	(0.0253)	(0.0311)	(0.0686)	(0.0306)
Treated_X_2002	-0.275**	0.0437	-0.0512	-0.134*	0.171***
	(0.105)	(0.0371)	(0.0368)	(0.0667)	(0.0407)
Treated_X_2003	-0.0738	-0.104**	-0.199***	-0.0983	-0.0671
	(0.0938)	(0.0395)	(0.0309)	(0.0680)	(0.0510)
Treated_X_2004	-0.215**	0.0133	-0.0150	-0.165**	0.107***
	(0.0937)	(0.0365)	(0.0395)	(0.0718)	(0.0368)
Treated_X_2005	-0.113	-0.124***	-0.133***	-0.151**	-0.132**
	(0.128)	(0.0395)	(0.0453)	(0.0687)	(0.0498)
Treated_X_2006	-0.240**	0.178***	0.182***	0.00813	0.265***
	(0.0908)	(0.0377)	(0.0325)	(0.0599)	(0.0477)
Treated_X_2007	0.0613	0.177***	0.217***	0.0177	0.218***
	(0.111)	(0.0411)	(0.0457)	(0.0698)	(0.0542)
Treated_X_2008	-0.0211	0.170***	0.0855	-0.0887	0.329***
	(0.122)	(0.0476)	(0.0539)	(0.0717)	(0.0529)
Treated_X_2009	-0.0591	0.106*	0.0974	-0.0603	0.185***
	(0.115)	(0.0521)	(0.0577)	(0.0739)	(0.0623)
Treated_X_2010	0.0950	0.202***	0.168***	0.0415	0.291***
	(0.0834)	(0.0515)	(0.0507)	(0.0950)	(0.0667)
Treated_X_2011	-0.131	0.142**	0.176***	0.0720	0.168**
	(0.122)	(0.0597)	(0.0580)	(0.111)	(0.0673)
Treated_X_2012	-0.0567	0.0676	0.107	-0.111	0.116*
	(0.103)	(0.0550)	(0.0641)	(0.0865)	(0.0597)
Treated_X_2013	0.0154	0	0	0	0
	(0.0960)	(.)	(.)	(.)	(.)
Treated_X_2014	-0.117	0	0	0	0
	(0.115)	(.)	(.)	(.)	(.)
Treated_X_2015	-0.106	0	0	0	0
	(0.111)	(.)	(.)	(.)	(.)
Treated_X_2016	-0.0248	0	0	0	0
	(0.108)	(.)	(.)	(.)	(.)
Treated_X_2017	-0.0166	0	0	0	0
	(0.121)	(.)	(.)	(.)	(.)
Treated_X_2018	-0.0481	0	0	0	0
	(0.118)	(.)	(.)	(.)	(.)
N	648	453	453	453	453

If parallel trends hold, coefficients before treatment year should be zero or statistically insignificant.

Results from this table indicate that for the Oklahoma case study, trends are close to parallel for All Nonfatal injuries. This can be verified using figure 5b.

Indiana (2012) Case Study - Parallel Trends Test

	Fatal	All Nonfatal	Lost Workday	Job Restriction/Transfer	Other Nonfatal
Treated_X_1992	-0.215***	0	0	0	0
	(0.0736)	(.)	(.)	(.)	(.)
Treated_X_1993	-0.245***	0	0	0	0
	(0.0692)	(.)	(.)	(.)	(.)
Treated_X_1994	0.0698	0	0	0	0
	(0.0532)	(.)	(.)	(.)	(.)
Treated_X_1995	-0.180**	0	0	0	0
	(0.0789)	(.)	(.)	(.)	(.)
Treated_X_1996	-0.239***	0.219***	0.415***	-0.0896	0.255***
	(0.0467)	(0.0536)	(0.0582)	(0.0908)	(0.0631)
Treated_X_1997	0.0693	0.264***	0.394***	0.0152	0.321***
	(0.0556)	(0.0573)	(0.0553)	(0.117)	(0.0633)
Treated_X_1998	-0.0851	0.190***	0.312***	-0.0631	0.258***
	(0.0737)	(0.0543)	(0.0494)	(0.0924)	(0.0664)
Treated_X_1999	0.0497	0.215***	0.363***	0.0161	0.240***
	(0.0643)	(0.0551)	(0.0604)	(0.0892)	(0.0593)
Treated_X_2000	0.0624	0.202***	0.269***	-0.0556	0.280***
	(0.109)	(0.0605)	(0.0722)	(0.122)	(0.0608)
Treated_X_2001	-0.127	0.182**	0.162**	0.0605	0.252***
	(0.0911)	(0.0680)	(0.0677)	(0.0975)	(0.0787)
Treated_X_2002	-0.260***	0.143**	0.169**	-0.0321	0.223***
	(0.0456)	(0.0650)	(0.0628)	(0.0827)	(0.0752)
Treated_X_2003	-0.214***	0.117**	0.130***	0.0123	0.142**
	(0.0540)	(0.0418)	(0.0367)	(0.0438)	(0.0553)
Treated_X_2004	0.00213	0.179***	0.0956**	0.0775*	0.260***
	(0.0568)	(0.0308)	(0.0345)	(0.0439)	(0.0380)
Treated_X_2005	0.0942	0.152***	0.235***	-0.0390	0.180***
	(0.0896)	(0.0278)	(0.0369)	(0.0615)	(0.0425)
Treated_X_2006	-0.0379	0.150***	0.209***	-0.0350	0.175***
	(0.0623)	(0.0384)	(0.0392)	(0.0623)	(0.0497)
Treated_X_2007	-0.0660	0.0867***	0.0656*	-0.00382	0.137***
	(0.0950)	(0.0240)	(0.0372)	(0.0486)	(0.0297)
Treated_X_2008	0.189**	0.0333	0.0304	-0.166**	0.109***
	(0.0815)	(0.0330)	(0.0406)	(0.0597)	(0.0338)
Treated_X_2009	0.169**	0.00343	0.0286	-0.178***	0.0545
	(0.0735)	(0.0227)	(0.0295)	(0.0585)	(0.0320)
Treated_X_2010	0.00877	0.0534**	0.0607*	-0.0463	0.100***
	(0.0718)	(0.0223)	(0.0311)	(0.0478)	(0.0287)
Treated_X_2011	0.00307	0.00972	-0.0161	-0.101**	0.0635**
	(0.0572)	(0.0175)	(0.0209)	(0.0397)	(0.0238)
Treated_X_2013	0.0402	-0.00297	-0.0531*	-0.0334	0.0471
	(0.0570)	(0.0258)	(0.0296)	(0.0442)	(0.0345)
Treated_X_2014	-0.0492	0.0706***	-0.0506**	0.0379	0.160***
	(0.0485)	(0.0212)	(0.0242)	(0.0393)	(0.0254)
Treated_X_2015	-0.0695	0.0115	0.00534	-0.0533	0.0406
	(0.0799)	(0.0309)	(0.0352)	(0.0553)	(0.0414)
Treated_X_2016	-0.0461	-0.0485	-0.107***	-0.111*	0.00803
	(0.0656)	(0.0330)	(0.0296)	(0.0623)	(0.0513)
Treated_X_2017	-0.0326	-0.0143	-0.0516	-0.0509	0.00978
	(0.0856)	(0.0401)	(0.0331)	(0.0768)	(0.0552)
Treated_X_2018	0.194	-0.0690*	-0.0914**	-0.127	-0.0603
	(0.114)	(0.0360)	(0.0351)	(0.0891)	(0.0473)
N	648	459	459	459	459

If parallel trends hold, coefficients before treatment year should be zero or statistically insignificant.

Results from this table indicate that for the Indiana case study, trends are close to parallel for Job Restriction/Transfer Nonfatal injuries. This can be verified using figure 5d.

Table 21: Michigan (2012) Case Study - Parallel Trends Test

	Fatal	All Nonfatal	Lost Workday	Job Restriction/Transfer	Other Nonfatal
Treated_X_1992	-0.523***	0	0	0	0
	(0.0693)	(.)	(.)	(.)	(.)
Treated_X_1993	-0.387***	0	0	0	0
	(0.0662)	(.)	(.)	(.)	(.)
Treated_X_1994	-0.326***	0	0	0	0
	(0.0487)	(.)	(.)	(.)	(.)
Treated_X_1995	-0.409***	0	0	0	0
	(0.0637)	(.)	(.)	(.)	(.)
Treated_X_1996	-0.343***	0.368***	0.298***	0.561***	0.346***
	(0.0464)	(0.0502)	(0.0583)	(0.0867)	(0.0528)
Treated_X_1997	-0.193***	0.315***	0.255***	0.372***	0.320***
	(0.0535)	(0.0434)	(0.0410)	(0.0982)	(0.0533)
Treated_X_1998	-0.234**	0.213***	0.0871*	0.334***	0.214***
	(0.0839)	(0.0496)	(0.0500)	(0.0894)	(0.0549)
Treated_X_1999	-0.222**	0.204***	0.137**	0.322***	0.166***
	(0.0842)	(0.0482)	(0.0537)	(0.0939)	(0.0469)
Treated_X_2000	-0.282***	0.218***	0.122**	0.351***	0.206***
	(0.0760)	(0.0412)	(0.0490)	(0.0935)	(0.0417)
Treated_X_2001	-0.108	0.165***	0.0361	0.303***	0.134***
	(0.0808)	(0.0358)	(0.0343)	(0.0613)	(0.0469)
Treated_X_2002	-0.168***	0.217***	0.153***	0.221***	0.203***
	(0.0561)	(0.0380)	(0.0327)	(0.0735)	(0.0479)
Treated_X_2003	-0.217**	0.180***	0.150***	0.266***	0.109**
	(0.0795)	(0.0351)	(0.0282)	(0.0662)	(0.0509)
Treated_X_2004	-0.368***	0.107***	-0.0126	0.200***	0.101**
	(0.0609)	(0.0289)	(0.0318)	(0.0477)	(0.0364)
Treated_X_2005	-0.399***	0.135***	0.0511	0.0416	0.187***
	(0.0839)	(0.0261)	(0.0312)	(0.0584)	(0.0331)
Treated_X_2006	-0.163**	0.106***	-0.00436	0.142**	0.126***
	(0.0654)	(0.0278)	(0.0217)	(0.0555)	(0.0360)
Treated_X_2007	-0.320***	0.0487**	-0.0363	0.0596	0.0730**
	(0.0622)	(0.0196)	(0.0275)	(0.0659)	(0.0329)
Treated_X_2008	-0.150**	0.0131	-0.0109	-0.0592	0.0340
	(0.0663)	(0.0232)	(0.0265)	(0.0470)	(0.0270)
Treated_X_2009	-0.312***	0.0548***	-0.00844	-0.0757	0.130***
	(0.0751)	(0.0192)	(0.0264)	(0.0475)	(0.0249)
Treated_X_2010	0.0105	0.0657**	0.0452*	-0.0192	0.113***
	(0.0615)	(0.0269)	(0.0254)	(0.0618)	(0.0339)
Treated_X_2011	-0.0213	-0.0301*	-0.0248	-0.116***	0.00409
	(0.0531)	(0.0155)	(0.0222)	(0.0287)	(0.0227)
Treated_X_2013	-0.0240	-0.0284	-0.0169	-0.0844**	-0.0132
	(0.0517)	(0.0209)	(0.0174)	(0.0395)	(0.0298)
Treated_X_2014	-0.127**	-0.00829	0.0238	-0.00181	-0.0131
	(0.0605)	(0.0141)	(0.0217)	(0.0516)	(0.0216)
Treated_X_2015	-0.123*	-0.0747**	-0.116***	-0.136**	-0.0220
	(0.0638)	(0.0296)	(0.0286)	(0.0633)	(0.0419)
Treated_X_2016	-0.0316	-0.0658**	-0.0713**	-0.180***	-0.0191
	(0.0561)	(0.0313)	(0.0309)	(0.0505)	(0.0440)
Treated_X_2017	-0.114	-0.0663*	-0.155***	-0.0728	-0.0224
	(0.0781)	(0.0378)	(0.0344)	(0.0706)	(0.0477)
Treated_X_2018	-0.194**	-0.126***	-0.139***	-0.0816	-0.125**
	(0.0843)	(0.0361)	(0.0291)	(0.0647)	(0.0561)
N	648	459	459	459	459

If parallel trends hold, coefficients before treatment year should be zero or statistically insignificant. Results from this table indicate no trends are parallel for the Michigan case study.

Table 22: Wisconsin (2013) Case Study - Parallel Trends Test

	Fatal	All Nonfatal	Lost Workday	Job Restriction/Transfer	Other Nonfatal
Treated_X_1992	-0.0217	0	0	0	0
	(0.0744)	(.)	(.)	(.)	(.)
Treated_X_1993	0.0231	0	0	0	0
	(0.102)	(.)	(.)	(.)	(.)
Treated_X_1994	-0.379***	0	0	0	0
	(0.0728)	(.)	(.)	(.)	(.)
Treated_X_1995	-0.240**	0	0	0	0
	(0.0963)	(.)	(.)	(.)	(.)
Treated_X_1996	-0.234**	0.307***	0.397***	0.104	0.346***
	(0.105)	(0.0554)	(0.0649)	(0.0857)	(0.0635)
Treated_X_1997	-0.237***	0.346***	0.361***	0.162*	0.413***
	(0.0799)	(0.0420)	(0.0497)	(0.0849)	(0.0451)
Treated_X_1998	-0.328***	0.335***	0.367***	0.207**	0.384***
	(0.0855)	(0.0450)	(0.0475)	(0.0766)	(0.0490)
Treated_X_1999	-0.355***	0.237***	0.314***	0.162**	0.230***
	(0.0832)	(0.0437)	(0.0506)	(0.0770)	(0.0482)
Treated_X_2000	-0.147	0.374***	0.382***	0.148*	0.453***
	(0.0870)	(0.0479)	(0.0543)	(0.0861)	(0.0554)
Treated_X_2001	-0.145	0.240***	0.383***	0.0264	0.220***
	(0.107)	(0.0465)	(0.0530)	(0.0706)	(0.0510)
Treated_X_2002	-0.313***	0.193***	0.277***	-0.142*	0.249***
	(0.0802)	(0.0433)	(0.0487)	(0.0724)	(0.0507)
Treated_X_2003	-0.163**	0.174***	0.259***	-0.0239	0.187***
	(0.0782)	(0.0336)	(0.0379)	(0.0694)	(0.0339)
Treated_X_2004	-0.222***	0.216***	0.303***	-0.0321	0.251***
	(0.0707)	(0.0380)	(0.0407)	(0.0668)	(0.0414)
Treated_X_2005	0.156*	0.160***	0.288***	-0.00141	0.135***
	(0.0867)	(0.0421)	(0.0480)	(0.0713)	(0.0460)
Treated_X_2006	-0.299**	0.125***	0.211***	0.0928	0.0806*
	(0.108)	(0.0418)	(0.0453)	(0.0796)	(0.0468)
Treated_X_2007	-0.0925	0.139***	0.199***	0.122**	0.109***
	(0.0971)	(0.0270)	(0.0293)	(0.0576)	(0.0324)
Treated_X_2008	-0.315***	0.0555*	0.144***	-0.0858	0.0582
	(0.108)	(0.0291)	(0.0348)	(0.0516)	(0.0341)
Treated_X_2009	-0.0197	-0.00472	0.0435	-0.0601	-0.0147
	(0.0886)	(0.0341)	(0.0518)	(0.0628)	(0.0328)
Treated_X_2010	-0.204*	0.0122	0.0336	0.0134	0.00424
	(0.112)	(0.0290)	(0.0328)	(0.0522)	(0.0379)
Treated_X_2011	-0.251**	-0.0266	-0.0586	-0.0677	0.0133
	(0.104)	(0.0404)	(0.0459)	(0.0618)	(0.0514)
Treated_X_2012	0.102	-0.0307	0.00707	-0.0626	-0.0426
	(0.0866)	(0.0378)	(0.0441)	(0.0642)	(0.0479)
Treated_X_2013	0.0154	0.0411	0.0529	-0.0620	0.0577
	(0.0678)	(0.0253)	(0.0308)	(0.0418)	(0.0340)
Treated_X_2014	-0.127*	0.0385	0.0929***	-0.0484	0.0332
	(0.0618)	(0.0253)	(0.0302)	(0.0542)	(0.0283)
Treated_X_2016	-0.105*	0.0426**	0.121***	-0.0747**	0.0333
	(0.0510)	(0.0163)	(0.0253)	(0.0293)	(0.0204)
Treated_X_2017	-0.0888	0.0360	0.0525	-0.0738	0.0447
	(0.0639)	(0.0240)	(0.0333)	(0.0489)	(0.0303)
Treated_X_2018	0.0874	0.0366	0.0637	-0.0897*	0.0370
	(0.0697)	(0.0337)	(0.0445)	(0.0511)	(0.0380)
N	648	459	459	459	459

If parallel trends hold, coefficients before treatment year should be zero or statistically insignificant.

Results from this table indicate that for the Wisconsin case study, trends are close to parallel for Job Restriction/Transfer Nonfatal injuries. This can be verified using figure 5d.

Table 23: West Virginia (2016) Case Study - Parallel Trends Test

	Fatal	All Nonfatal	Lost Workday	Job Restriction/Transfer	Other Nonfatal
Treated_X_1992	0.398**	0	0	0	0
	(0.184)	(.)	(.)	(.)	(.)
Treated_X_1993	0.326*	0	0	0	0
	(0.159)	(.)	(.)	(.)	(.)
Treated_X_1994	0.121	0	0	0	0
	(0.126)	(.)	(.)	(.)	(.)
Treated_X_1995	0.0406	0	0	0	0
	(0.106)	(.)	(.)	(.)	(.)
Treated_X_1996	0.212	0	0	0	0
	(0.126)	(.)	(.)	(.)	(.)
Treated_X_1997	-0.00936	0	0	0	0
	(0.119)	(.)	(.)	(.)	(.)
Treated_X_1998	0.0923	0.0783	0.329***	-0.420***	-0.0243
	(0.121)	(0.0839)	(0.0847)	(0.130)	(0.0861)
Treated_X_1999	0.154	-0.0177	0.326***	-0.441***	-0.191**
	(0.116)	(0.0932)	(0.101)	(0.153)	(0.0881)
Treated_X_2000	0.132	-0.0166	0.320***	-0.504***	-0.178**
	(0.134)	(0.0825)	(0.0860)	(0.161)	(0.0760)
Treated_X_2001	0.346**	0.0320	0.417***	-0.748***	-0.113
	(0.160)	(0.0624)	(0.0729)	(0.106)	(0.0701)
Treated_X_2002	-0.0852	0.0114	0.409***	-0.770***	-0.143*
	(0.155)	(0.0687)	(0.0781)	(0.103)	(0.0790)
Treated_X_2003	0.229*	0.0225	0.343***	-0.728***	-0.0511
	(0.126)	(0.0493)	(0.0490)	(0.100)	(0.0636)
Treated_X_2004	0.284**	0.0310	0.400***	-0.482***	-0.140***
	(0.113)	(0.0464)	(0.0489)	(0.101)	(0.0460)
Treated_X_2005	0.113	-0.0164	0.376***	-0.616***	-0.204***
	(0.107)	(0.0455)	(0.0460)	(0.128)	(0.0511)
Treated_X_2006	0.517***	-0.0518	0.359***	-0.516***	-0.277***
	(0.110)	(0.0377)	(0.0400)	(0.115)	(0.0452)
Treated_X_2007	0.375**	-0.0577*	0.266***	-0.591***	-0.184***
	(0.138)	(0.0293)	(0.0358)	(0.0928)	(0.0352)
Treated_X_2008	0.329**	0.0541	0.373***	-0.559***	-0.0460
	(0.138)	(0.0365)	(0.0534)	(0.0968)	(0.0381)
Treated_X_2009	0.0973	0.0488	0.322***	-0.532***	-0.0309
	(0.142)	(0.0416)	(0.0578)	(0.0681)	(0.0468)
Treated_X_2010	0.862***	0.0975*	0.325***	-0.608***	0.0637
	(0.112)	(0.0514)	(0.0590)	(0.0706)	(0.0667)
Treated_X_2011	-0.0935	-0.0286	0.164***	-0.378***	-0.110*
	(0.0888)	(0.0457)	(0.0491)	(0.0650)	(0.0554)
Treated_X_2012	0.114	0.0418	0.219***	-0.121*	-0.0552
	(0.0790)	(0.0336)	(0.0396)	(0.0659)	(0.0359)
Treated_X_2013	0.376***	-0.00350	0.113***	-0.334***	-0.00208
	(0.0753)	(0.0288)	(0.0395)	(0.0552)	(0.0365)
Treated_X_2014	-0.171***	0.171***	0.230***	-0.0228	0.198***
	(0.0534)	(0.0312)	(0.0399)	(0.0542)	(0.0312)
Treated_X_2015	-0.165**	0.00889	0.0580**	-0.124***	0.0101
	(0.0690)	(0.0215)	(0.0250)	(0.0403)	(0.0216)
Treated_X_2017	0.0981	-0.0605**	-0.0695**	-0.195***	-0.0271
	(0.0574)	(0.0233)	(0.0328)	(0.0545)	(0.0306)
Treated_X_2018	0.242***	-0.0455	0.0256	-0.172***	-0.0516
	(0.0787)	(0.0296)	(0.0322)	(0.0600)	(0.0366)
N	648	457	457	457	457

~~If parallel trends hold, coefficients before treatment year should be zero or statistically insignificant.~~

Results from this table indicate that for the West Virginia case study, trends are close to parallel for All Nonfatal injuries. Figure 5b indicates that this is primarily true except for the year 2014.

