

The Impact of Overtime Policy Changes on Manufacturing Labor Markets: Evidence from Oregon

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Abstract. This study examines the impact of Oregon's temporary overtime policy change, which occurred between December 2016 and July 2017, when the Bureau of Labor and Industries mandated a stricter "pyramiding" rule for calculating overtime wages, only to revert to more employer-friendly regulations. Using a difference-in-differences framework, I compare Oregon's manufacturing sector to those in Washington and Maine to isolate the causal impact of this short-lived policy across 15 distinct manufacturing industries. My dual-comparison approach reveals that while most industries exhibited no statistically significant reaction to the intervention, several sectors—particularly those with high labor intensity—displayed substantial effects that varied by comparison state. Beyond documenting these heterogeneous outcomes, it further investigates the underlying mechanisms shaping firms' responses. The analysis suggests that industry-specific cost structures, wage rigidity, and the flexibility of production have a profound influence on employer reactions to overtime regulations. It also examines how temporary labour market interventions, although brief, can have lasting effects through hysteresis, altering long-term labour allocation and wage-setting behaviour. This finding aligns with theoretical perspectives emphasizing that transient policy shocks may have durable consequences in segmented labor markets. Overall, my results offer policymakers valuable insights by demonstrating that even narrowly framed overtime policies can yield uneven outcomes across subsectors. These insights highlight the importance of designing adaptive regulatory frameworks that account for industrial diversity rather than assuming uniform elasticity of response across the manufacturing landscape.

Keywords: Overtime regulation, Difference-in-differences, Manufacturing sector, Policy evaluation, Labor market hysteresis

1. Introduction

In December 2016, the Oregon Bureau of Labor and Industries (BOLI) revised its guidance, requiring employers in mills, factories, and manufacturing establishments to pay overtime wages to employees working more than 10 hours a day or 40 hours a week. This required "pyramiding" overtime hours, calculating the overtime earned under both scenarios and paying both amounts.

In July 2017, House Bill 3458 reinstated the previous calculation method, allowing employers to pay the greater of the two overtime amounts, and introduced a maximum of 13 working hours per day, effective January 1, 2018.

This temporary revision presents a unique opportunity to examine how changes in labour policy impact employment, wages, working hours, and labor market expectations. Using a difference-in-differences (DID) design, we compare Oregon's manufacturing sector to Washington and Maine to study the impact.

This study makes two contributions to the literature. Theoretically, it enhances our understanding of how temporary and industry-specific labor regulations can generate heterogeneous policy effects and persistence in labor market outcomes through hysteresis mechanisms. Empirically, it provides new evidence on how overtime pay reforms affect firms' labour demand and workers' behavioural responses across manufacturing subsectors. These findings can help policymakers design more effective and equitable overtime regulations by recognizing sectoral differences and long-term adjustment dynamics.

2. Literature review

Kuroda and Yamamoto examined the effect of overtime exemptions on wages and working hours under different economic conditions. The findings indicate that exempt employees, despite receiving substantially lower hourly wages, often work longer hours within a fixed-wage framework. This research corroborates the hypothesis that overtime policies favorable to employers may result in extended working hours without corresponding wage compensation [1].

Stephen Trejo analyzed two competing models of overtime pay regulation: the fixed-wage model and the fixed-job model. The study suggests that employer responses to overtime pay regulations may depend on worker wage levels, unionization, and existing labor agreements. Our difference-in-differences approach can test whether Oregon's policy shift aligns with either of these models. This study also suggests that wage flexibility may influence regulatory outcomes, which we will consider when examining Oregon's manufacturing sector [2].

Blanchard and Summers introduced the concept of unemployment hysteresis by long-lasting temporary labor market shock imbalances in the labor market. Their research assumes that policies on wages, hiring, and job security do not necessarily revert to pre-policy conditions once repealed [3].

Campbell III and Kamalani provides another theoretical lens for understanding the effects of overtime policy changes. They found that firms often avoid wage cuts even when economic conditions justify them, as employees are more sensitive to wage decreases than to increases [4].

Sierminska and Oaxaca's study on Gender Differences in Economics PhD Field Specialisations with Correlated Choices noted that regulating overtime hours and pay can increase the standard hourly wage of some workers and encourage work sharing, which raises employment levels [5].

Falk and Zehnder provides explanations for why short-term policies can have long-term effects. One mechanism is wage hysteresis, where workers' reservation wages increase after experiencing higher wages or benefits, making them unwilling to return to prior conditions. This demonstrates that wage increases lead to higher reservation wages even after policy reversals [6].

