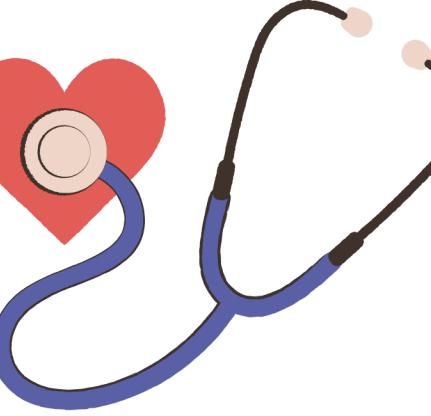


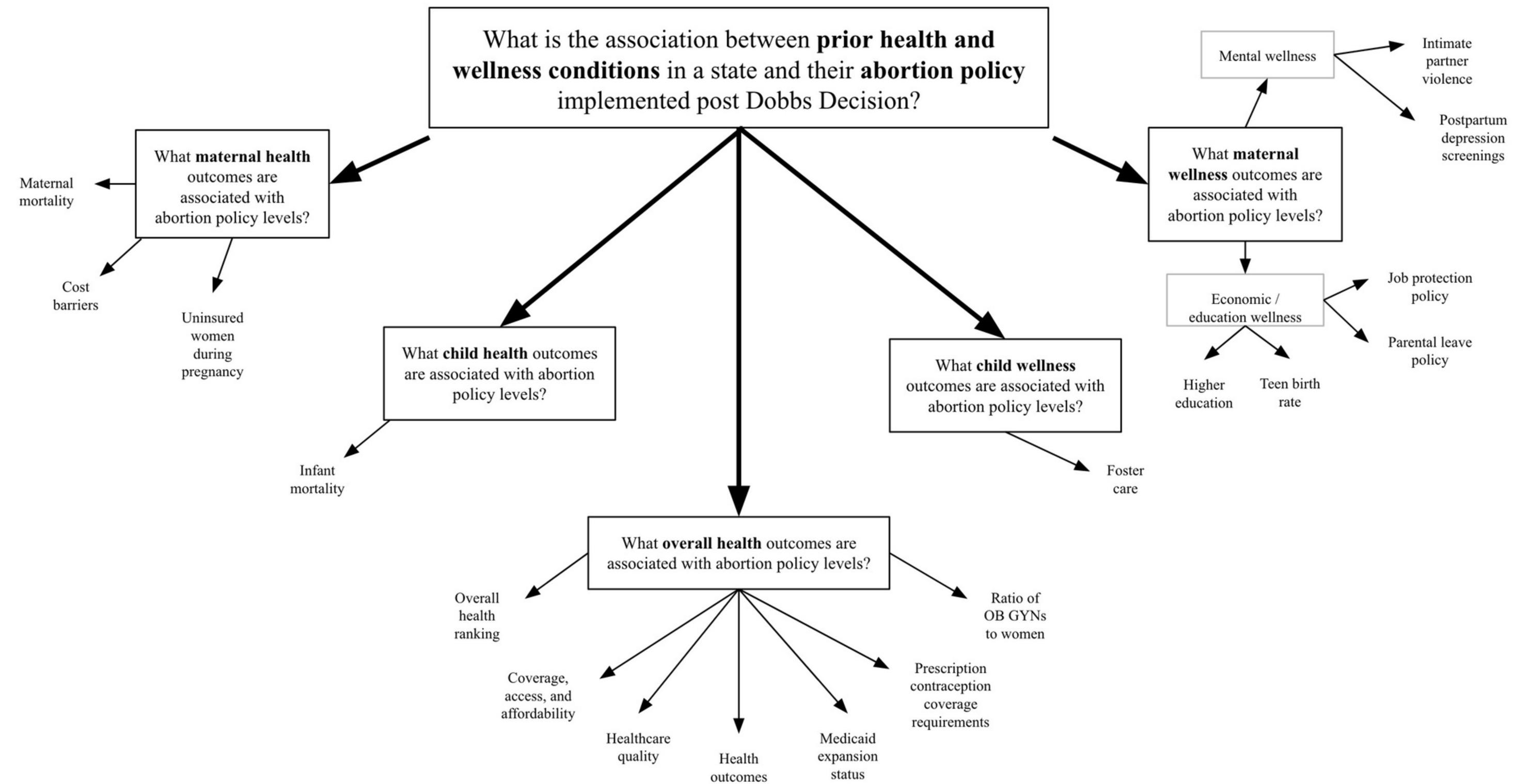
# ABORTION POLICY AND HEALTH / WELLNESS

KRISTIN LLOYD, VIVIANA LUCCIOLI, COURTNEY GREEN,  
JOSHUA LIN, SAM SOFMAN

DSAN 5100: PROBABILISTIC MODELING & STATISTICAL COMPUTING  
DECEMBER 5TH, 2024



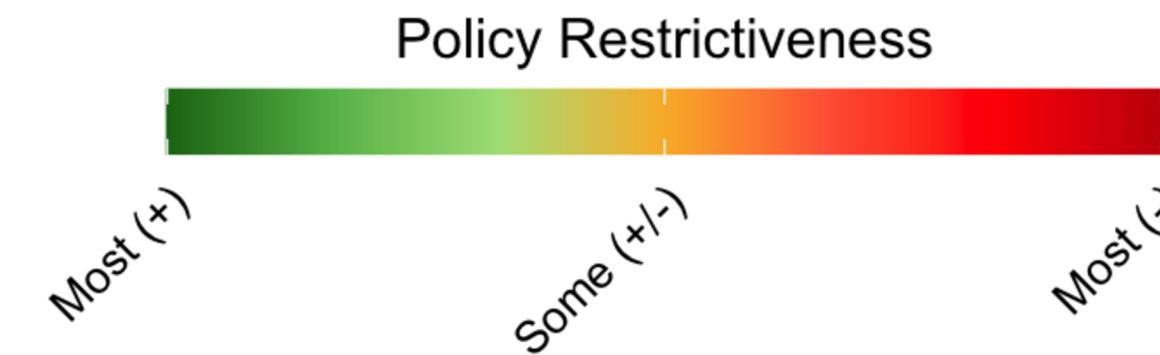
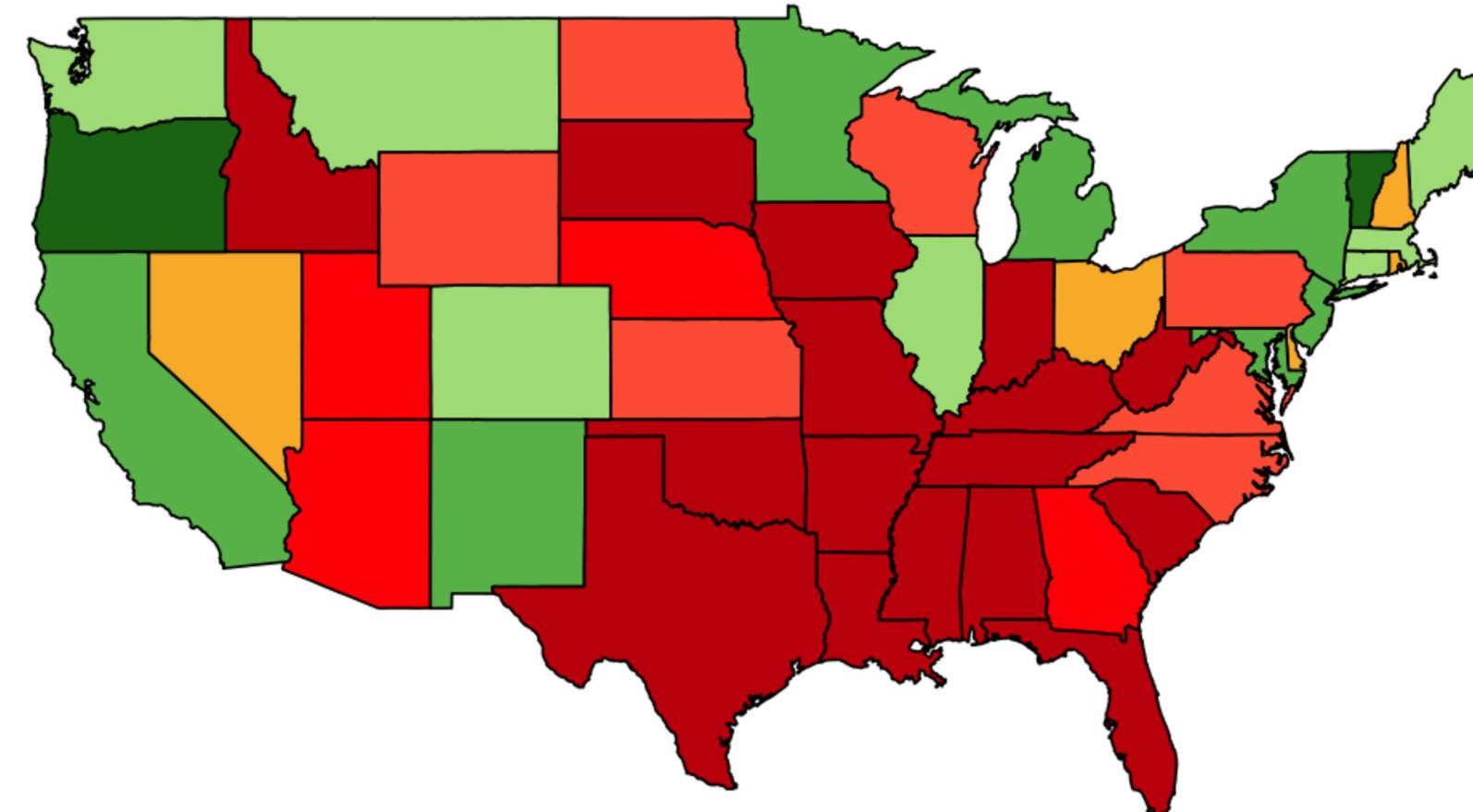
# Introduction



# Restrictions / Protections Regarding Abortion

## Abortion Policies by State (USA) 2023

States categorized by level of restrictiveness



Abortion Policies Across U.S. States (2023)  
States categorized by level of policy restrictiveness



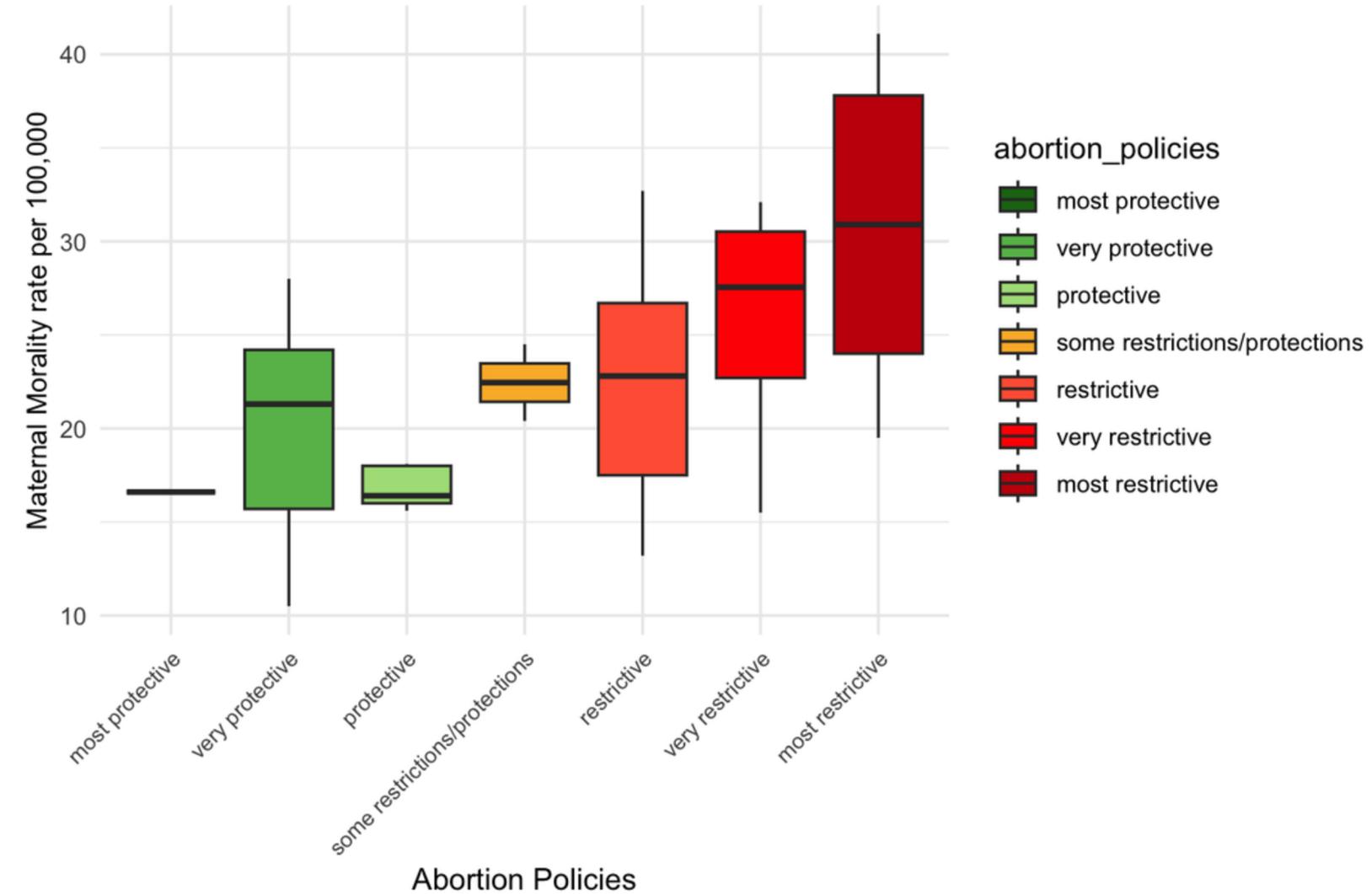


# Maternal Health



# Maternal Mortality

## Maternal Mortality Rate by Abortion Policy



- Permutation test p-val: 0.0067
  - Null Hypothesis: There is no relationship between MMRs and abortion policy categories
  - Alternative Hypothesis: There is a relationship between MMRs and abortion policy categories
- Kruskal-Wallis test p-val: 0.01516
  - Null Hypothesis: Distributions of MMRs are identical across all abortion policy categories
  - Alternative Hypothesis: At least one abortion policy category has a different distribution of MMRs compared to others



