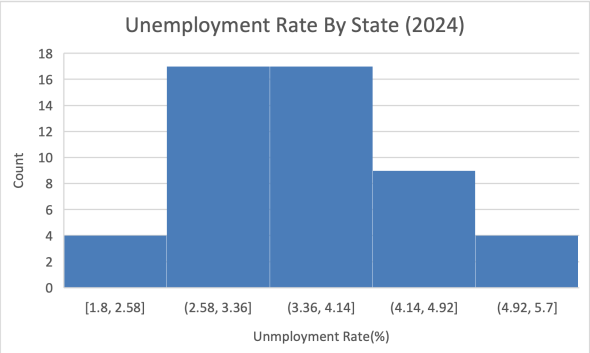
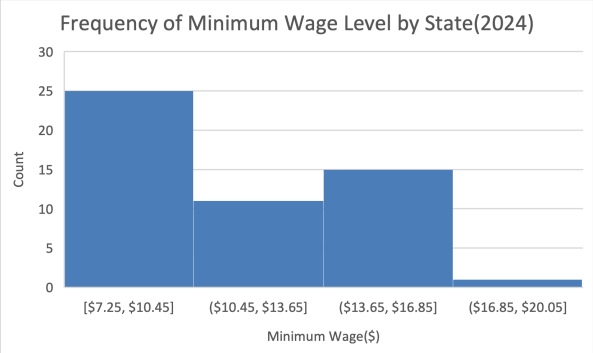
Introduction

Minimum wage laws are a highly debated topic and major economic policy across the United States. Some might argue that the minimum wage helps workers, while critics worry that it might increase unemployment. I would expect a positive relationship between minimum wage and unemployment, as higher minimum wages could lead to a slight increase in unemployment, as businesses might reduce hiring to offset higher wages. Do states with higher minimum wages have higher or lower unemployment rates?

Methods

To answer the central question, I used unemployment rate records from the Federal Reserve Bank of St. Louis and hourly minimum wage records from the U.S. Department of Labor from taxpolicycenter.org. I matched each state's minimum wage to its corresponding unemployment rate for the same time period.





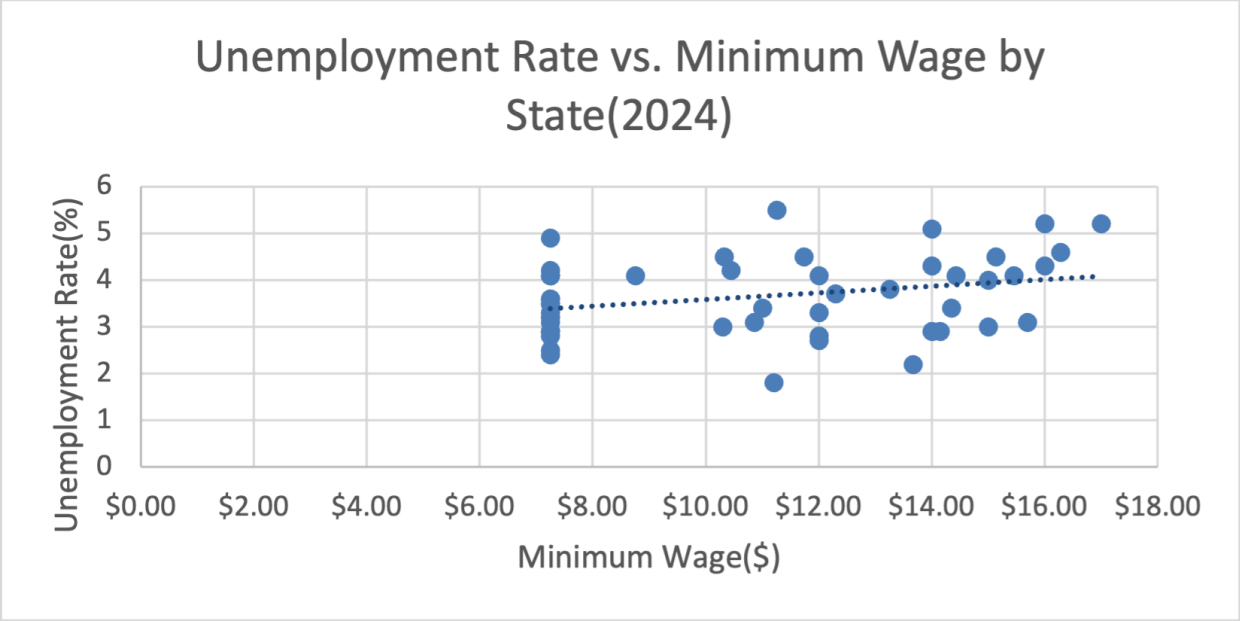
The distribution of unemployment rates across states in 2024 is moderately spread and roughly symmetric, with most states falling into the middle range. Only a small number of states are on the higher and lower ends. The distribution of minimum wage levels are also clustered, with most states concentrated around the federal minimum wage or slightly above it. This shows a right-skewed distribution, and produced a larger tail toward higher minimum wage values.Fewer states have significantly higher minimum wage levels, which shows that only a limited number of states adopted higher minimum wage policies.

Statistical Methods

To answer my central question, I used a regression model to examine if there is a relationship between a state's minimum wage level with its unemployment rate in 2024. The model predicts each state's unemployment rate using its minimum wage value:

$$\text{Unemployment\_Rate} = \beta 0 + \beta 1 \text{Minimum\_Wage} + \varepsilon$$

This figure shows the relationship between minimum wage levels and unemployment rates across states.



Due to both variables being measured in the same time period, the model does not use change variables, however the scatterplot still captures the variation across states in economic conditions and policy choices. I used robust standard errors to account for the chance that the variance in data might not be constant across the states, which helps make the results more reliable.

Results

For my simple linear model, I used the state minimum wage as the predictor and state's unemployment rate as the outcome. This is the regression equation that I formed:

$$\text{Unemployment\_Rate} = 2.864 + 0.0717 \times \text{Minimum\_Wage}$$

This equation tells us that for every one dollar increase in a state's minimum wage, the unemployment rate is expected to rise by about 0.0717 percentage points. The coefficient for minimum wage is statistically significant, as it's $p = 0.037$, which means that the positive

relationship that is shown on the scatter plot is unlikely to be due to random chance. Through the scatter plot visualization, it shows that states with higher minimum wages tend to have a slight increase in unemployment. Overall the model suggests that there is a small, but statistically significant association between minimum wage levels and unemployment.

Conclusion

My analysis suggests that there is a small, but statistically significant positive association between minimum wage levels and unemployment rate. While higher minimum wage levels are associated with slightly higher increases in unemployment, this indicates that other economic factors and policies likely play a larger role in shaping each state's unemployment rate.

Sources

- https://fred.stlouisfed.org/release/tables?rid=112&eid=1195039&od=2025-05-01#
- https://taxpolicycenter.org/sites/default/files/statistics/pdf/state_min_wage_rates_1.pdf