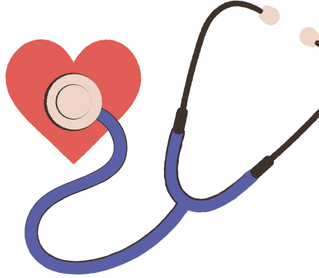
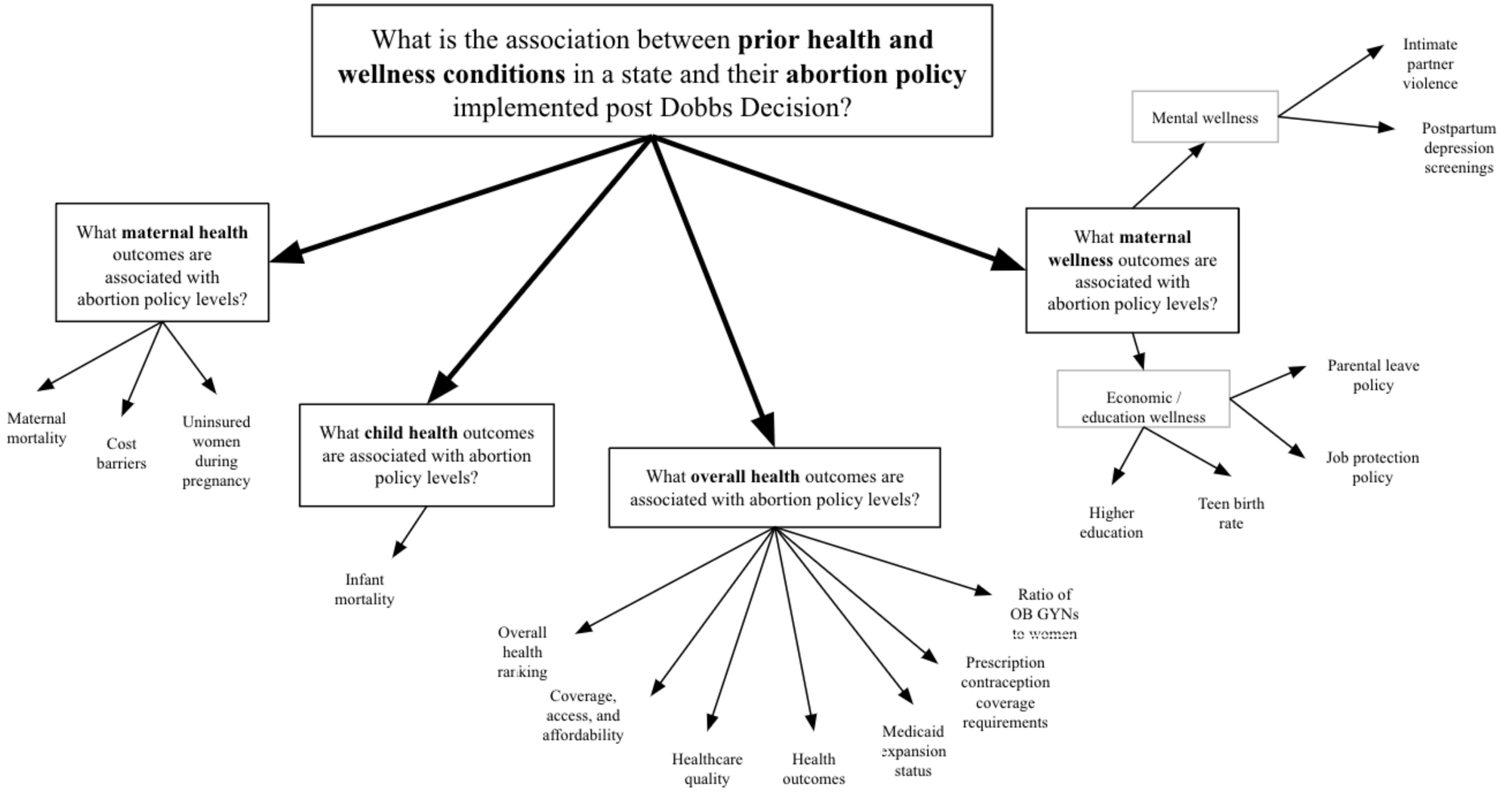