# Women without care/insurance



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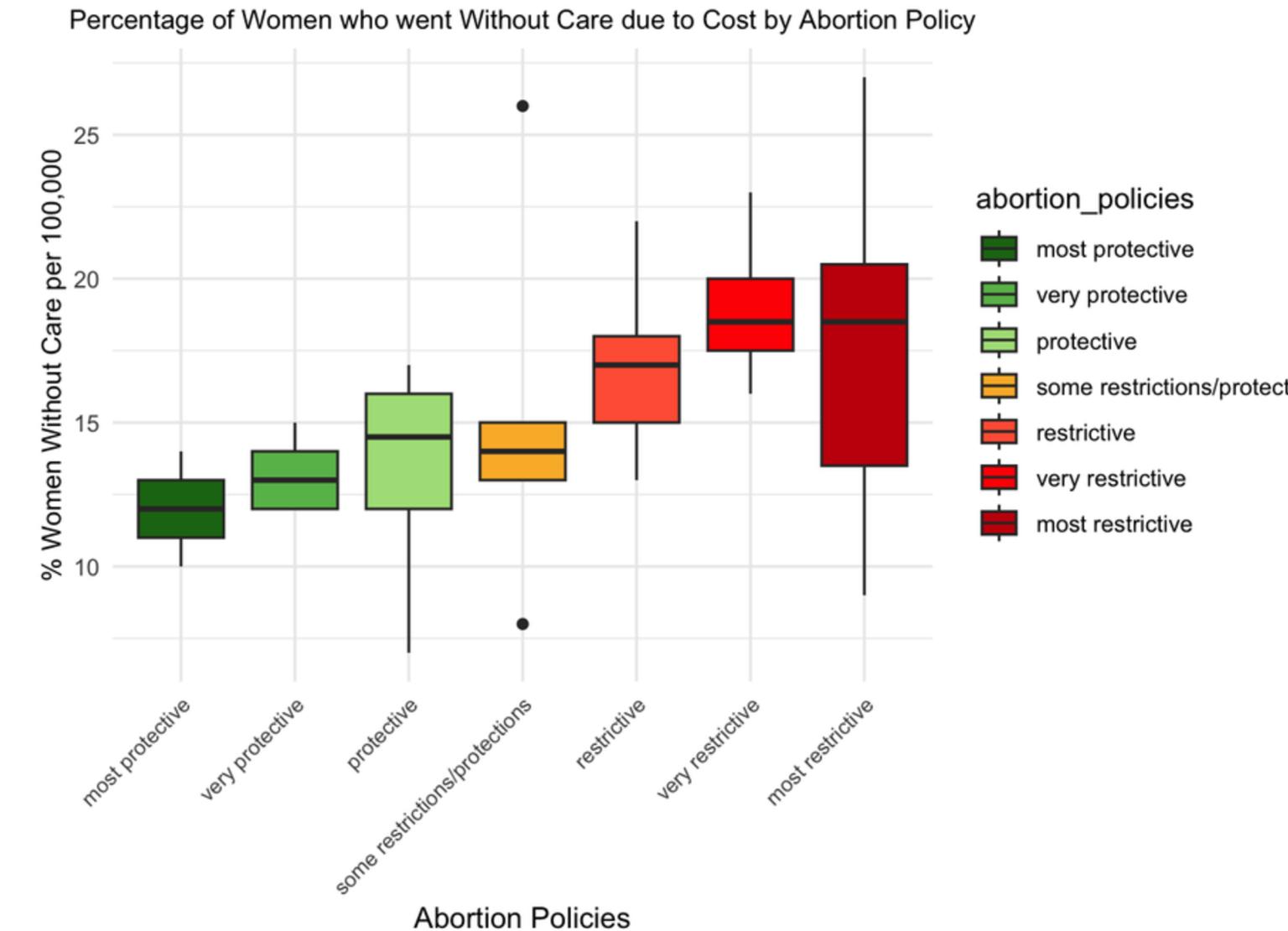
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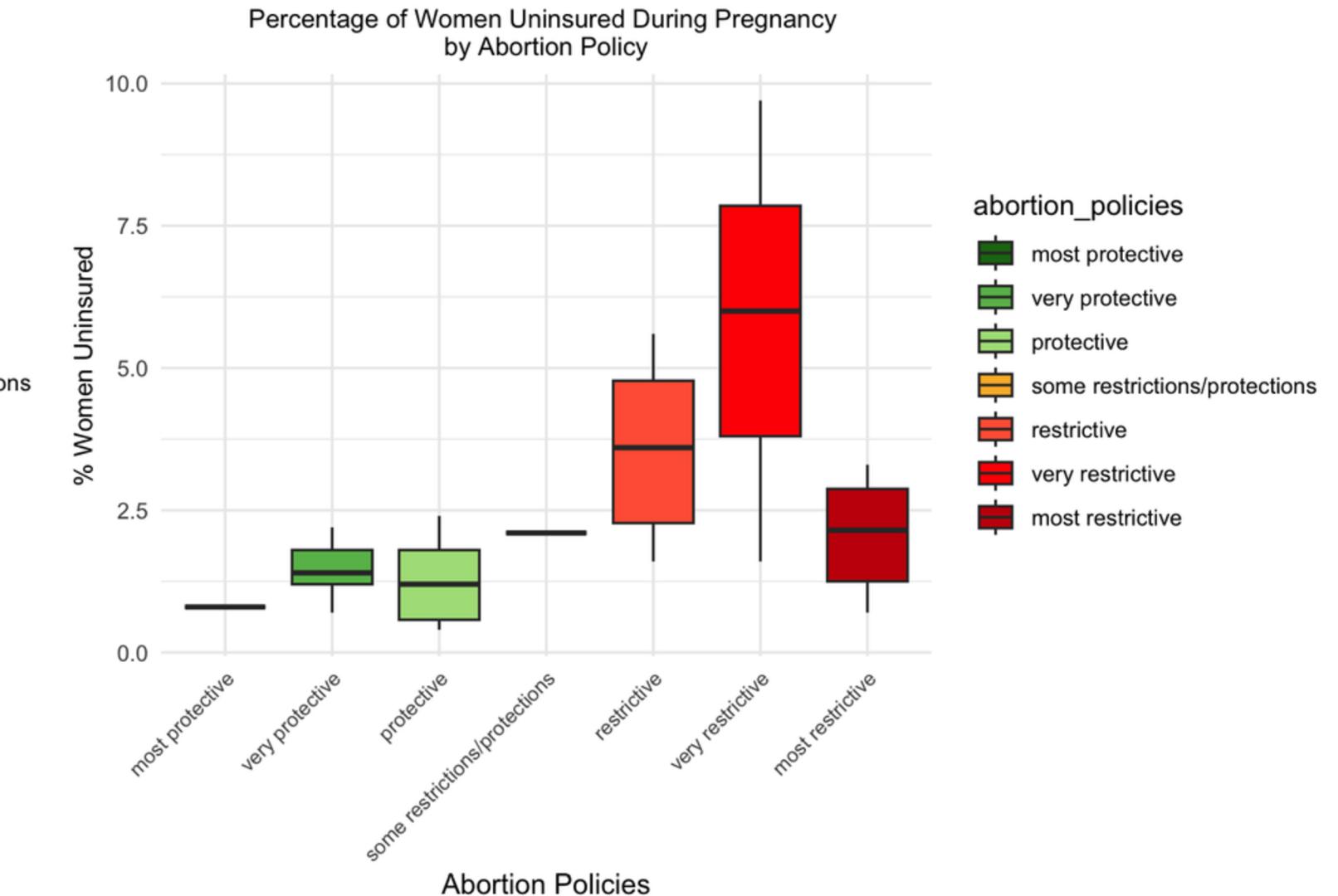
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- Permutation test p-val: 0.0496
- Kruskal-Wallis p-val: 0.02916



- Permutation test p-val: 0.0252  
Kruskal-Wallis p-val: 0.03475

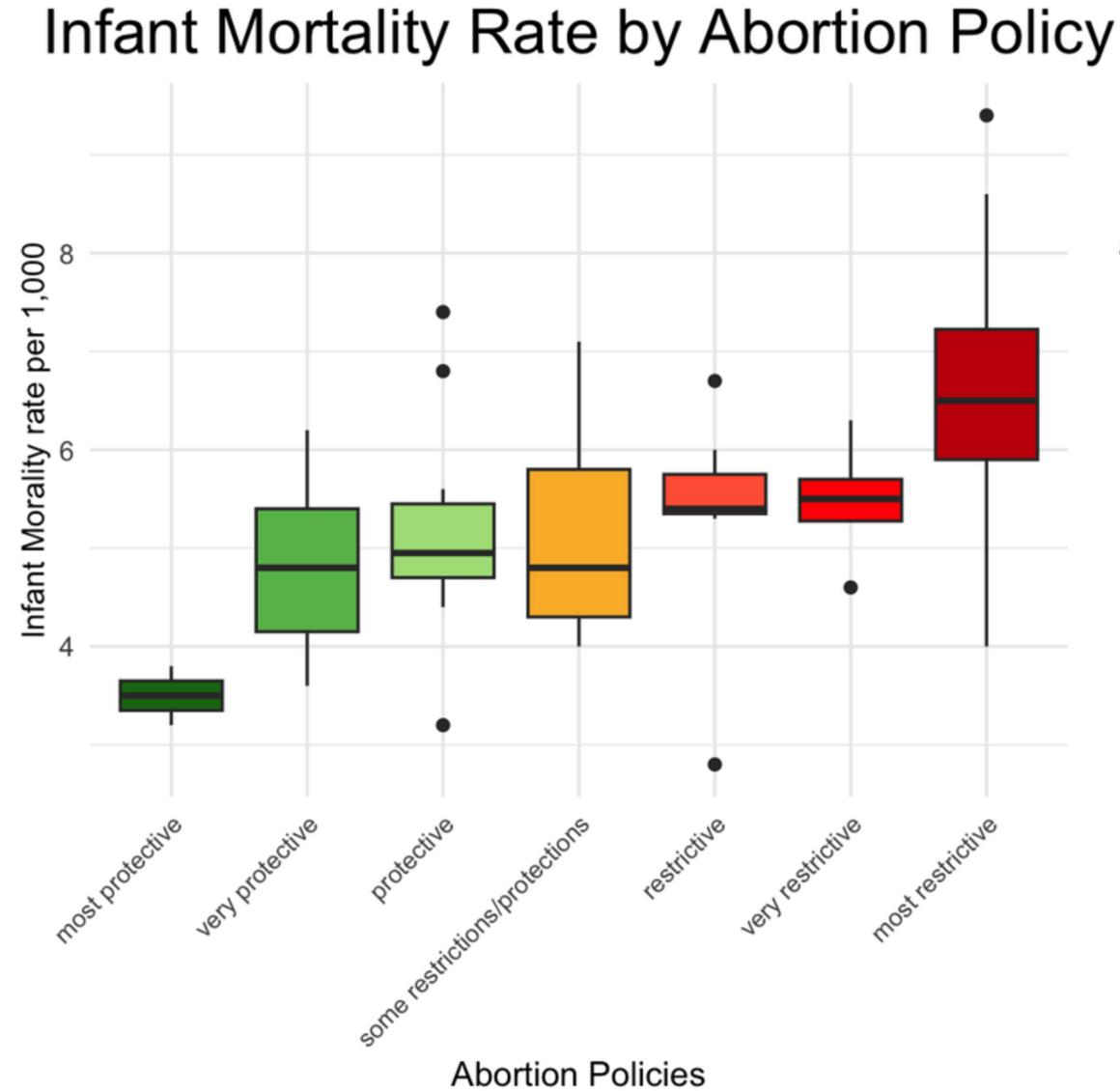
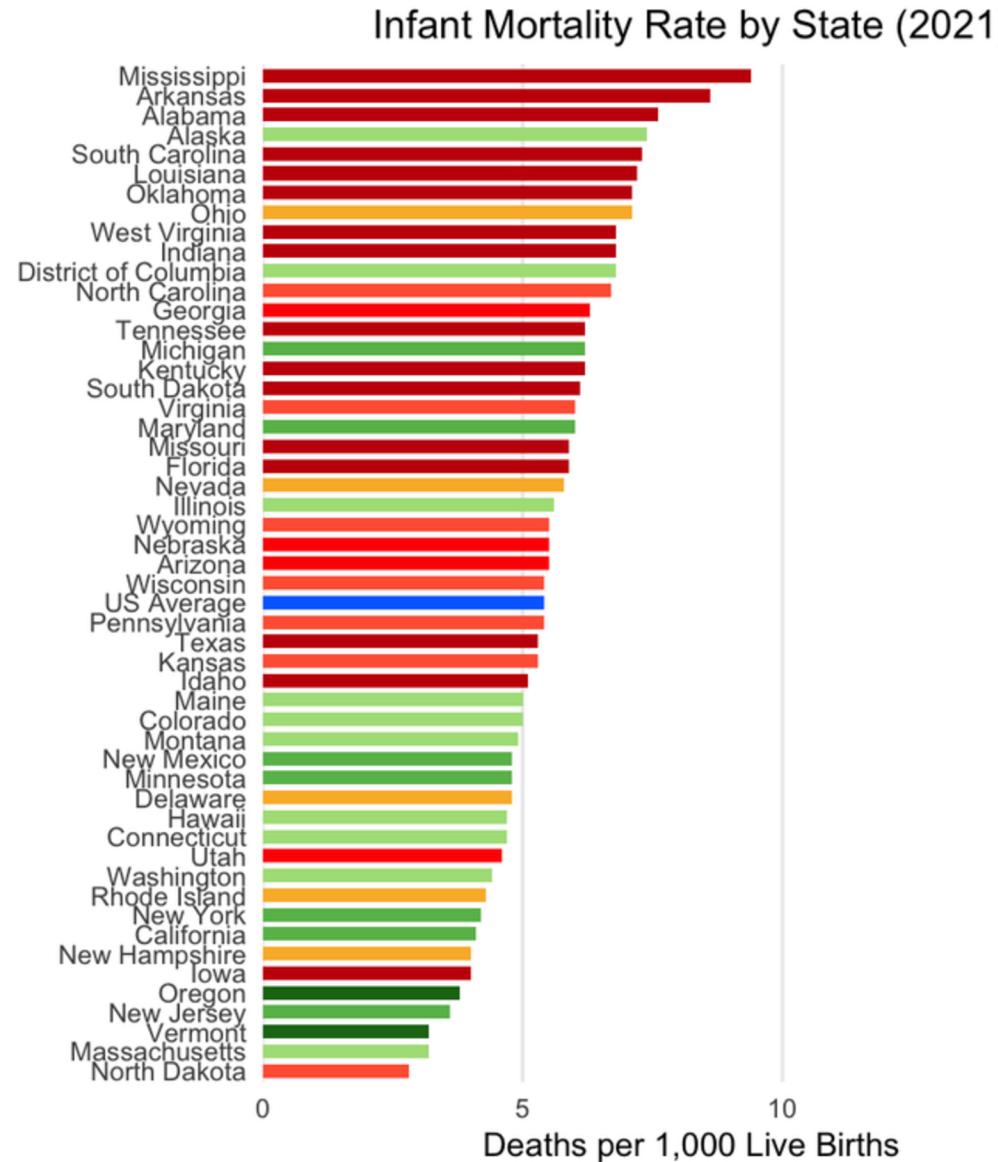


