The Socioeconomic Consequences of Abortion Restrictions

Emma Huizenga

CMSE 201 Section 006

Question ☆

- Since the annulment of reproductive rights in 2022, the United States has witnessed a significant divergence in abortion policies across states
- This policy fragmentation presents a unique opportunity to examine the broader implications of abortion access, particularly concerning women's economic participation and state-level economic performance
- This leads to the question:
- How does abortion access impact women's workforce participation and a state's economy?

Data and Algorithm Contextualization ❃

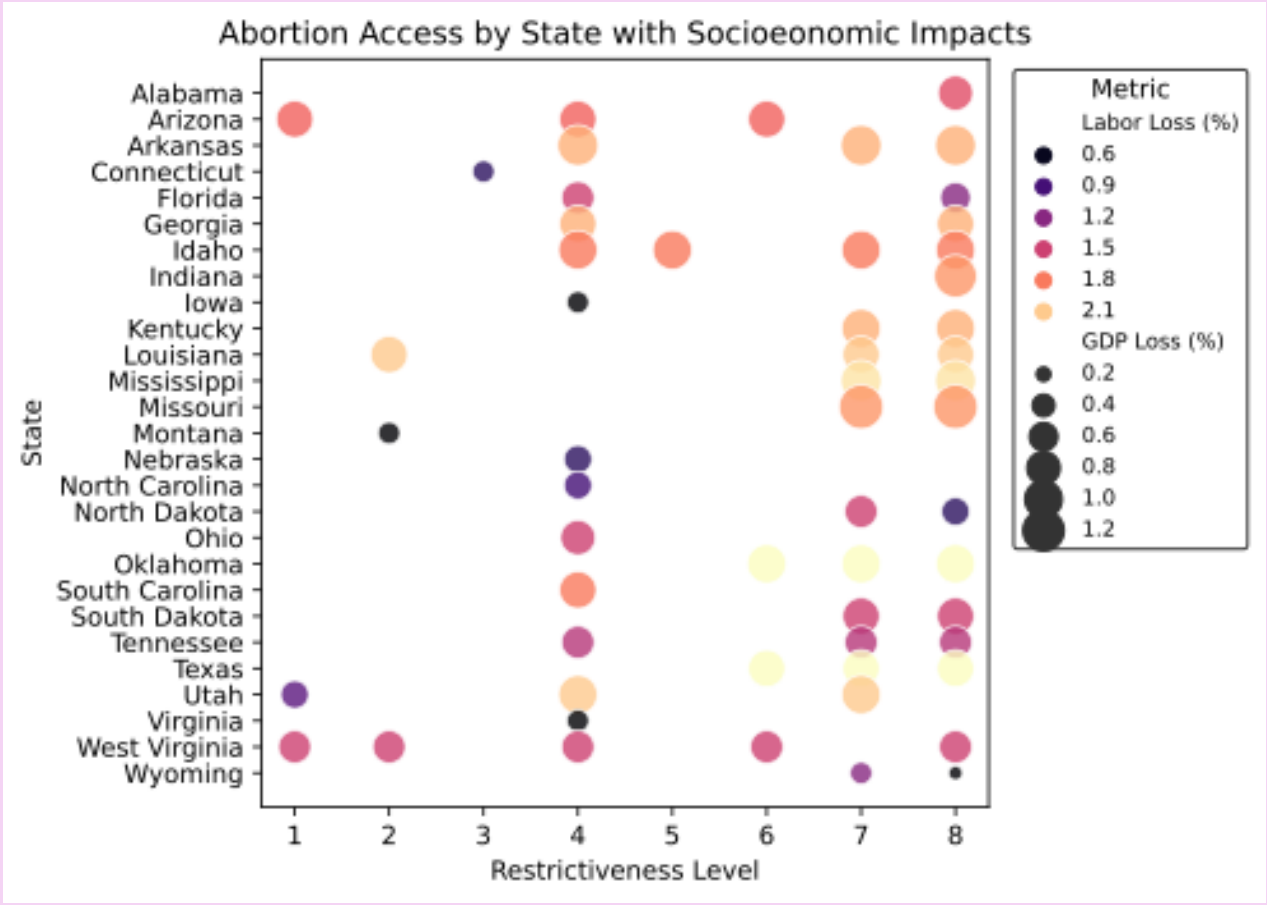
- Utilized data from the Institute for Women's Policy Research (IWPR)
  - Average annual economic loss as a percentage of state GDP
  - Average annual loss in labor force participation among women aged 15–44
- Abortion policy data was accessed through Michigan State University's Institute for Public Policy and Social Research (IPPSR)
  - Organized as a binary-coded, state-year panel dataset with 8 different categories
- Employed a curve-fitting model to examine the relationship between the two variables
  - Assumes that abortion restrictions have measurable economic effects and that these effects are captured adequately by the available data I will be using from 2022 and 2023
  - Assumes that other economic or social policies remain relatively stable or exert minimal influence on the outcomes being studied