Table 24: Kentucky (2017) Case Study - Parallel Trends Test

	Fatal	All Nonfatal	Lost Workday	Job Restriction/Transfer	Other Nonfatal
Treated_X_1992	0.339**	0	0	0	0
	(0.122)	(.)	(.)	(.)	(.)
Treated_X_1993	0.524***	0	0	0	0
	(0.129)	(.)	(.)	(.)	(.)
Treated_X_1994	0.750***	0	0	0	0
	(0.130)	(.)	(.)	(.)	(.)
Treated_X_1995	0.584***	0	0	0	0
	(0.0901)	(.)	(.)	(.)	(.)
Treated_X_1996	0.652***	0.170**	0.220**	0.214	0.137
	(0.0935)	(0.0736)	(0.0783)	(0.134)	(0.0873)
Treated_X_1997	0.655***	0.286***	0.374***	0.194	0.272***
	(0.107)	(0.0609)	(0.0536)	(0.124)	(0.0787)
Treated_X_1998	0.403***	0.171**	0.239***	0.0860	0.145*
	(0.116)	(0.0651)	(0.0678)	(0.109)	(0.0794)
Treated_X_1999	0.331***	0.152**	0.292***	0.0292	0.0870
	(0.118)	(0.0600)	(0.0697)	(0.119)	(0.0624)
Treated_X_2000	0.536***	0.226***	0.318***	0.312**	0.147**
	(0.0899)	(0.0638)	(0.0680)	(0.134)	(0.0699)
Treated_X_2001	0.343**	0.233***	0.270***	0.330***	0.173**
	(0.123)	(0.0566)	(0.0580)	(0.0902)	(0.0706)
Treated_X_2002	0.644***	0.261***	0.344***	0.268***	0.202***
	(0.0822)	(0.0468)	(0.0413)	(0.0772)	(0.0632)
Treated_X_2003	0.641***	0.219***	0.316***	0.0829	0.192***
	(0.0805)	(0.0458)	(0.0316)	(0.0796)	(0.0605)
Treated_X_2004	0.751***	0.210***	0.302***	0.130	0.161***
	(0.0920)	(0.0436)	(0.0321)	(0.0940)	(0.0539)
Treated_X_2005	0.610***	0.246***	0.305***	0.118	0.245***
	(0.0933)	(0.0495)	(0.0493)	(0.0928)	(0.0566)
Treated_X_2006	0.613***	0.0821*	0.150***	0.00908	0.0374
	(0.0802)	(0.0399)	(0.0443)	(0.0917)	(0.0431)
Treated_X_2007	0.585***	0.121***	0.139***	0.0297	0.109***
	(0.0965)	(0.0329)	(0.0433)	(0.0726)	(0.0353)
Treated_X_2008	0.578***	0.123***	0.168***	-0.0106	0.113***
	(0.0788)	(0.0283)	(0.0301)	(0.0639)	(0.0351)
Treated_X_2009	0.541***	0.0433	0.140***	-0.0849	0.00784
	(0.0886)	(0.0357)	(0.0330)	(0.0664)	(0.0411)
Treated_X_2010	0.160*	0.137***	0.189***	-0.000176	0.152***
	(0.0847)	(0.0295)	(0.0316)	(0.0785)	(0.0423)
Treated_X_2011	0.385***	0.0778**	0.168***	-0.101	0.0815**
	(0.0972)	(0.0311)	(0.0304)	(0.0832)	(0.0389)
Treated_X_2012	0.421***	0.0237	0.0717***	0.0378	-0.0120
	(0.0799)	(0.0234)	(0.0219)	(0.0672)	(0.0307)
Treated_X_2013	0.295***	0.0835***	0.139***	0.179***	0.0126
	(0.0700)	(0.0243)	(0.0250)	(0.0609)	(0.0353)
Treated_X_2014	0.125**	0.0187	0.0156	0.161**	-0.0266
	(0.0582)	(0.0206)	(0.0367)	(0.0671)	(0.0283)
Treated_X_2015	0.544***	0.0945***	0.117***	0.0996*	0.0888**
	(0.0574)	(0.0246)	(0.0342)	(0.0558)	(0.0355)
Treated_X_2016	0.270***	-0.00861	0.0577*	-0.00373	-0.0488*
	(0.0683)	(0.0210)	(0.0307)	(0.0629)	(0.0274)
Treated_X_2018	0.192***	-0.0124	0.0648***	-0.0293	-0.0716***
	(0.0502)	(0.0177)	(0.0170)	(0.0385)	(0.0251)
N	648	459	459	459	459

If parallel trends hold, coefficients before treatment year should be zero or statistically insignificant. Results from this table indicate no trends are parallel for the Kentucky case study.

Table 25: Case Study Synthetic Difference-in-Differences Results

	Oklahoma	Indiana	Michigan	Wisconsin	West Virginia	Kentucky
Treatment Year	2001	2012	2012	2015	2016	2017
Fatal	0.222	0.117	0.143	0.049	0.077	-0.227
	(0.132)	(0.143)	(0.174)	(0.169)	(0.198)	(0.188)
Nonfatal	0.067	-0.034	-0.087	-0.017	-0.137^{***}	-0.045
	(0.109)	(0.065)	(0.064)	(0.038)	(0.040)	(0.056)
Lost Day	-0.108*	-0.107	-0.082*	-0.049	-0.300^{***}	-0.075
	(0.084)	(0.061)	(0.054)	(0.040)	(0.047)	(0.067)
Transfer/Restriction	0.068	0.029	-0.083	0.042	-0.030	-0.044
	(0.213)	(0.102)	(0.098)	(0.071)	(0.089)	(0.105)
Other	0.059	-0.033	-0.055	0.010	-0.050	-0.025
	(0.122)	(0.082)	(0.085)	(0.053)	(0.062)	(0.074)

Synthetic difference-in-differences estimated using David Hirshberg paper.

Figure 1: Right-to-Work States

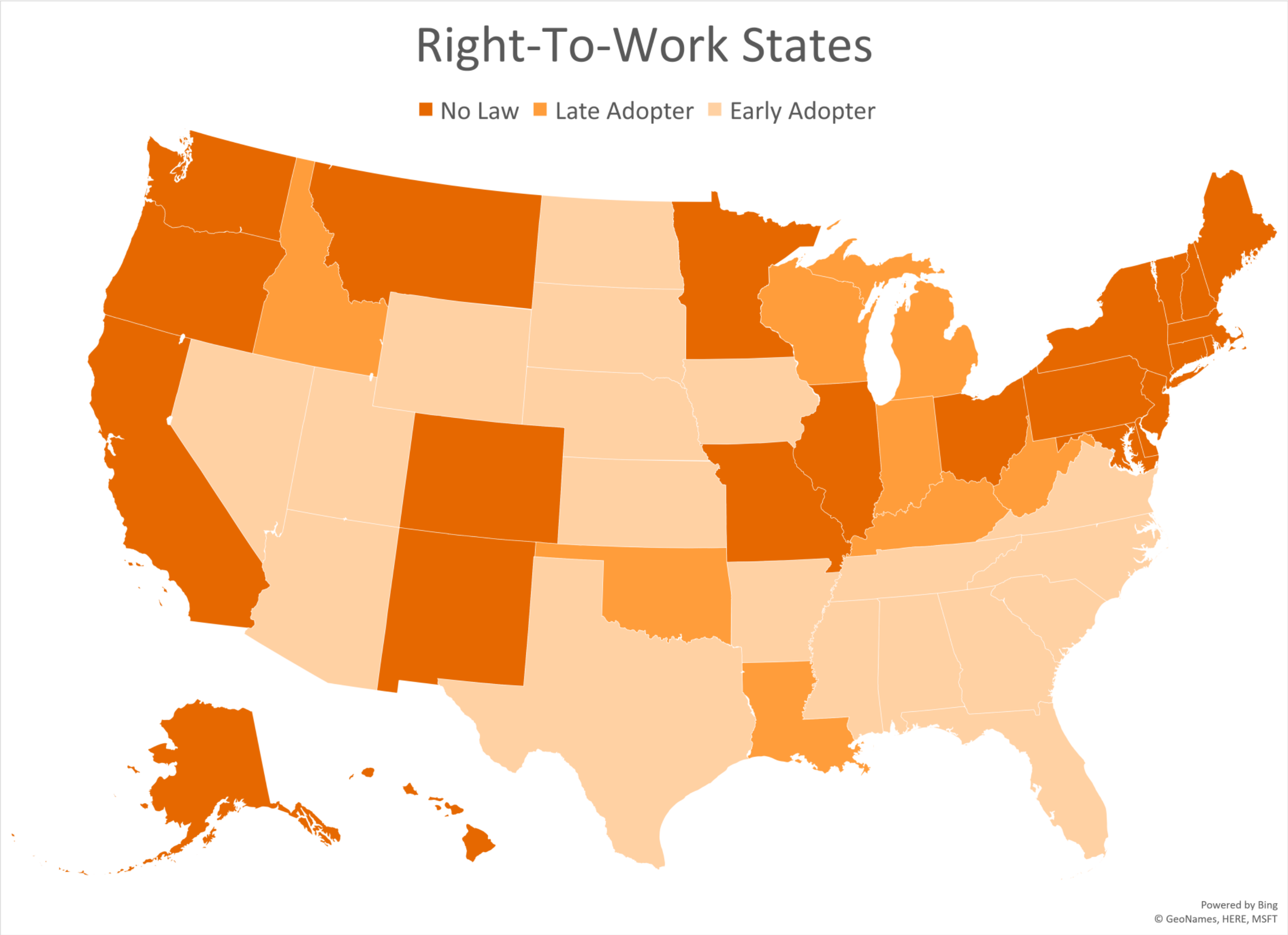
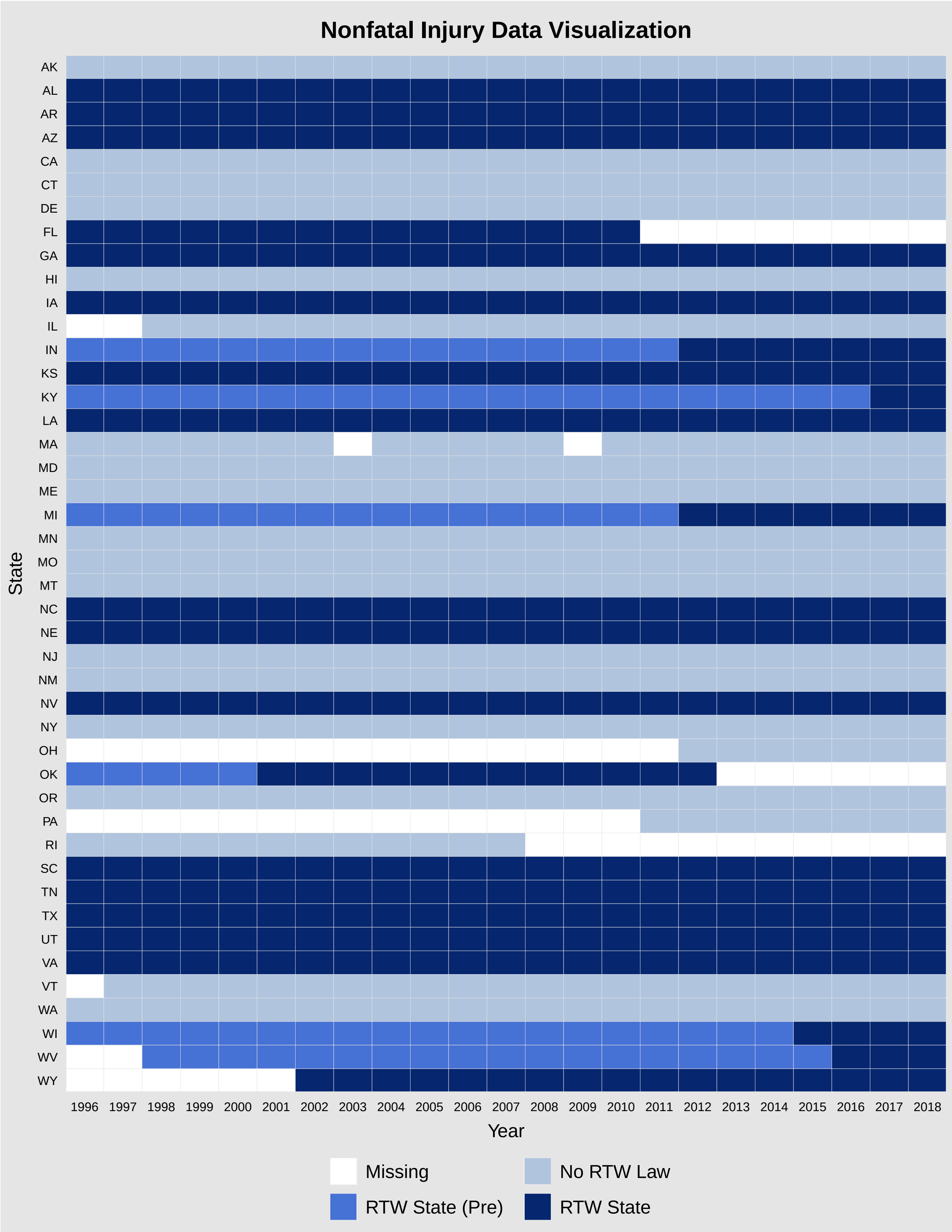


Figure 2: Right-to-Work Law Adoptions and Nonfatal Injury Data



Note that all treated states are participants in SOII. However, since the data begins in 1996, Oklahoma has only 5 pre-treatment periods which is insufficient for the Generalized Synthetic Control method.

Figure 3: OSHA State Mandates

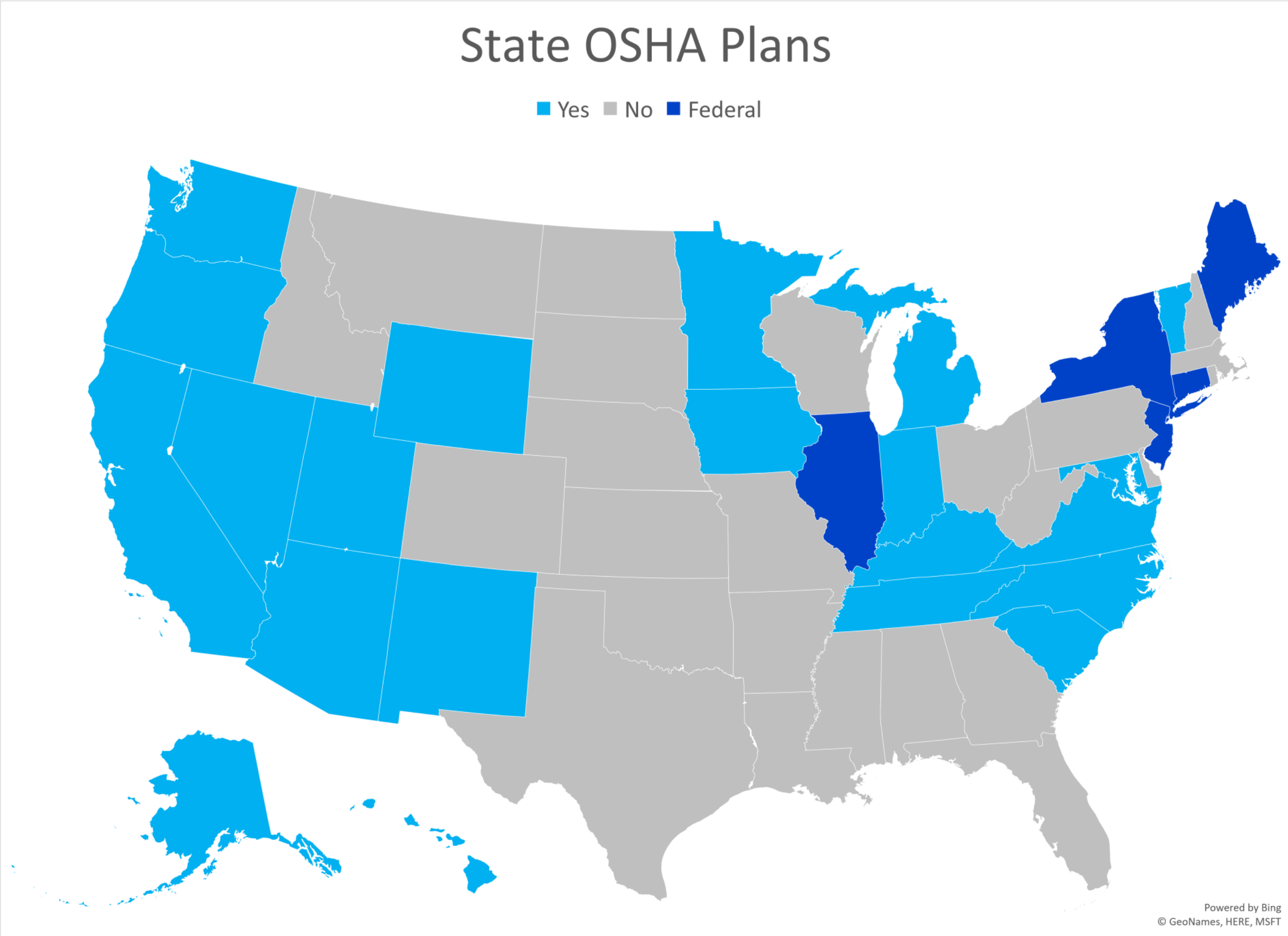


Figure 4: Fatal and Nonfatal Workplace Injury Trends

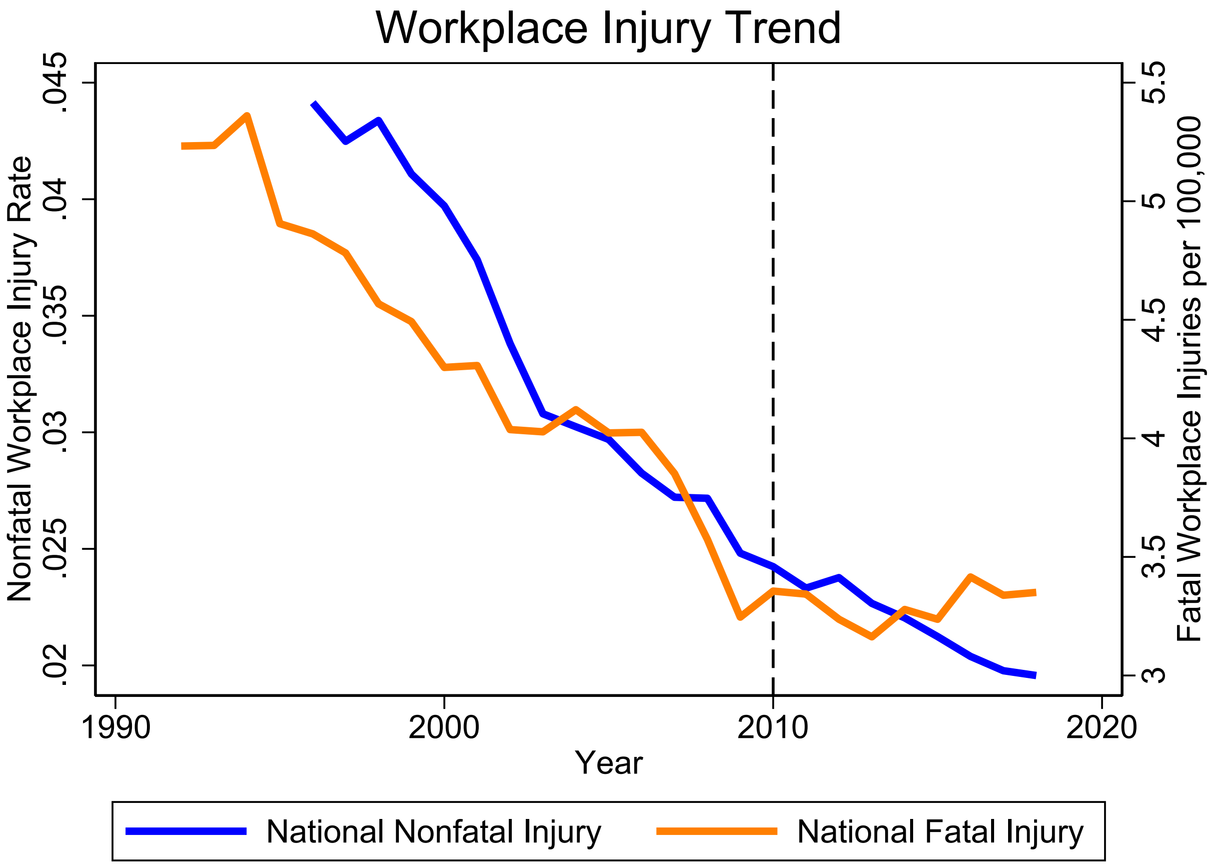
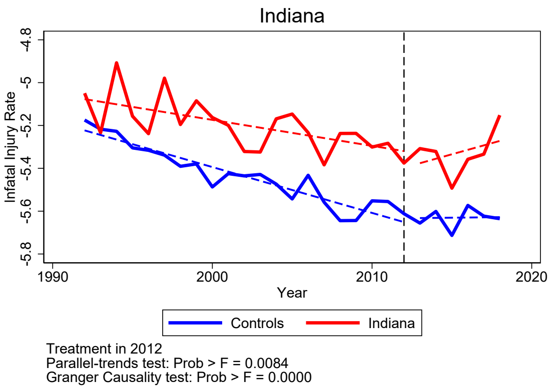
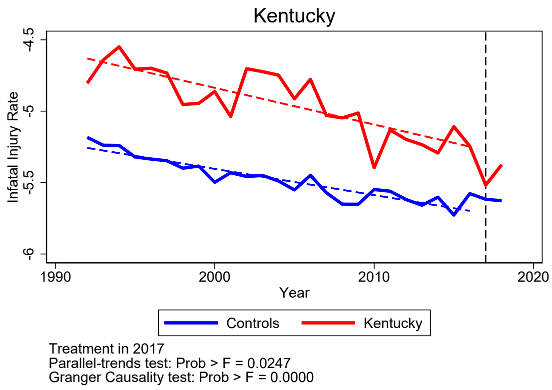