# Child Health





# Infant Mortality



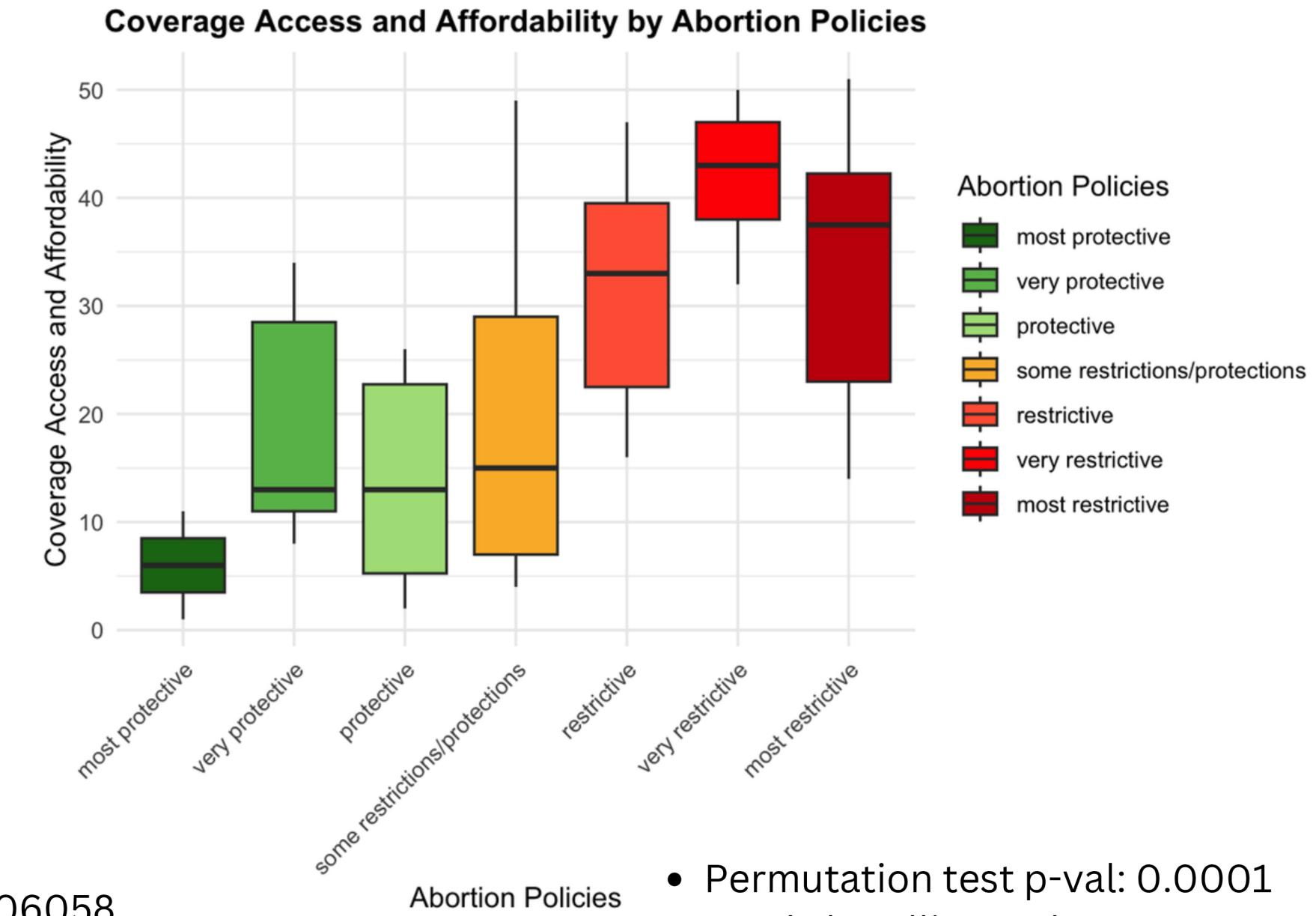
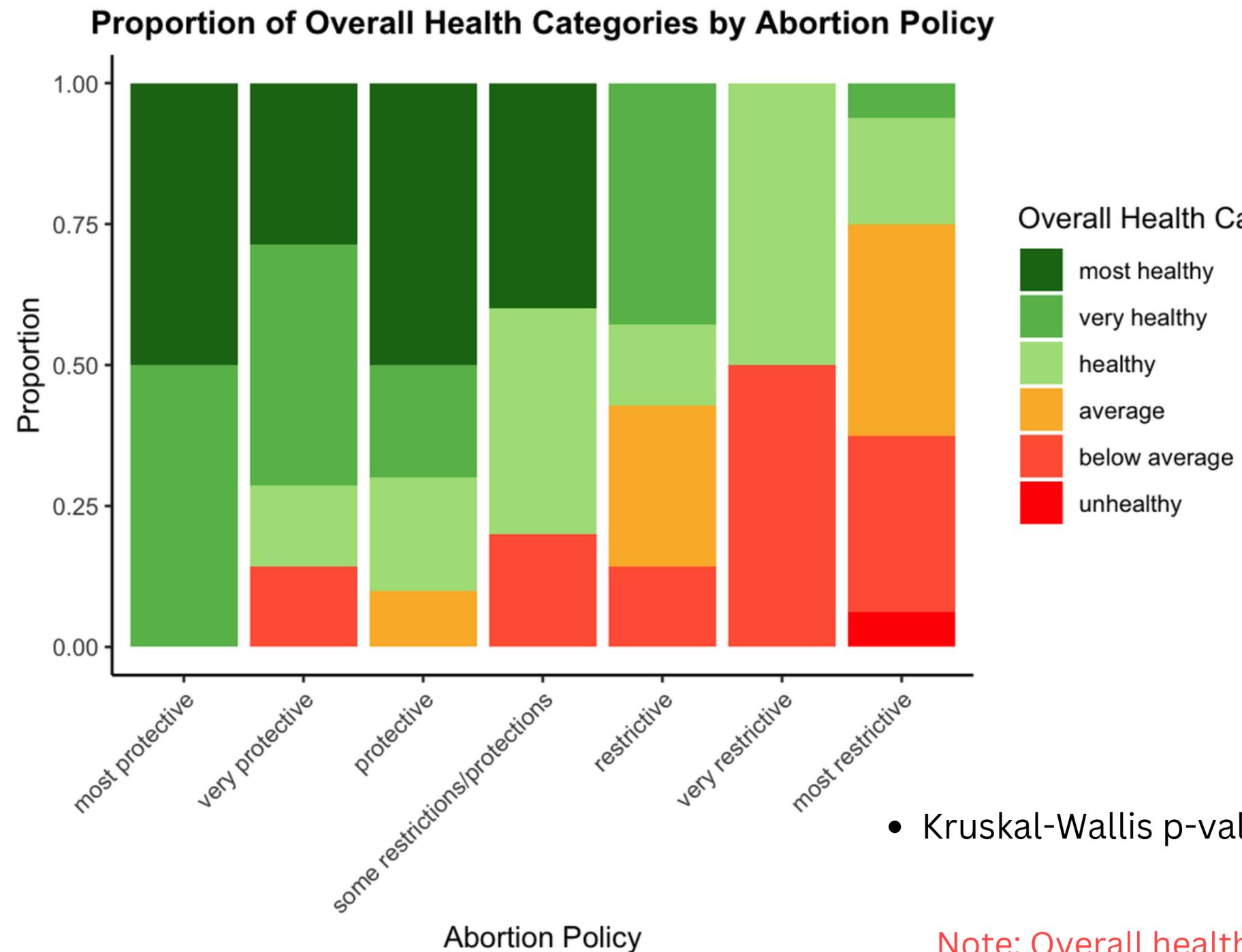
- Permutation test p-val: 0.0048
- Kruskal-Wallis p-val: 0.009246



# Overall Health



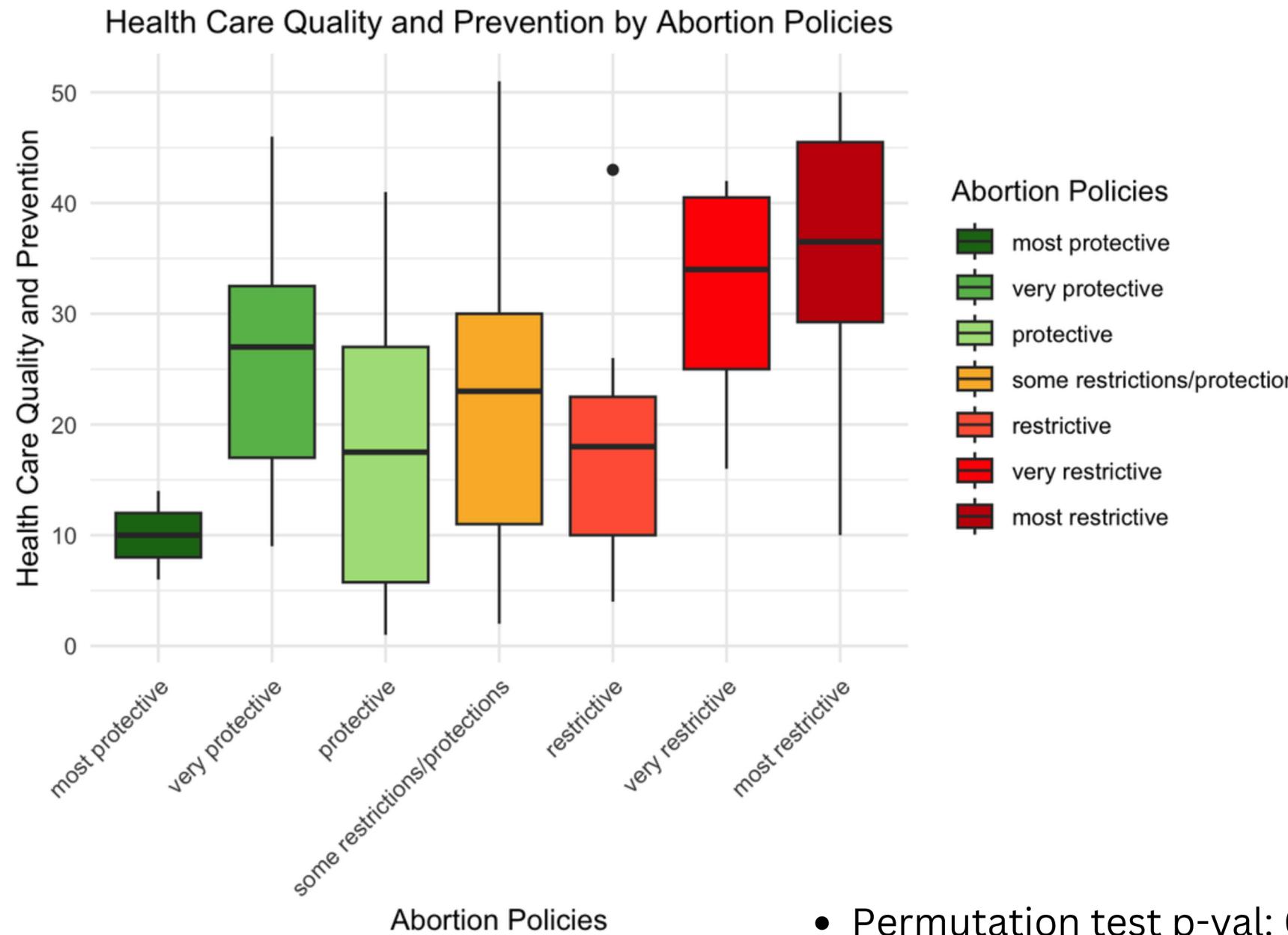
# Overall Health



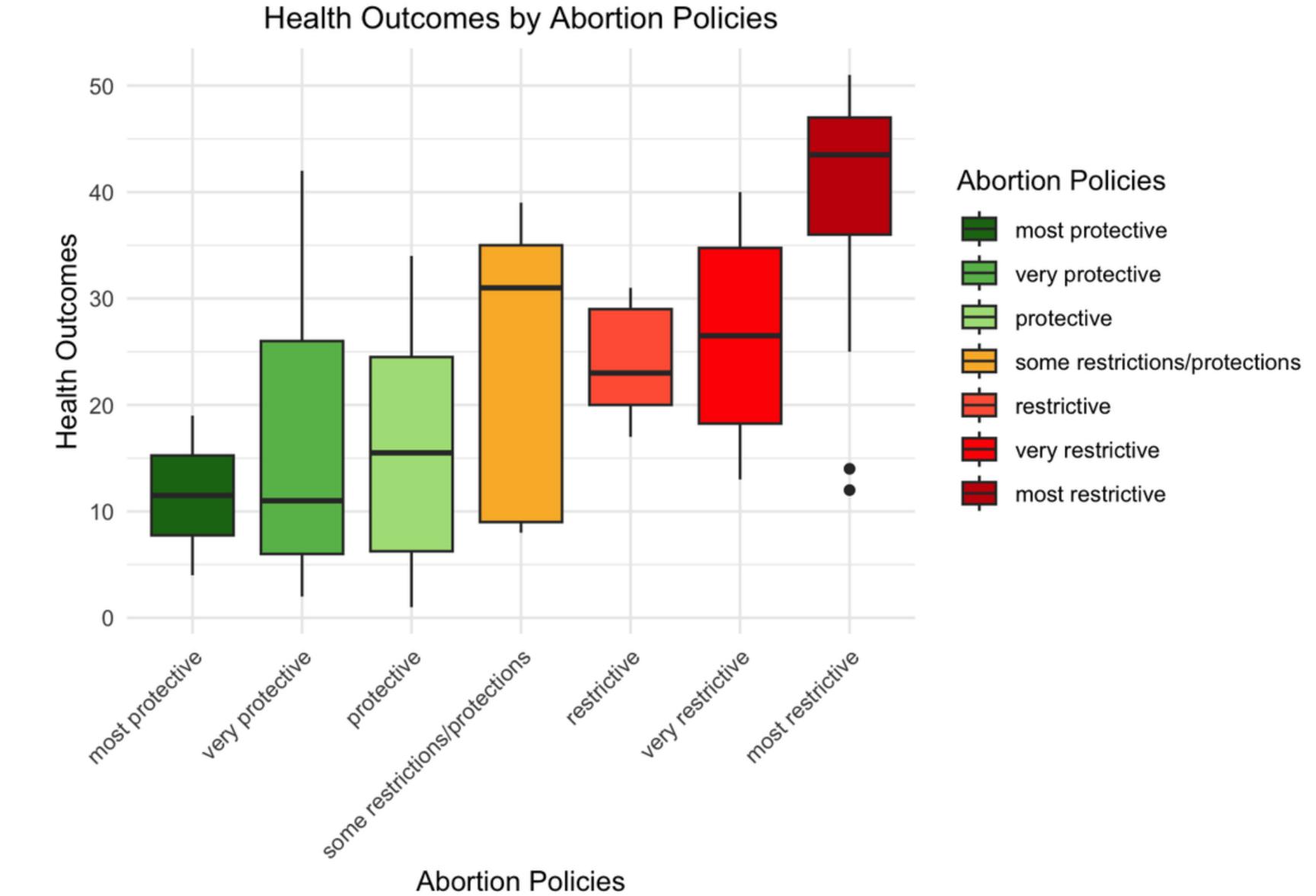
Note: Overall health ranked variables are where 1 is the best and, 51 is the worst. Lower values in boxplots indicate better outcomes and vice versa.