ABORTION POLICY AND HEALTH / WELLNESS

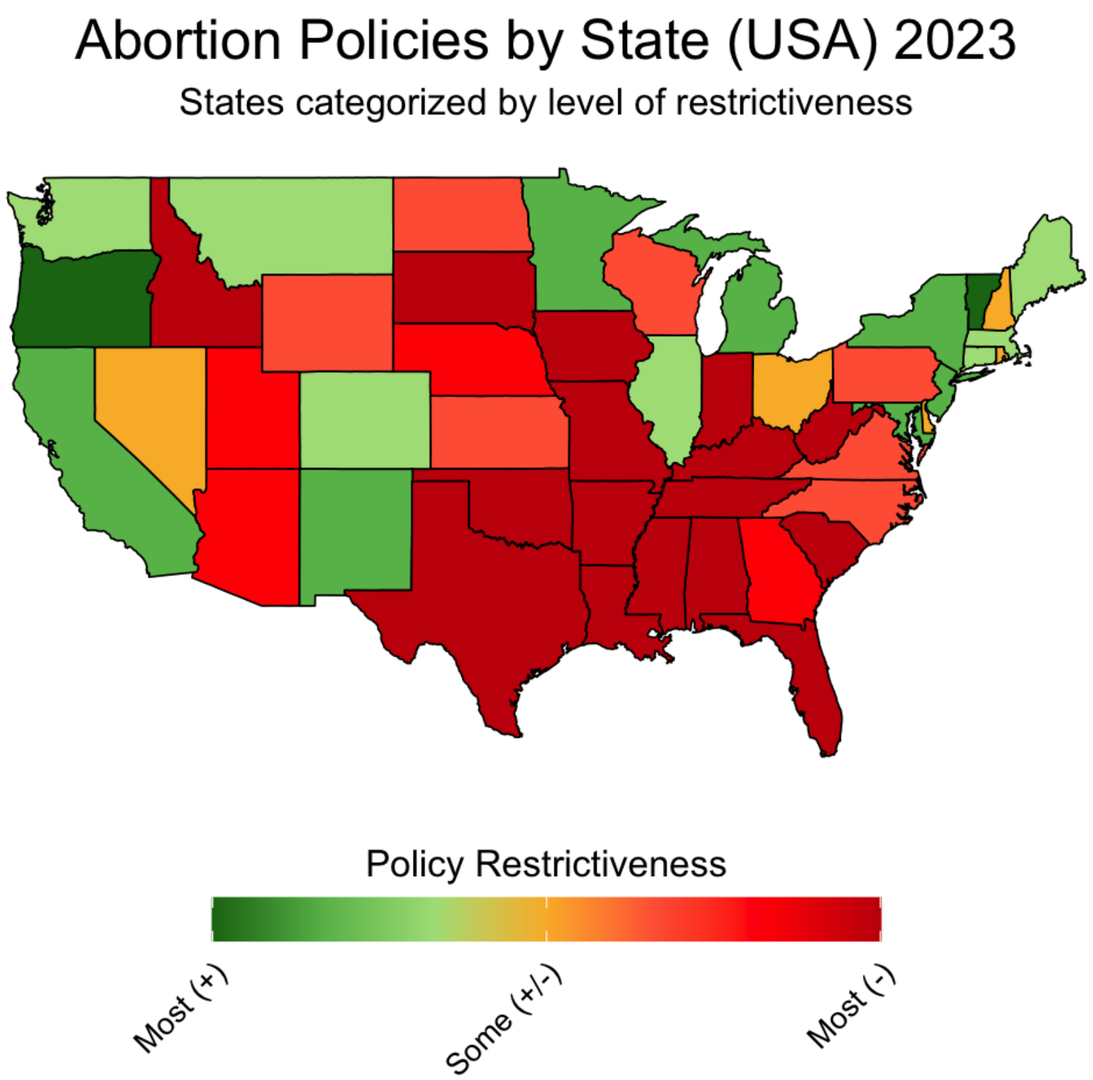
KRISTIN LLOYD, VIVIANA LUCCIOLI, COURTNEY GREEN,
JOSHUA LIN, SAM SOFMAN

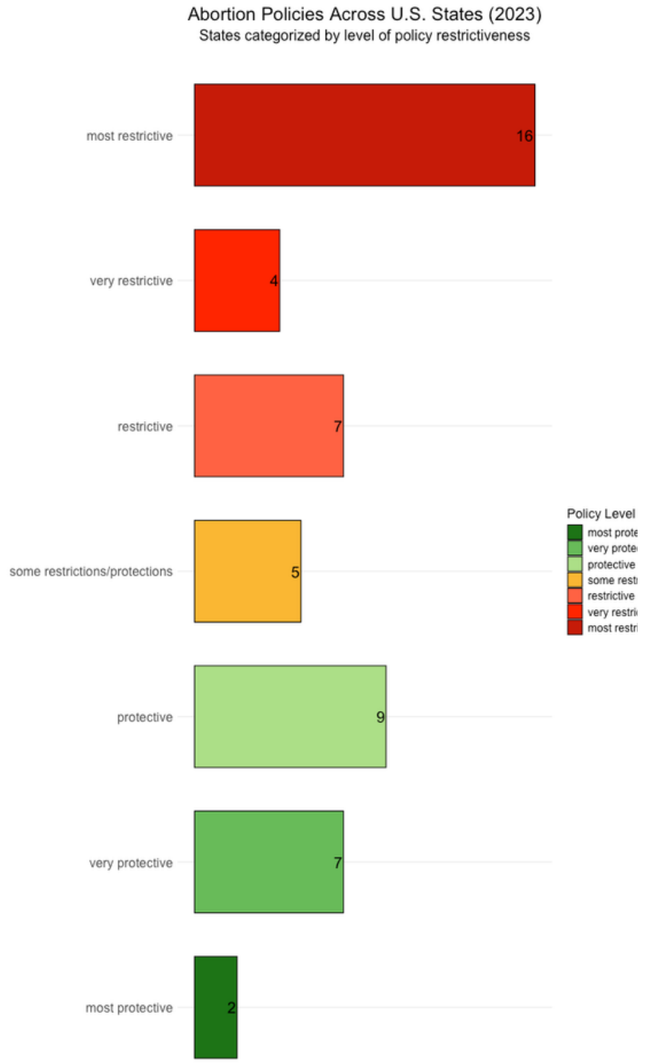
DSAN 5100: PROBABILISTIC MODELING & STATISTICAL COMPUTING
DECEMBER 5TH, 2024

Introduction



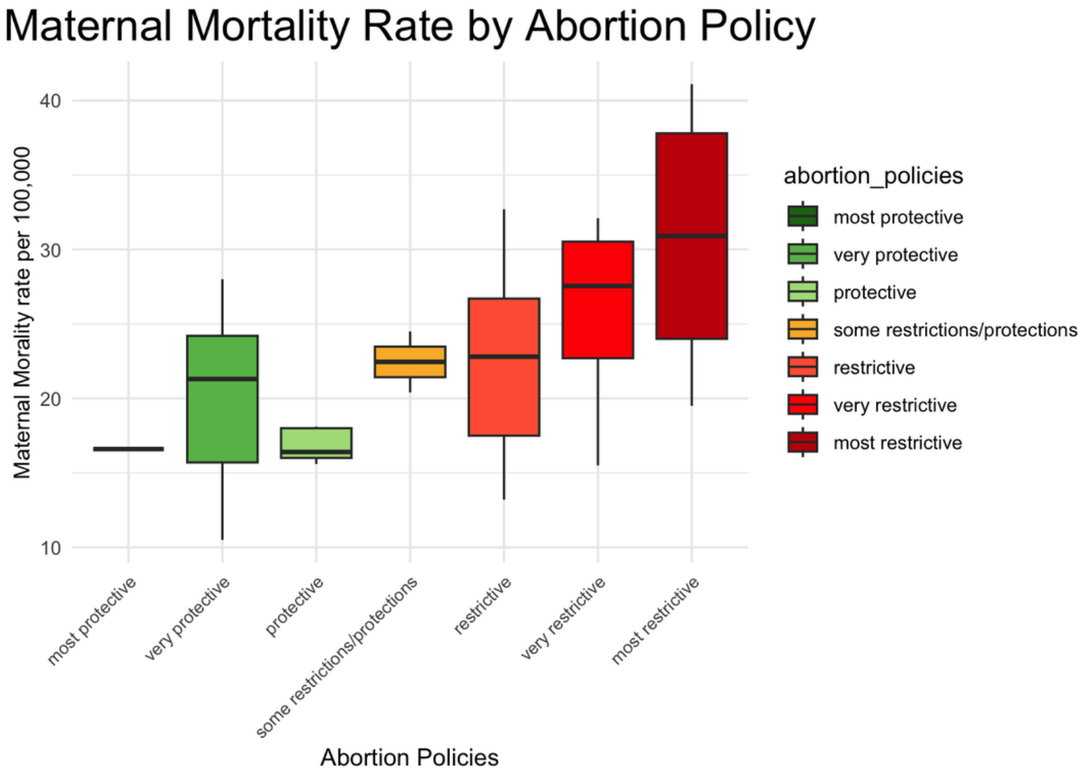
Restrictions / Protections Regarding Abortion





