Childcare Analysis

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Data & Analysis

The dataset contains insights into childcare costs at the county and state levels. The core of my analysis will focus on how childcare expenses are influenced by local economic and demographic conditions. I'll specifically investigate if there's a link between high childcare costs and certain economic indicators.

Key Questions to Address:

- **Financial Strain:** How much of a family's income is consumed by childcare costs? I'll show how this "**disproportionate share**" of income makes childcare a major financial stressor.

- **Economic Indicators:** Is there a relationship between a county's **unemployment rate** and the cost of childcare?

- **Single-Parent Households:** I'll test the hypothesis that single-parent households bear a higher financial burden from childcare costs, especially those with lower incomes.

Analysis Finding

- Throughout the research of this project, I've found that Top 10 and Bottom 10 States with the composite of disparity cost index (CDCI). The CDCI is a metric used to rank states based on the severity of two combined financial burns: economic hardship and childcare expense. The CDCI is not a simple average; it's a multiplicative index that penalizes states where both problems are significant.
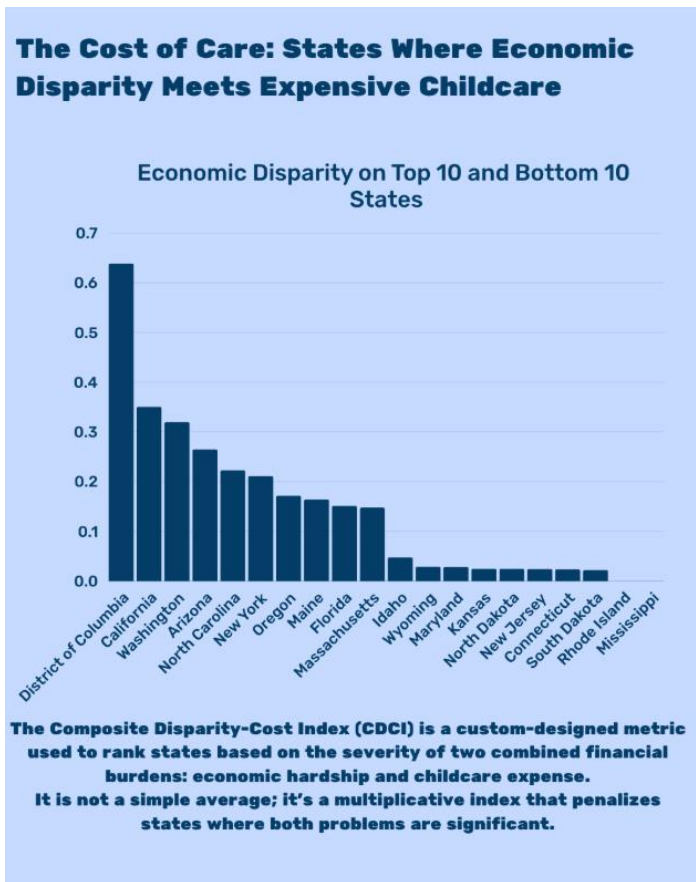
- Top 10 by CDCI (Higher to lower): District of Columbia, California, Washington, Arizona, North Carolina, New York, Oregon, Maine, Florida, and Massachusetts.

- Bottom 10 by CDCI (Higher to lower): Idaho, Wyoming, Maryland, New Jersey, Connecticut, South Dakota, Rhode Island, and Mississippi.

- Another finding was the national average weekly childcare cost by age group. The most expensive age groups are infants, followed by toddlers, then preschoolers. The histograph shows the cost of childcare increasing every year and has only decreased once in 2016.

Items that still need clarification

The medium for the dashboard still requires more work. The dashboard so far has a histogram for childcare prices and toggle option to display the different age groups. I created another bar chart that shows the weekly cost of childcare by state in 2018. I plan to incorporate this or version of it with the dashboard.

Infographic

The central goal of this infographic was to clearly communicate the **economic disparity concerning expensive childcare** across the top and bottom 10 states. To ensure readers accurately interpret the metric, I included a **clear description of the Composite Disparity-Cost Index (CDCI)** at the bottom, emphasizing that it is a multiplicative index—not a simple average—to rank combined financial burden. Visually, I aimed for readability by using a **light blue background** with high-contrast **darker blue text and bars**. I intentionally added generous white space around the main title, chart title, and CDCI definition to maintain visual hierarchy and prevent clutter.

PowerPoint

PowerPoint Goal: To demonstrate the increasing financial pressure placed on U.S. families by rising childcare costs, identify the states where this pressure is most acute, and explain the deep policy implications of this disparity.

Dashboard

The time series analysis reveals a clear and concerning **upward trend** in the national average weekly price of center-based childcare across all age groups from **2008 to 2018**.

- A consistent hierarchy of cost is maintained throughout the decade, with **Infant** care being the most expensive, followed by **Toddler** care, and then **Preschool** care. The cost of childcare continues to increase year by year. This trend underscores the highest financial burden placed on families with the youngest children. For design choices I've decided on blue color for infants, orange for toddlers and green for preschool. This selection of blue, orange, and green is effective because the colors are **visually distinct** (not easily confused with each other), are **easy on the eyes.**

Ethical Considerations

The analysis relies on a public dataset from the U.S. Department of Labor, which simplifies certain legal and regulatory concerns, but still require the analysis to represent the data in fair way for user interpretation.

- **Limited Data Manipulation: The** primary cleaning step involved **removing rows with null values** for childcare costs. This ensures that the visualizations are based only on valid, measurable price points, thereby maintaining the integrity and accuracy of the displayed metrics.

Risk of Misinterpretation (Key Ethical Focus)

The main ethical consideration revolves around the complexity of the core data points:

- **Clarifying the Childcare Cost Data Index (CDCI):** A significant risk is that end-users may **mistake the CDCI values for a simple average**, which could lead to flawed policy or personal financial decisions.

- **Mitigation Strategy:** The decision to dedicate specific sections in the infographic and PowerPoint to detailing that the CDCI is not a simple average but emphasizing that it is a multiplicative index—not a simple average—to rank combined financial burden.

Lesson Learned

The most valuable takeaway from this project was the realization that data analysis extends far beyond computation and visualization within a single environment like JupyterLab. My core learning centered on different **communication mediums** and tailoring visualizations to suit each format. I delved into using canvas to create and explore different mediums.

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