Figure 5a: Trends for Fatal Injury rates

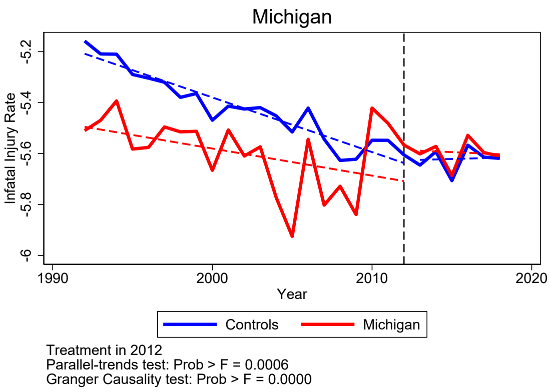
(a) Indiana



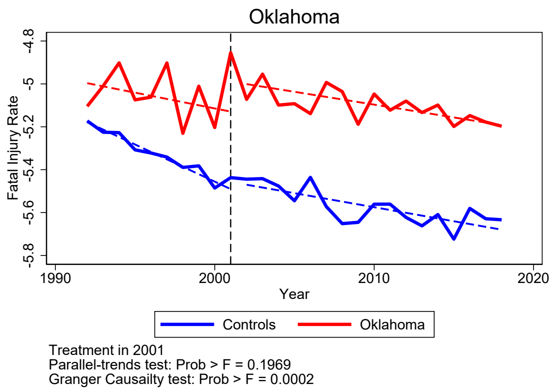
(b) Kentucky



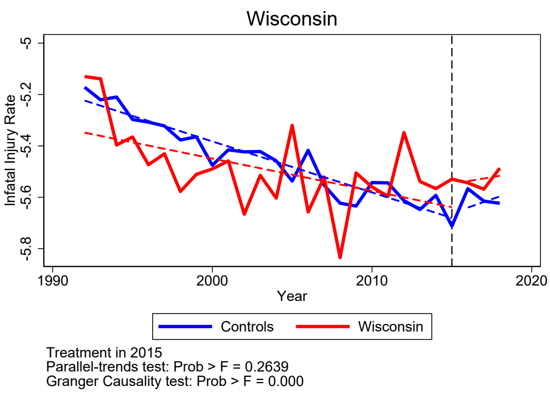
(c) Michigan



(d) Oklahoma



(e) Wisconsin



(f) West Virginia

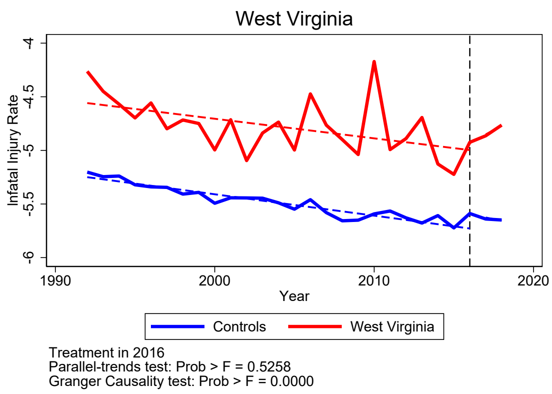
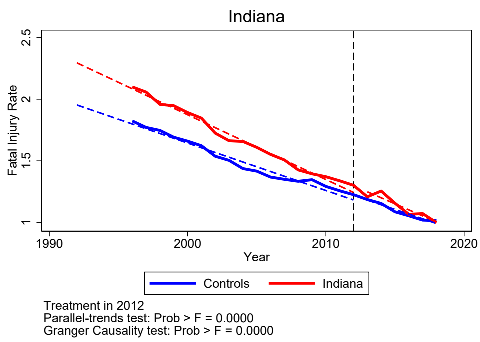
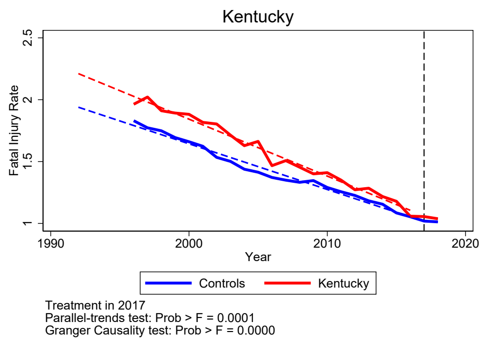


Figure 5b: Trends for All Nonfatal Injury rates

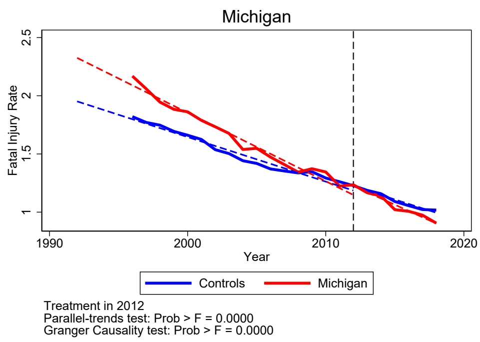
(g) Indiana



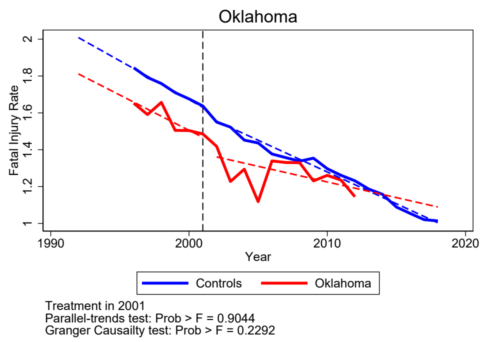
(h) Kentucky



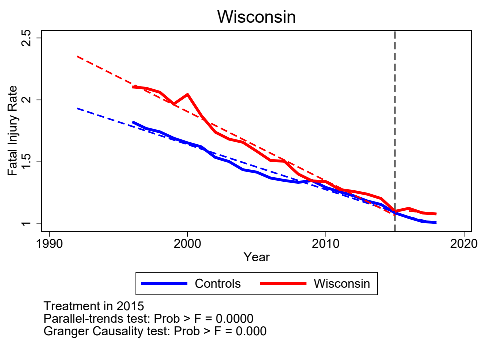
(i) Michigan



(j) Oklahoma



(k) Wisconsin



(l) West Virginia

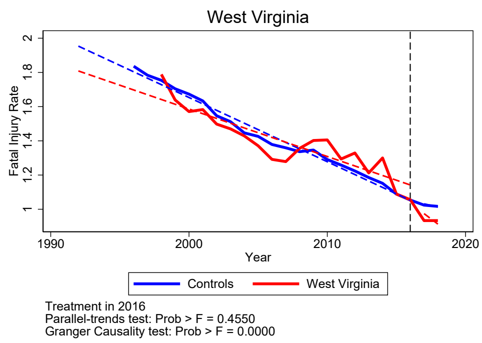
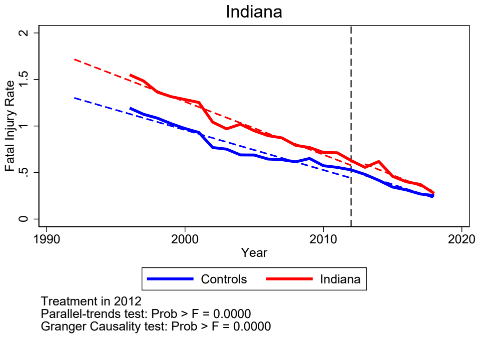
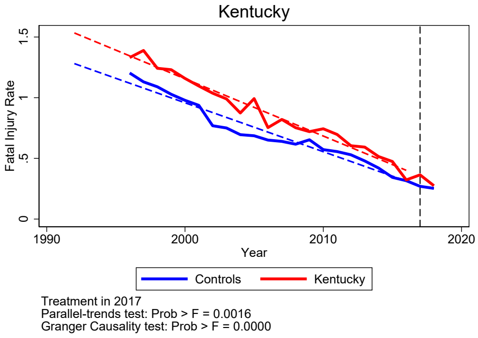


Figure 5c: Trends for "Other" Nonfatal Injury Rates

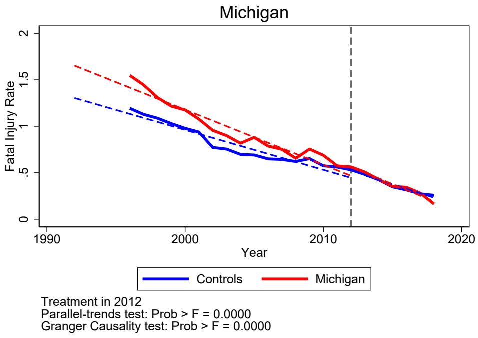
(m) Indiana



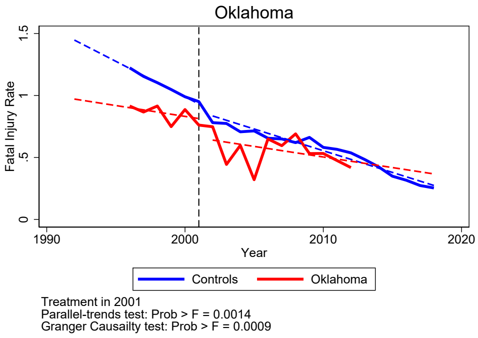
(n) Kentucky



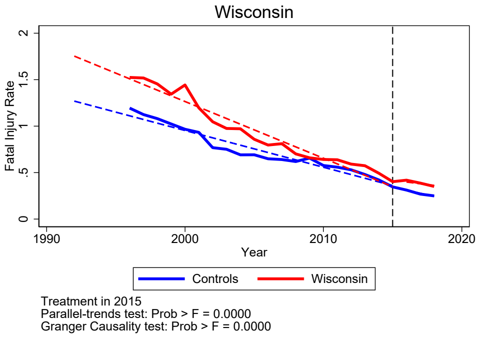
(o) Michigan



(p) Oklahoma



(q) Wisconsin



(r) West Virginia

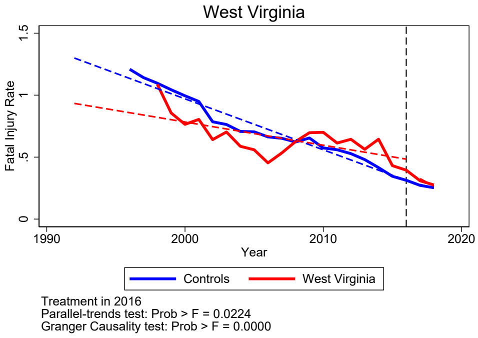
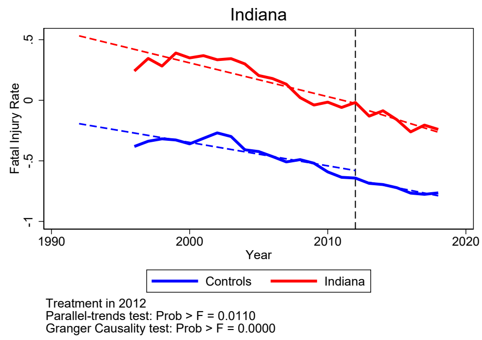
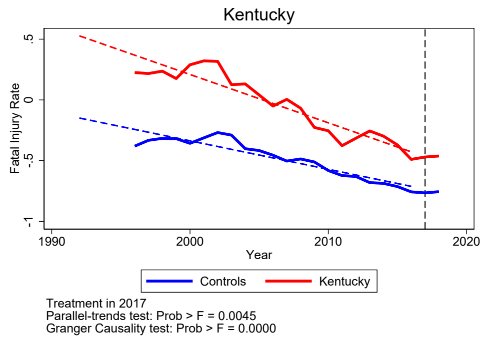


Figure 5d: Trends for Job Restriction or Transfer Nonfatal Injury Rates

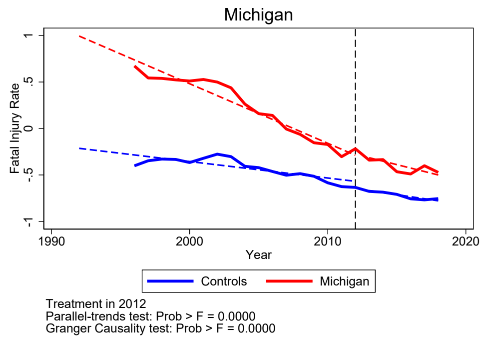
(s) Indiana



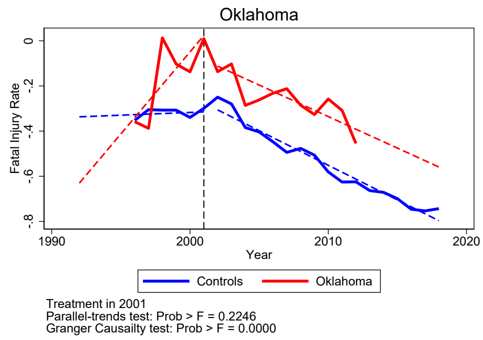
(t) Kentucky



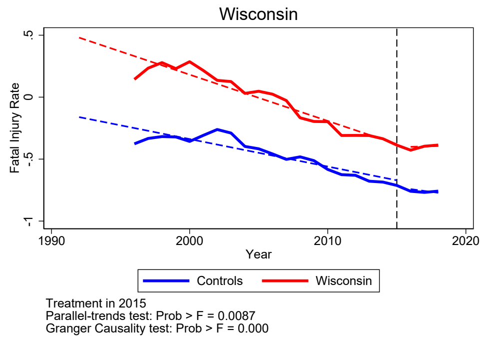
(u) Michigan



(v) Oklahoma



(w) Wisconsin



(x) West Virginia

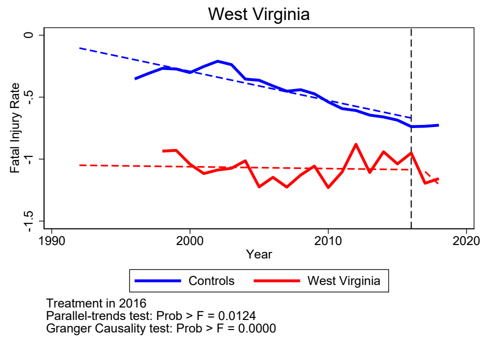
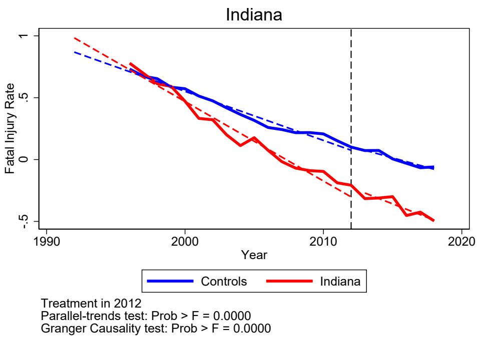
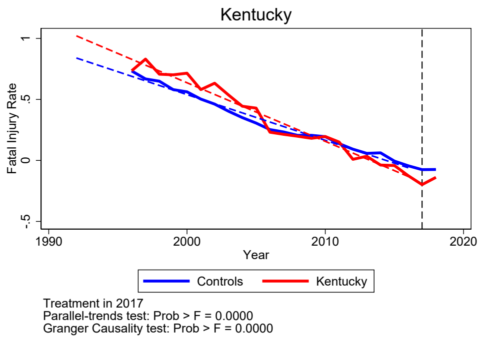


Figure 5e: Trends for Lost Workday Nonfatal Injury Rates

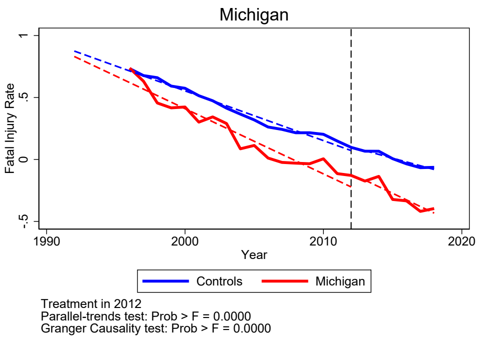
(y) Indiana



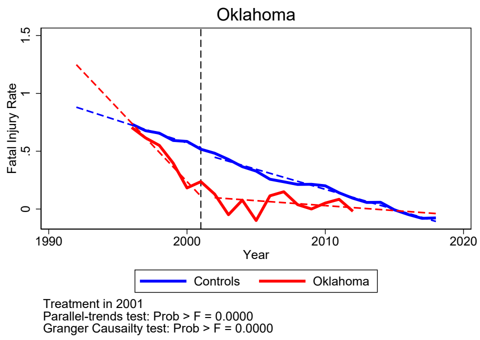
(z) Kentucky



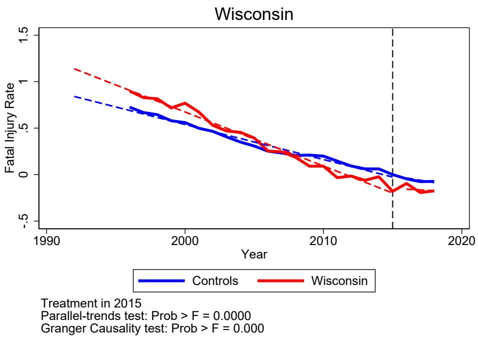
(aa) Michigan



(ab) Oklahoma



(ac) Wisconsin



(ad) West Virginia

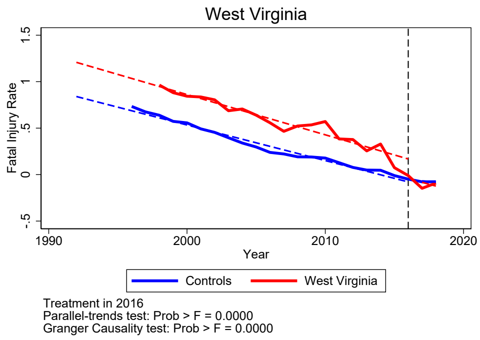
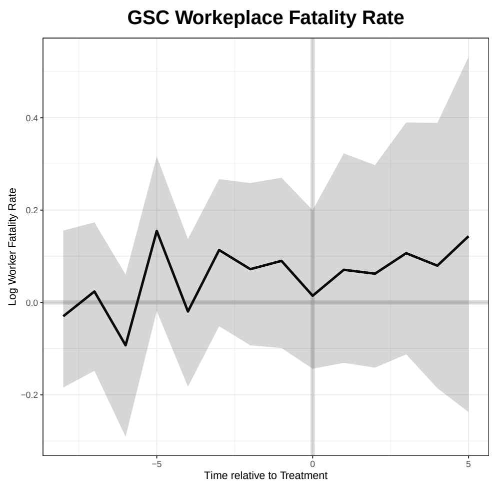
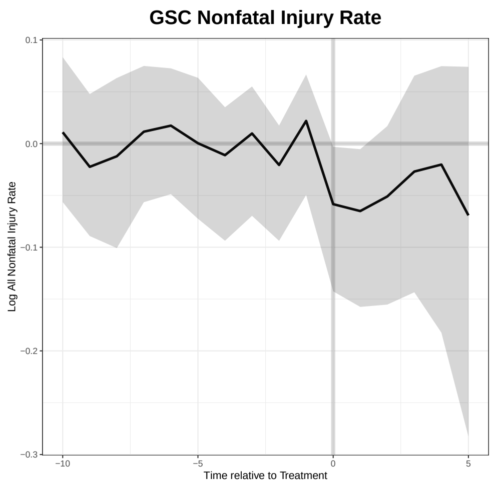


Figure 6: Generalized Synthetic Control ATT Each Period

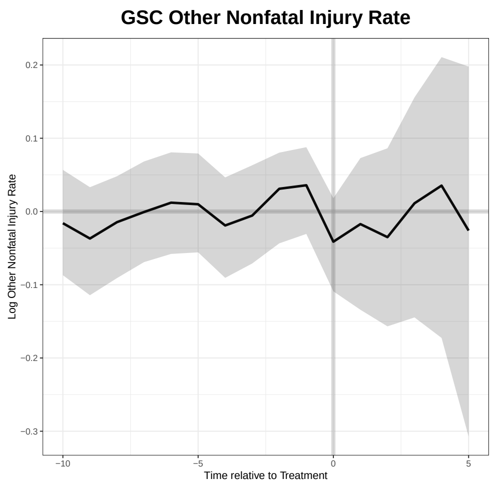
(a) Fatal Injuries



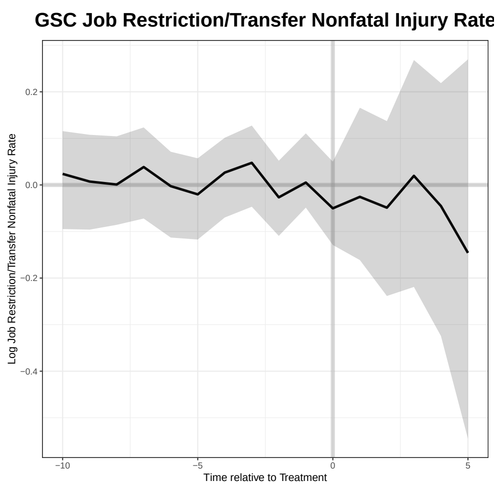
(b) All Nonfatal Injuries



(c) Other Nonfatal Injuries



(d) Job Restriction/Transfer Cases



(e) Lost Workday Cases

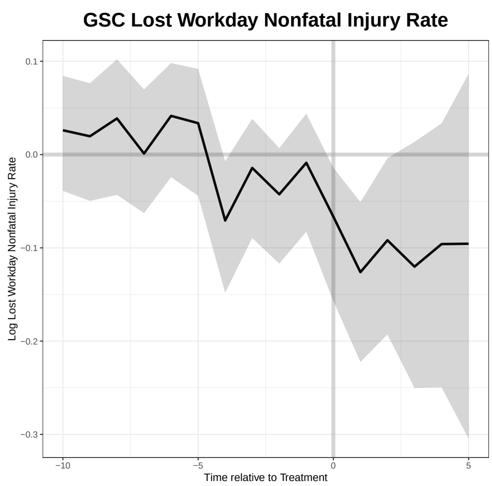
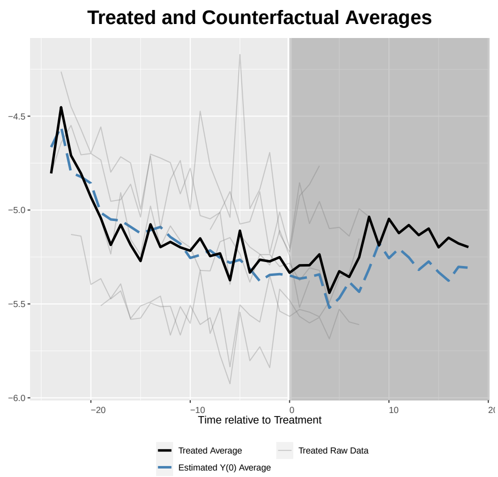
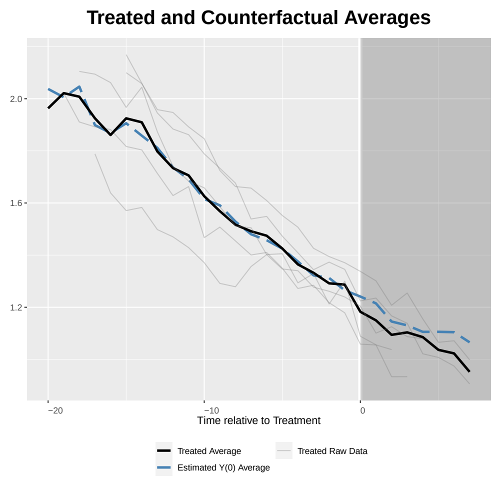