- Permutation test p-val: 0.0001
- Kruskal-Wallis p-val: 0.0009489

# Healthcare Quality & Health Outcomes



- Permutation test p-val: 0.0186
- Kruskal-Wallis p-val: 0.02865



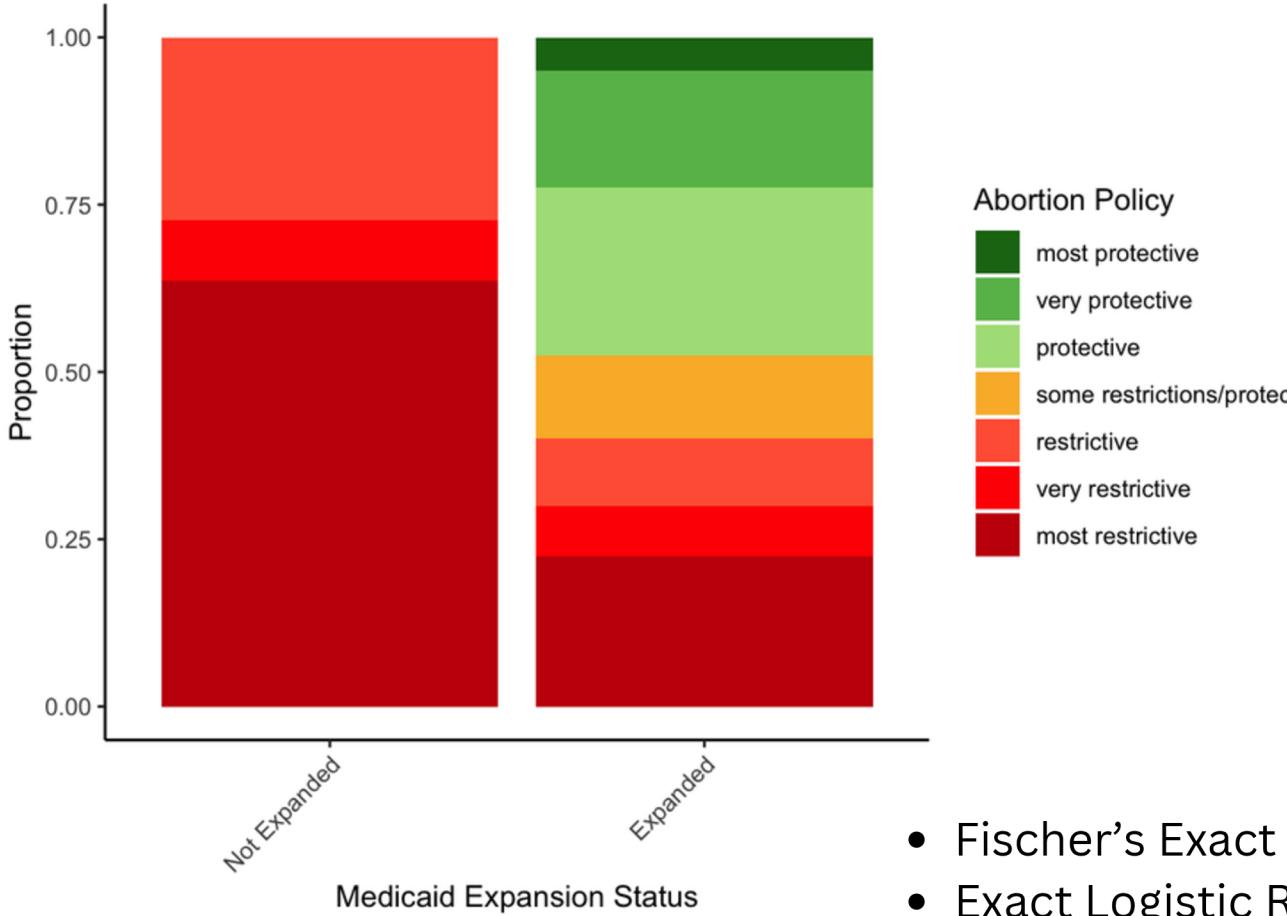
- Permutation test p-val: 0.0002
- Kruskal-Wallis p-val: 0.00139

- Very restrictive and most restrictive states have worse healthcare quality and prevention
- States with restrictions have worse health outcomes than states without restrictions

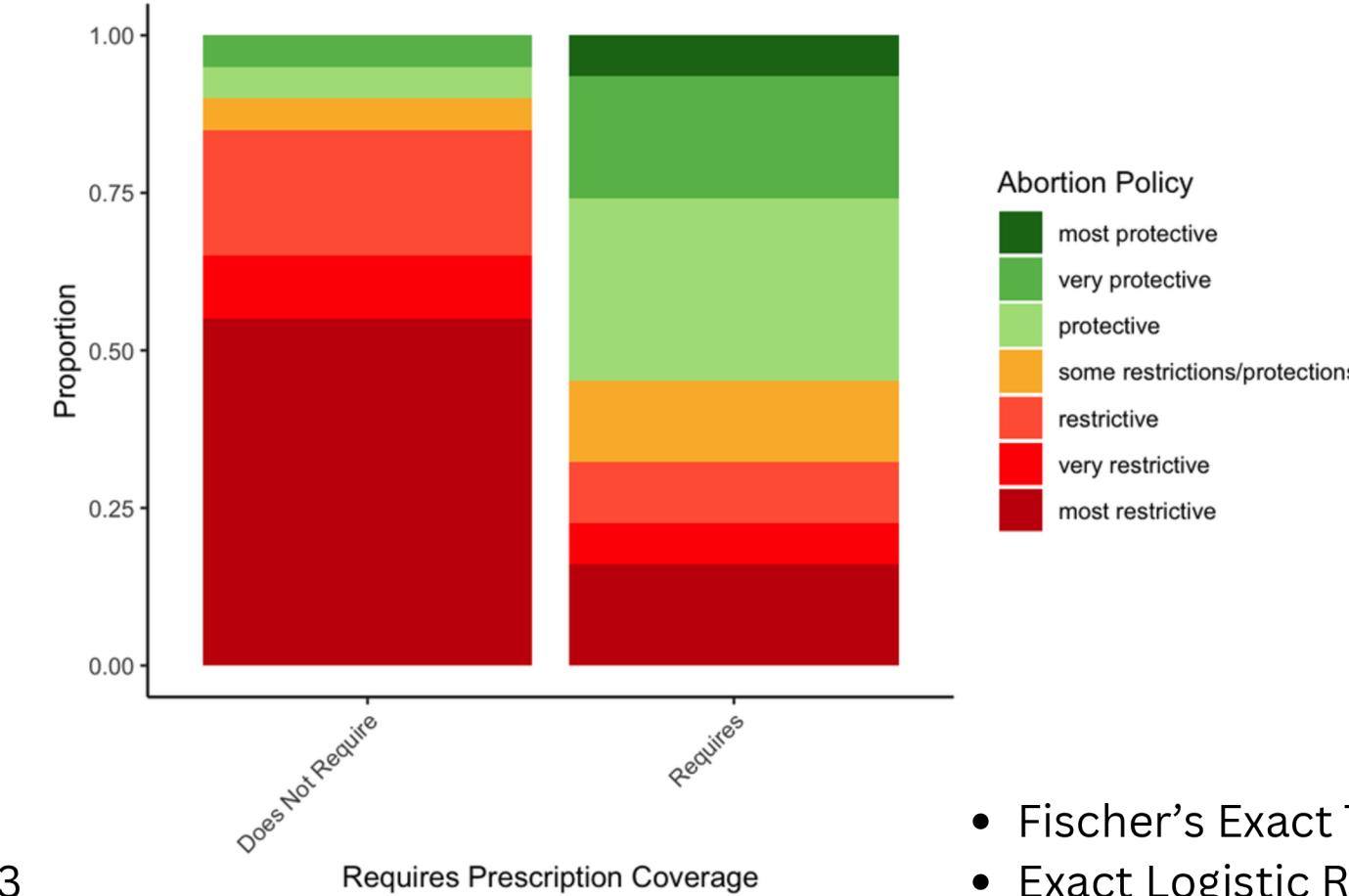
Note: These ranked variables are where 1 is the best and, 51 is the worst. Lower values in boxplots indicate better outcomes and vice versa.

# Medicaid and Rx Contraceptive Access

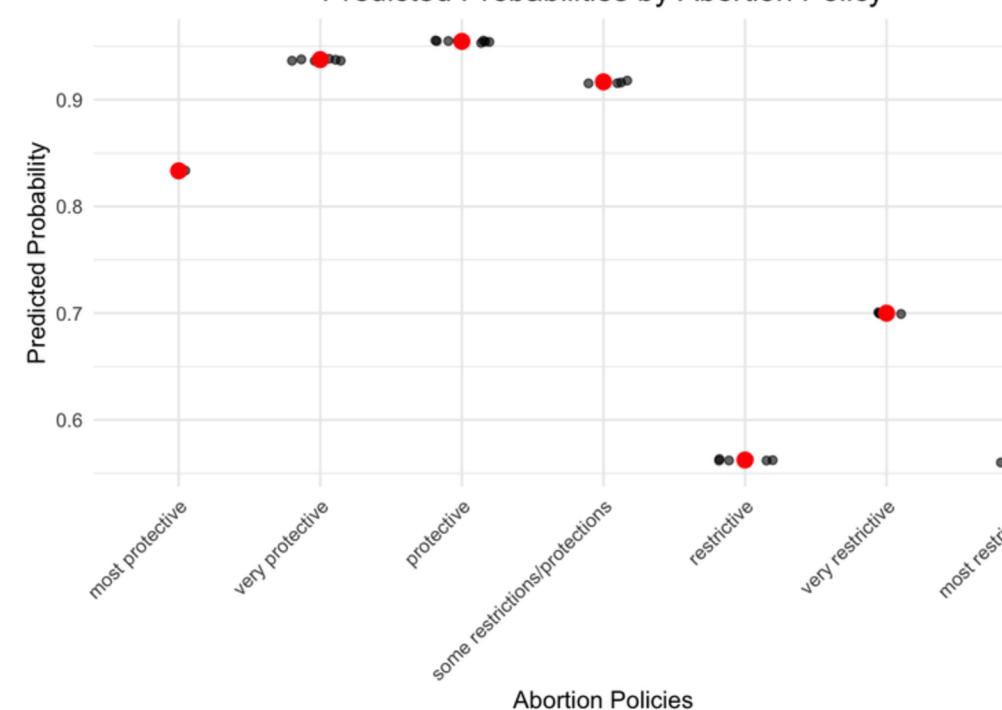
Proportion of Abortion Policies by Medicaid Expansion Status



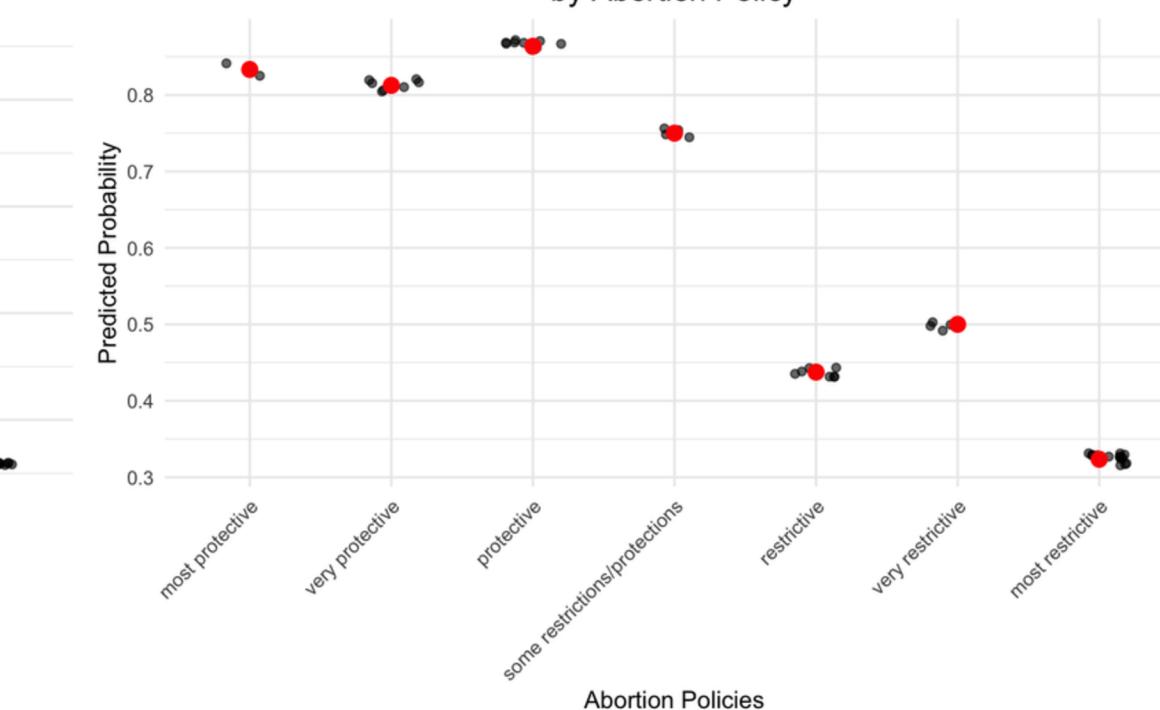
Prescription Contraception Coverage Requirements by Abortion Policy