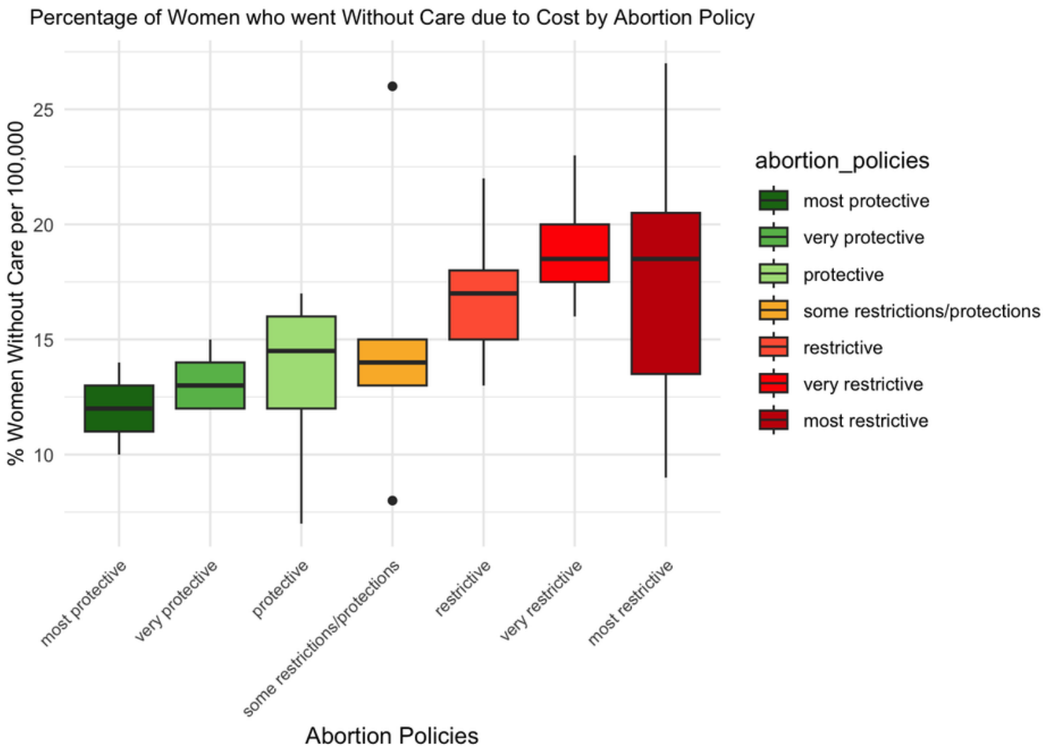
Maternal Health

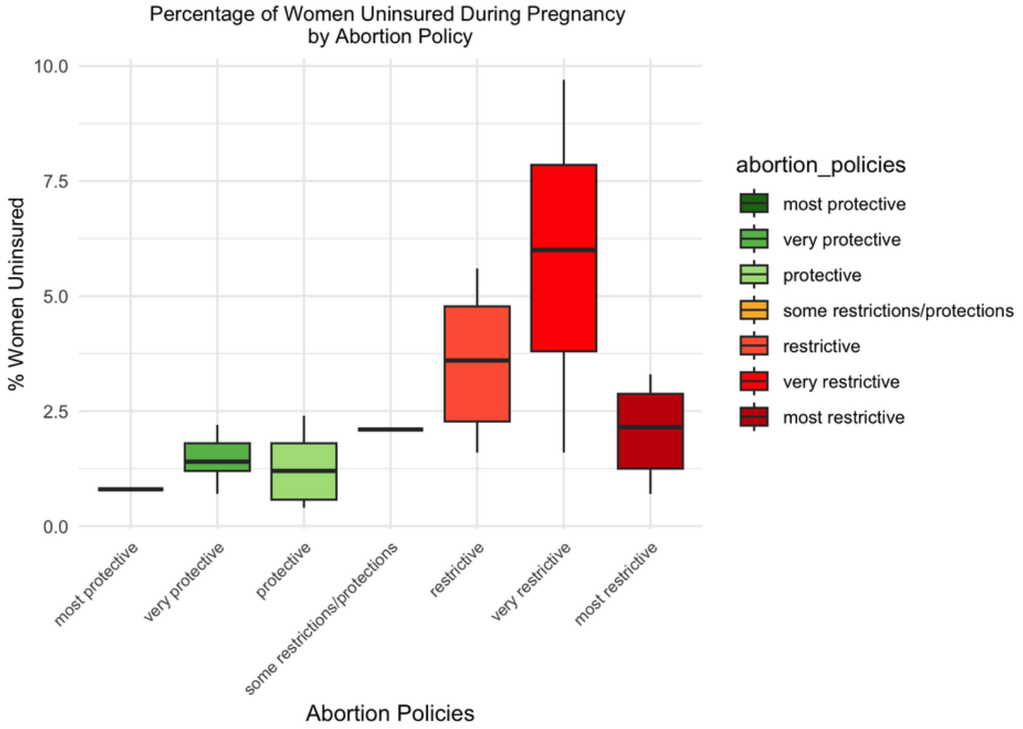
Maternal Mortality



- 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





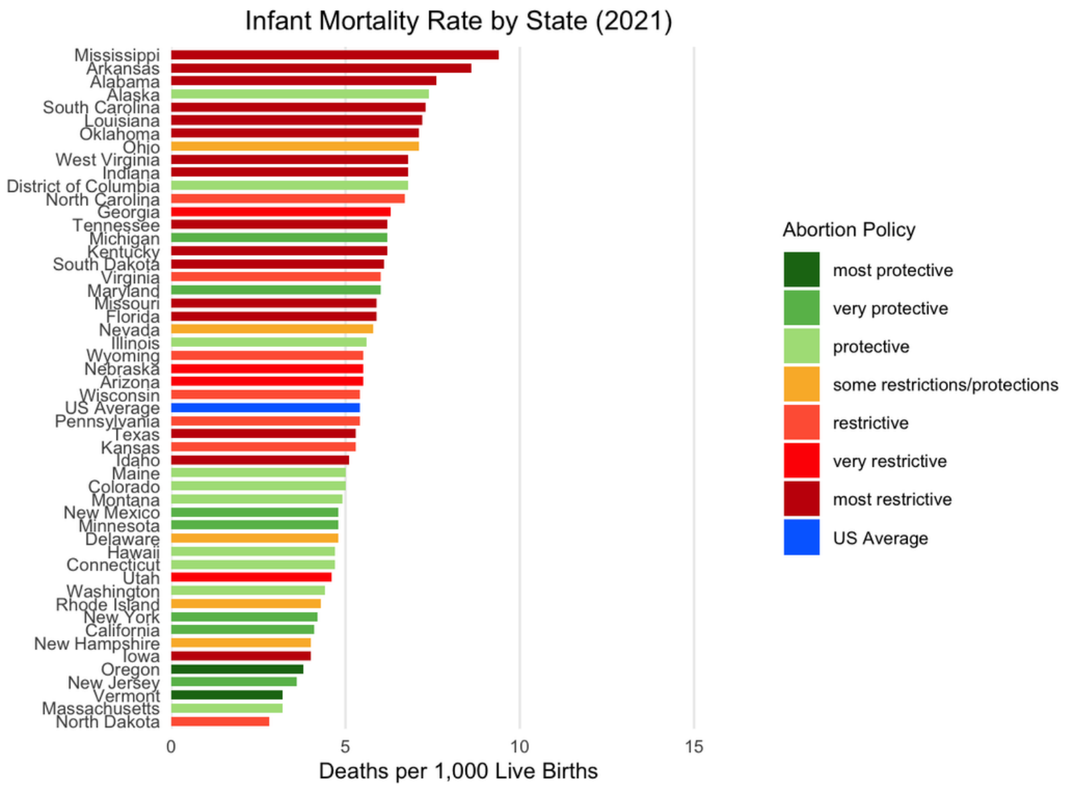
- Permutation test p-val: 0.0496
- Kruskal-Wallis p-val: 0.02916

