

Final Report: Tipping Point The Growing Divide Between Minimum Wage and Cost of Living

INFO 4310 Interactive Visualization Final Project

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Project Goals and Motivation

This project came from my personal interest in the gap between the federal minimum wage and what it really costs to live in the U.S. As a student who worked several minimum wage jobs in New York City, I've seen how hard it is to get by even with long hours. I balanced cashier shifts and weekend retail work while also keeping up with high school. No matter how carefully I budgeted, there never seemed to be enough to cover basics like food or transportation.

One thought that kept coming up while working on this project was how even in Ithaca, where I go to Cornell, a student working minimum wage wouldn't be able to afford rent. I've been lucky enough not to have to worry about rent personally, but it hit me that if I had to support myself, I'd be in real trouble. That made this project feel even more important. I wanted to build something interactive that showed how wide the gap is between wages and real living costs, especially for people working full time but still struggling.

Target Audience and Use Cases

This project is for a wide audience, but especially students, journalists, policy makers, and anyone interested in wage policy. It could help a student compare jobs across states, or an activist make a case for raising wages. It's also useful for people trying to understand family budgeting or economic conditions in different regions.

I wanted the project to be both educational and persuasive. It clearly shows that the federal minimum wage isn't enough anymore, and the visuals help people explore that issue themselves. It gives different perspectives depending on where someone lives and what kind of household they have.

Related Work and Inspiration

I was inspired by data stories from the New York Times. Projects like "Is It Better to Rent or Buy?" and "What the Tax Bill Would Look Like for 25000 Middle-Class Families" helped me think about how to blend visuals, writing, and interaction. I also looked at their maps and flood visualizations for layout ideas.

On the technical side, I took inspiration from class, and my previous homeworks. I knew I wanted to include a choropleth graph similar to the one I created in homework 2. I also took

inspiration from the movie ratings bar chart I made for homework 4. These helped shape my approach to building the choropleth map, bar chart, and pie chart.

Another key source of inspiration was the Economic Policy Institute's Minimum Wage Tracker. This website offers a simple but effective interactive map of the United States showing minimum wage rates by state. I appreciated how clearly it communicated the differences in policy across states and how easy it was to navigate. While the interface is more informational than exploratory, it helped me think about how to combine geographic comparisons with up-to-date policy data. I wanted to take that kind of clarity and build on it with more customization, deeper analysis, and personal relevance. The EPI site helped ground my thinking as I developed my own map and visuals.

Data Sources and Processing

I used the Economic Policy Institute's Minimum Wage Tracker and the MIT Living Wage Calculator as my main data sources. The minimum wage figures came from https://www.epi.org/minimum-wage-tracker/#/min_wage and the cost of living data came from <https://livingwage.mit.edu/>. I manually entered the projected 2025 minimum wages for each state based on current laws, inflation indexing, and policy updates available on these sites. For the living wage data, I pulled the hourly estimates for household types like single adult, single adult with one child, and two adults with two children directly from the MIT calculator and scaled them for 2025 using inflation trends. I chose to manually input the data myself because I couldn't really find up to date datasets on the web, most of them were at least a few years old.

To break down monthly expenses, I applied category weights based on the Consumer Price Index data published by the Bureau of Labor Statistics, which I sourced from <https://www.bls.gov/news.release/cpi.t01.htm>. I used the April 2025 CPI table to estimate the relative costs of housing, food, healthcare, transportation, and other necessities. I calculated monthly income using a 4.33 weeks/month conversion and applied household multipliers to model how costs scale across different family sizes.

