IMPACT OF MINIMUM WAGE POLICY ON EMPLOYMENT ACROSS U.S. STATES (2010–2020)

1. Background and Problem Statement

Over the past decade, debates around minimum wage increases in the United States have intensified. While proponents argue higher wages improve living standards, opponents suggest these policies may reduce employment, particularly for low-skilled workers. Policymakers require empirical evidence to assess these effects at the state level. This project investigates whether state-level minimum wage changes between 2010 and 2020 had a statistically significant impact on employment rates using panel econometric methods in Stata.

2. Objectives

- To evaluate the relationship between minimum wage levels and employment rates at the state level
- To control for state-specific and time-specific effects through a fixed-effects model
- To examine whether employment effects vary across different industry sectors
- To create an interactive summary report using graphs and regression outputs from Stata

3. Methodology

3.1 Data Collection

- **Time Frame:** 2010–2020
- **Unit of Observation:** 50 U.S. states over 11 years
- **Variables:**
    - Dependent Variable: Employment rate (%)
    - Main Independent Variable: Minimum wage (in USD)
    - Control Variables: GDP per capita, population density, industry employment shares, education levels
- **Data Sources:** U.S. Bureau of Labor Statistics, U.S. Census Bureau, Economic Policy Institute

3.2 Stata Commands and Models

- Panel setup: xtset state year
- Fixed-effects model:
- xtreg employment_rate min_wage gdp_per_capita pop_density edu_index, fe vce(cluster state)
- Sectoral analysis using interaction terms:
- xtreg employment_rate c.min_wage##i.industry_sector controls..., fe
- Hausman test to justify fixed-effects: hausman fe re
- Diagnostics:
    - Multicollinearity: vif
    - Autocorrelation: xtserial
    - Heteroskedasticity: xttest3

4. Key Features of the Stata Output

- Regression tables showing within-state effects of wage changes
- Year and state fixed-effects controlled to reduce bias from time trends or state policies
- Marginal effects of minimum wage by industry sector (hospitality, retail, manufacturing)
- Line graphs visualizing employment trends before and after minimum wage hikes
- Exported tables and plots integrated into a structured Word/PDF report

5. Results and Benefits

- States with large increases in minimum wage showed marginally lower employment growth in low-wage sectors
- Overall employment rate changes were not statistically significant across all sectors
- The fixed-effects model outperformed pooled OLS in both fit and explanatory power
- Diagnostic tests confirmed no severe violations of regression assumptions
- Visuals made results accessible for policymakers and non-technical stakeholders

6. Deliverables

- .do and .dta files used for the complete econometric analysis

- Econometric report in APA format with tables, graphs, and interpretations
- One-page executive summary of key policy implications
- Supplementary Excel file with cleaned dataset and summary stats for reuse

7. Stakeholder Relevance

Academic:

- Serves as an empirical case for labor economics and public policy courses
- Illustrates application of fixed-effects models and diagnostics in Stata

Corporate/Government:

- Useful for state labor departments and policy think tanks
- Can guide future wage legislation with evidence-backed employment forecasts