Medicaid Expansion Status  
Predicted Probabilities by Abortion Policy

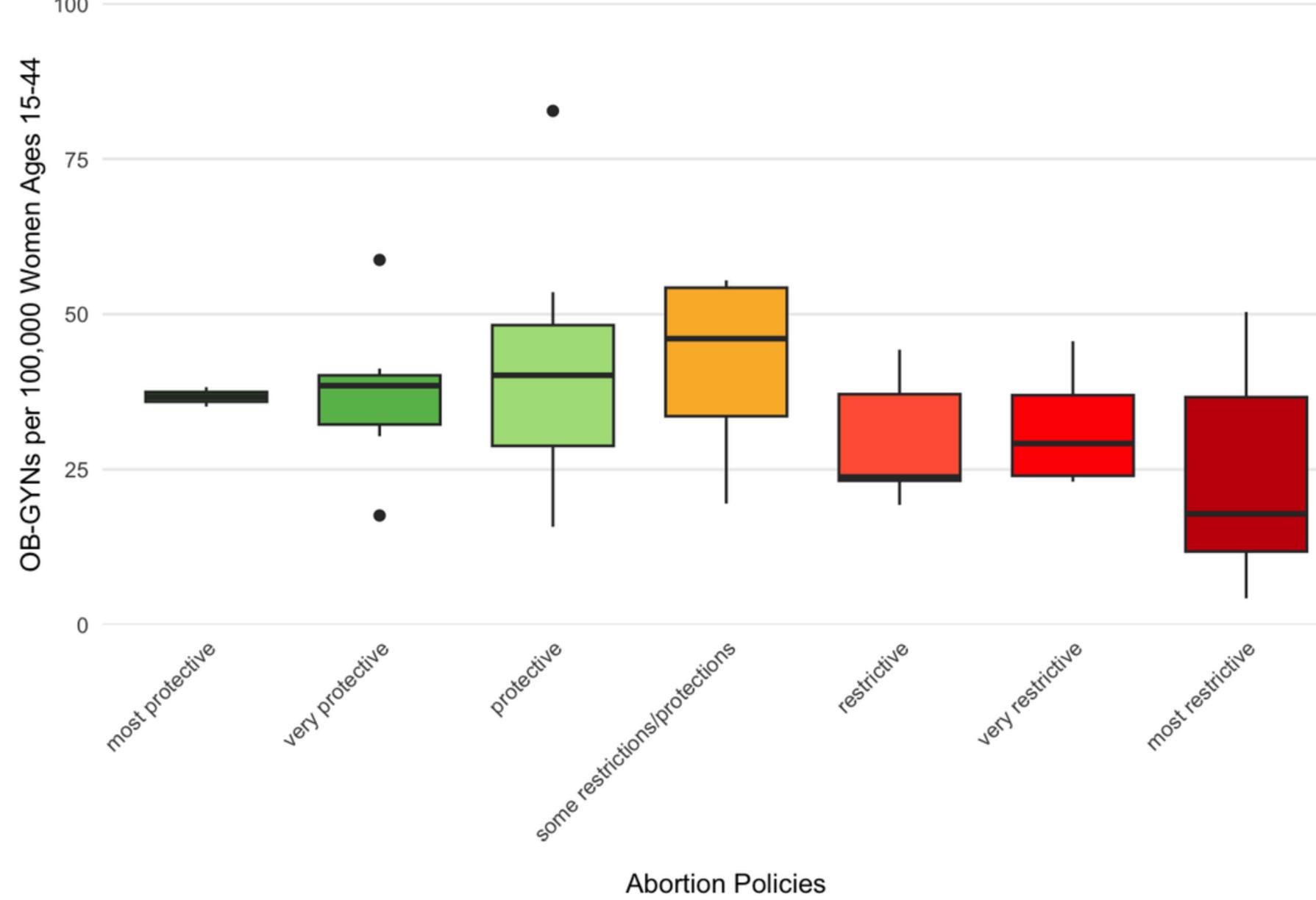


Predicted Probability of Prescription Contraceptive Coverage  
by Abortion Policy

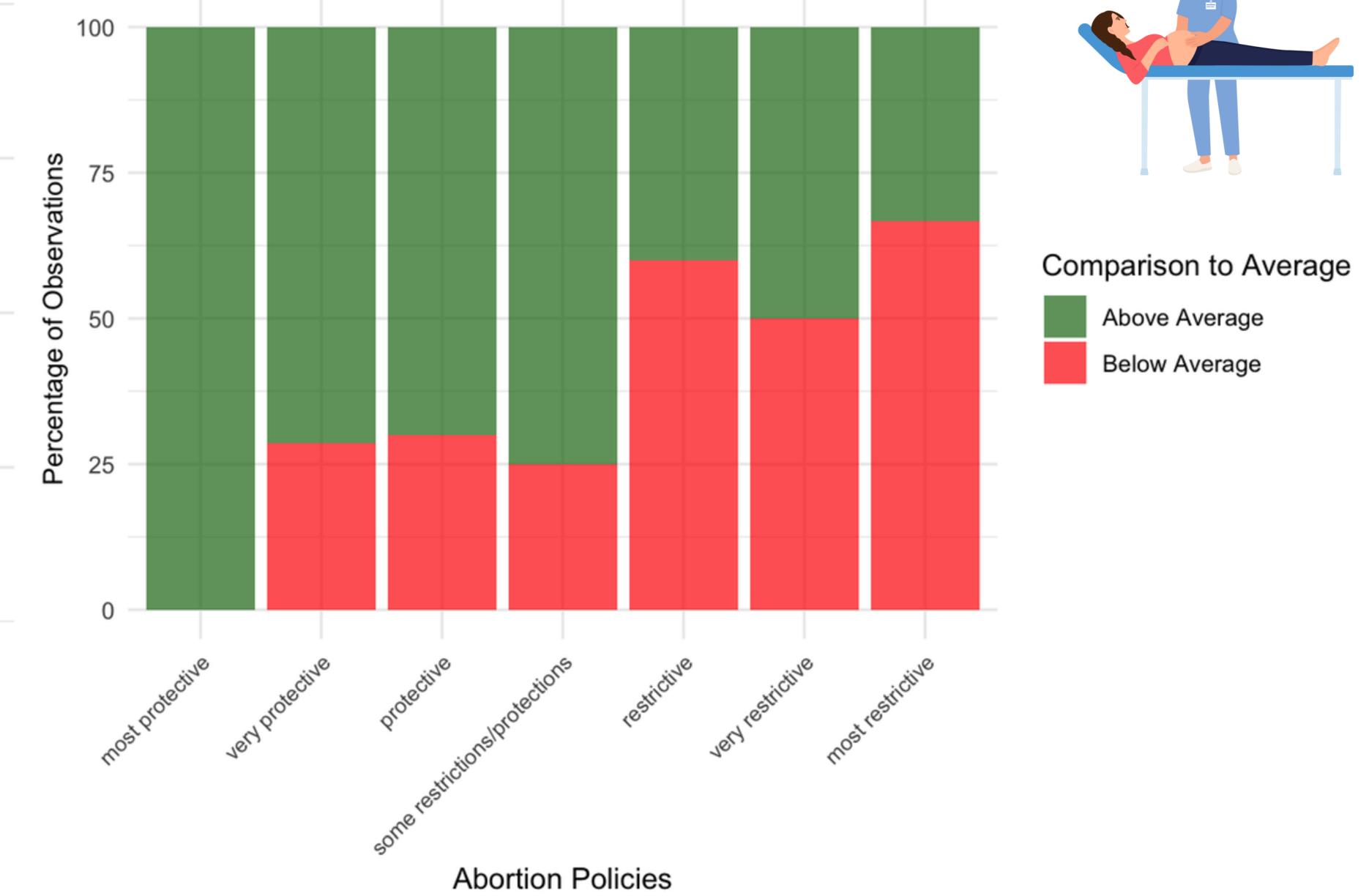


# OB-GYN Access

Distribution of OB-GYN Access by State Abortion Policy (2023)



Percentage of Above/Below Average OBGYN Ratio by Abortion Policy



Comparison to Average

- █ Above Average
- █ Below Average

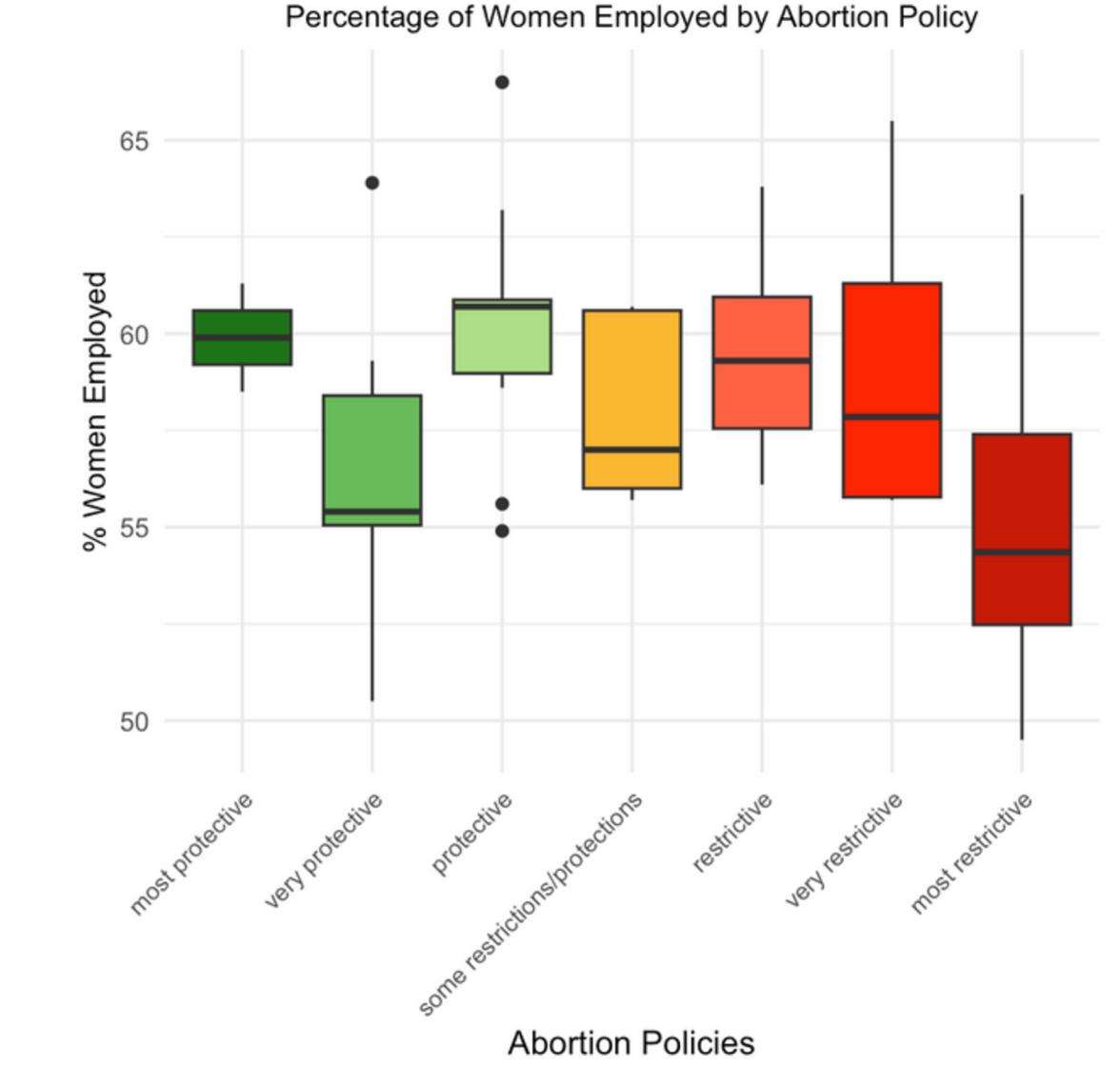
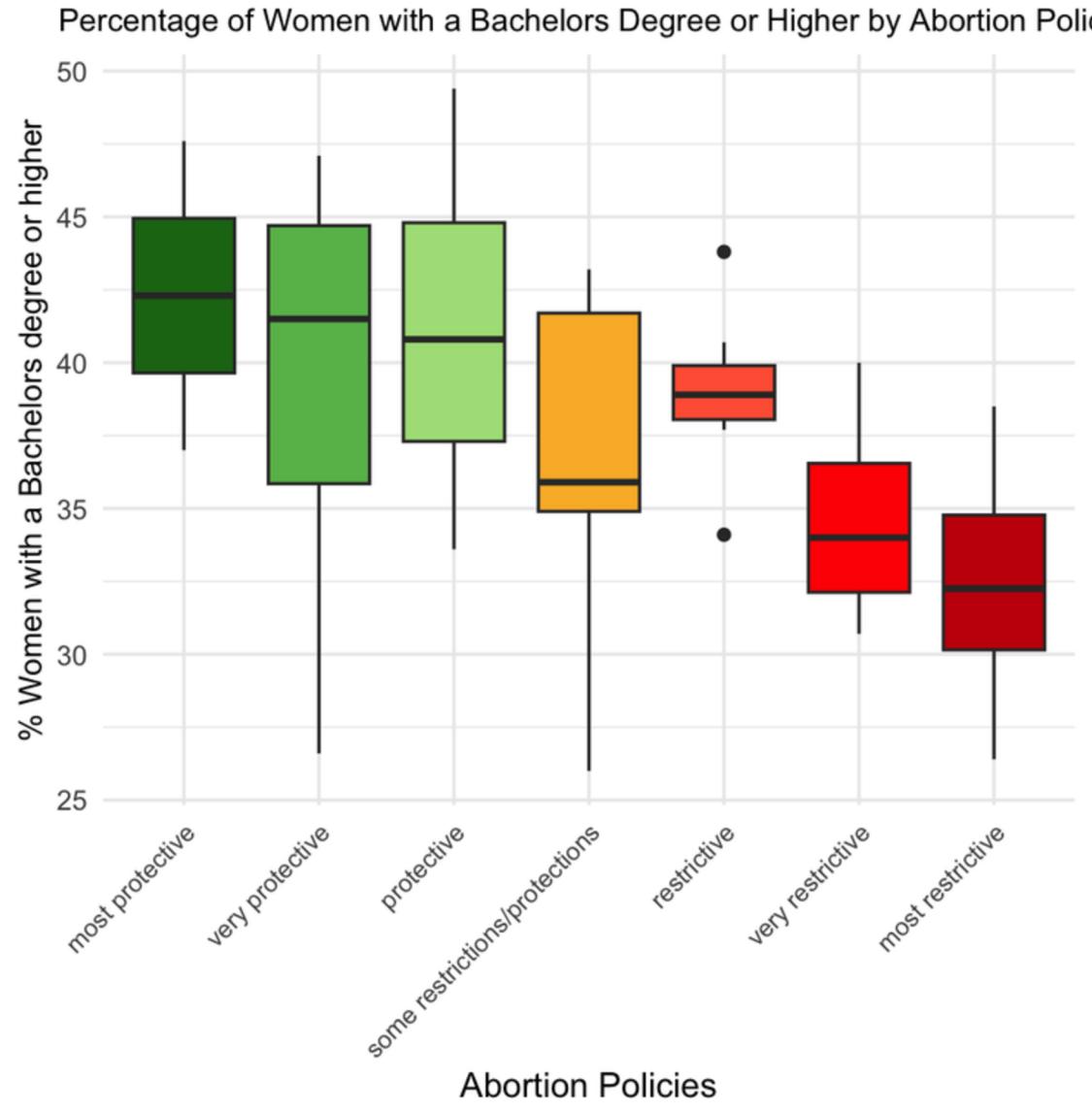
- Permutation test p-val: 0.15428
- Kruskal-Wallis p-val: 0.1683