Design Iterations

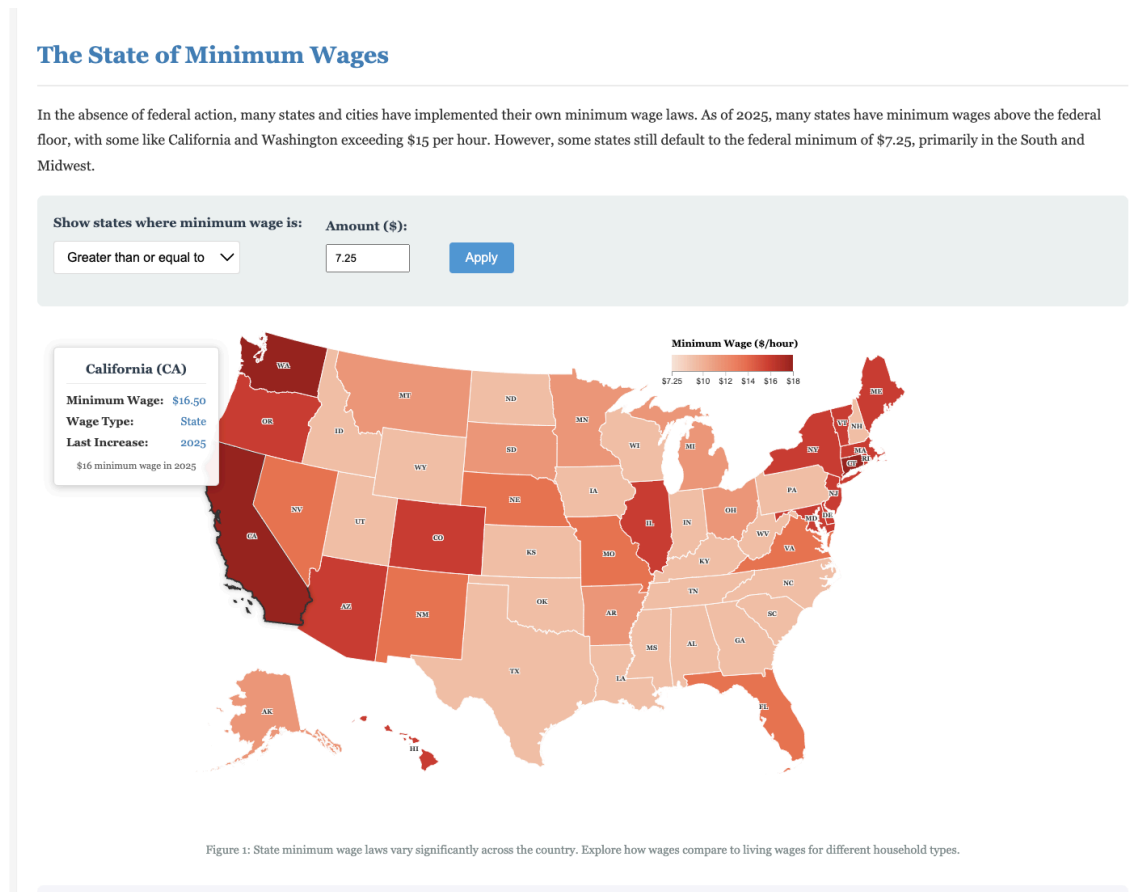
The first version of the map used basic colors and tooltips. After feedback, I added a sidebar that shows state details when clicked. I also added filters so users can highlight states based on their wage levels, making patterns easier to see.

At first, the bar chart only sorted by wage. Later, I added sorting by the gap between minimum wage and living wage, which helped tell the story better. I also added lines to mark the federal wage and the 15 dollar benchmark.

The calculator was the section I changed the most. I started with a bar chart for expenses but it didn't feel very personal. I switched to a pie chart and added a budget summary with surplus or deficit amounts. This part really hit home for me. I used to sit with sticky notes and spreadsheets late at night, trying to figure out if I could afford groceries. This calculator felt like a more polished version of that experience.

Final Design Decisions

The project has three main parts. First, a choropleth map shows the minimum wage in each state. States that use the federal minimum are the lightest color on the color scale and the darker the state indicates a higher minimum wage. Users can click to see more info and filter the map by specific wage thresholds. For instance you can set the filter to “Show states where minimum wage is Greater than 12.50” and only states that fulfill that criteria will be highlighted while the rest will be blank.