Figure 7: Generalized Synthetic Control Raw Data Comparison

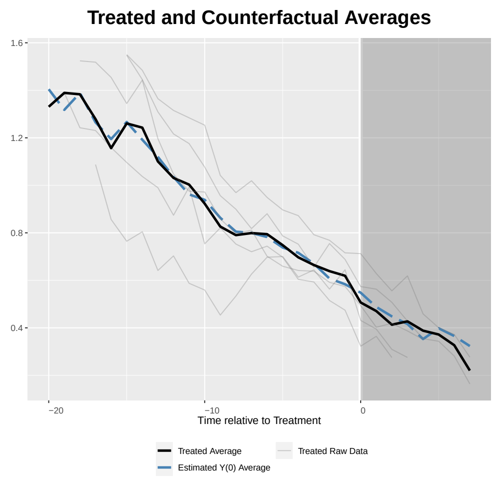
(a) Fatal Injuries



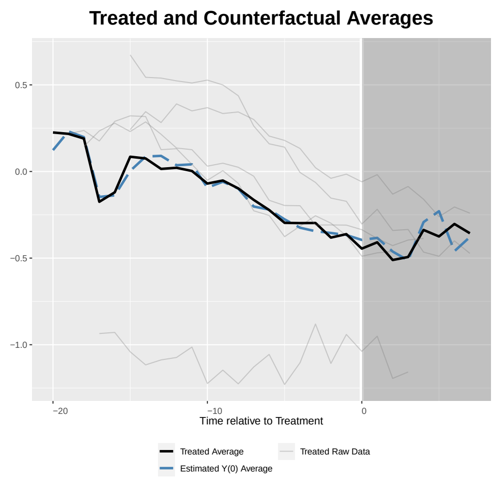
(b) All Nonfatal Injuries



(c) Other Nonfatal Injuries



(d) Job Restriction/Transfer Cases



(e) Lost Workday Cases

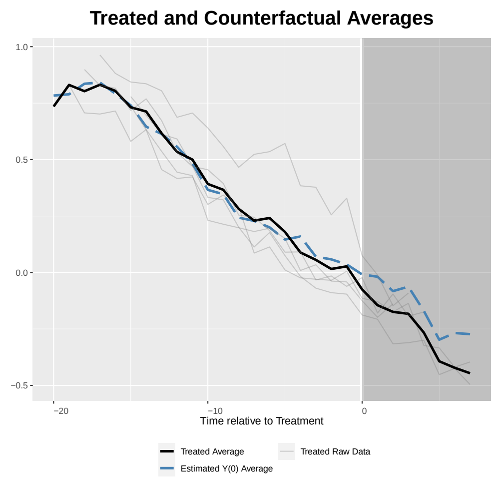


Figure 8a: Case Study Placebo Results for the Full Workforce

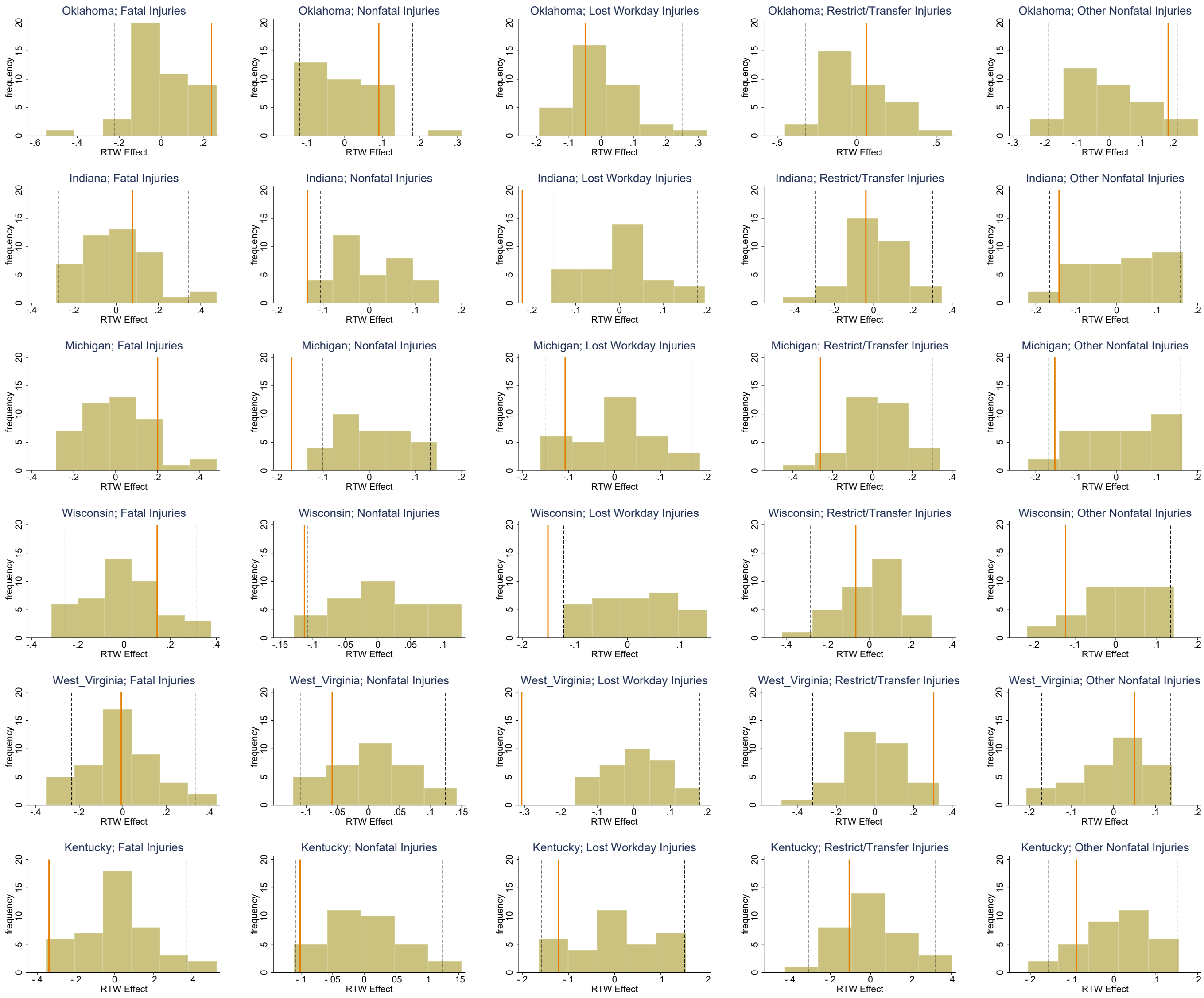


Figure 8b: Case Study Placebo Results for the Private Sector

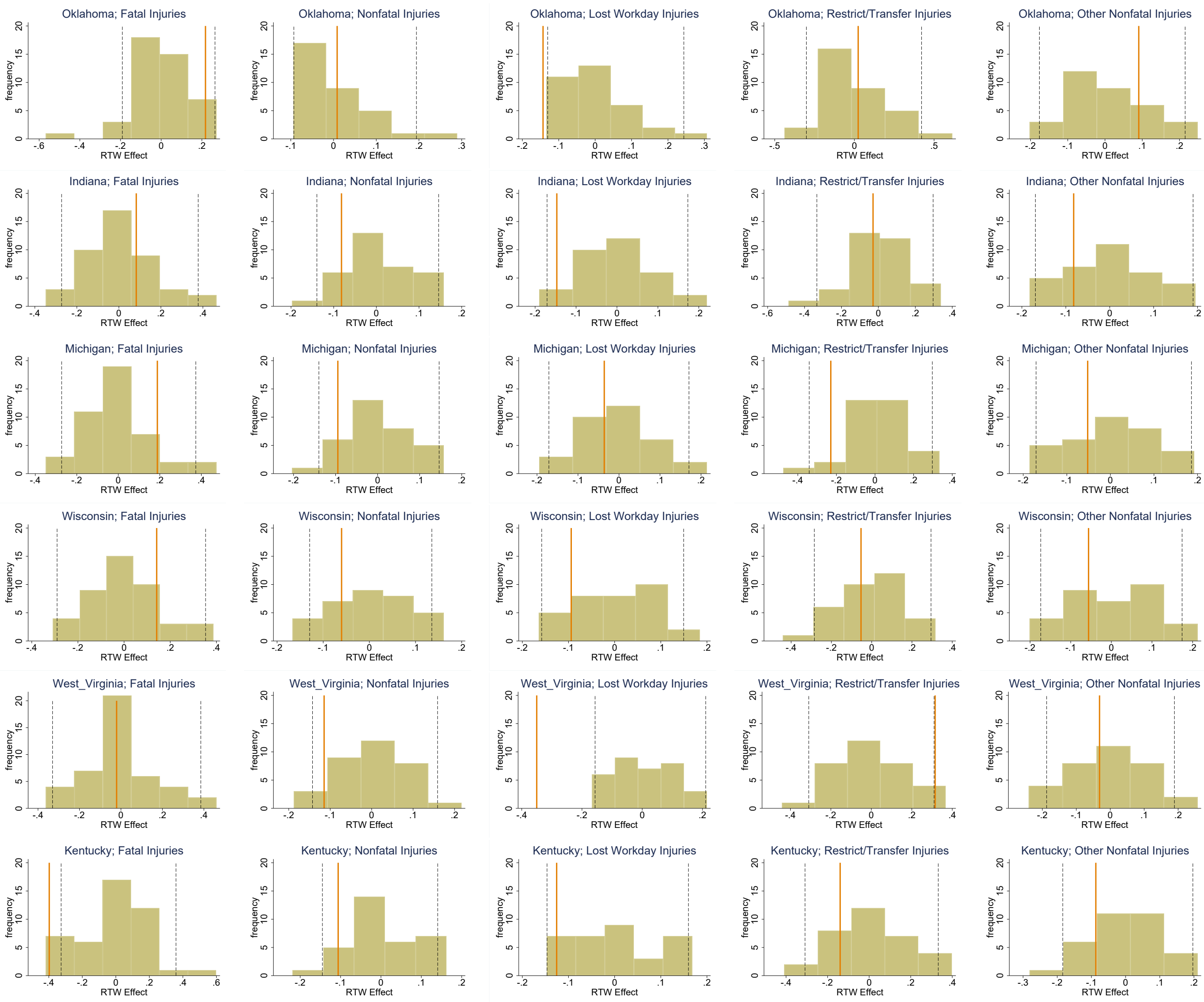


Figure 8c: Case Study Placebo Results for the Public Sector

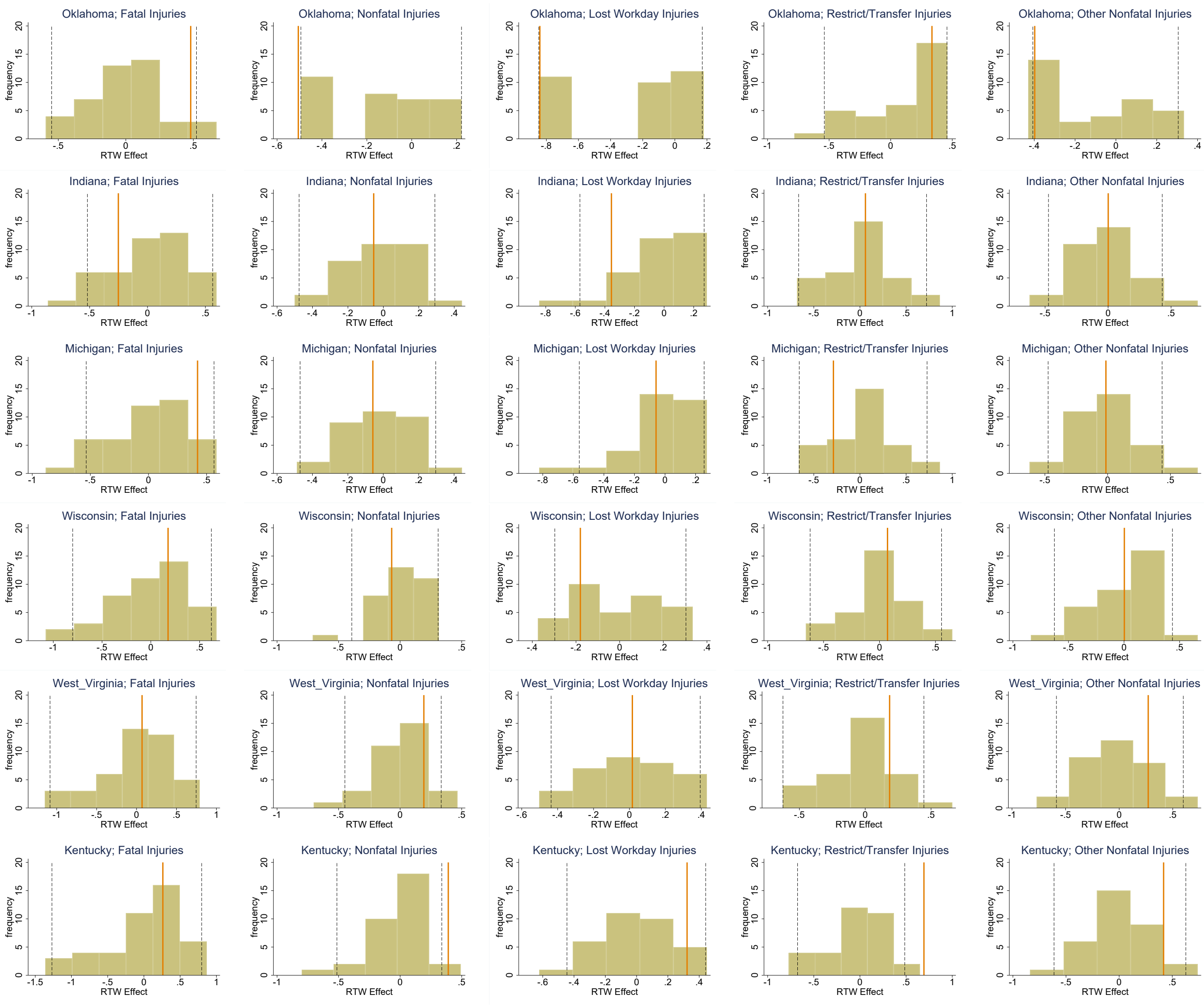


Figure 8d: Case Study Placebo Results for the Construction Industry

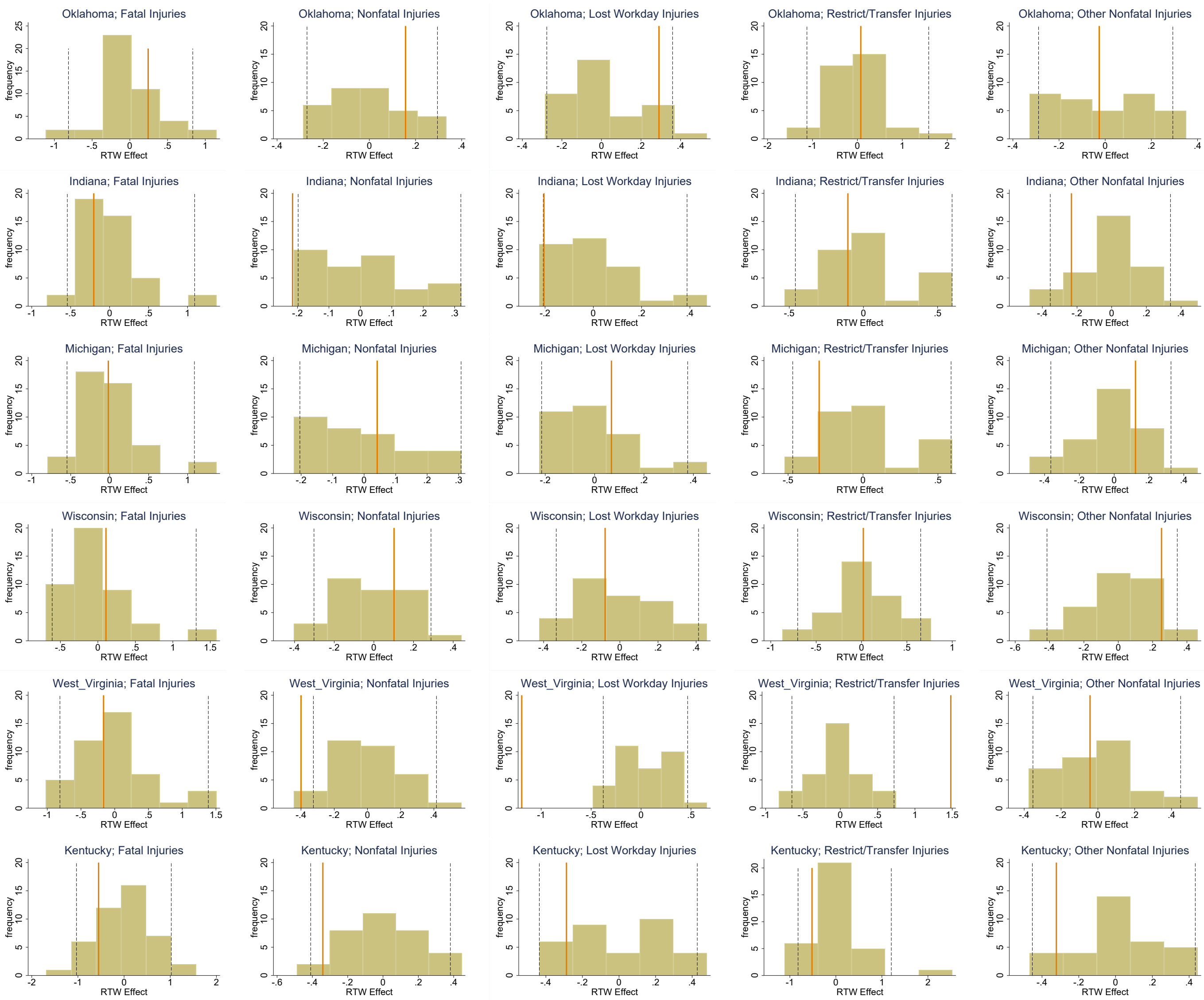


Figure 8e: Case Study Placebo Results for the Manufacturing Industry

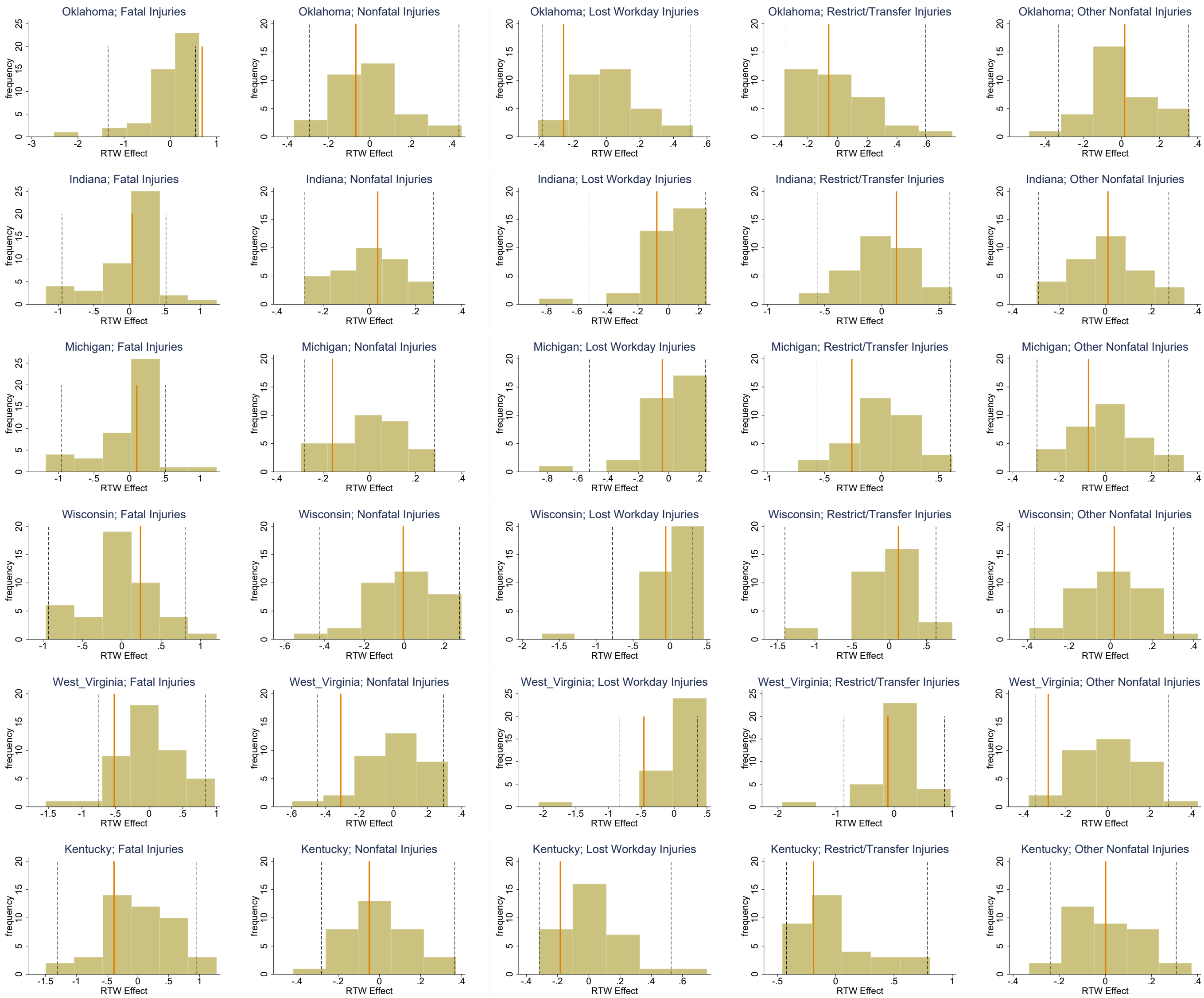


Figure 8f: Case Study Placebo Results for the Wholesale Trade Industry

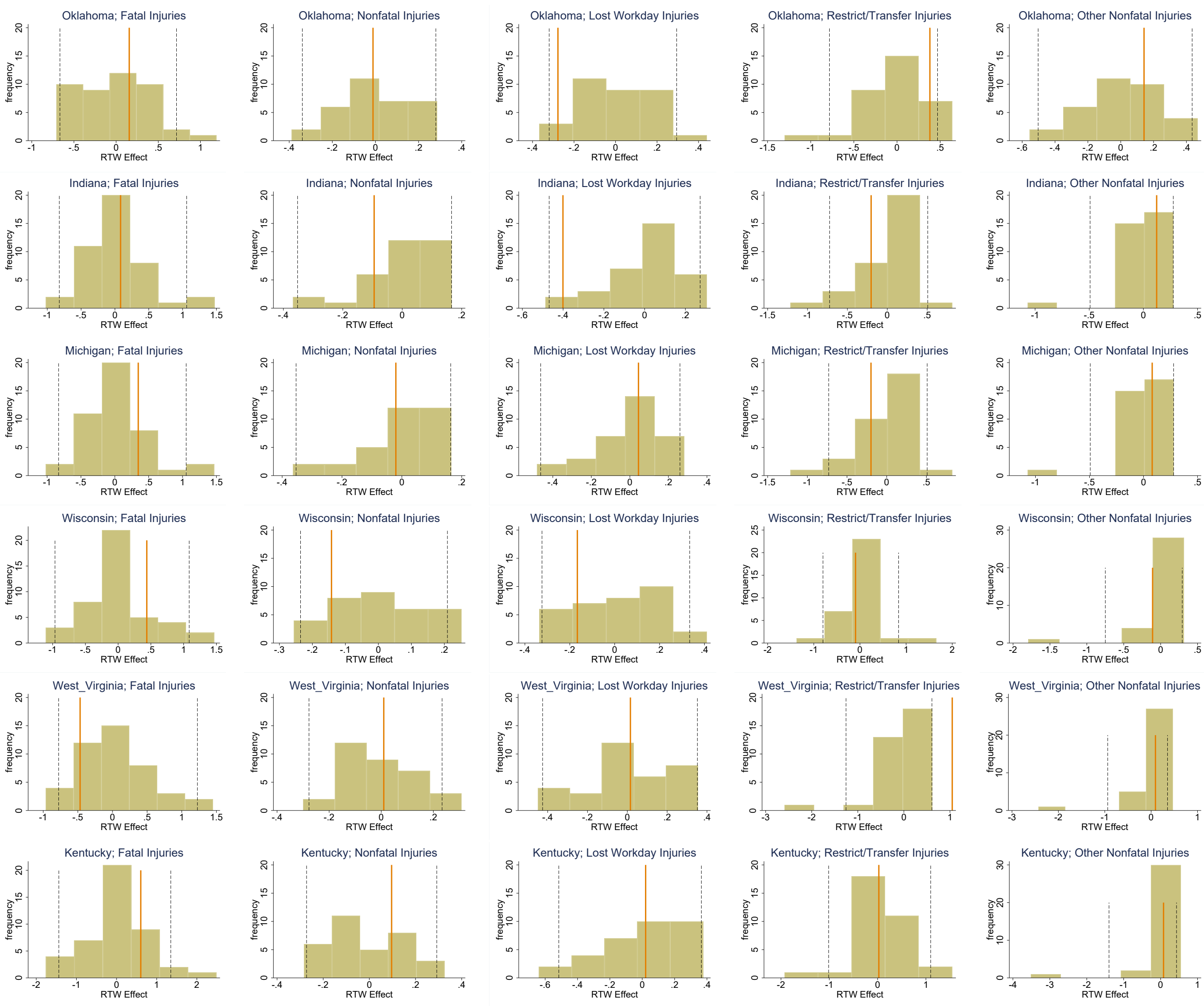


Figure 8g: Case Study Placebo Results for the Retail Trade Industry

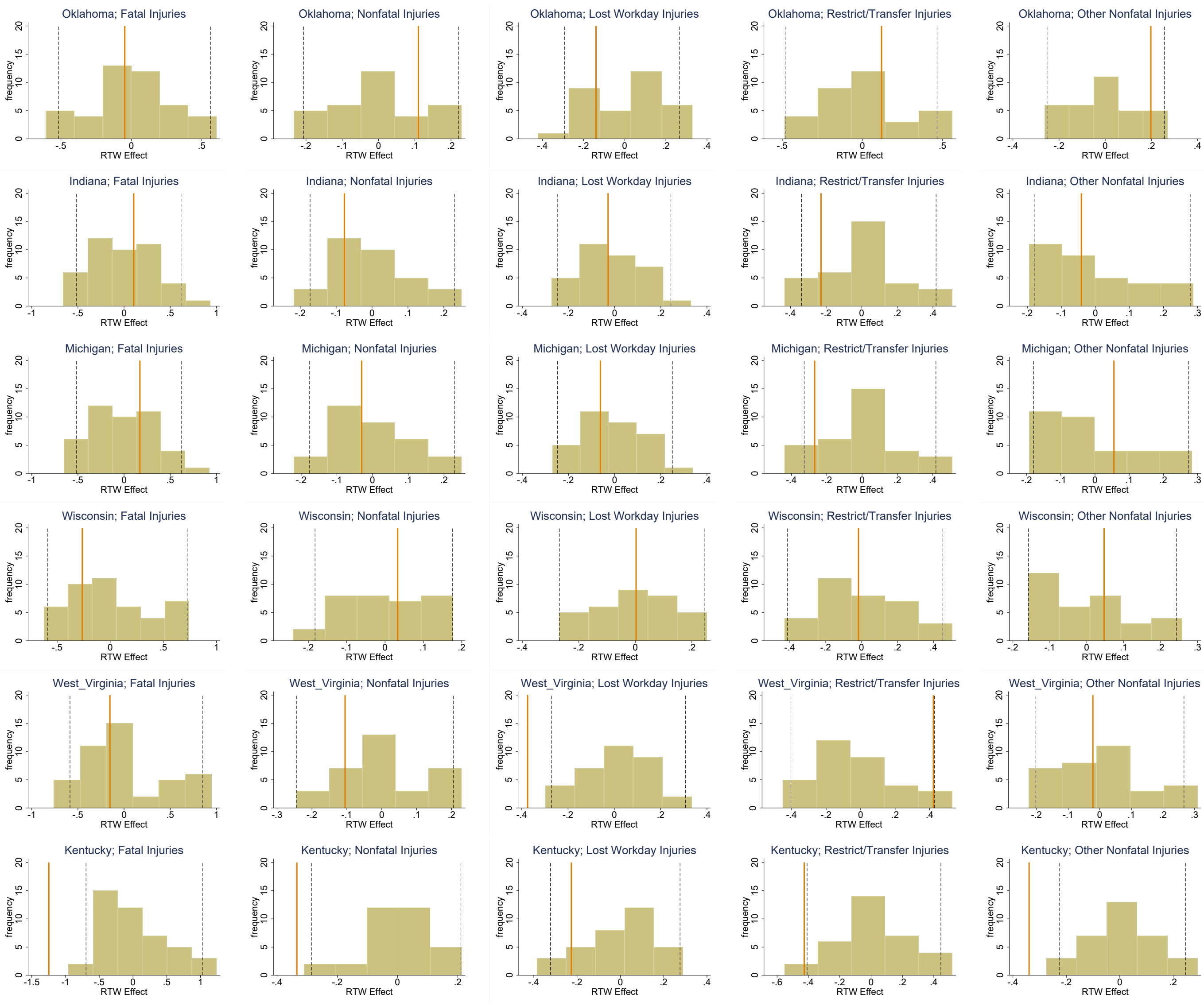


Figure 8h: Case Study Placebo Results for the Transportation and Warehousing Industry

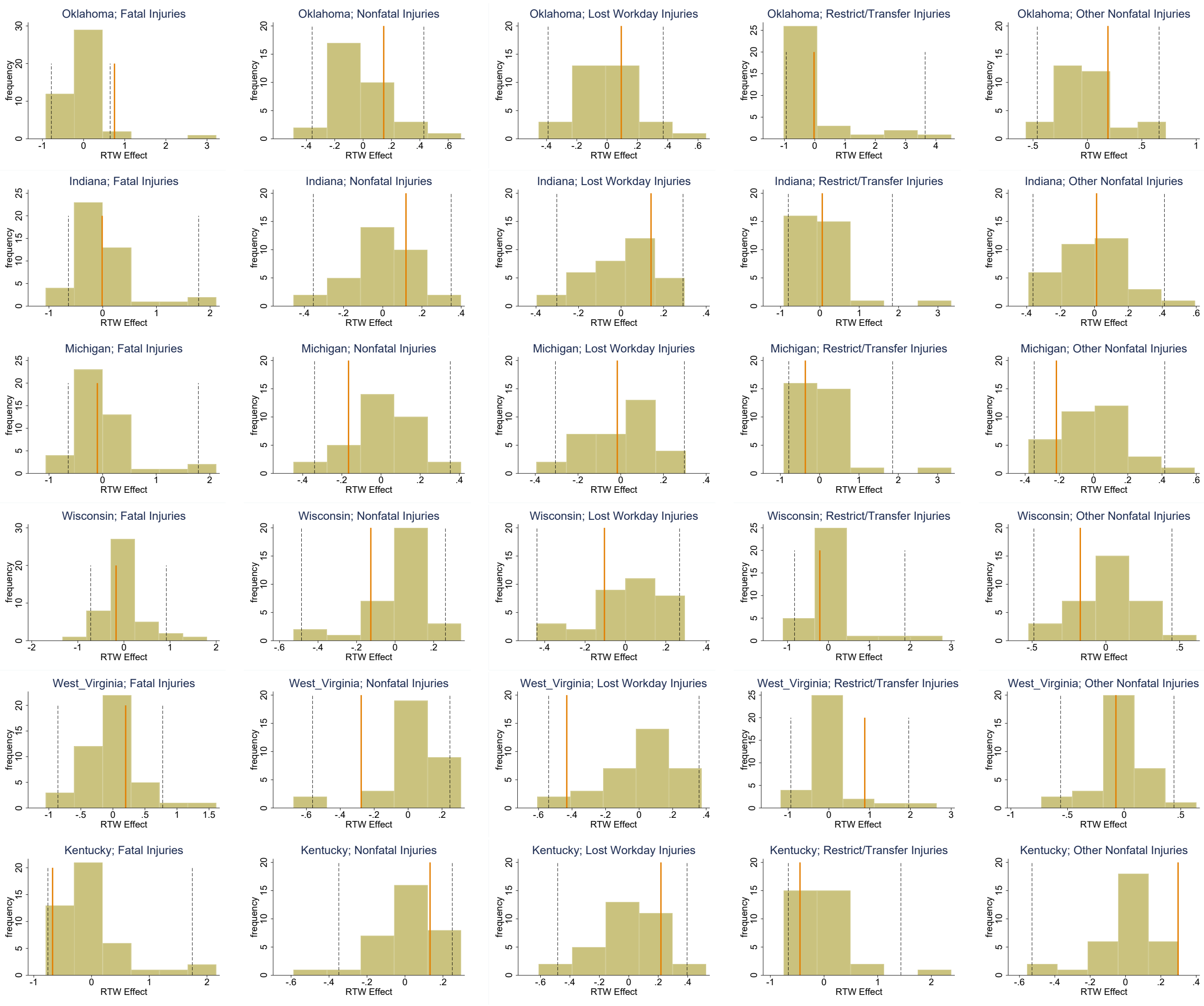


Figure 8i: Case Study Placebo Results for the Finance Industry

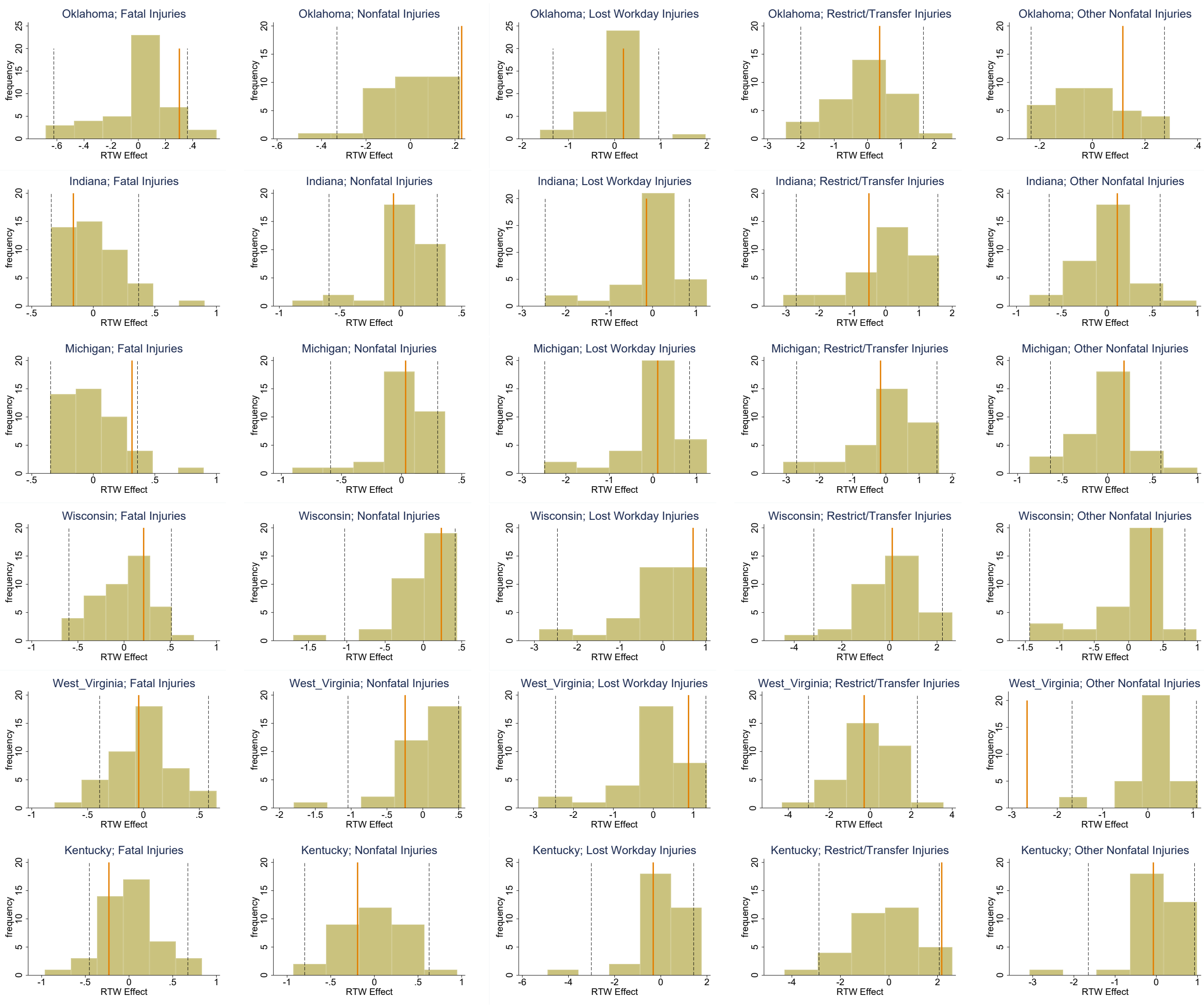


Figure 8j: Case Study Placebo Results for the Service Industry

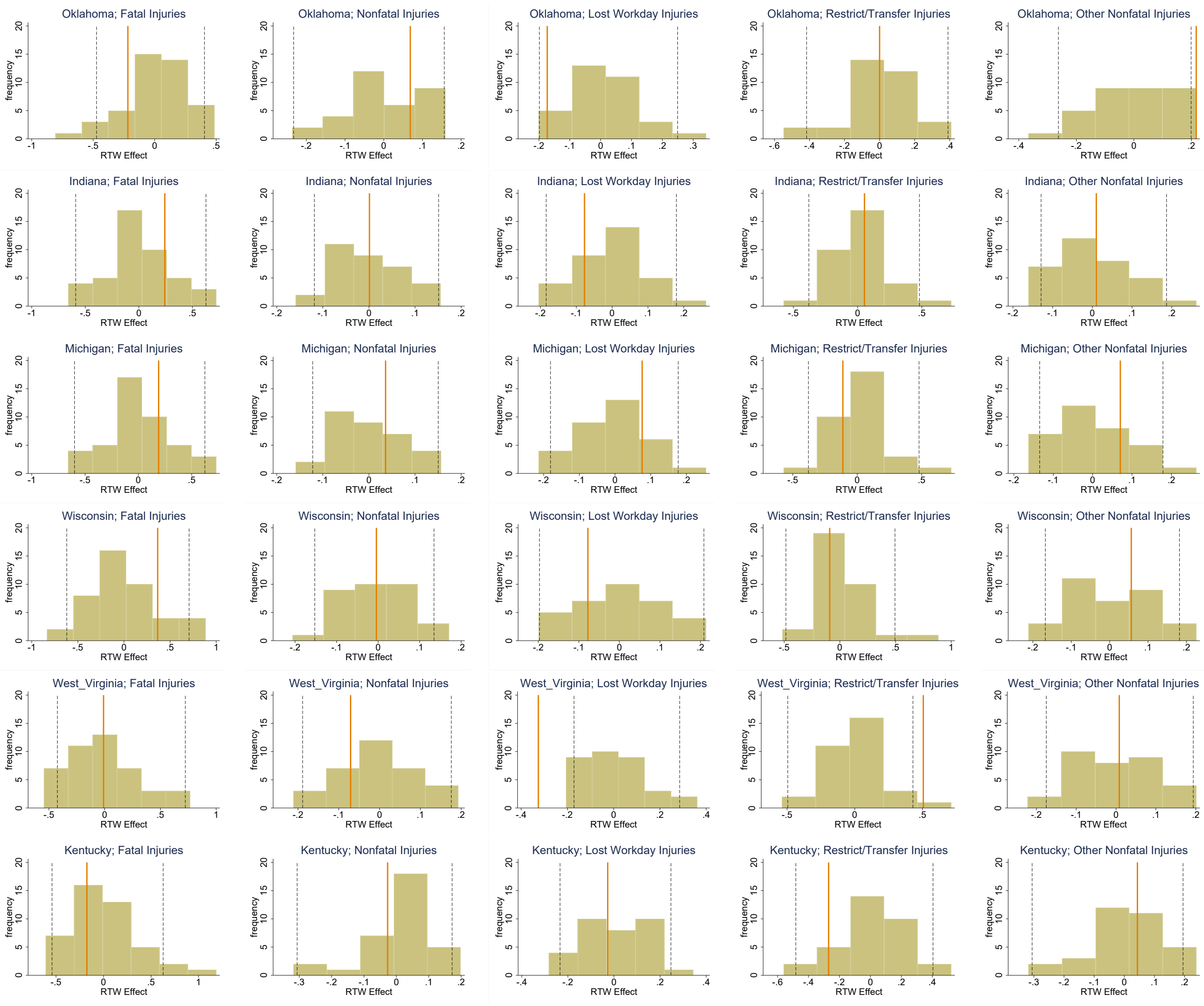


Figure 8k: Synthetic Difference-in-Differences Results

Appendix A

Table 26: Mutli-State Analysis - Private Sector

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	0.107*	0.121**	-0.0655***	-0.119***	-0.0469	-0.0323
	(0.0560)	(0.0521)	(0.0183)	(0.0363)	(0.0623)	(0.0273)
Inspection Rate	-0.158	-0.549	-0.283	-0.248	-1.640	0.206
	(1.238)	(0.902)	(0.526)	(0.538)	(1.199)	(0.547)