# Maternal Wellness



# Female Education & Employment



- Permutation test p-val: 0.0019
- Kruskal-Wallis p-val: 0.003362

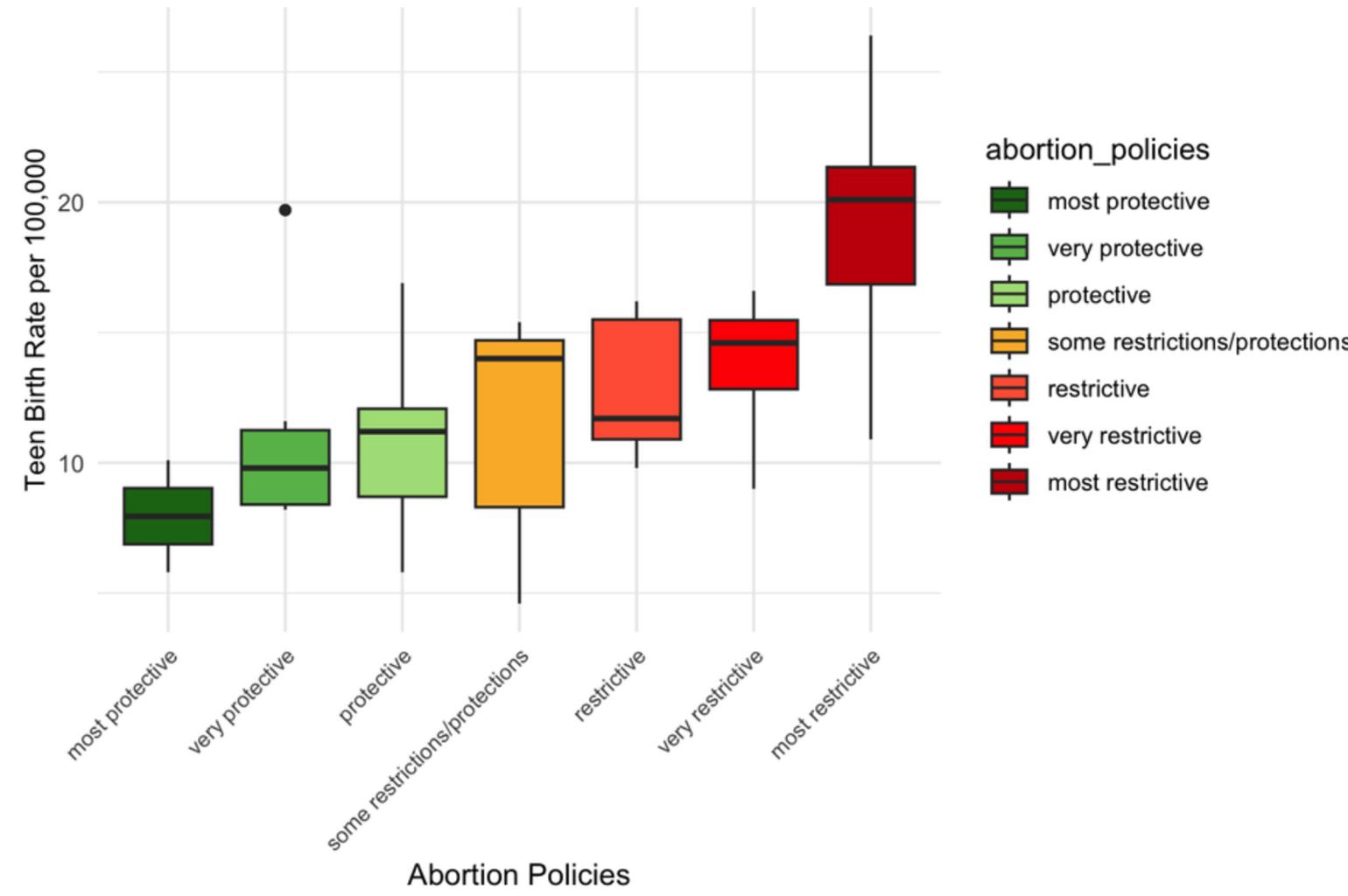
- Permutation test p-val: 0.0296
- Kruskal-Wallis p-val: 0.0309



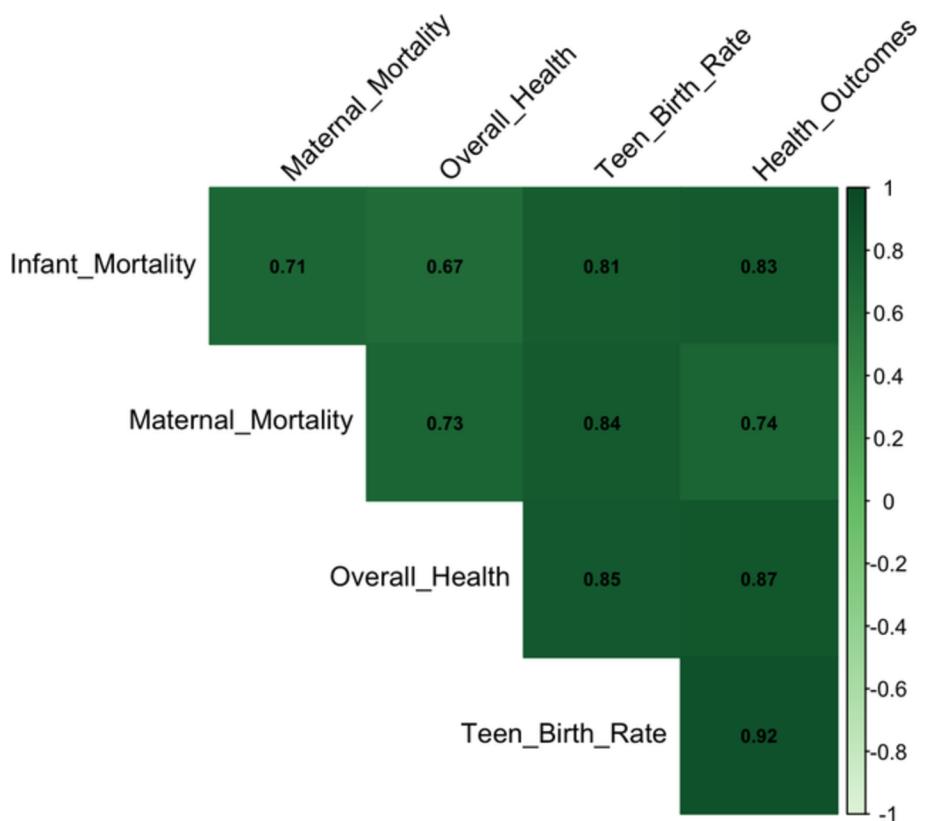
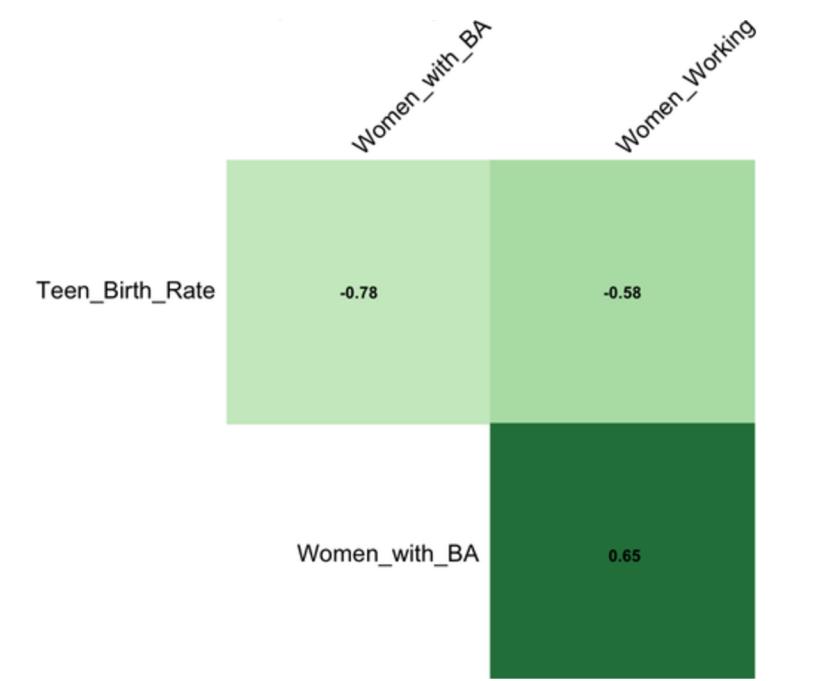
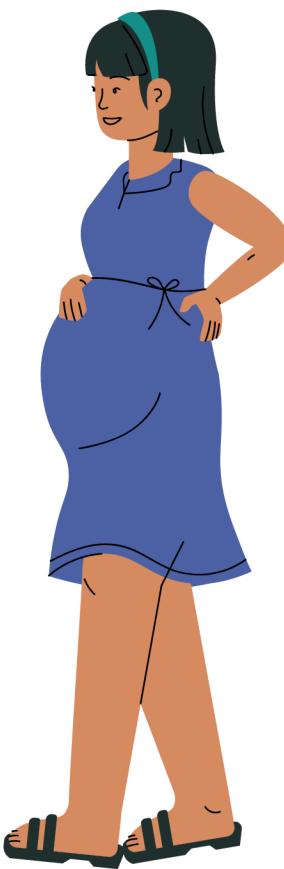
# Teen Birth Rate