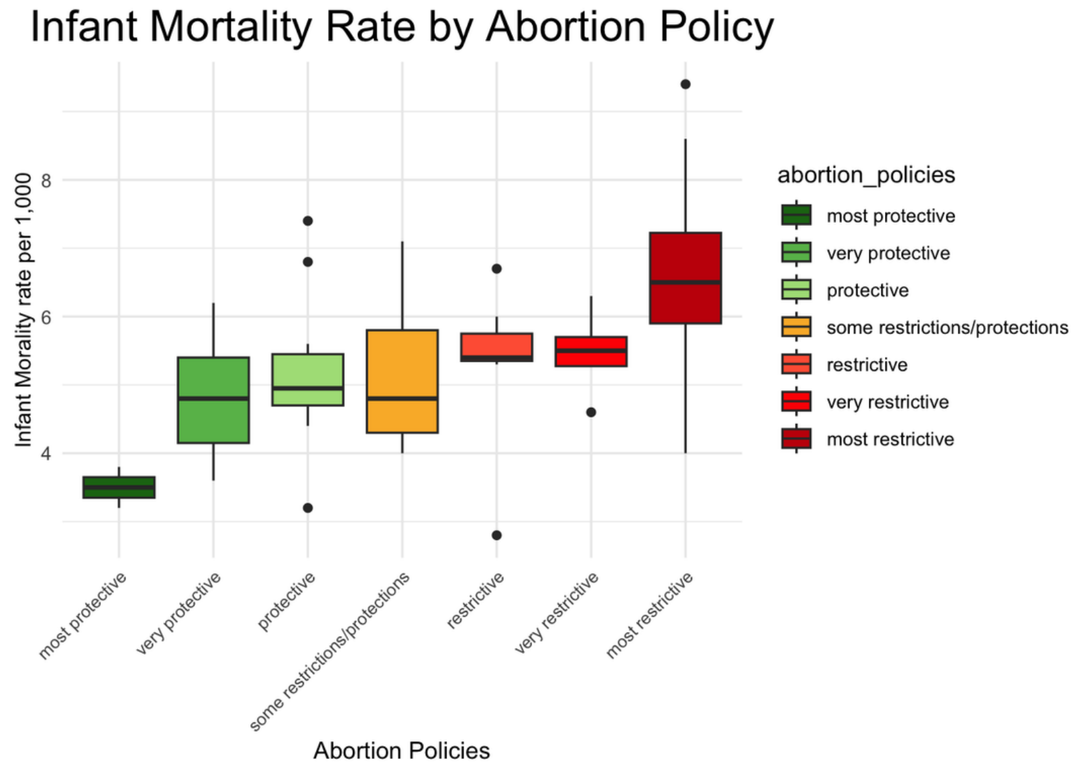
Permutation test p-val: 0.0252

Kruskal-Wallis p-val: 0.03475

Child Health

Infant Mortality