Exponential Model☆

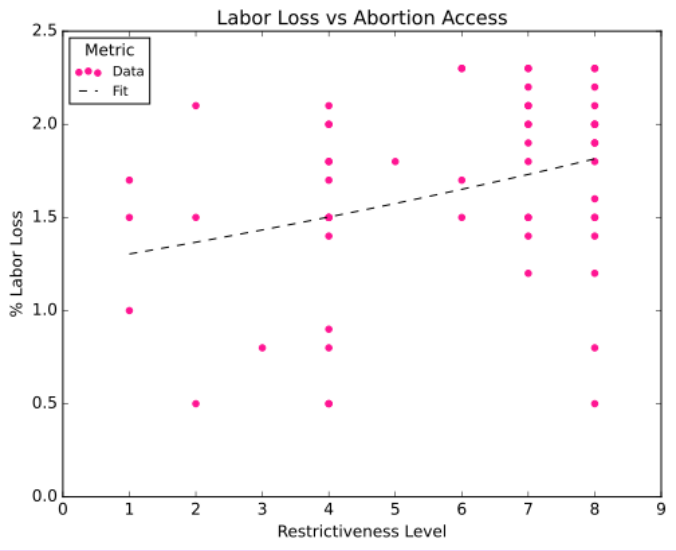
- I selected an **exponential model** because I thought it could best capture the observed pattern in the data
- This choice reflects the assumption that more severe restrictions may lead to disproportionately large economic impacts
- $y = a \times e^{bx}$
- Where:
  - y represents the socioeconomic outcome (either labor force loss or GDP loss),
  - x is the abortion restrictiveness score,
  - a is the baseline value (i.e., the expected outcome when x = 0),
  - b reflects the rate at which the outcome changes as restrictiveness increases

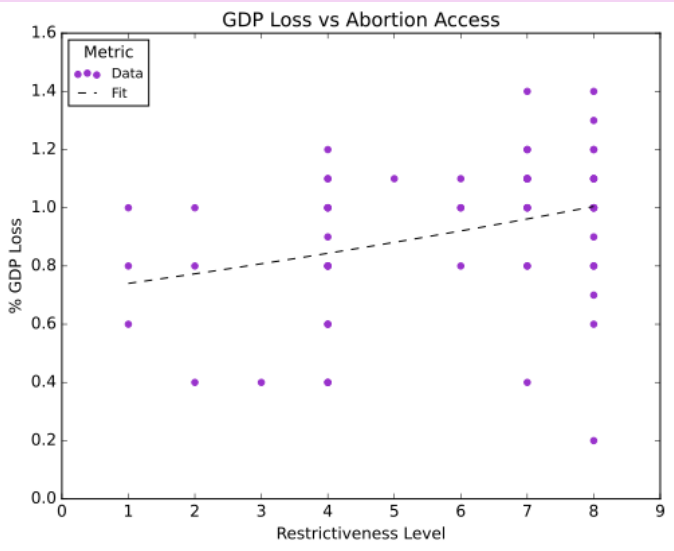
Computational Techniques ❀

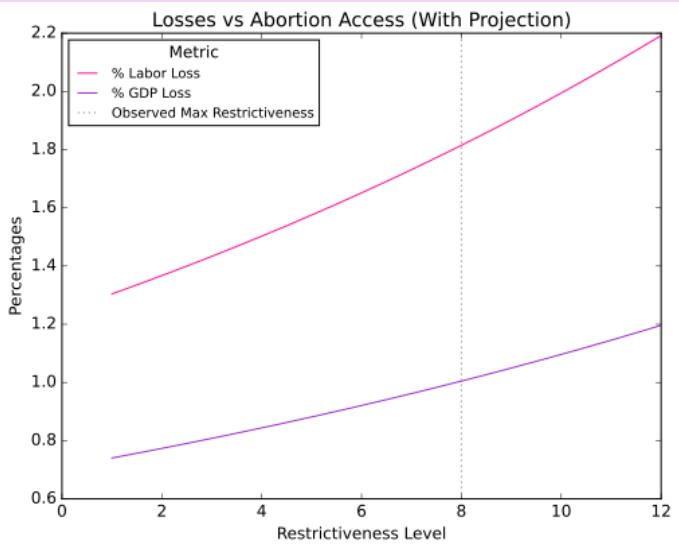
- Data cleaning and preparation:
  - Imported and merged two datasets (socioeconomic and abortion policy data)
  - Filtered out states that didn't pass abortion-related laws in the relevant years
  - Created a new variable called "restrictiveness_score" to quantify the severity of abortion bans on an ordinal scale
- Data visualization:
  - Created a scatterplot using color and size to show labor force loss and GDP loss in relation to restriction severity
- Model fitting (curve fitting):
  - Used curve_fit() function from SciPy to apply an exponential model to the data
  - Model took the form: $y = a \times e^{bx}$, where x is the restrictiveness score, and y is either labor force or GDP loss
  - Extracted fitted parameters a and b, and generated fitted curves
- Model evaluation:
  - Computed R^2 values to evaluate how well the exponential curve fit the actual data, helping assess model performance and robustness



Results ✳







- The models showed a modest upward trend, with fitted parameters suggesting that as abortion restrictions increase, associated economic costs also rise, though at a gradual rate
- Around 10.5% of the variation in labor force loss across states is explained by the restrictiveness of their abortion laws
- Around 10.4% of the variation in GDP loss across states is explained by the restrictiveness of their abortion laws
- These results can translate to substantial numbers of affected women or millions of dollars in lost productivity
- Projections can show long-term consequences of increasingly restrictive abortion policies on the labor market and state economic losses