## Teen Birth Rate by Abortion Policy

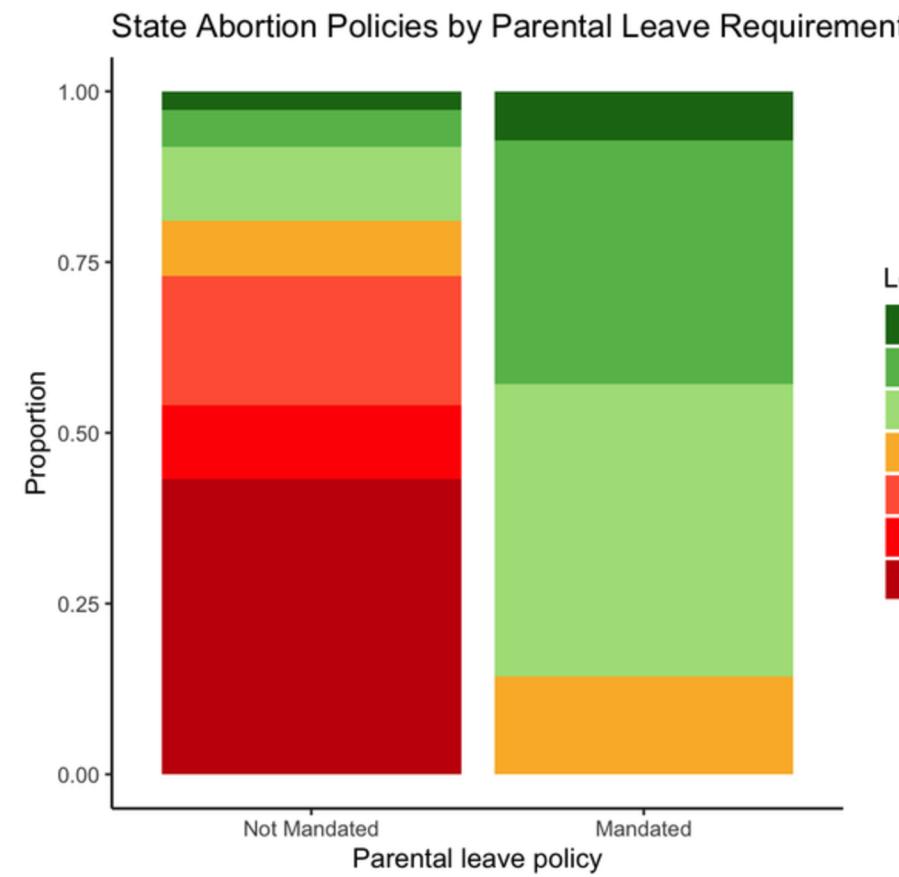


- Permutation test p-val: 0.00005
- Kruskal-Wallis p-val: 0.0002706

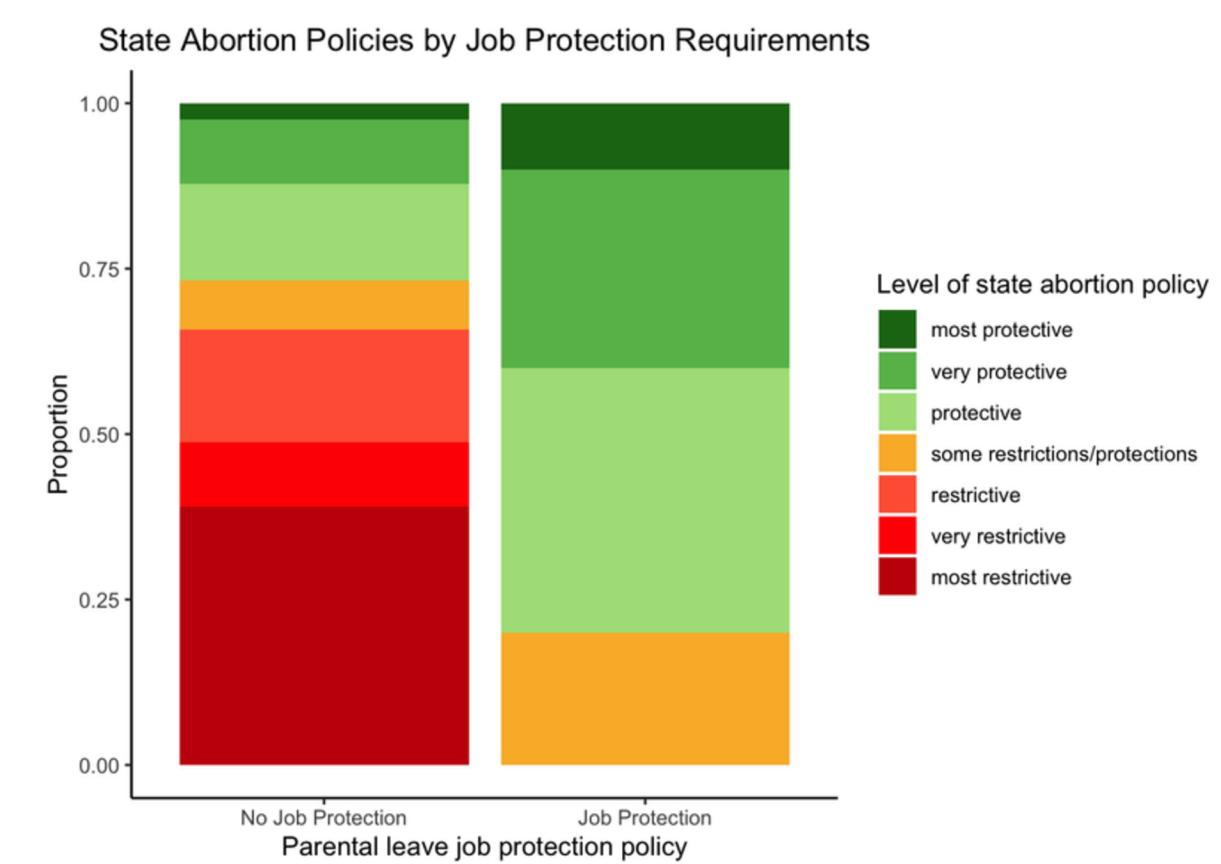


There are strong correlations between infant mortality, maternal mortality, teen birth rates, health, education, and women in the workforce

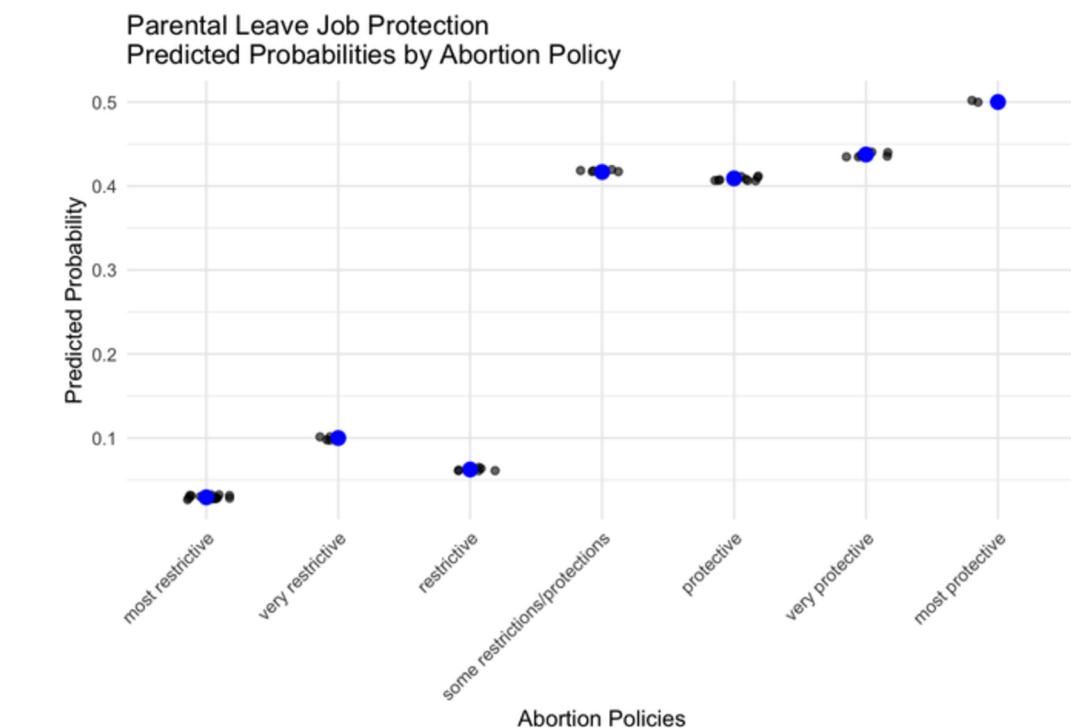
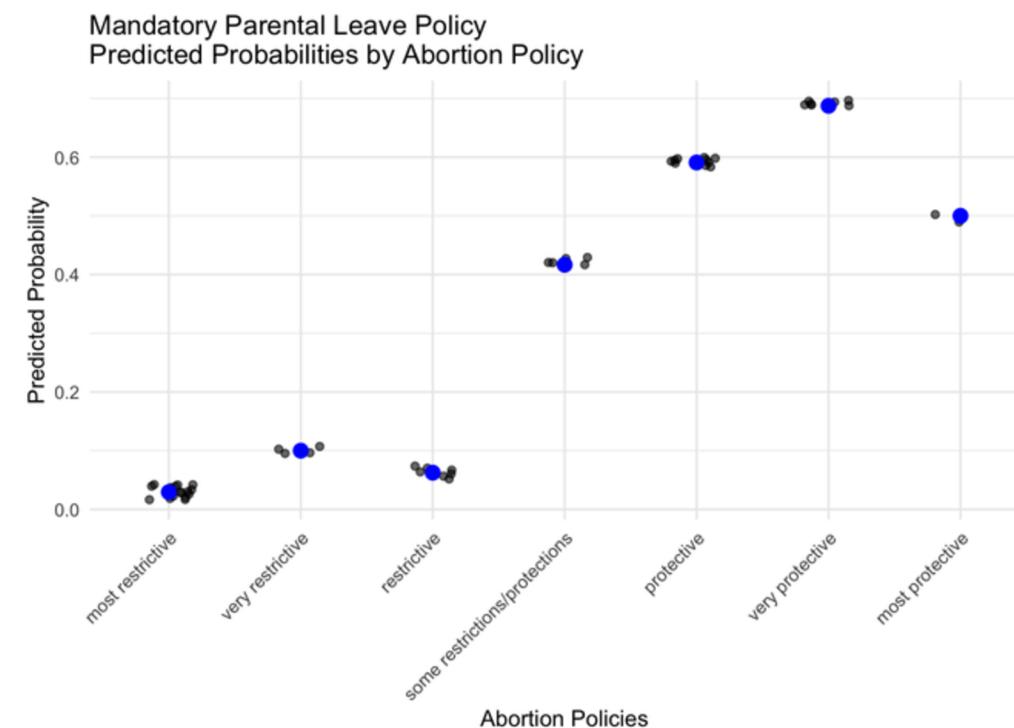
# Parental Leave



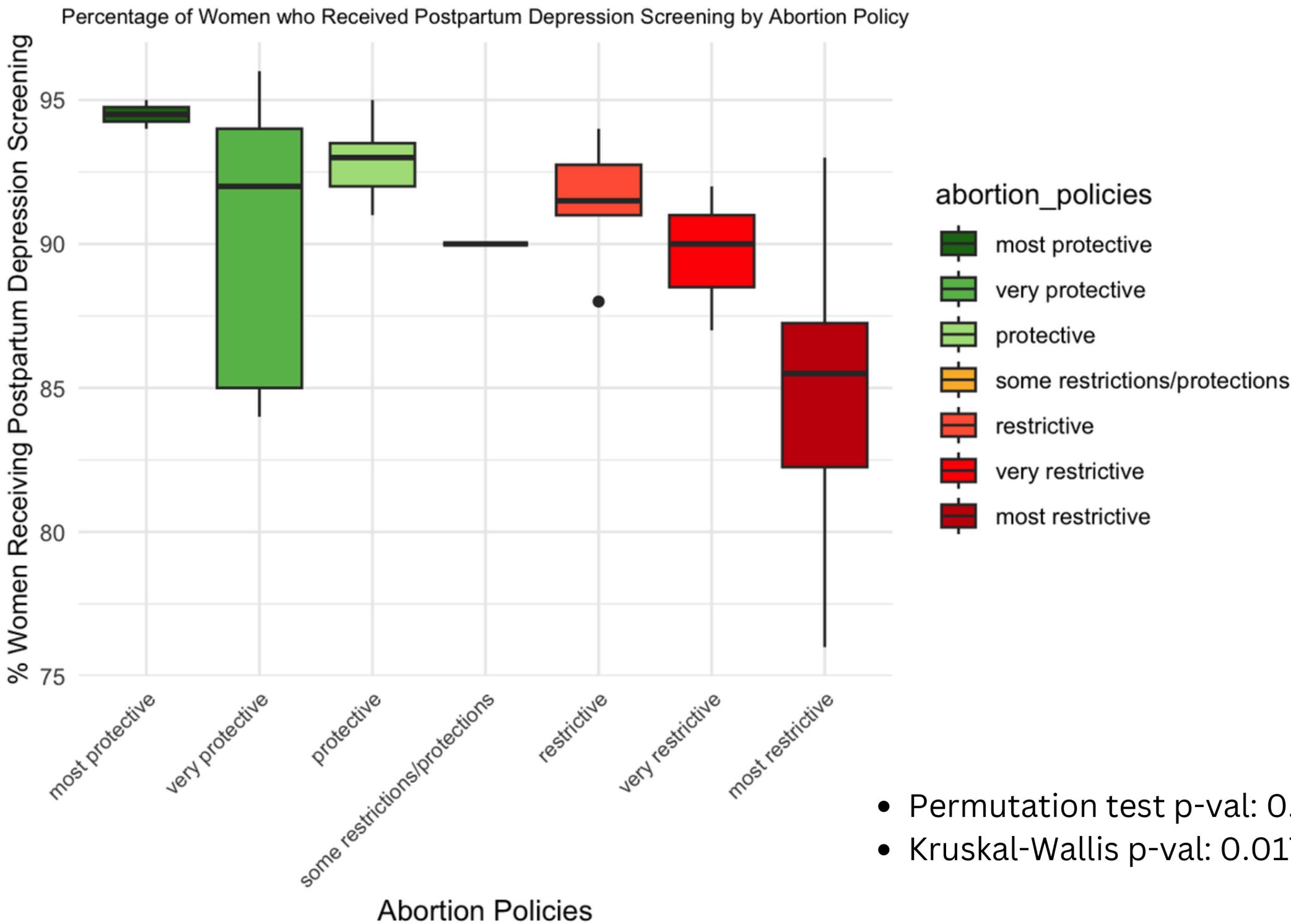
- Fisher's Exact Test p-val: 0.00006816
- Exact Logistic Regression p-val: 0.0010263



- Fisher's Exact Test p-val: 0.006869
- Exact Logistic Regression p-val: p=0.03880713



# Postpartum Depression Screenings

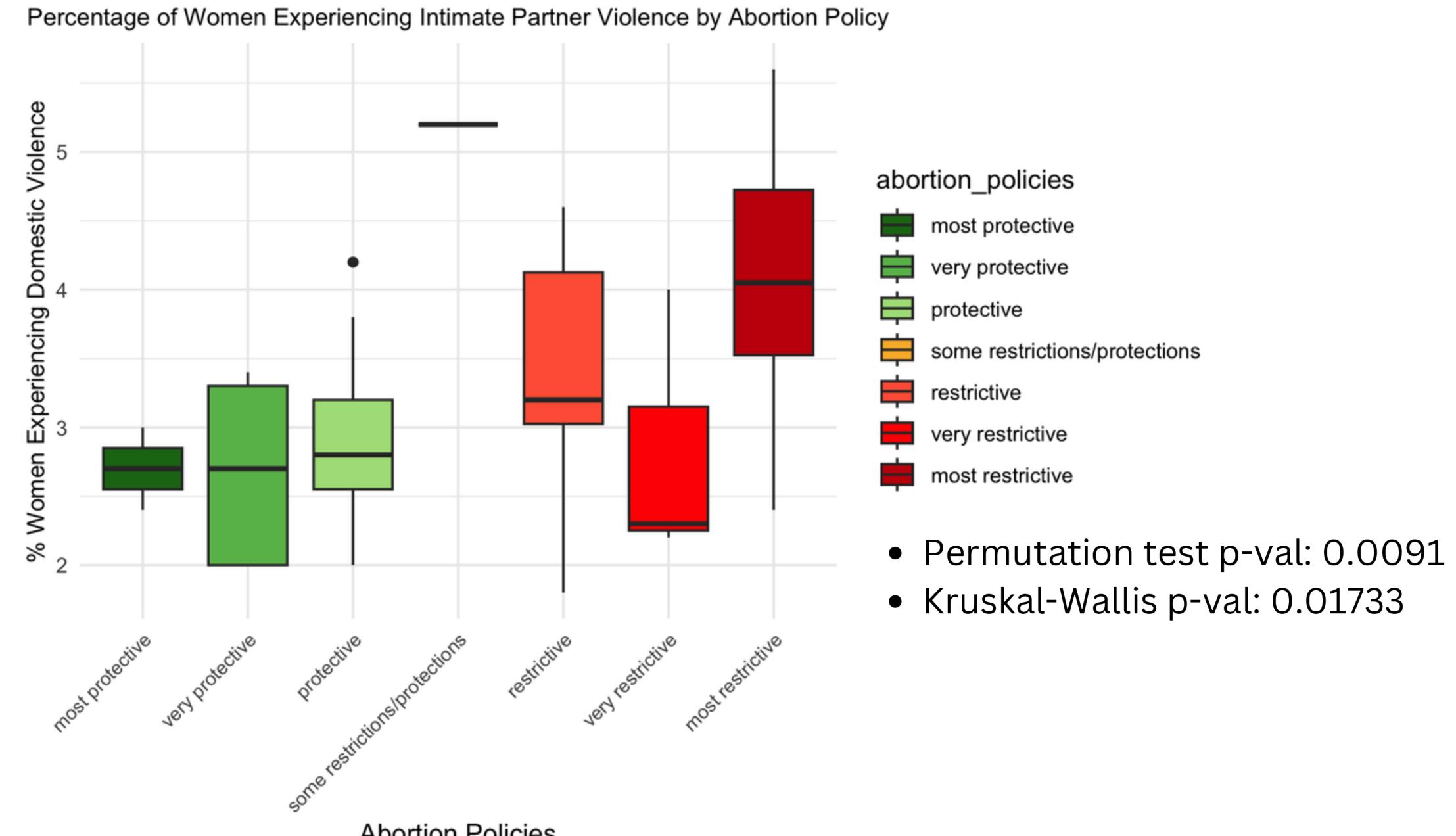


- On average, 8-15% of women experience postpartum depression. (9)
- A higher percentage of women in states with restrictive abortion policies fall below the average screening rate for postpartum depression. (9)