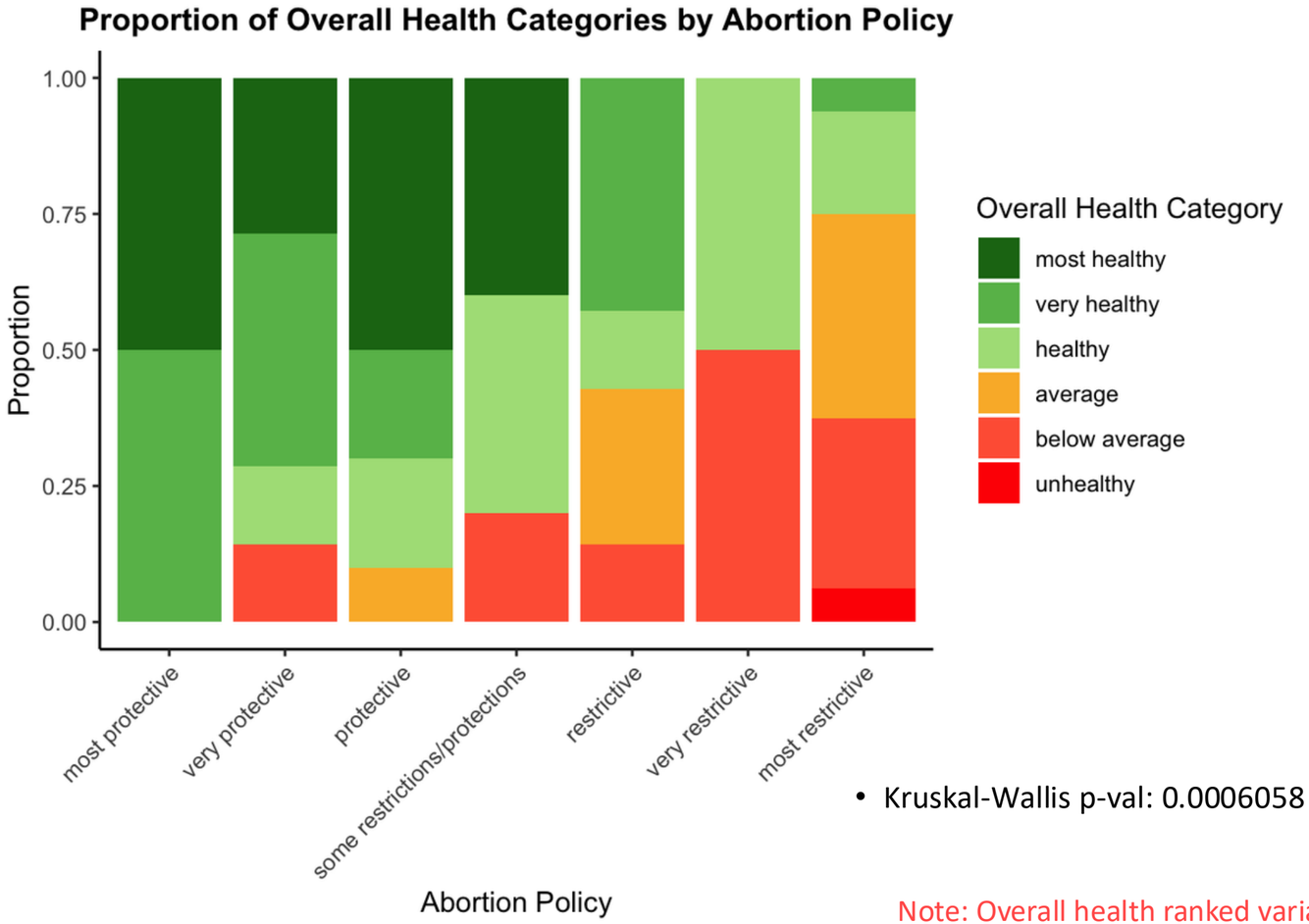




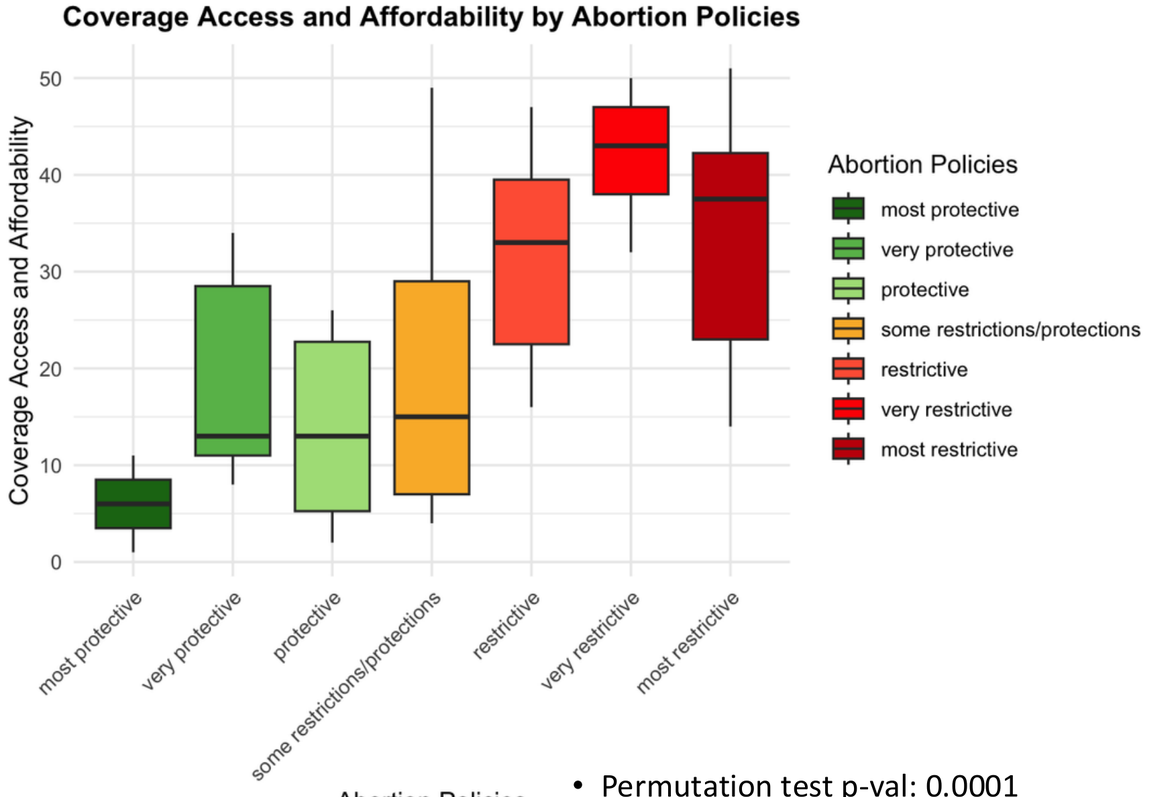
- Permutation test p-val: 0.0048
- Kruskal-Wallis p-val: 0.009246