Age 25-34	-0.735	-0.837	-2.232***	-2.326***	-2.207**	-2.495***
	(0.907)	(0.809)	(0.455)	(0.581)	(1.042)	(0.592)
Age 35-44	-2.457**	-1.758	-2.413***	-2.229***	-2.598*	-2.861***
	(1.170)	(1.267)	(0.533)	(0.693)	(1.389)	(0.688)
Age 45-54	-0.271	-0.382	-2.800***	-2.247***	-4.852***	-3.035***
	(1.141)	(1.453)	(0.524)	(0.805)	(1.366)	(0.595)
Age 55-64	-0.580	-1.472	-0.794	-0.377	-0.839	-0.855
	(1.393)	(1.720)	(0.532)	(0.708)	(1.431)	(0.784)
Male	2.727**	1.404	0.654	-0.164	2.853***	0.666
	(1.287)	(1.331)	(0.480)	(0.671)	(0.883)	(0.610)
White	-0.185	0.0628	-0.795**	-0.955**	-1.556*	-0.491
	(0.681)	(0.673)	(0.321)	(0.359)	(0.869)	(0.434)
Black	0.894	1.451	-0.396	-0.479	-1.389	-0.107
	(1.246)	(1.298)	(0.560)	(0.835)	(1.313)	(0.713)
Asian	-0.615	-0.309	-0.228*	-0.441**	-0.0890	-0.211
	(0.578)	(0.416)	(0.120)	(0.196)	(0.446)	(0.272)
Single	0.236	-0.0194	-0.777*	-0.634	-1.320	-0.898
	(0.788)	(1.106)	(0.433)	(0.432)	(0.972)	(0.567)
Divorced	5.757***	4.275***	0.537	0.113	-0.553	1.467*
	(0.851)	(0.882)	(0.536)	(0.717)	(1.305)	(0.744)
HS Degree Only	-0.661	-0.287	-0.607	-0.663	-0.886	-0.657
	(0.703)	(0.891)	(0.383)	(0.545)	(1.008)	(0.480)
Obtained Bachelor's Degree'	1.807*	2.607**	0.0111	0.635	-1.109	-0.434
	(1.077)	(1.223)	(0.361)	(0.525)	(0.896)	(0.552)
Frac. of Lower Rep.	0.0377	-0.0639	-0.0844*	-0.102*	-0.0167	-0.0741
	(0.0616)	(0.0598)	(0.0476)	(0.0575)	(0.0764)	(0.0509)
Maximum Temperature	0.00352	0.00332	0.00238	0.000614	0.00524**	0.00226
	(0.00258)	(0.00374)	(0.00143)	(0.00124)	(0.00220)	(0.00209)
Monthly Precipitation	0.0173	0.0340***	-0.00161	-0.00720	-0.00139	0.00277
	(0.0111)	(0.0118)	(0.00495)	(0.00506)	(0.0101)	(0.00610)
Constant	-6.552***	-6.568***	4.386***	3.634***	3.036*	3.721***
	(1.537)	(1.703)	(0.642)	(0.763)	(1.671)	(0.944)
N	1350	943	943	943	943	943
r2	0.855	0.847	0.966	0.956	0.940	0.957