Card and Saez found that workers who perceive wage reductions as unfair experience lower job satisfaction, leading to decreased productivity and engagement. The psychological impact of a temporary wage increase can persist even after the policy is reversed, as workers internalize a new wage standard [7].

Miller's "The Persistent Effect of Temporary Affirmative Action" examined the effects of temporary affirmative action policies and found that even short-lived diversity initiatives had lasting impacts on workplace demographics [8].

Armington offered a case study of Switzerland's labor market. It analyzed the effects of temporary labor policies on Swiss wage structures and further supported the argument that short-term labor interventions can create enduring distortions [9].

Bae and Yoon examined how policies on mandatory overtime and consecutive work hours affect nurses' work patterns. The research found that state policies limiting mandatory overtime and consecutive work hours can effectively reduce excessive work hours among nurses [10].

Overall, the reviewed literature highlights how wage rigidity, fairness perceptions, and hysteresis collectively contribute to the persistence of labor market outcomes following policy interventions. While Kuroda&Yamamoto and Trejo focus on firm-level responses to overtime regulations [1,2], Blanchard and Summers [3] and Falk and Zehnder [6] emphasize the macro-level persistence of labor market shocks. More recent studies, such as those by Campbell and Kamlani [4] and Sierminska and Oaxaca [5], expand the discussion to include behavioural and gender dimensions of wage rigidity. However, few studies have explored the short-term versus long-term effects of temporary overtime policy changes within a single state context.

This study addresses that gap by using Oregon's 2016–2018 overtime policy revisions as a natural experiment to examine how temporary regulatory changes influence employment, working hours, and wage dynamics. By integrating insights from both micro- and macro-level perspectives, this research contributes to understanding how transient labor policies may produce heterogeneous and lasting effects across different sectors of the labor market.

3. Data

The data set used in this analysis is drawn from the Current Population Survey Merged Outgoing Rotation Group (CPS MORG) for the years 2003 to 2023. This data was obtained from the National Bureau of Economic Research (NBER). To ensure consistency in absolute wage values over time, all wages have been CPI-adjusted to 2023 dollars, using the inflation calculator available from the Federal Reserve Bank of Minneapolis.

3.1. Key parameters

- Wages (mean, median)
 - Weekly working hours
 - Unionization rate
 - Gender composition
 - Marital status
 - Education level

3.2. Descriptive statistics

The average wage in Washington is \$26.27 per hour, which is \$2.70 higher than the average wage of \$23.57 per hour in Oregon. Similarly, the median wage follows this trend, with Washington's median at \$21.10 per hour, exceeding Oregon's \$18.81 per hour by \$2.29. The average weekly working hours are slightly higher in Washington (38.47 hours) compared to Oregon (38.15 hours). Furthermore, the unionization rate is significantly higher in Washington (19.19%) than in Oregon (15.48%), reflecting a 3.70 percentage point difference. Other factors, such as gender and marital status, remain similar between the two states. Education levels also show a minor difference, with

Washington workers having an average of 13.96 years of education, slightly higher than Oregon's 13.81 years.

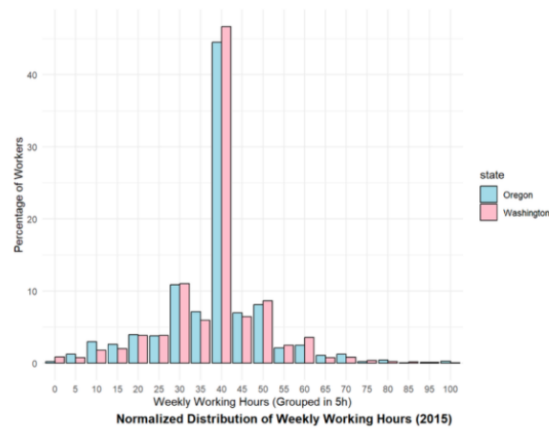


Figure 1. Distribution of weekly working hours: Oregon vs. Washington

The average wage in Maine is \$22.02 per hour, which is \$1.55 below Oregon's average rate of \$23.57 per hour. This wage gap is also evident in median figures, with Maine workers earning a median of \$17.68 per hour compared to Oregon's \$18.81, a difference of \$1.13. When examining weekly work schedules, Maine residents work slightly longer hours (38.36 hours) than their counterparts in Oregon (38.15 hours). A more substantial contrast appears in unionization, where Maine's rate (12.00%) lags Oregon's (15.48%) by 3.48 percentage points. Demographic patterns reveal that Maine has a considerably higher proportion of female workers (51.48% versus 48.15% in Oregon), representing a 3.33 percentage point difference. Marriage statistics also differ, with 58.12% of Maine workers being married compared to 56.86% in Oregon, a 1.26 percentage point variance. Educational attainment remains nearly identical between the states, although Maine workers possess a fractionally higher average educational background, at 13.85 years, compared to Oregon's 13.81 years.