Overall Health

Overall Health



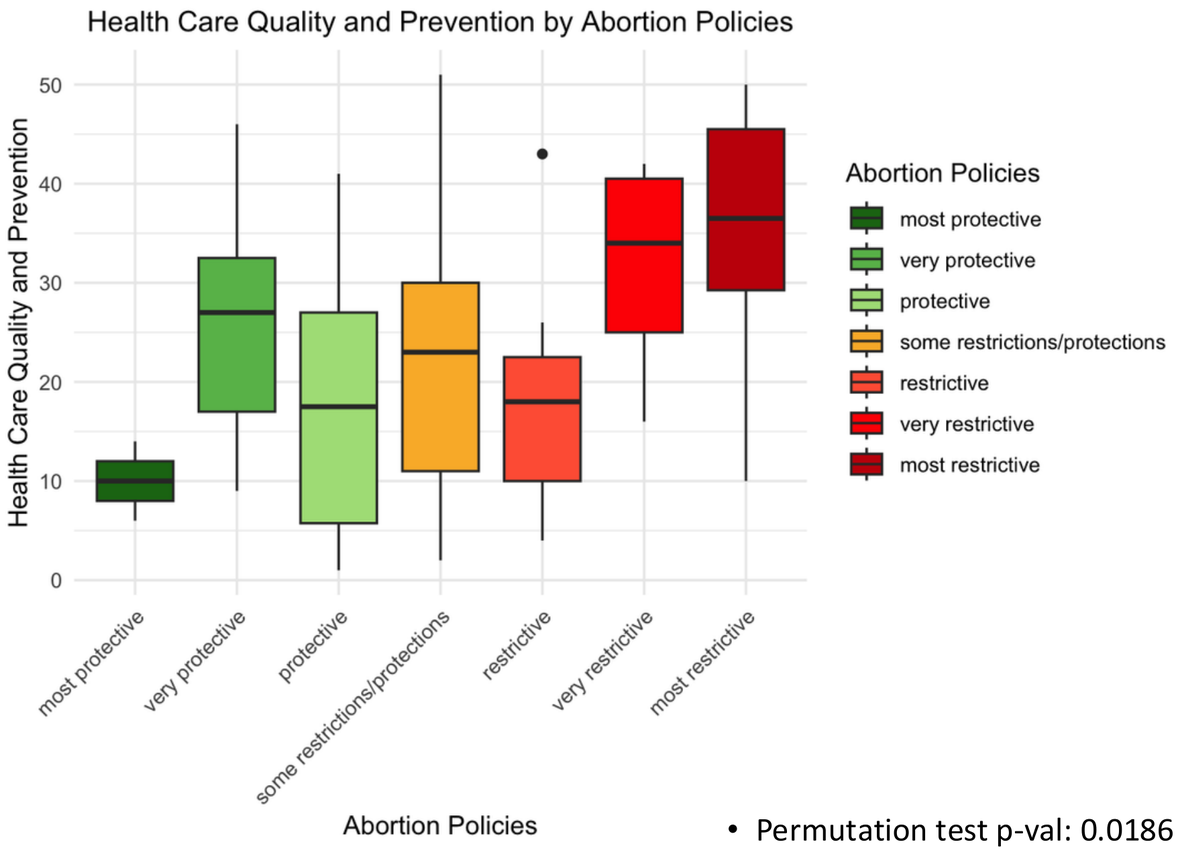
- Kruskal-Wallis p-val: 0.0006058



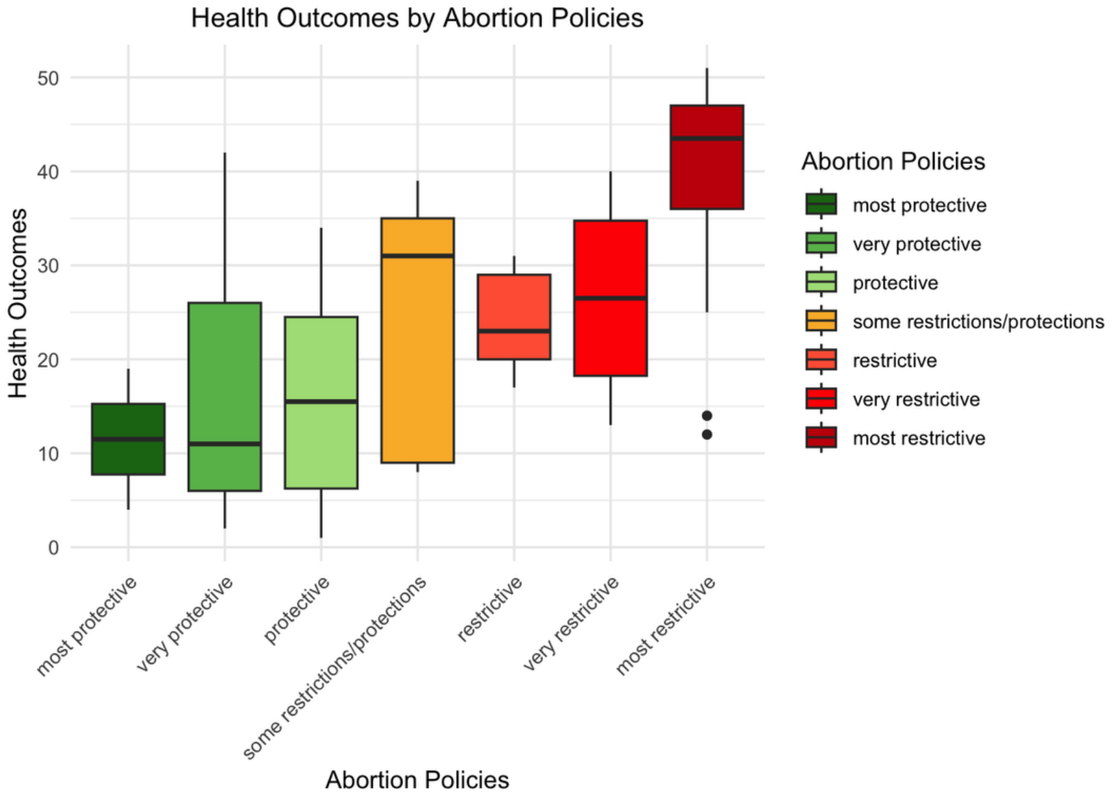
- Permutation test p-val: 0.0001
- Kruskal-Wallis p-val: 0.0009489

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.

Healthcare Quality & Health Outcomes



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