Table 27: Mutli-State Analysis - Public Sector

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	0.208	0.115	0.0140	-0.125	0.0347	0.0696
	(0.136)	(0.144)	(0.0580)	(0.0927)	(0.128)	(0.0621)
Inspection Rate	5.220**	6.719***	-0.817	-0.990	-0.480	-0.784
	(2.190)	(1.193)	(0.696)	(0.712)	(1.712)	(1.001)
Age 25-34	-0.782	0.0193	-0.679	-0.766**	-0.347	-0.633
	(0.829)	(1.219)	(0.494)	(0.337)	(0.695)	(0.604)
Age 35-44	0.719	1.286	-0.735	-0.596*	-0.0126	-0.788
	(0.772)	(1.280)	(0.498)	(0.301)	(0.775)	(0.631)
Age 45-54	0.270	2.051	-0.906*	-0.606*	0.524	-1.055*
	(0.981)	(1.482)	(0.466)	(0.303)	(0.809)	(0.586)
Age 55-64	1.285	3.143**	-0.362	-0.148	0.465	-0.513
	(1.034)	(1.415)	(0.586)	(0.402)	(0.919)	(0.712)
Male	-0.229	0.749	-0.0253	-0.320	0.113	0.0830
	(0.645)	(0.747)	(0.202)	(0.207)	(0.404)	(0.260)
White	1.177	1.381	0.452	0.402	0.784	0.565
	(0.759)	(1.076)	(0.359)	(0.287)	(0.655)	(0.489)
Black	0.615	1.374	0.205	-0.0646	-0.000889	0.438
	(0.927)	(1.321)	(0.408)	(0.437)	(0.808)	(0.521)
Asian	-0.0874	0.637	0.225	-1.006***	0.535	1.184
	(0.921)	(0.980)	(0.452)	(0.304)	(0.844)	(0.733)
Single	0.367	0.613	-0.351	-0.213	0.149	-0.473*
	(0.630)	(0.805)	(0.244)	(0.272)	(0.495)	(0.275)
Divorced	-1.178*	-1.797**	0.481*	0.220	0.352	0.554
	(0.661)	(0.887)	(0.268)	(0.267)	(0.508)	(0.341)
HS Degree Only	0.477	1.020	1.461***	1.269*	1.134	1.862**
	(1.607)	(1.387)	(0.524)	(0.691)	(1.315)	(0.738)
Obtained Bachelor's Degree'	0.267	0.190	1.530***	1.391**	0.916	1.845**
	(1.621)	(1.466)	(0.502)	(0.653)	(1.314)	(0.766)
Frac. of Lower Rep.	0.340***	0.239	0.0136	-0.0419	0.146	0.000535
	(0.126)	(0.191)	(0.0886)	(0.0905)	(0.165)	(0.0992)
Maximum Temperature	0.0141	0.00264	-0.00111	0.000746	-0.00408	-0.00136
	(0.0102)	(0.0125)	(0.00343)	(0.00322)	(0.00728)	(0.00457)
Monthly Precipitation	0.0301	0.0578	0.00573	-0.0163	0.0368	0.00976
	(0.0344)	(0.0487)	(0.0194)	(0.0172)	(0.0298)	(0.0245)
Constant	-7.336***	-8.896***	1.315	0.485	-2.143	0.353
	(1.804)	(2.204)	(0.835)	(0.740)	(1.426)	(1.128)
N	1350	762	762	762	744	762
r2	0.386	0.393	0.849	0.885	0.843	0.796

Table 28: Mutli-State Analysis - Construction Industry

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	-0.0187	0.0347	-0.0680	-0.143	0.0723	-0.0292
	(0.110)	(0.0815)	(0.0812)	(0.145)	(0.214)	(0.0876)
Inspection Rate	3.275	3.569	-1.111	-1.012	-0.104	-0.408
	(3.006)	(3.186)	(0.950)	(1.179)	(3.211)	(0.861)
Age 25-34	-2.132**	-1.690**	-0.308	-0.788*	-1.783	0.0120
	(0.813)	(0.786)	(0.378)	(0.446)	(1.206)	(0.455)
Age 35-44	-2.584***	-2.673***	-0.503	-0.327	-2.566*	-0.641
	(0.853)	(0.924)	(0.364)	(0.425)	(1.483)	(0.433)
Age 45-54	-2.946**	-3.048**	-1.109**	-1.154**	-3.183**	-1.244**
	(1.108)	(1.429)	(0.413)	(0.510)	(1.342)	(0.506)
Age 55-64	-1.251	-2.178	0.165	0.0792	2.205	0.262
	(1.299)	(1.367)	(0.485)	(0.546)	(2.610)	(0.609)
Male	1.431	0.209	0.517	0.162	3.697	0.861**
	(1.169)	(1.116)	(0.366)	(0.487)	(3.500)	(0.413)
White	0.585	0.203	-0.193	0.0382	-2.221	-0.660
	(1.437)	(1.482)	(0.418)	(0.591)	(1.326)	(0.564)
Black	1.707	2.015	1.527***	1.285	2.032	1.313*
	(1.790)	(1.628)	(0.562)	(0.798)	(1.408)	(0.674)
Asian	-0.841	-0.919	0.0114	-0.117	-1.206	-0.0685
	(0.661)	(0.630)	(0.248)	(0.229)	(0.739)	(0.478)
Single	0.332	-0.369	0.0238	0.0686	-0.413	0.160
	(0.734)	(0.806)	(0.341)	(0.395)	(1.002)	(0.416)
Divorced	1.544	2.062	0.880*	0.275	1.055	1.524***
	(1.163)	(1.475)	(0.457)	(0.562)	(1.603)	(0.521)
HS Degree Only	0.786	0.457	-0.0867	0.260	-0.728	-0.0628
	(0.766)	(0.666)	(0.276)	(0.321)	(1.050)	(0.343)
Obtained Bachelor's Degree'	2.292*	2.262*	0.233	0.318	-2.854	0.377
	(1.201)	(1.189)	(0.416)	(0.521)	(1.913)	(0.470)
Frac. of Lower Rep.	0.302	0.113	-0.0196	-0.0767	-0.0702	-0.0126
	(0.201)	(0.133)	(0.0720)	(0.135)	(0.178)	(0.0662)
Maximum Temperature	0.0140	-0.00270	0.00437	0.00136	-0.0304	0.00757*
	(0.0136)	(0.0113)	(0.00348)	(0.00556)	(0.0388)	(0.00432)
Monthly Precipitation	0.0748*	0.0478	0.00463	-0.00538	-0.0276	0.0166
	(0.0442)	(0.0461)	(0.0139)	(0.0172)	(0.0619)	(0.0218)
Constant	-6.793***	-3.403*	1.211	0.612	2.907	0.193
	(2.455)	(1.688)	(0.838)	(0.969)	(5.559)	(1.085)
N	1350	941	941	941	941	941
r2	0.419	0.442	0.886	0.820	0.406	0.863

Table 29: Mutli-State Analysis - Manufacturing Industry

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	0.160	0.115	-0.0771	-0.131**	0.0489	-0.0338
	(0.163)	(0.161)	(0.0474)	(0.0629)	(0.135)	(0.0373)
Inspection Rate	5.224	3.771	0.715	0.450	4.313	1.226
	(5.662)	(4.447)	(0.929)	(0.824)	(3.580)	(0.961)
Age 25-34	1.465	1.614	-1.270***	-1.418**	-2.373**	-1.217***
	(1.309)	(1.287)	(0.357)	(0.554)	(1.125)	(0.352)
Age 35-44	1.667	2.216	-1.520***	-1.757***	-3.323*	-1.560***
	(1.498)	(1.726)	(0.405)	(0.515)	(1.691)	(0.420)
Age 45-54	0.382	0.887	-1.798***	-2.046**	-5.207**	-1.693***
	(1.116)	(1.475)	(0.384)	(0.879)	(2.273)	(0.418)
Age 55-64	1.268	0.438	-0.254	0.00480	-0.498	-0.189
	(1.922)	(2.016)	(0.395)	(0.576)	(1.066)	(0.367)
Male	0.0965	-1.069	-0.0909	-0.0671	0.845	0.168
	(1.013)	(1.587)	(0.226)	(0.365)	(0.977)	(0.255)
White	0.585	1.583	-1.406***	-1.638***	0.0493	-1.260***
	(1.335)	(1.218)	(0.483)	(0.577)	(0.950)	(0.386)
Black	1.422	1.934	-1.038*	-1.458**	0.835	-0.781
	(1.596)	(1.831)	(0.526)	(0.641)	(1.342)	(0.540)
Asian	-3.332**	-1.862**	-1.021**	-0.902	0.823	-0.999***
	(1.312)	(0.896)	(0.416)	(0.579)	(1.432)	(0.280)
Single	0.659	1.066	-0.362	-0.0508	-0.979	-0.628**
	(1.243)	(1.385)	(0.251)	(0.363)	(0.972)	(0.272)
Divorced	2.557	2.483	-0.205	-0.514	-0.853	0.108
	(1.841)	(1.628)	(0.309)	(0.375)	(1.989)	(0.372)
HS Degree Only	-0.211	-1.018	1.003***	1.640***	1.099	1.118***
	(0.836)	(0.990)	(0.307)	(0.547)	(0.655)	(0.371)
Obtained Bachelor's Degree'	0.994	-0.211	1.228***	2.121***	1.705**	1.144***
	(1.220)	(1.086)	(0.282)	(0.530)	(0.830)	(0.306)
Frac. of Lower Rep.	-0.219	-0.362*	-0.0152	-0.000842	0.130	-0.0208
	(0.157)	(0.193)	(0.0875)	(0.0998)	(0.105)	(0.0714)
Maximum Temperature	0.00935	0.00790	0.00365	0.000529	-0.00446	0.00524**
	(0.00931)	(0.0119)	(0.00256)	(0.00595)	(0.00725)	(0.00207)
Monthly Precipitation	0.0303	0.0153	-0.00194	-0.0115	-0.0210	0.00315
	(0.0402)	(0.0409)	(0.00952)	(0.0161)	(0.0243)	(0.00984)
Constant	-8.370***	-7.881**	3.944***	2.584***	2.537*	2.687***
	(2.355)	(3.053)	(0.737)	(0.930)	(1.424)	(0.669)
N	1350	942	942	942	942	942
r2	0.429	0.405	0.928	0.811	0.641	0.944

Table 30: Mutli-State Analysis - Wholesale Trade Industry

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	0.165	0.219*	-0.0319	-0.138	0.0803	0.0928**
	(0.112)	(0.111)	(0.0289)	(0.0882)	(0.164)	(0.0428)
Inspection Rate	-2.678	-3.624	-2.078**	-2.038**	-18.79***	1.344
	(3.494)	(3.838)	(0.883)	(0.985)	(6.643)	(2.566)
Age 25-34	-1.063	-0.935	0.0877	0.542*	-0.168	0.0420
	(1.185)	(1.321)	(0.239)	(0.315)	(1.314)	(0.501)
Age 35-44	-1.000	-0.372	-0.362	-0.0678	-0.867	-0.288
	(1.117)	(1.327)	(0.258)	(0.337)	(0.740)	(0.396)
Age 45-54	-0.828	-0.379	0.195	0.421	-0.346	0.380
	(1.063)	(1.442)	(0.213)	(0.340)	(0.494)	(0.434)
Age 55-64	-0.926	-0.100	0.476*	1.025**	-1.076	0.658*
	(0.984)	(1.242)	(0.261)	(0.466)	(1.144)	(0.384)
Male	-1.593***	-1.855***	-0.303	-0.221	-0.806	-0.828
	(0.579)	(0.631)	(0.188)	(0.266)	(0.814)	(0.550)
White	-0.929	-0.119	0.414	0.256	5.834*	0.556
	(1.337)	(1.682)	(0.364)	(0.560)	(3.131)	(0.776)
Black	-1.378	0.163	0.262	0.0642	5.501*	-0.368
	(1.108)	(1.456)	(0.477)	(0.570)	(2.781)	(0.877)
Asian	0.852	1.130	0.318	0.00613	4.651	-0.468
	(1.403)	(1.549)	(0.227)	(0.350)	(2.908)	(1.637)
Single	0.365	0.828	0.358*	0.471	-0.157	0.656
	(0.753)	(0.821)	(0.203)	(0.293)	(1.443)	(0.504)
Divorced	0.176	-0.849	1.001***	0.444	3.155**	0.0427
	(0.986)	(1.065)	(0.283)	(0.371)	(1.295)	(1.001)
HS Degree Only	1.909**	0.744	-0.114	-0.204	1.467	1.096
	(0.851)	(0.867)	(0.390)	(0.301)	(1.333)	(1.339)
Obtained Bachelor's Degree'	0.958	0.413	-0.0480	-0.0666	0.829	0.717
	(0.970)	(1.281)	(0.440)	(0.336)	(1.214)	(1.785)
Frac. of Lower Rep.	-0.0153	-0.275	-0.0869	-0.0734	-0.185	-0.0269
	(0.177)	(0.208)	(0.0777)	(0.0985)	(0.149)	(0.0586)
Maximum Temperature	-0.0168	-0.000638	0.00179	0.000546	-0.0374	-0.000723
	(0.0156)	(0.0165)	(0.00305)	(0.00425)	(0.0268)	(0.00518)
Monthly Precipitation	-0.0178	0.0363	0.0245	0.0334	-0.0103	0.0346
	(0.0481)	(0.0588)	(0.0176)	(0.0207)	(0.0652)	(0.0321)
Constant	-2.440	-3.951	1.718***	0.627	-2.318	0.387
	(2.157)	(2.759)	(0.596)	(0.764)	(4.417)	(1.480)
N	1349	932	933	933	933	933
r2	0.374	0.422	0.683	0.613	0.616	0.520

Table 31: Mutli-State Analysis - Retail Trade Industry

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	-0.0856	-0.0373	-0.0412	-0.0964**	-0.0887	0.00414
	(0.129)	(0.149)	(0.0422)	(0.0475)	(0.0907)	(0.0512)
Inspection Rate	-2.079	-1.981	0.0871	0.404	-0.640	0.777
	(1.904)	(1.788)	(0.630)	(0.756)	(1.223)	(0.560)
Age 25-34	-2.462***	-2.285**	-0.753**	-0.615*	-1.547*	-0.879**
	(0.742)	(0.936)	(0.287)	(0.352)	(0.772)	(0.363)
Age 35-44	-2.194*	-1.059	-1.177***	-1.107**	-1.314	-1.176**
	(1.096)	(1.315)	(0.432)	(0.421)	(0.794)	(0.446)
Age 45-54	-2.187**	-2.672**	-1.067*	-0.921	-1.596*	-0.838*
	(1.016)	(1.075)	(0.596)	(0.645)	(0.845)	(0.446)
Age 55-64	-0.416	-1.612	0.0394	0.0442	-0.432	0.463
	(1.426)	(1.779)	(0.559)	(0.697)	(0.843)	(0.531)
Male	1.161*	0.325	-0.912***	-0.773**	-0.0332	-0.785**
	(0.608)	(0.673)	(0.299)	(0.377)	(0.523)	(0.328)
White	0.122	1.652	0.862*	0.701	-0.562	1.058***
	(1.336)	(1.778)	(0.456)	(0.492)	(0.652)	(0.380)
Black	-1.486	-0.155	1.289**	1.802***	-0.355	0.959*
	(1.478)	(1.982)	(0.562)	(0.628)	(0.831)	(0.482)
Asian	-2.000*	-0.741	-0.0742	-0.211	-0.924	-0.129
	(1.079)	(0.929)	(0.308)	(0.407)	(0.587)	(0.258)
Single	-1.208*	-0.666	-0.0942	-0.131	-0.466	-0.126
	(0.659)	(0.892)	(0.288)	(0.428)	(0.456)	(0.343)
Divorced	1.596	0.267	0.240	0.0738	0.457	-0.606
	(1.216)	(1.420)	(0.700)	(0.715)	(0.798)	(0.441)
HS Degree Only	-2.164**	-2.138*	-0.645*	-0.648	-1.032	-0.687*
	(0.826)	(1.081)	(0.324)	(0.418)	(0.645)	(0.378)
Obtained Bachelor's Degree'	-1.439	-0.396	-0.0305	0.0689	-0.945	-0.692
	(1.084)	(1.187)	(0.410)	(0.443)	(0.804)	(0.544)
Frac. of Lower Rep.	-0.00405	-0.197	-0.0243	-0.0842	-0.00893	-0.0521
	(0.120)	(0.149)	(0.0421)	(0.0663)	(0.114)	(0.0647)
Maximum Temperature	0.00802	0.00551	-0.0000760	-0.00263	0.00193	0.00472
	(0.00749)	(0.00925)	(0.00367)	(0.00385)	(0.00490)	(0.00361)
Monthly Precipitation	0.0266	0.0450	0.000480	-0.0114	0.00183	0.0211
	(0.0295)	(0.0373)	(0.0119)	(0.0149)	(0.0173)	(0.0128)
Constant	-3.017**	-4.426**	2.369***	1.208	1.912**	1.379*
	(1.424)	(1.996)	(0.599)	(0.775)	(0.943)	(0.701)
N	1349	939	940	941	940	940
r2	0.458	0.381	0.808	0.802	0.776	0.869

Table 32: Mutli-State Analysis - Transportation and Warehousing Industry

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	0.122	0.148	-0.0398	-0.0103	-0.0759	-0.0392
	(0.191)	(0.125)	(0.0726)	(0.0730)	(0.154)	(0.0737)
Inspection Rate	-3.541	-5.366*	-0.543	0.136	-3.041	0.0556
	(3.001)	(3.185)	(0.653)	(0.784)	(3.817)	(0.998)
Age 25-34	-1.737	0.414	-0.849**	-0.691*	-4.197*	-1.080**
	(1.710)	(1.647)	(0.318)	(0.383)	(2.438)	(0.417)
Age 35-44	-1.014	0.113	-0.573*	-0.444	-4.399*	-1.010**
	(1.389)	(1.350)	(0.337)	(0.380)	(2.472)	(0.471)
Age 45-54	-1.806	0.264	-0.846**	-0.688	-3.630*	-1.212***
	(1.558)	(1.431)	(0.388)	(0.515)	(2.025)	(0.426)
Age 55-64	-1.155	-0.424	-0.647*	-0.275	-4.938*	-0.886*
	(1.574)	(1.636)	(0.383)	(0.450)	(2.752)	(0.501)
Male	0.512	0.380	0.103	0.176	-0.547	0.0226
	(0.572)	(0.620)	(0.205)	(0.275)	(0.725)	(0.267)
White	1.975	2.860**	0.379	0.0875	3.059	-0.251
	(1.239)	(1.087)	(0.339)	(0.373)	(2.505)	(0.447)
Black	0.953	2.297**	0.624	0.223	3.892	0.0740
	(1.201)	(1.039)	(0.448)	(0.454)	(2.651)	(0.578)
Asian	-1.183	0.523	-0.575***	-0.890***	-2.103	-0.911***
	(0.806)	(0.491)	(0.199)	(0.255)	(1.470)	(0.268)
Single	0.158	-0.360	-0.141	0.0240	-0.480	-0.446
	(0.864)	(0.512)	(0.262)	(0.293)	(1.072)	(0.343)
Divorced	0.383	-0.0924	-0.475*	-0.396	0.0220	-0.585
	(0.780)	(0.932)	(0.277)	(0.267)	(1.084)	(0.381)
HS Degree Only	-0.657	-0.345	0.637**	0.734**	0.395	0.698*
	(0.656)	(0.789)	(0.271)	(0.356)	(1.428)	(0.405)
Obtained Bachelor's Degree'	-0.106	0.201	0.275	0.247	1.724	0.690
	(1.081)	(1.112)	(0.349)	(0.375)	(1.932)	(0.494)
Frac. of Lower Rep.	-0.133	-0.488*	-0.0541	-0.122*	-0.108	0.0253
	(0.318)	(0.255)	(0.0429)	(0.0623)	(0.318)	(0.0620)
Maximum Temperature	0.0191	0.0122	-0.00544*	-0.00874**	0.00254	-0.00655*
	(0.0115)	(0.0131)	(0.00317)	(0.00421)	(0.0272)	(0.00383)
Monthly Precipitation	0.00297	0.0296	-0.00655	-0.0102	-0.0239	-0.00454
	(0.0401)	(0.0530)	(0.0171)	(0.0187)	(0.0525)	(0.0246)
Constant	-5.641**	-7.561***	2.315***	1.803**	0.352	2.380***
	(2.117)	(2.332)	(0.655)	(0.745)	(4.401)	(0.861)
N	1350	936	936	934	934	936
r2	0.523	0.554	0.764	0.698	0.385	0.758

Table 33: Mutli-State Analysis - Finance and Real Estate Industry

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	0.132	0.134	-0.00841	0.129	0.0722	-0.0917
	(0.106)	(0.118)	(0.0839)	(0.196)	(0.339)	(0.251)
Inspection Rate	-0.244	-0.327	-2.657	-8.815	-17.27	0.278
	(1.240)	(1.392)	(4.194)	(6.022)	(11.99)	(3.105)
Age 25-34	0.362	0.340	-0.304	0.0297	2.585	0.352
	(0.495)	(0.609)	(0.635)	(2.054)	(2.246)	(0.889)
Age 35-44	0.00124	-0.0728	-0.340	0.113	-1.406	0.186
	(0.478)	(0.726)	(0.994)	(2.152)	(2.732)	(1.041)
Age 45-54	0.142	-0.0382	0.0393	2.825	3.435	1.337
	(0.548)	(0.721)	(0.828)	(2.741)	(2.801)	(1.200)
Age 55-64	0.379	0.341	0.813	2.096	3.310	1.189
	(0.692)	(0.791)	(0.845)	(3.401)	(3.987)	(1.452)
Male	0.170	0.522	-0.208	1.572	-3.409*	-0.310
	(0.481)	(0.712)	(0.524)	(1.534)	(2.015)	(0.850)
White	-0.478	-0.433	1.183	3.497	2.230	0.191
	(0.590)	(1.097)	(1.267)	(2.689)	(2.940)	(1.150)
Black	-0.00889	-0.0133	1.932	4.855*	6.307	0.155
	(0.802)	(1.124)	(1.527)	(2.651)	(4.518)	(1.380)
Asian	-1.566***	-1.277*	1.653**	4.435**	5.448*	1.532*
	(0.528)	(0.641)	(0.649)	(2.047)	(2.812)	(0.882)
Single	-0.154	0.295	0.563	1.870	-0.403	2.466**
	(0.537)	(0.759)	(0.431)	(1.476)	(2.052)	(1.209)
Divorced	0.423	0.432	-0.522	-1.072	0.175	-0.130
	(0.588)	(0.655)	(0.670)	(1.637)	(3.419)	(0.999)
HS Degree Only	-0.716	0.0479	-0.492	1.183	2.936	2.725*
	(0.893)	(1.196)	(1.425)	(2.635)	(3.431)	(1.522)
Obtained Bachelor's Degree'	-0.623	0.262	-0.0384	2.209	6.070*	2.993*
	(0.853)	(1.129)	(0.983)	(2.976)	(3.250)	(1.675)
Frac. of Lower Rep.	-0.0626	-0.139	-0.224	-0.393	0.493	-0.342**
	(0.0766)	(0.109)	(0.162)	(0.435)	(0.366)	(0.164)
Maximum Temperature	0.00765	0.00345	-0.00896	-0.00674	-0.00809	-0.0191
	(0.00510)	(0.00789)	(0.0106)	(0.0145)	(0.0328)	(0.0125)
Monthly Precipitation	0.0416*	0.0244	0.00282	-0.00707	0.0337	-0.00310
	(0.0248)	(0.0255)	(0.0213)	(0.0435)	(0.113)	(0.0359)
Constant	-6.889***	-7.215***	0.618	-7.172**	-9.464	-1.456
	(1.546)	(2.322)	(2.086)	(3.466)	(6.774)	(1.802)
N	1350	912	912	907	903	909
r2	0.131	0.152	0.505	0.433	0.551	0.393