Show states where minimum wage is: Amount (\$):

Greater than or equal to

Apply

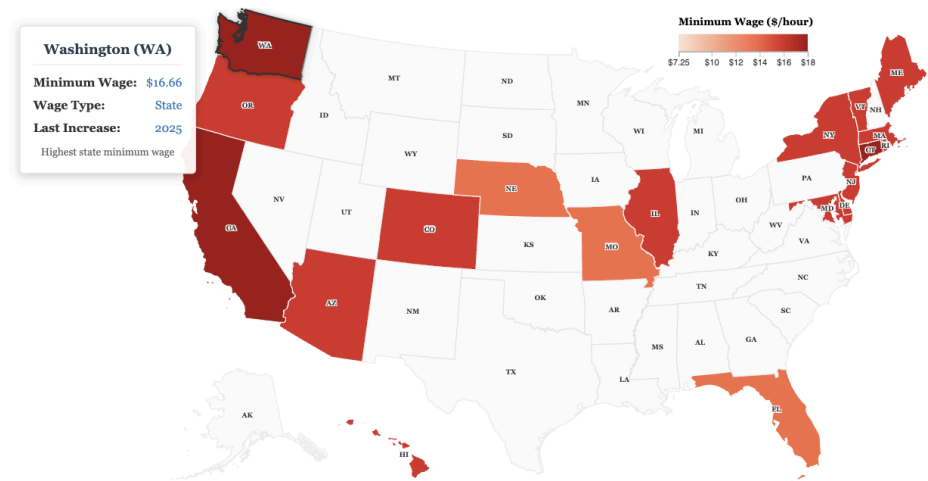
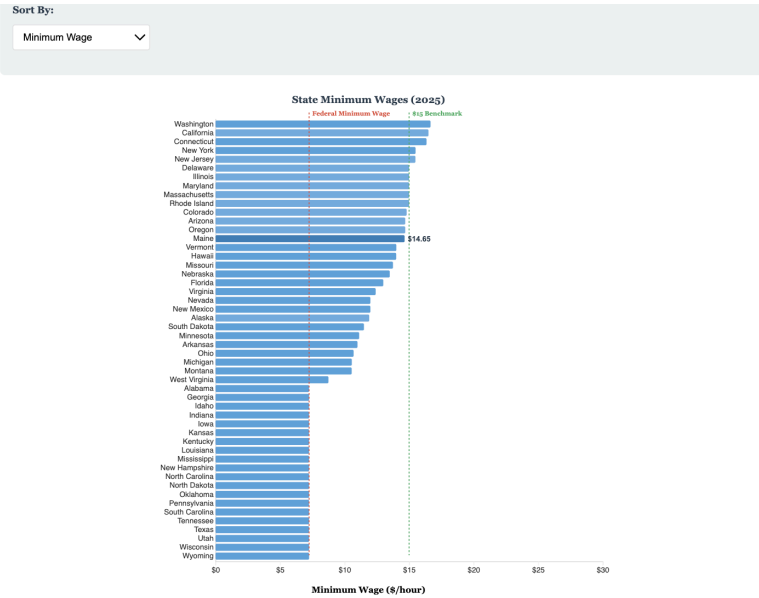