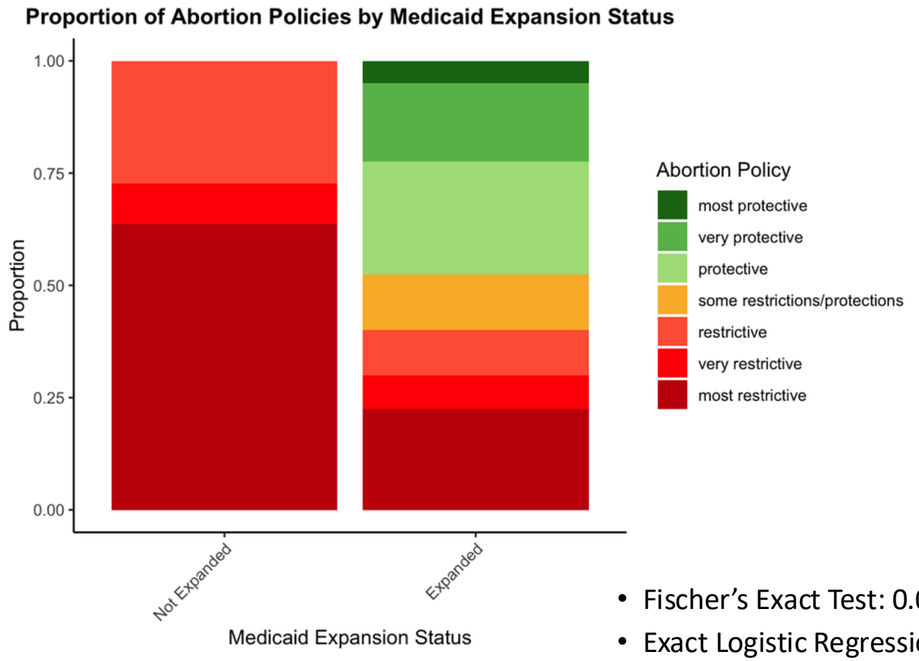


- Permutation test p-val: 0.0002
- Kruskal-Wallis p-val: 0.00139

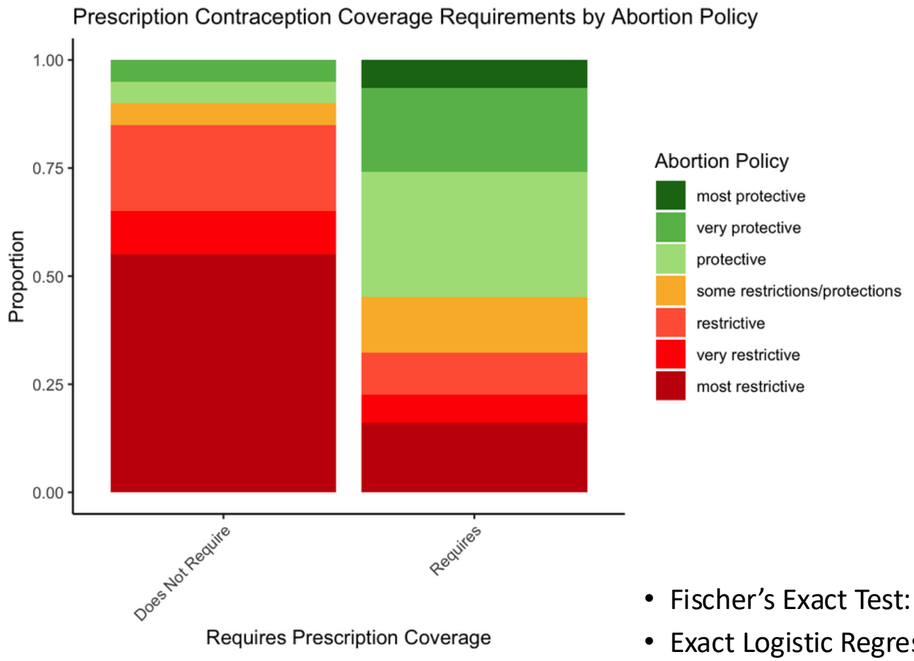
- Very restrictive and most restrictive states have worse healthcare quality and prevention
- States with restrictions have worse health outcomes than states without restrictions

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.