- Permutation test p-val: 0.0091
- Kruskal-Wallis p-val: 0.01733



# Intimate Partner Violence



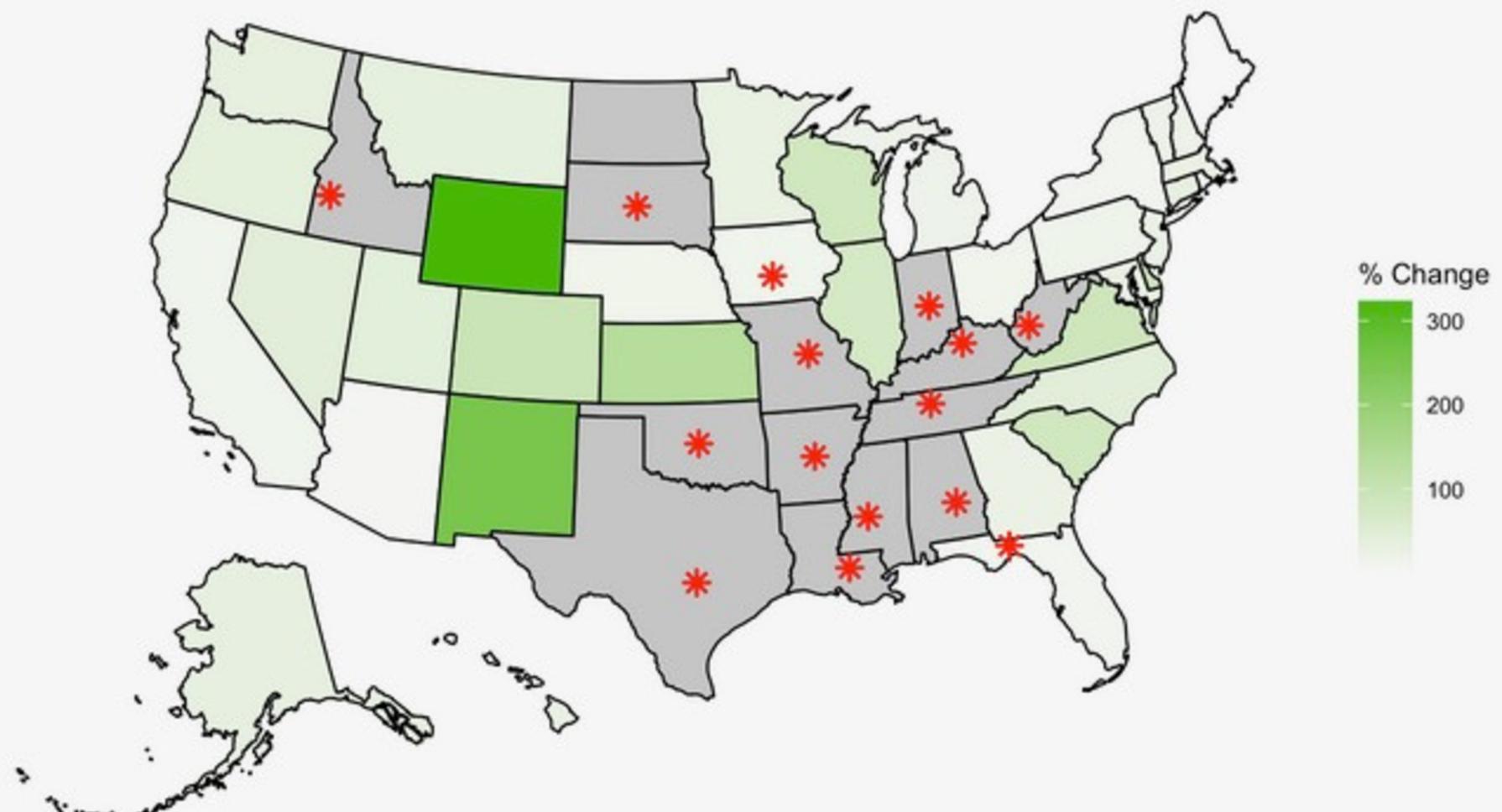
## Case Study:

A study from 2019 showed that homicide during pregnancy or within 42 days of the end of pregnancy exceeded all the leading causes of maternal mortality by more than twice as much in the U.S. (9)

# Conclusions

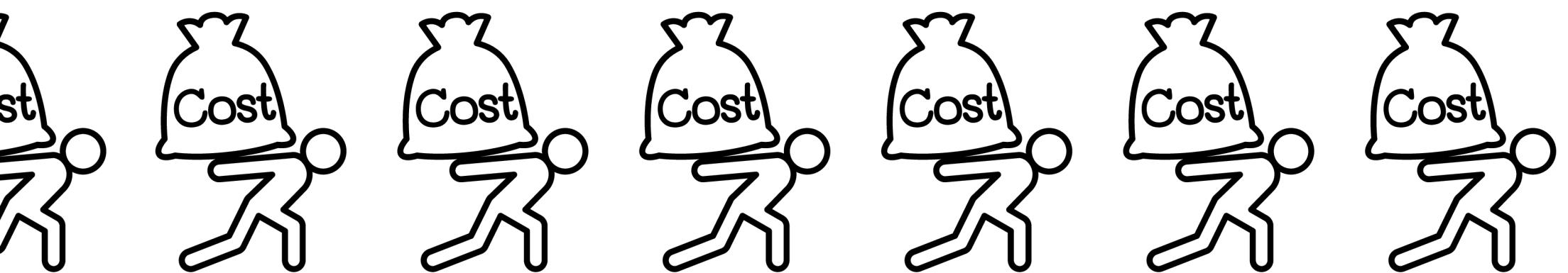
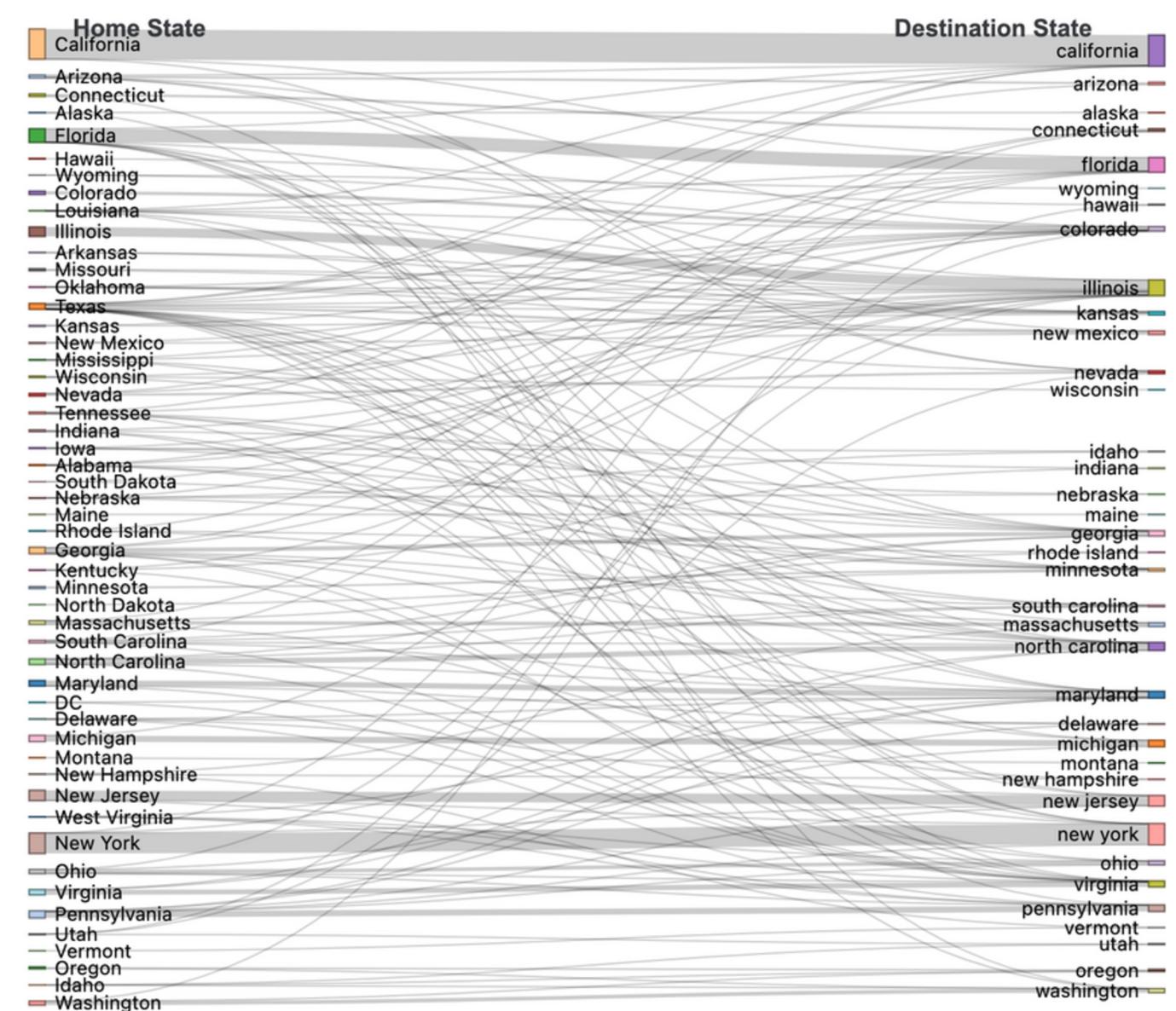
# Travel

Change in Clinician-Provided Abortions Since 2020 by State



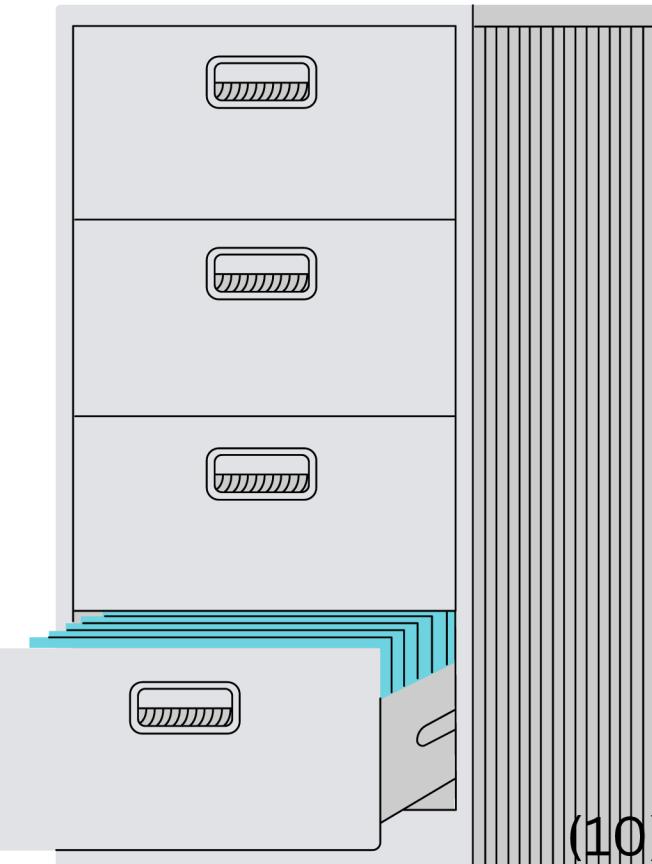
(3)

Visualization of Abortion Travel Flows Across States (2023)



# Limitations

- Challenges in Maternal Mortality Data
  - Committee variation by State
  - Disbanding of MM committees
- Time Frame
  - 2 Years of Dobbs
  - Differing OBGYN & female population data
- Missing Datasets
  - Miscarriage
  - Pregnancy complications
  - Maternal mortality linked to inability to obtain abortion
  - Illegal abortions
- Intense Regulation of Research Surrounding Pregnancy
- Latent Confounding Variables



# Conclusion

States that implemented abortion bans and restrictions were already associated with unfavorable outcomes in overall health, maternal health and wellness and child health.

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# Further Exploration

- Impacts on various populations
- Impact on existing inequalities
- Continued policy evolution
- Generation of a centralized database
- Gathering the stories of women impacted by abortion bans



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9. Wallace, M., Gillispie-Bell, V., Cruz, K., Davis, K., & Vilda, D. (2021). Homicide During Pregnancy and the Postpartum Period in the United States, 2018-2019. *Obstetrics and gynecology*, 138(5), 762–769. <https://doi.org/10.1097/AOG.0000000000004567>
10. Onuoha, M. (n.d.). The library of missing datasets. Retrieved December 2, 2024, from <https://mimionuoha.com/the-library-of-missing-datasets>



## Q & A

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