Table 34: Mutli-State Analysis - Service Industry

	(1) Fatal	(2) Fatal (Reduced n)	(3) All Nonfatal	(4) Lost Workday	(5) Job Restriction/Transfer	(6) Other Nonfatal
Right to Work	0.0698	0.129	0.00490	-0.0677	-0.00327	0.0544*
	(0.0981)	(0.0890)	(0.0202)	(0.0523)	(0.0686)	(0.0292)
Inspection Rate	0.862	0.954	-0.408	-0.546	-2.497*	0.113
	(2.450)	(2.054)	(0.489)	(0.584)	(1.435)	(0.474)
Age 25-34	-1.029	0.148	-1.650***	-1.583***	-2.299	-1.864***
	(1.577)	(1.937)	(0.419)	(0.545)	(1.427)	(0.443)
Age 35-44	-0.426	1.187	-1.593***	-1.148*	-2.815*	-1.889***
	(1.600)	(2.058)	(0.513)	(0.655)	(1.624)	(0.670)
Age 45-54	0.272	0.719	-1.911***	-1.197	-3.549*	-2.498***
	(1.468)	(1.926)	(0.569)	(0.916)	(2.031)	(0.749)
Age 55-64	-0.854	-3.359	-0.656	0.457	-0.931	-1.243
	(1.920)	(2.260)	(0.597)	(0.753)	(1.521)	(0.879)
Male	0.816	-0.113	-0.0132	0.339	0.923	-0.382
	(1.155)	(1.409)	(0.337)	(0.517)	(0.760)	(0.470)
White	1.140	0.336	-0.0462	-1.183***	-0.506	0.488
	(0.861)	(1.340)	(0.451)	(0.402)	(0.948)	(0.684)
Black	0.180	-0.706	0.0689	-0.829	-0.0647	0.558
	(1.285)	(1.866)	(0.566)	(0.640)	(1.349)	(0.842)
Asian	1.407	1.095	0.712***	0.368	-0.218	1.093***
	(0.935)	(1.083)	(0.236)	(0.237)	(0.645)	(0.362)
Single	0.684	0.305	-0.480	-0.626	-2.874*	-0.176
	(1.177)	(1.418)	(0.315)	(0.425)	(1.542)	(0.482)
Divorced	4.041***	4.100**	1.755***	0.452	0.0327	2.858***
	(1.443)	(2.008)	(0.513)	(0.605)	(1.237)	(0.710)
HS Degree Only	0.337	-0.511	-0.290	-0.589	1.033	-0.142
	(1.309)	(1.656)	(0.600)	(0.531)	(1.944)	(0.802)
Obtained Bachelor's Degree'	0.621	0.615	-0.221	-0.190	0.755	-0.307
	(1.443)	(1.781)	(0.642)	(0.641)	(1.270)	(0.890)
Frac. of Lower Rep.	0.0239	-0.0660	-0.0813***	-0.105	-0.0278	-0.0596*
	(0.0962)	(0.110)	(0.0292)	(0.0657)	(0.0877)	(0.0341)
Maximum Temperature	0.00923	0.00805	0.000505	-0.000159	-0.00304	-0.00107
	(0.00812)	(0.00841)	(0.00276)	(0.00214)	(0.0122)	(0.00379)
Monthly Precipitation	0.0595**	0.0502	-0.00296	-0.0109	-0.0146	0.000368
	(0.0264)	(0.0303)	(0.00923)	(0.00744)	(0.0226)	(0.0102)
Constant	-8.957***	-7.771**	2.724***	2.516***	1.570	1.921
	(2.160)	(3.492)	(0.795)	(0.740)	(2.136)	(1.213)
N	1350	913	913	907	909	910
r2	0.346	0.368	0.878	0.892	0.804	0.816

Table 35: Oklahoma Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer
Right to Work	0.0906***	-0.0490*	0.0596	0.184***
	(0.0205)	(0.0258)	(0.0420)	(0.0325)
Inspection Rate	0.0905	0.0255	-1.596	0.728*
	(0.348)	(0.473)	(1.242)	(0.424)
Age 25-34	-1.587***	-2.310***	-2.040*	-1.179*
	(0.516)	(0.694)	(1.134)	(0.692)
Age 35-44	-1.938**	-2.410***	-2.472	-1.759*
	(0.739)	(0.860)	(1.517)	(1.018)
Age 45-54	-2.137**	-2.397**	-4.647***	-1.556
	(0.826)	(0.994)	(1.492)	(0.928)
Age 55-64	-0.444	-1.186	-0.574	0.344
	(0.741)	(0.803)	(1.466)	(1.082)
Male	-0.210	-0.730	1.810*	-0.308
	(0.621)	(0.913)	(0.938)	(0.809)
White	-0.123	-0.508	-1.040	0.354
	(0.482)	(0.490)	(0.981)	(0.689)
Black	0.967	0.674	-0.806	1.767*
	(0.706)	(0.779)	(1.523)	(0.989)
Asian	0.0346	-0.387**	0.167	0.286
	(0.176)	(0.174)	(0.485)	(0.366)
Single	-0.585	-0.753	-1.180	-0.403
	(0.527)	(0.641)	(1.182)	(0.698)
Divorced	1.189**	1.556***	-1.306	1.916**
	(0.559)	(0.525)	(0.999)	(0.827)
HS Degree Only	-0.718	-1.043	-0.890	-0.668
	(0.575)	(0.662)	(1.226)	(0.754)
Obtained Bachelor's Degree'	-0.200	0.251	-1.053	-0.643
	(0.450)	(0.650)	(1.037)	(0.673)
Frac. of Lower Rep.	-0.00906	-0.0166	-0.0119	0.00976
	(0.0305)	(0.0269)	(0.0647)	(0.0502)
Maximum Temperature	0.00362**	0.00206	0.00540**	0.00377*
	(0.00147)	(0.00166)	(0.00259)	(0.00200)
Monthly Precipitation	0.00484	-0.00207	0.00877	0.00924
	(0.00636)	(0.00574)	(0.0107)	(0.00950)
N	771	771	771	771

Table 36: Indiana Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer
Right to Work	-0.134***	-0.222***	-0.0391	-0.142***
	(0.0187)	(0.0214)	(0.0336)	(0.0239)
Inspection Rate	0.0742	0.0227	-1.607	0.707
	(0.357)	(0.491)	(1.252)	(0.419)
Age 25-34	-1.573***	-2.319***	-2.088*	-1.125
	(0.512)	(0.691)	(1.118)	(0.688)
Age 35-44	-1.979**	-2.509***	-2.656*	-1.720
	(0.747)	(0.862)	(1.526)	(1.022)
Age 45-54	-2.083**	-2.401**	-4.743***	-1.406
	(0.814)	(0.990)	(1.490)	(0.908)
Age 55-64	-0.277	-0.973	-0.904	0.677
	(0.701)	(0.765)	(1.493)	(0.992)
Male	-0.103	-0.593	1.812*	-0.176
	(0.609)	(0.909)	(0.897)	(0.790)
White	-0.0294	-0.388	-1.005	0.445
	(0.475)	(0.467)	(1.029)	(0.703)
Black	1.039	0.611	-0.774	1.892*
	(0.693)	(0.786)	(1.533)	(0.980)
Asian	0.0850	-0.323*	0.168	0.344
	(0.148)	(0.182)	(0.495)	(0.307)
Single	-0.560	-0.682	-1.270	-0.358
	(0.515)	(0.625)	(1.173)	(0.686)
Divorced	1.210**	1.486***	-1.194	1.948**
	(0.547)	(0.519)	(1.006)	(0.813)
HS Degree Only	-0.745	-1.114*	-0.885	-0.684
	(0.571)	(0.655)	(1.236)	(0.748)
Obtained Bachelor's Degree'	-0.180	0.257	-1.029	-0.604
	(0.448)	(0.645)	(1.051)	(0.675)
Frac. of Lower Rep.	-0.00913	-0.0171	-0.0125	0.00943
	(0.0306)	(0.0263)	(0.0645)	(0.0501)
Maximum Temperature	0.00309**	0.00198	0.00441*	0.00307
	(0.00144)	(0.00174)	(0.00248)	(0.00195)
Monthly Precipitation	0.00202	-0.00512	0.00724	0.00548
	(0.00616)	(0.00605)	(0.0109)	(0.00906)
N	777	777	777	777

Table 37: Kentucky Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer
Right to Work	-0.102***	-0.122***	-0.106**	-0.0901***
	(0.0234)	(0.0236)	(0.0436)	(0.0281)
Inspection Rate	0.123	0.0257	-1.533	0.762*
	(0.363)	(0.506)	(1.204)	(0.434)
Age 25-34	-1.528***	-2.276***	-2.067*	-1.060
	(0.517)	(0.696)	(1.128)	(0.693)
Age 35-44	-1.886**	-2.382***	-2.664*	-1.599
	(0.731)	(0.846)	(1.503)	(1.003)
Age 45-54	-2.035**	-2.343**	-4.673***	-1.360
	(0.807)	(0.971)	(1.495)	(0.903)
Age 55-64	-0.157	-0.880	-0.730	0.792
	(0.706)	(0.784)	(1.487)	(1.006)
Male	-0.239	-0.739	1.685*	-0.336
	(0.624)	(0.906)	(0.934)	(0.813)
White	-0.0217	-0.345	-1.063	0.472
	(0.478)	(0.459)	(1.027)	(0.704)
Black	1.122	0.827	-0.751	1.970*
	(0.714)	(0.784)	(1.541)	(1.006)
Asian	0.0845	-0.315*	0.144	0.348
	(0.147)	(0.181)	(0.492)	(0.307)
Single	-0.567	-0.719	-1.385	-0.319
	(0.519)	(0.627)	(1.170)	(0.674)
Divorced	0.976*	1.284**	-1.589	1.740**
	(0.562)	(0.553)	(0.998)	(0.811)
HS Degree Only	-0.775	-1.180*	-0.821	-0.726
	(0.534)	(0.609)	(1.162)	(0.702)
Obtained Bachelor's Degree'	-0.184	0.223	-0.925	-0.640
	(0.427)	(0.613)	(1.017)	(0.651)
Frac. of Lower Rep.	-0.00830	-0.0152	-0.0105	0.00972
	(0.0310)	(0.0274)	(0.0629)	(0.0504)
Maximum Temperature	0.00322**	0.00208	0.00399	0.00341*
	(0.00146)	(0.00174)	(0.00252)	(0.00196)
Monthly Precipitation	0.00305	-0.00256	0.00764	0.00627
	(0.00594)	(0.00552)	(0.0107)	(0.00877)
N	777	777	777	777

Table 38: Michigan Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer
Right to Work	-0.168***	-0.107***	-0.260***	-0.151***
	(0.0205)	(0.0199)	(0.0321)	(0.0251)
Inspection Rate	0.0980	-0.0267	-1.485	0.743*
	(0.345)	(0.485)	(1.161)	(0.428)
Age 25-34	-1.563***	-2.322***	-2.088*	-1.115
	(0.521)	(0.697)	(1.115)	(0.698)
Age 35-44	-1.926**	-2.398***	-2.654*	-1.679
	(0.738)	(0.856)	(1.521)	(1.012)
Age 45-54	-2.156**	-2.428**	-4.905***	-1.459
	(0.816)	(0.983)	(1.490)	(0.905)
Age 55-64	-0.274	-0.929	-0.972	0.702
	(0.709)	(0.774)	(1.515)	(0.999)
Male	-0.0598	-0.692	2.139**	-0.157
	(0.620)	(0.900)	(0.953)	(0.810)
White	0.0290	-0.299	-0.979	0.507
	(0.479)	(0.460)	(1.039)	(0.708)
Black	1.086	0.762	-0.834	1.945*
	(0.707)	(0.781)	(1.549)	(1.004)
Asian	0.0876	-0.314	0.179	0.345
	(0.149)	(0.187)	(0.506)	(0.309)
Single	-0.479	-0.637	-1.076	-0.311
	(0.518)	(0.629)	(1.134)	(0.684)
Divorced	1.104*	1.468***	-1.359	1.817**
	(0.566)	(0.535)	(1.026)	(0.834)
HS Degree Only	-0.788	-1.137*	-1.031	-0.703
	(0.554)	(0.630)	(1.231)	(0.733)
Obtained Bachelor's Degree'	-0.263	0.166	-1.179	-0.672
	(0.443)	(0.636)	(1.032)	(0.667)
Frac. of Lower Rep.	-0.0180	-0.0220	-0.0305	0.00224
	(0.0306)	(0.0265)	(0.0684)	(0.0493)
Maximum Temperature	0.00316**	0.00211	0.00437*	0.00312
	(0.00144)	(0.00172)	(0.00248)	(0.00195)
Monthly Precipitation	0.00238	-0.00345	0.00701	0.00543
	(0.00613)	(0.00563)	(0.0109)	(0.00904)
N	777	777	777	777

Table 39: West Virginia Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer
Right to Work	-0.0584***	-0.308***	0.303***	0.0496
	(0.0194)	(0.0243)	(0.0489)	(0.0324)
Inspection Rate	0.0364	-0.0838	-1.609	0.691
	(0.372)	(0.513)	(1.295)	(0.413)
Age 25-34	-1.587***	-2.058***	-2.412**	-1.271*
	(0.513)	(0.749)	(1.142)	(0.681)
Age 35-44	-1.933**	-2.225**	-2.900*	-1.774*
	(0.735)	(0.876)	(1.514)	(1.004)
Age 45-54	-2.097**	-2.058**	-5.141***	-1.610*
	(0.795)	(1.007)	(1.469)	(0.901)
Age 55-64	-0.139	-0.697	-0.937	0.732
	(0.704)	(0.809)	(1.545)	(1.005)
Male	-0.0477	-0.712	1.760*	0.0192
	(0.596)	(0.904)	(0.916)	(0.796)
White	0.0170	-0.290	-0.993	0.493
	(0.479)	(0.475)	(1.020)	(0.708)
Black	1.140	0.702	-0.672	2.096**
	(0.707)	(0.798)	(1.559)	(1.006)
Asian	0.103	-0.315	0.163	0.381
	(0.144)	(0.189)	(0.463)	(0.324)
Single	-0.550	-0.612	-1.258	-0.404
	(0.505)	(0.642)	(1.146)	(0.669)
Divorced	1.252**	1.153*	-0.457	2.165**
	(0.519)	(0.578)	(1.243)	(0.810)
HS Degree Only	-0.716	-1.055	-0.896	-0.662
	(0.552)	(0.633)	(1.195)	(0.732)
Obtained Bachelor's Degree'	-0.152	0.179	-0.911	-0.524
	(0.450)	(0.648)	(1.050)	(0.682)
Frac. of Lower Rep.	-0.00549	-0.0319	0.0163	0.0239
	(0.0289)	(0.0280)	(0.0648)	(0.0503)
Maximum Temperature	0.00309**	0.00201	0.00440*	0.00309
	(0.00143)	(0.00174)	(0.00245)	(0.00195)
Monthly Precipitation	0.00270	-0.00261	0.00649	0.00584
	(0.00602)	(0.00562)	(0.0108)	(0.00895)
N	775	775	775	775

Table 40: Wisconsin Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer
Right to Work	-0.113***	-0.151***	-0.0664*	-0.123***
	(0.0185)	(0.0167)	(0.0371)	(0.0248)
Inspection Rate	-0.0399	-0.161	-1.643	0.594
	(0.387)	(0.514)	(1.268)	(0.430)
Age 25-34	-1.612***	-2.355***	-2.083*	-1.178
	(0.526)	(0.711)	(1.116)	(0.708)
Age 35-44	-1.897**	-2.405***	-2.610*	-1.629
	(0.744)	(0.862)	(1.511)	(1.018)
Age 45-54	-2.134**	-2.454**	-4.715***	-1.484
	(0.815)	(0.984)	(1.492)	(0.909)
Age 55-64	-0.376	-1.168	-0.849	0.568
	(0.716)	(0.816)	(1.474)	(1.006)
Male	0.0825	-0.445	1.920**	0.0599
	(0.668)	(0.960)	(0.904)	(0.860)
White	-0.00122	-0.288	-1.021	0.460
	(0.486)	(0.477)	(1.033)	(0.709)
Black	0.984	0.675	-0.833	1.816*
	(0.716)	(0.798)	(1.542)	(1.009)
Asian	0.105	-0.289	0.168	0.367
	(0.150)	(0.200)	(0.495)	(0.301)
Single	-0.540	-0.696	-1.236	-0.324
	(0.523)	(0.642)	(1.162)	(0.694)
Divorced	1.022*	1.321**	-1.357	1.740**
	(0.585)	(0.563)	(1.012)	(0.852)
HS Degree Only	-0.796	-1.170*	-0.834	-0.762
	(0.573)	(0.647)	(1.215)	(0.751)
Obtained Bachelor's Degree'	-0.242	0.133	-0.955	-0.674
	(0.447)	(0.644)	(1.029)	(0.676)
Frac. of Lower Rep.	-0.0200	-0.0292	-0.0204	-0.00197
	(0.0313)	(0.0285)	(0.0647)	(0.0505)
Maximum Temperature	0.00300**	0.00201	0.00406	0.00296
	(0.00145)	(0.00169)	(0.00247)	(0.00197)
Monthly Precipitation	0.00281	-0.00280	0.00718	0.00584
	(0.00608)	(0.00564)	(0.0107)	(0.00899)
N	777	777	777	777

Table 41: Oklahoma Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer	(5) Other Nonfatal
Right to Work	0.243***	0.0603**	-0.104***	-0.00665	0.162***
	(0.0441)	(0.0251)	(0.0300)	(0.0569)	(0.0340)
Inspection Rate	2.732***	-0.0447	-0.0977	-1.560	0.500
	(0.965)	(0.330)	(0.459)	(1.260)	(0.332)
Age 25-34	-3.018**	-0.596	-1.022	0.402	-0.667
	(1.340)	(0.905)	(0.988)	(2.150)	(0.979)
Age 35-44	-1.964	-1.123	-0.924	-1.560	-1.428
	(1.741)	(0.758)	(0.811)	(2.206)	(1.183)
Age 45-54	0.0593	-1.656	-1.614	-4.112**	-1.502
	(1.644)	(0.968)	(1.154)	(1.579)	(1.032)
Age 55-64	-1.960	-0.127	-1.002	0.591	0.411
	(1.583)	(0.843)	(1.039)	(2.085)	(1.228)
Male	2.619	0.247	-0.373	3.628***	0.00529
	(2.258)	(0.605)	(0.764)	(0.955)	(1.028)
White	-0.0313	0.216	-0.224	-0.236	0.594
	(0.594)	(0.574)	(0.537)	(1.127)	(0.775)
Black	2.169	1.063	0.385	-3.688	2.747*
	(1.962)	(1.093)	(1.078)	(2.911)	(1.359)
Asian	-0.151	0.132	-0.280	0.341	0.417
	(0.665)	(0.220)	(0.171)	(0.461)	(0.419)
Single	0.154	-0.602	-1.000	-1.403	-0.300
	(1.295)	(0.536)	(0.592)	(1.484)	(0.796)
Divorced	6.481***	1.963**	2.188**	-1.828	3.039***
	(1.355)	(0.775)	(0.819)	(1.687)	(0.911)
HS Degree Only	-0.269	0.395	0.428	-1.472	0.794
	(1.345)	(0.861)	(0.967)	(2.042)	(1.133)
Obtained Bachelor's Degree'	2.105	0.660	1.724***	-1.869	0.318
	(1.662)	(0.590)	(0.577)	(1.796)	(0.967)
Frac. of Lower Rep.	0.0863	-0.0348	-0.0358	-0.0236	-0.0315
	(0.0643)	(0.0368)	(0.0345)	(0.0862)	(0.0478)
Maximum Temperature	-0.00183	0.00558**	0.00227	0.00210	0.00775***
	(0.00339)	(0.00200)	(0.00228)	(0.00396)	(0.00250)
Monthly Precipitation	0.00326	0.0121	-0.00107	0.00880	0.0226*
	(0.0161)	(0.00863)	(0.0102)	(0.0143)	(0.0119)
N	648	453	453	453	453

Table 42: Indiana Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer	(5) Other Nonfatal
Right to Work	0.0494	-0.142***	-0.226***	-0.0102	-0.157***
	(0.0456)	(0.0211)	(0.0256)	(0.0408)	(0.0238)
Inspection Rate	2.608**	-0.0117	-0.0316	-1.597	0.543
	(0.950)	(0.343)	(0.490)	(1.267)	(0.343)
Age 25-34	-2.879**	-0.694	-1.241	0.279	-0.713
	(1.277)	(0.864)	(0.990)	(2.060)	(0.953)
Age 35-44	-1.917	-1.380	-1.409	-1.988	-1.539
	(1.718)	(0.836)	(0.967)	(2.197)	(1.223)
Age 45-54	0.273	-1.723*	-1.896	-4.356**	-1.404
	(1.550)	(0.936)	(1.144)	(1.552)	(0.983)
Age 55-64	-1.771	0.125	-0.646	0.0696	0.899
	(1.555)	(0.779)	(0.967)	(2.131)	(1.065)
Male	2.857	0.351	-0.288	3.747***	0.0878
	(2.213)	(0.610)	(0.775)	(0.865)	(1.009)
White	0.176	0.242	-0.174	-0.210	0.585
	(0.617)	(0.533)	(0.497)	(1.144)	(0.765)
Black	2.742	0.842	-0.198	-3.916	2.604*
	(1.904)	(1.047)	(1.074)	(2.954)	(1.306)
Asian	-0.119	0.144	-0.274*	0.335	0.428
	(0.655)	(0.182)	(0.138)	(0.456)	(0.368)
Single	0.0949	-0.613	-0.952	-1.586	-0.288
	(1.302)	(0.574)	(0.642)	(1.442)	(0.836)
Divorced	6.198***	1.894**	1.817**	-1.772	3.075***
	(1.448)	(0.781)	(0.843)	(1.654)	(0.930)
HS Degree Only	0.0152	0.180	0.0183	-1.621	0.627
	(1.385)	(0.831)	(0.923)	(2.054)	(1.104)
Obtained Bachelor's Degree'	2.291	0.612	1.595**	-1.928	0.317
	(1.731)	(0.608)	(0.634)	(1.807)	(0.983)
Frac. of Lower Rep.	0.0862	-0.0393	-0.0443	-0.0271	-0.0358
	(0.0665)	(0.0346)	(0.0265)	(0.0844)	(0.0468)
Maximum Temperature	-0.00274	0.00477**	0.00258	0.000267	0.00654**
	(0.00367)	(0.00215)	(0.00256)	(0.00380)	(0.00259)
Monthly Precipitation	-0.00113	0.00769	-0.00677	0.00819	0.0168
	(0.0167)	(0.00838)	(0.0102)	(0.0148)	(0.0112)
N	648	459	459	459	459