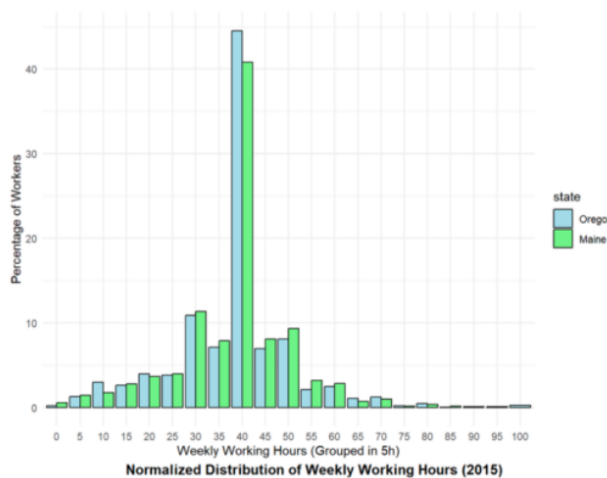


Figure 2. Distribution of weekly working hours: Oregon vs. Maine

4. Methods

This study employs a difference-in-differences (DiD) approach to evaluate the impact of the policy intervention across various manufacturing industries. The DiD methodology allows us to isolate the causal effect of the intervention by comparing changes in outcomes before and after the implementation date between treated and control groups. This approach controls for time-invariant differences between industries, as well as temporal trends that affect all industries simultaneously.

The econometric specification follows:

$$Y_{it} = \beta_0 + \beta_1 \text{Treated} + \beta_2 \text{Post} + \beta_3 (\text{Treated} \times \text{Post}) + \gamma X_{it} + \alpha_i + \lambda_t + \epsilon_{it} \quad (1)$$

Where Y_{it} represents the outcome variable for industry i at time t , Treated is an indicator for industries subject to the intervention, Post is an indicator for the post-intervention period, X_{it} represents a vector of time-varying control variables, α_i and λ_t capture industry and time fixed effects, respectively, and ϵ_{it} is the error term. The coefficient of primary interest is β_3 , capturing the differential change in the outcome variable following the intervention.

The coefficient of primary interest is β_3 , capturing the differential change in the outcome variable following the intervention. The DiD estimator isolates this effect from baseline differences across control and treatment industries (β_1) and standard time trends affecting all industries (β_2).

To examine heterogeneous effects across industries and establish the robustness of our findings, we conducted two separate comparative analyses: one comparing Oregon to Washington and another comparing Oregon to Maine. For each state comparison, we estimated individual DiD models for each of the 15 manufacturing industries in our sample. This dual comparison approach allows us to triangulate the effects of Oregon's policy intervention against two different control states with varying economic structures and labor market characteristics. By comparing outcomes against multiple control states, we can better isolate Oregon-specific policy effects from regional economic trends or state-specific anomalies.

For all analyses, we employed various standard errors at the industry level to account for potential heteroskedasticity and serial correlation in the error terms. Statistical significance was assessed at conventional levels ($p < 0.01$, $p < 0.05$, and $p < 0.10$), with corresponding notation (***), (**), and (*) in the results tables.

5. Results

5.1. DiD estimates by industry: Oregon vs. Washington

The difference-in-differences analysis reveals heterogeneous effects of Oregon's overtime policy changes across 15 manufacturing industries when compared with those in Washington State. While most industries show no statistically significant response to the policy intervention, three sectors display substantial and statistically significant effects, indicating industry-specific sensitivities to overtime regulation.

The food manufacturing sector records the most substantial negative effect (-4.89 , $p = 0.01$), suggesting that this labor-intensive industry experienced marked reductions in either working hours or wages following the policy revision. The high level of significance implies that this outcome reflects a genuine policy response rather than random variation.