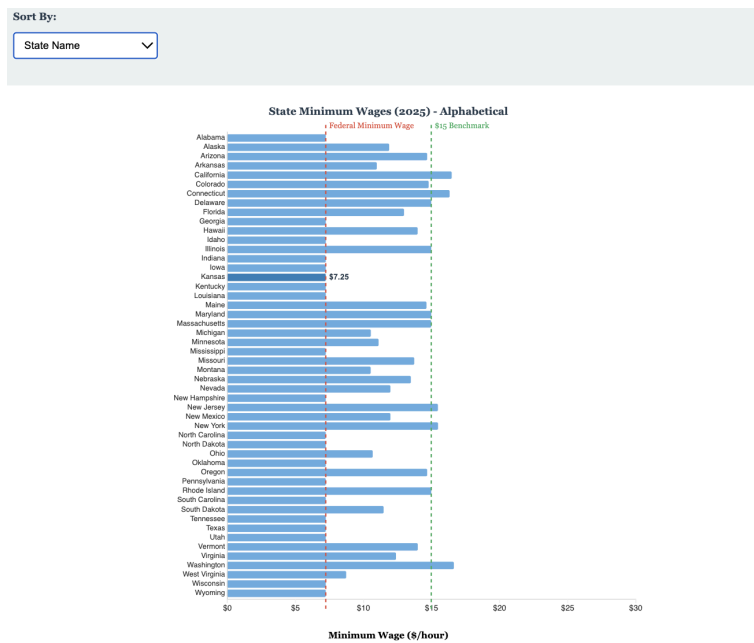
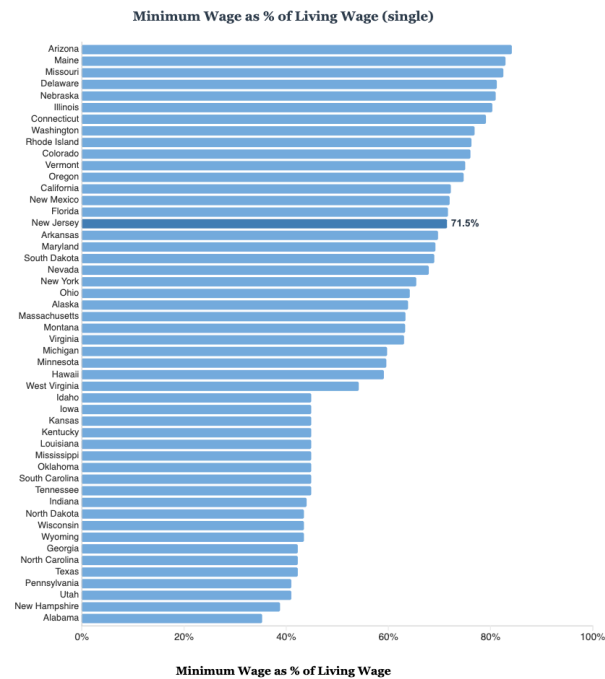
Figure 1: State minimum wage laws vary significantly across the country. Explore how wages compare to living wages for different household types.

Next, a bar chart compares all 50 states. Users can sort by wage, percent of living wage, or alphabetically. Two lines show the federal wage and the 15 dollar benchmark. Hovering over bars gives either the minimum wage value next to the respective highlighted bar or the percentage of the living wage if the bar chart was filtered by “gap from minimum wage”. And lastly I also added a filter where you can see the states with their minimum wage data in alphabetical order just in case a user wanted to locate their state easily from the y-axis.



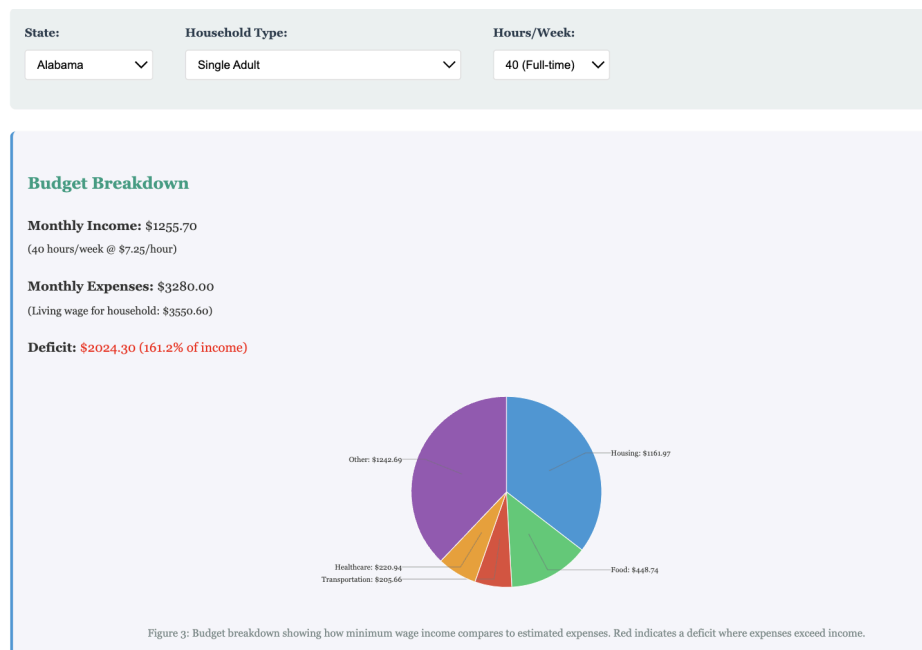
Sort By:

Gap from Living Wage



Last, there's a calculator. Users pick a state, household type, and work hours. It shows how much income that person or household would earn and compares it to typical expenses. A pie chart

shows the breakdown, and the tool tells you whether the household would run a surplus or be in a deficit.



I used D3.js for all the visuals and CSS for styling. Georgia is the main font to give it a more editorial feel, and Arial is used for chart labels.

While building this project, I had to make trade-offs between detail and simplicity. For the choropleth map, I chose a single continuous color scale to represent minimum wage levels. This made comparisons easy at a glance, but I gave up the chance to show more nuanced wage policy differences like tipped wages or regional exceptions. I also opted for state shapes over tile maps because I wanted to keep the geographic integrity, even though that meant some smaller states were harder to see.

For the bar chart, I used horizontal bars with sort options to let users compare states. The trade-off here was visual complexity. Adding multiple sort modes and lines for benchmarks made the chart more informative but risked overwhelming some users. I chose bar length as the main encoding because it's easy to compare and works well with sorting, but it meant I could not show secondary variables like cost of living directly in the same space.

The calculator relied on a pie chart to visualize expenses. Pie charts are not always the best for precise comparisons, but in this case, I picked it because it gives an emotional impact. Seeing a small sliver of leftover income or a huge red slice for deficit helped make the user feel the stakes more than just seeing numbers. I also included detailed budget numbers above the chart for clarity.

In terms of interaction, I focused on intuitive controls like dropdowns and filters rather than sliders or more advanced UI. This made the site easier to use and kept the experience lightweight, but it also limited how deeply users could customize the scenarios. I prioritized clarity and quick comparisons over full data flexibility.

Technical Implementation

The whole project runs in HTML, CSS, and JavaScript. The charts are built with D3.js. I used TopoJSON for the map data. Everything is rendered client-side with no need for a server.

The map uses a geoAlbersUsa projection and colors states based on wage. Clicking a state brings up more info. The bar chart uses linear and band scales, and the pie chart uses d3.pie and d3.arc. All labels and tooltips were built manually.

The project responds to user input using D3 event listeners. The map filters states dynamically, the bar chart updates when you change the sorting, and the calculator updates when you select different options.

Team Contributions

This was a solo project. I did everything from researching data to writing copy to coding the visuals. After showing a demo in class, I made updates based on feedback especially around chart labels, annotations, and also some of my functions weren't fully working correctly at the time so I fixed them all so that the math worked out in displaying the correct data.

In the end, working on this project taught me how to connect personal experiences with public data. I wanted it to be more than just a bunch of charts. I wanted it to help people feel the real-world effects of wage inequality. I learned how to keep things simple but still powerful, and how to use interaction to tell stories that matter. I hope this makes people think more seriously about how wages affect everyday life.

Citations

Economic Policy Institute. "Minimum Wage Tracker."

<https://www.epi.org/minimum-wage-tracker/>

<https://www.nytimes.com/interactive/2024/upshot/buy-rent-calculator.html>

<https://www.nytimes.com/interactive/2017/11/28/upshot/what-the-tax-bill-would-look-like-for-25000-middle-class-families.html>

MIT Living Wage Calculator. <https://livingwage.mit.edu/>

Bureau of Labor Statistics. "Consumer Price Index, April 2025." <https://www.bls.gov/cpi/>

Cost-of-living disparities within states complicate minimum-wage debate
https://www.pewresearch.org/short-reads/2016/04/07/cost-of-living-disparities-within-states-complicate-minimum-wage-debate/?utm_source=chatgpt.com