Table 43: Kentucky Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer	(5) Other Nonfatal
Right to Work	-0.382***	-0.136***	-0.160***	-0.109*	-0.132***
	(0.0638)	(0.0275)	(0.0266)	(0.0542)	(0.0316)
Inspection Rate	2.935**	0.0153	-0.0864	-1.542	0.588
	(1.046)	(0.366)	(0.526)	(1.245)	(0.373)
Age 25-34	-3.219**	-0.570	-0.987	0.142	-0.528
	(1.349)	(0.889)	(0.938)	(2.111)	(0.978)
Age 35-44	-2.180	-1.340*	-1.237	-2.228	-1.437
	(1.688)	(0.760)	(0.807)	(2.144)	(1.143)
Age 45-54	-0.256	-1.666*	-1.731	-4.321**	-1.340
	(1.617)	(0.888)	(1.035)	(1.563)	(0.946)
Age 55-64	-1.956	0.277	-0.530	0.314	1.038
	(1.614)	(0.758)	(0.975)	(2.118)	(1.059)
Male	2.178	0.105	-0.480	3.311***	-0.164
	(2.247)	(0.663)	(0.816)	(0.989)	(1.060)
White	0.0173	0.259	-0.0779	-0.323	0.632
	(0.610)	(0.543)	(0.452)	(1.158)	(0.771)
Black	2.369	1.114	0.301	-3.532	2.852**
	(1.890)	(1.039)	(0.988)	(2.881)	(1.310)
Asian	-0.137	0.125	-0.278**	0.268	0.418
	(0.637)	(0.182)	(0.129)	(0.466)	(0.371)
Single	-0.0220	-0.837	-1.258*	-1.882	-0.451
	(1.249)	(0.613)	(0.622)	(1.468)	(0.802)
Divorced	5.828***	1.296	1.320	-2.566	2.483**
	(1.583)	(0.909)	(0.976)	(1.727)	(0.995)
HS Degree Only	-0.543	0.0196	-0.193	-1.378	0.401
	(1.258)	(0.751)	(0.822)	(1.859)	(1.008)
Obtained Bachelor's Degree'	1.926	0.503	1.430**	-1.676	0.127
	(1.630)	(0.554)	(0.545)	(1.675)	(0.915)
Frac. of Lower Rep.	0.0764	-0.0433	-0.0478*	-0.0238	-0.0402
	(0.0676)	(0.0336)	(0.0276)	(0.0797)	(0.0469)
Maximum Temperature	-0.00208	0.00494**	0.00255	-0.000682	0.00711**
	(0.00357)	(0.00217)	(0.00255)	(0.00394)	(0.00258)
Monthly Precipitation	0.00494	0.00945	-0.00137	0.00996	0.0174
	(0.0168)	(0.00795)	(0.00847)	(0.0148)	(0.0107)
N	648	459	459	459	459

Table 44: Michigan Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer	(5) Other Nonfatal
Right to Work	0.164***	-0.190***	-0.136***	-0.241***	-0.175***
	(0.0432)	(0.0275)	(0.0276)	(0.0441)	(0.0282)
Inspection Rate	2.541**	0.00461	-0.0842	-1.448	0.563
	(0.928)	(0.320)	(0.475)	(1.152)	(0.342)
Age 25-34	-2.966**	-0.727	-1.166	-0.00399	-0.728
	(1.314)	(0.926)	(1.005)	(2.121)	(1.005)
Age 35-44	-1.905	-1.353	-1.124	-2.293	-1.506
	(1.709)	(0.811)	(0.858)	(2.205)	(1.203)
Age 45-54	0.334	-1.905*	-1.862	-4.902***	-1.535
	(1.595)	(0.971)	(1.130)	(1.626)	(0.999)
Age 55-64	-1.846	0.0199	-0.676	-0.198	0.845
	(1.640)	(0.819)	(1.004)	(2.143)	(1.085)
Male	2.310	0.549	-0.205	4.155***	0.291
	(2.271)	(0.618)	(0.765)	(0.961)	(1.005)
White	0.0996	0.348	0.0135	-0.193	0.691
	(0.607)	(0.540)	(0.453)	(1.182)	(0.778)
Black	2.381	1.073	0.186	-3.792	2.848**
	(1.981)	(1.017)	(1.019)	(2.931)	(1.303)
Asian	-0.181	0.167	-0.241*	0.353	0.457
	(0.651)	(0.177)	(0.136)	(0.478)	(0.365)
Single	0.186	-0.517	-0.835	-1.429	-0.236
	(1.283)	(0.565)	(0.647)	(1.353)	(0.822)
Divorced	6.315***	1.720*	1.885**	-2.161	2.881***
	(1.467)	(0.845)	(0.860)	(1.759)	(0.960)
HS Degree Only	-0.130	0.0200	-0.0652	-2.141	0.566
	(1.385)	(0.820)	(0.878)	(2.060)	(1.079)
Obtained Bachelor's Degree'	2.228	0.379	1.368**	-2.423	0.155
	(1.680)	(0.633)	(0.622)	(1.773)	(0.979)
Frac. of Lower Rep.	0.0874	-0.0576	-0.0568	-0.0595	-0.0507
	(0.0659)	(0.0412)	(0.0333)	(0.0936)	(0.0496)
Maximum Temperature	-0.000944	0.00485**	0.00263	-0.000125	0.00671**
	(0.00377)	(0.00218)	(0.00250)	(0.00385)	(0.00264)
Monthly Precipitation	0.00251	0.00812	-0.00418	0.00674	0.0165
	(0.0161)	(0.00811)	(0.00943)	(0.0148)	(0.0111)
N	648	459	459	459	459

Table 45: West Virginia Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer	(5) Other Nonfatal
Right to Work	-0.0548	-0.0586**	-0.279***	0.281***	0.0408
	(0.0801)	(0.0237)	(0.0393)	(0.0835)	(0.0290)
Inspection Rate	2.679***	-0.0745	-0.252	-1.457	0.534
	(0.946)	(0.373)	(0.557)	(1.273)	(0.338)
Age 25-34	-2.476*	-0.618	-0.610	-0.366	-0.823
	(1.389)	(0.854)	(0.937)	(2.191)	(0.924)
Age 35-44	-1.473	-1.173	-0.886	-2.104	-1.402
	(1.791)	(0.760)	(0.833)	(2.262)	(1.132)
Age 45-54	0.447	-1.623*	-1.256	-4.870***	-1.520
	(1.647)	(0.896)	(1.068)	(1.684)	(0.946)
Age 55-64	-1.256	0.219	-0.276	-0.352	0.851
	(1.678)	(0.767)	(1.027)	(2.270)	(1.082)
Male	3.182	0.549	-0.277	3.205***	0.628
	(2.157)	(0.582)	(0.783)	(1.104)	(1.040)
White	0.110	0.366	0.0628	-0.170	0.714
	(0.630)	(0.548)	(0.451)	(1.150)	(0.800)
Black	2.686	1.096	0.0570	-3.664	3.053**
	(1.993)	(1.108)	(1.068)	(3.088)	(1.413)
Asian	-0.0512	0.180	-0.267**	0.309	0.517
	(0.631)	(0.175)	(0.114)	(0.434)	(0.382)
Single	0.110	-0.536	-0.926	-1.209	-0.232
	(1.279)	(0.530)	(0.616)	(1.479)	(0.770)
Divorced	6.446***	1.967***	1.207	-0.138	3.445***
	(1.172)	(0.687)	(0.913)	(2.081)	(0.860)
HS Degree Only	-0.237	0.271	0.194	-1.810	0.765
	(1.327)	(0.790)	(0.810)	(2.003)	(1.105)
Obtained Bachelor's Degree'	1.941	0.723	1.579**	-1.857	0.551
	(1.640)	(0.599)	(0.568)	(1.820)	(1.005)
Frac. of Lower Rep.	0.0676	-0.0371	-0.0786*	0.0324	-0.0132
	(0.0655)	(0.0324)	(0.0423)	(0.0863)	(0.0465)
Maximum Temperature	-0.00151	0.00473**	0.00239	0.000547	0.00649**
	(0.00365)	(0.00207)	(0.00247)	(0.00383)	(0.00248)
Monthly Precipitation	-0.00115	0.00901	-0.00156	0.00558	0.0177
	(0.0168)	(0.00791)	(0.00922)	(0.0144)	(0.0108)
N	648	457	457	457	457

Table 46: Wisconsin Case Study Results

	(1) Fatal	(2) All Nonfatal	(3) Lost Workday	(4) Job Restriction/Transfer	(5) Other Nonfatal
Right to Work	0.135**	-0.115***	-0.144***	-0.0750	-0.126***
	(0.0540)	(0.0228)	(0.0208)	(0.0445)	(0.0302)
Inspection Rate	2.820***	-0.236	-0.359	-1.686	0.316
	(0.969)	(0.449)	(0.577)	(1.322)	(0.429)
Age 25-34	-2.952**	-0.788	-1.170	0.241	-0.884
	(1.338)	(0.948)	(1.006)	(2.134)	(1.084)
Age 35-44	-2.001	-1.382	-1.242	-1.937	-1.611
	(1.734)	(0.819)	(0.915)	(2.202)	(1.224)
Age 45-54	0.112	-1.895*	-1.950*	-4.386**	-1.663
	(1.624)	(0.935)	(1.114)	(1.560)	(1.006)
Age 55-64	-1.930	-0.103	-0.999	0.0848	0.656
	(1.622)	(0.871)	(1.136)	(2.079)	(1.138)
Male	2.271	0.769	0.151	3.886***	0.625
	(2.283)	(0.743)	(0.945)	(0.906)	(1.110)
White	0.133	0.298	0.0153	-0.260	0.617
	(0.614)	(0.547)	(0.459)	(1.158)	(0.772)
Black	2.551	0.849	-0.0138	-3.878	2.606*
	(1.945)	(1.046)	(1.063)	(2.961)	(1.297)
Asian	-0.180	0.181	-0.218	0.334	0.475
	(0.666)	(0.174)	(0.136)	(0.458)	(0.354)
Single	-0.0227	-0.700	-1.086	-1.528	-0.384
	(1.321)	(0.596)	(0.647)	(1.446)	(0.870)
Divorced	6.480***	1.436	1.428	-1.942	2.495**
	(1.407)	(0.965)	(1.021)	(1.696)	(1.138)
HS Degree Only	-0.335	0.0830	-0.0352	-1.517	0.473
	(1.376)	(0.840)	(0.907)	(1.989)	(1.118)
Obtained Bachelor's Degree'	1.927	0.511	1.448**	-1.776	0.188
	(1.662)	(0.627)	(0.640)	(1.725)	(1.014)
Frac. of Lower Rep.	0.0906	-0.0625	-0.0709*	-0.0403	-0.0601
	(0.0658)	(0.0411)	(0.0391)	(0.0838)	(0.0525)
Maximum Temperature	-0.00247	0.00464*	0.00242	0.0000801	0.00638**
	(0.00363)	(0.00226)	(0.00247)	(0.00383)	(0.00277)
Monthly Precipitation	0.00113	0.00953	-0.00141	0.00860	0.0175
	(0.0163)	(0.00827)	(0.00915)	(0.0148)	(0.0111)
N	648	459	459	459	459

Table 47: Synthetic Control Weights for Fatal Workplace Injury Analysis

	Indiana	Kentucky	Michigan	Oklahoma	West_Virginia	Wisconsin
Alaska	-1.77	-1.06	-1.82×10^{-4}	-1.14	-0.477	-0.979
Hawaii	-1.64	-0.985	-1.45×10^{-4}	-1.06	-0.442	-0.907
Washington	-0.497	-0.299	-1.05×10^{-4}	-0.32	-0.134	-0.275
Colorado	-0.478	-0.287	-9.44×10^{-5}	-0.308	-0.129	-0.264
California	-0.262	-0.157	-7.09×10^{-5}	-0.169	-0.0707	-0.145
Rhode Island	-0.249	-0.15	-5.56×10^{-5}	-0.16	-0.0672	-0.138
Pennsylvania	-0.191	-0.114	-4.93×10^{-5}	-0.123	-0.0514	-0.105
New Jersey	-0.189	-0.113	-4.16×10^{-5}	-0.122	-0.0509	-0.104
Delaware	-0.141	-0.0847	-3.57×10^{-5}	-0.0909	-0.038	-0.078
Montana	-0.0351	-0.0211	-1.46×10^{-5}	-0.0226	-0.00946	-0.0194
Illinois	-0.0239	-0.0143	-9.88×10^{-6}	-0.0154	-0.00643	-0.0132
New Mexico	-0.0109	-0.00651	1.59×10^{-6}	-0.00699	-0.00293	-0.006
Minnesota	0.0675	0.0405	3.49×10^{-6}	0.0434	0.0182	0.0373
Oregon	0.0994	0.0597	5.14×10^{-6}	0.064	0.0268	0.055
Maine	0.244	0.146	2.07×10^{-5}	0.157	0.0657	0.135
New York	0.284	0.17	2.77×10^{-5}	0.183	0.0765	0.157
Maryland	0.337	0.202	2.79×10^{-5}	0.217	0.0907	0.186
Ohio	0.38	0.228	3.65×10^{-5}	0.245	0.102	0.21
Missouri	0.485	0.291	3.84×10^{-5}	0.312	0.131	0.268
Massachusetts	0.645	0.387	7.00×10^{-5}	0.415	0.174	0.357
Connecticut	0.715	0.429	7.28×10^{-5}	0.46	0.193	0.395
New Hampshire	0.991	0.595	2.40×10^{-4}	0.638	0.267	0.548
Vermont	1.24	0.745	2.59×10^{-4}	0.8	0.335	0.687

Table 48: Synthetic Control Weights for All Nonfatal Workplace Injuries Analysis

	Indiana	Kentucky	Michigan	West_Virginia	Wisconsin
Alaska	-1.77	-1.06	-1.82×10^{-4}	-1.14	-0.477
Hawaii	-1.64	-0.985	-1.45×10^{-4}	-1.06	-0.442
Washington	-0.497	-0.299	-1.05×10^{-4}	-0.32	-0.134
Colorado	-0.478	-0.287	-9.44×10^{-5}	-0.308	-0.129
California	-0.262	-0.157	-7.09×10^{-5}	-0.169	-0.0707
Rhode Island	-0.249	-0.15	-5.56×10^{-5}	-0.16	-0.0672
Pennsylvania	-0.191	-0.114	-4.93×10^{-5}	-0.123	-0.0514
New Jersey	-0.189	-0.113	-4.16×10^{-5}	-0.122	-0.0509
Delaware	-0.141	-0.0847	-3.57×10^{-5}	-0.0909	-0.038
Montana	-0.0351	-0.0211	-1.46×10^{-5}	-0.0226	-0.00946
Illinois	-0.0239	-0.0143	-9.88×10^{-6}	-0.0154	-0.00643
New Mexico	-0.0109	-0.00651	1.59×10^{-6}	-0.00699	-0.00293
Minnesota	0.0675	0.0405	3.49×10^{-6}	0.0434	0.0182
Oregon	0.0994	0.0597	5.14×10^{-6}	0.064	0.0268
Maine	0.244	0.146	2.07×10^{-5}	0.157	0.0657
New York	0.284	0.17	2.77×10^{-5}	0.183	0.0765
Maryland	0.337	0.202	2.79×10^{-5}	0.217	0.0907
Ohio	0.38	0.228	3.65×10^{-5}	0.245	0.102
Missouri	0.485	0.291	3.84×10^{-5}	0.312	0.131
Massachusetts	0.645	0.387	7.00×10^{-5}	0.415	0.174
Connecticut	0.715	0.429	7.28×10^{-5}	0.46	0.193
New Hampshire	0.991	0.595	2.40×10^{-4}	0.638	0.267
Vermont	1.24	0.745	2.59×10^{-4}	0.8	0.335

Table 49: Synthetic Control Weights for Lost Workday Workplace Injury Analysis

	Indiana	Kentucky	Michigan	West_Virginia	Wisconsin
Alaska	-1.77	-1.06	-1.82×10^{-4}	-1.14	-0.477
Hawaii	-1.64	-0.985	-1.45×10^{-4}	-1.06	-0.442
Washington	-0.497	-0.299	-1.05×10^{-4}	-0.32	-0.134
Colorado	-0.478	-0.287	-9.44×10^{-5}	-0.308	-0.129
California	-0.262	-0.157	-7.09×10^{-5}	-0.169	-0.0707
Rhode Island	-0.249	-0.15	-5.56×10^{-5}	-0.16	-0.0672
Pennsylvania	-0.191	-0.114	-4.93×10^{-5}	-0.123	-0.0514
New Jersey	-0.189	-0.113	-4.16×10^{-5}	-0.122	-0.0509
Delaware	-0.141	-0.0847	-3.57×10^{-5}	-0.0909	-0.038
Montana	-0.0351	-0.0211	-1.46×10^{-5}	-0.0226	-0.00946
Illinois	-0.0239	-0.0143	-9.88×10^{-6}	-0.0154	-0.00643
New Mexico	-0.0109	-0.00651	1.59×10^{-6}	-0.00699	-0.00293
Minnesota	0.0675	0.0405	3.49×10^{-6}	0.0434	0.0182
Oregon	0.0994	0.0597	5.14×10^{-6}	0.064	0.0268
Maine	0.244	0.146	2.07×10^{-5}	0.157	0.0657
New York	0.284	0.17	2.77×10^{-5}	0.183	0.0765
Maryland	0.337	0.202	2.79×10^{-5}	0.217	0.0907
Ohio	0.38	0.228	3.65×10^{-5}	0.245	0.102
Missouri	0.485	0.291	3.84×10^{-5}	0.312	0.131
Massachusetts	0.645	0.387	7.00×10^{-5}	0.415	0.174
Connecticut	0.715	0.429	7.28×10^{-5}	0.46	0.193
New Hampshire	0.991	0.595	2.40×10^{-4}	0.638	0.267
Vermont	1.24	0.745	2.59×10^{-4}	0.8	0.335

Table 50: Synthetic Control Weights for Job Restriction or Transfer Workplace Injury Analysis

	Indiana	Kentucky	Michigan	West_Virginia	Wisconsin
Alaska	-1.77	-1.06	-1.82×10^{-4}	-1.14	-0.477
Hawaii	-1.64	-0.985	-1.45×10^{-4}	-1.06	-0.442
Washington	-0.497	-0.299	-1.05×10^{-4}	-0.32	-0.134
Colorado	-0.478	-0.287	-9.44×10^{-5}	-0.308	-0.129
California	-0.262	-0.157	-7.09×10^{-5}	-0.169	-0.0707
Rhode Island	-0.249	-0.15	-5.56×10^{-5}	-0.16	-0.0672
Pennsylvania	-0.191	-0.114	-4.93×10^{-5}	-0.123	-0.0514
New Jersey	-0.189	-0.113	-4.16×10^{-5}	-0.122	-0.0509
Delaware	-0.141	-0.0847	-3.57×10^{-5}	-0.0909	-0.038
Montana	-0.0351	-0.0211	-1.46×10^{-5}	-0.0226	-0.00946
Illinois	-0.0239	-0.0143	-9.88×10^{-6}	-0.0154	-0.00643
New Mexico	-0.0109	-0.00651	1.59×10^{-6}	-0.00699	-0.00293
Minnesota	0.0675	0.0405	3.49×10^{-6}	0.0434	0.0182
Oregon	0.0994	0.0597	5.14×10^{-6}	0.064	0.0268
Maine	0.244	0.146	2.07×10^{-5}	0.157	0.0657
New York	0.284	0.17	2.77×10^{-5}	0.183	0.0765
Maryland	0.337	0.202	2.79×10^{-5}	0.217	0.0907
Ohio	0.38	0.228	3.65×10^{-5}	0.245	0.102
Missouri	0.485	0.291	3.84×10^{-5}	0.312	0.131
Massachusetts	0.645	0.387	7.00×10^{-5}	0.415	0.174
Connecticut	0.715	0.429	7.28×10^{-5}	0.46	0.193
New Hampshire	0.991	0.595	2.40×10^{-4}	0.638	0.267
Vermont	1.24	0.745	2.59×10^{-4}	0.8	0.335

Table 51: Synthetic Control Weights for Other Nonfatal Workplace Injury Analysis

	Indiana	Kentucky	Michigan	West_Virginia	Wisconsin
Alaska	-1.77	-1.06	-1.82×10^{-4}	-1.14	-0.477
Hawaii	-1.64	-0.985	-1.45×10^{-4}	-1.06	-0.442
Washington	-0.497	-0.299	-1.05×10^{-4}	-0.32	-0.134
Colorado	-0.478	-0.287	-9.44×10^{-5}	-0.308	-0.129
California	-0.262	-0.157	-7.09×10^{-5}	-0.169	-0.0707
Rhode Island	-0.249	-0.15	-5.56×10^{-5}	-0.16	-0.0672
Pennsylvania	-0.191	-0.114	-4.93×10^{-5}	-0.123	-0.0514
New Jersey	-0.189	-0.113	-4.16×10^{-5}	-0.122	-0.0509
Delaware	-0.141	-0.0847	-3.57×10^{-5}	-0.0909	-0.038
Montana	-0.0351	-0.0211	-1.46×10^{-5}	-0.0226	-0.00946
Illinois	-0.0239	-0.0143	-9.88×10^{-6}	-0.0154	-0.00643
New Mexico	-0.0109	-0.00651	1.59×10^{-6}	-0.00699	-0.00293
Minnesota	0.0675	0.0405	3.49×10^{-6}	0.0434	0.0182
Oregon	0.0994	0.0597	5.14×10^{-6}	0.064	0.0268
Maine	0.244	0.146	2.07×10^{-5}	0.157	0.0657
New York	0.284	0.17	2.77×10^{-5}	0.183	0.0765
Maryland	0.337	0.202	2.79×10^{-5}	0.217	0.0907
Ohio	0.38	0.228	3.65×10^{-5}	0.245	0.102
Missouri	0.485	0.291	3.84×10^{-5}	0.312	0.131
Massachusetts	0.645	0.387	7.00×10^{-5}	0.415	0.174
Connecticut	0.715	0.429	7.28×10^{-5}	0.46	0.193
New Hampshire	0.991	0.595	2.40×10^{-4}	0.638	0.267
Vermont	1.24	0.745	2.59×10^{-4}	0.8	0.335