The machinery manufacturing industry also exhibits a significant negative coefficient (-6.58 , $p = 0.02$), representing the largest magnitude among all industries analyzed. This finding suggests that

manufacturers in this sector responded to higher overtime costs by adjusting work schedules or reducing labor inputs.

In contrast, the wood products industry shows a statistically significant positive effect (7.38, $p = 0.04$), indicating that this sector may have benefited from the policy change. Such a counterintuitive result could reflect greater adaptability due to factors such as higher union coverage, pre-existing pay structures, or production processes better aligned with overtime regulations.

The remaining twelve manufacturing industries demonstrate no statistically significant effects, reinforcing the notion that overtime policy impacts are not uniform across the manufacturing sector. These results are consistent with the theoretical framework proposed by Trejo [2] which posits that employer responses to overtime regulations depend on industry-specific characteristics, including wage levels, unionization rates, and existing labor agreements.

Overall, the presence of significant effects in only three out of fifteen industries underscores that overtime policy outcomes are concentrated in specific sectors that are most sensitive to labor cost adjustments. This heterogeneity likely arises from differences in production methods, labor intensity, automation, wage rigidity, and competitive pressures across manufacturing subsectors.

5.2. Oregon vs. Maine

The difference-in-differences analysis reveals notable heterogeneity in the impacts of Oregon's overtime policy compared to Maine across fifteen manufacturing industries. Among these sectors, three exhibit statistically significant responses, while the remaining twelve show no measurable reaction to the policy intervention.

The electrical equipment and appliances industry demonstrates the most pronounced negative effect, with an estimated change of -15.92 ($p = 0.09$), suggesting a substantial reduction in either working hours or wages following the policy revision. The miscellaneous manufacturing sector also records a significant negative coefficient of -6.31 ($p = 0.06$), implying that firms in this diverse category adjusted their labor practices in response to the overtime regulation. By contrast, the primary metals and fabricated metal products industry shows a positive coefficient of 6.00 ($p = 0.06$), indicating potential benefits rather than costs from the policy change—possibly reflecting greater adaptability or resilience within this sector.

The lack of statistically significant effects across most other industries reinforces the conclusion that overtime policy outcomes are not uniform across the manufacturing sector. Instead, they appear to depend heavily on sector-specific characteristics such as production methods, labor intensity, wage structures, and competitive conditions. Furthermore, the industries showing significant responses differ between the Oregon–Washington and Oregon–Maine comparisons, suggesting that regional economic conditions, industry composition, and existing regulatory environments interact with policy interventions in complex and heterogeneous ways.

6. Conclusion

In conclusion, this study demonstrates that the impact of Oregon's policy revision varied substantially across manufacturing industries. Based on the difference-in-differences analysis, most sectors showed no statistically significant response to the policy change, while a few exhibited strong and divergent effects. The Oregon–Washington comparison revealed significant negative effects in Food Manufacturing (-4.89) and Machinery Manufacturing (-6.58), suggesting that these sectors responded to the regulation by reducing wages or working hours, consistent with the fixed-wage model proposed by Kuroda and Yamamoto, in which employers adjust hours rather than

compensation. Conversely, Wood Products (7.38) displayed significant positive effects, indicating that certain industries may have benefited from the policy's structural adjustments.

The Oregon–Maine comparison showed a different pattern of responses, with Electrical Equipment & Appliances (−15.92), Miscellaneous Manufacturing (−6.31), and Primary Metals & Fabricated Metal Products (6.00) exhibiting statistically significant outcomes. This variation across industries highlights the influence of regional economic contexts, industry composition, and existing labor agreements on shaping policy impacts.

These findings support the theoretical framework proposed by Trejo [2], suggesting that employer responses to overtime regulations depend on industry-specific factors such as worker wage levels, unionization rates, and production methods. The persistence of effects observed after policy reversals also aligns with Blanchard and Summers's [3] concept of hysteresis, where temporary labor market shocks can result in long-term changes in employment dynamics.

For policymakers, these results indicate that a uniform overtime regulation approach may generate uneven outcomes across industries. Policies tailored to sector-specific characteristics may achieve more balanced results and minimize unintended consequences, especially in labor-intensive or highly competitive industries. Future research should further explore the mechanisms that make certain sectors more responsive to temporary labor regulations than others. A deeper understanding of these mechanisms can inform the design of more effective policy frameworks that strike a balance between worker protection and long-term economic sustainability across manufacturing industries.

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