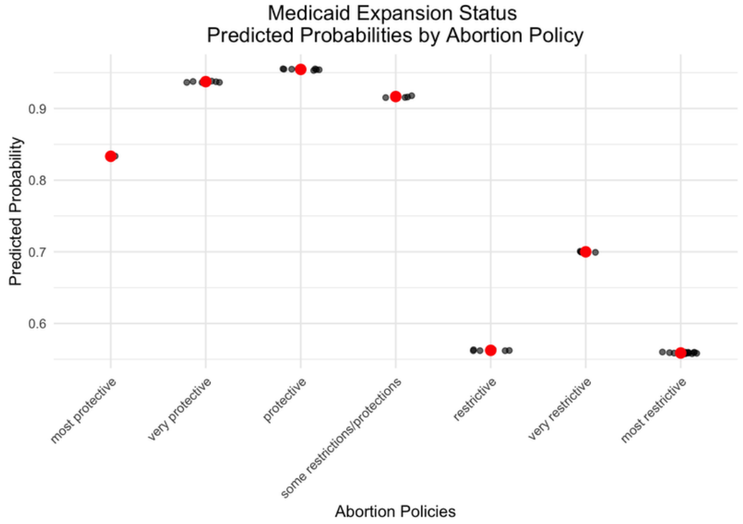
Medicaid and Rx Contraceptive Access

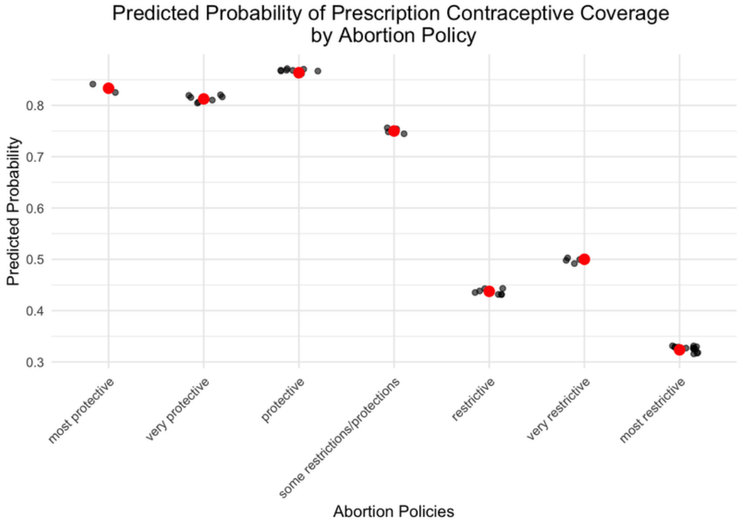


- Fischer's Exact Test: 0.03091
- Exact Logistic Regression p-val: 0.0483

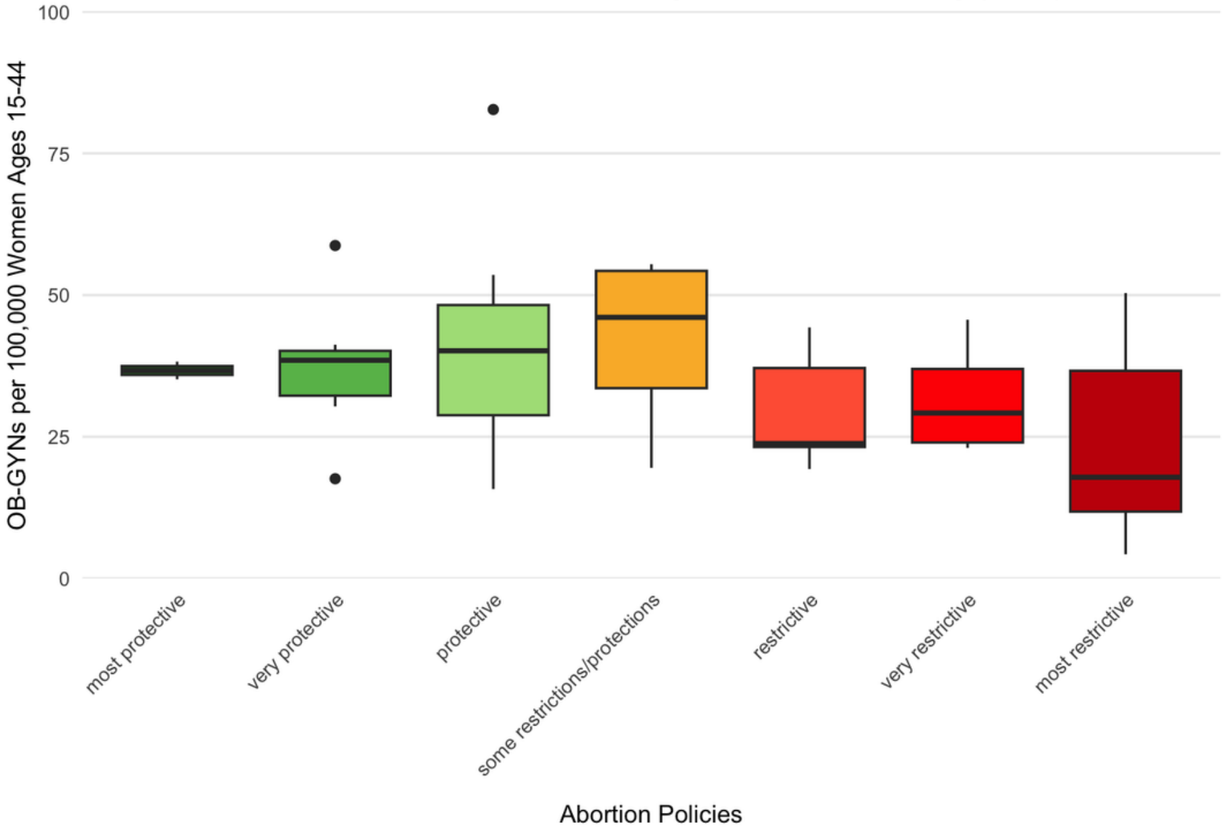


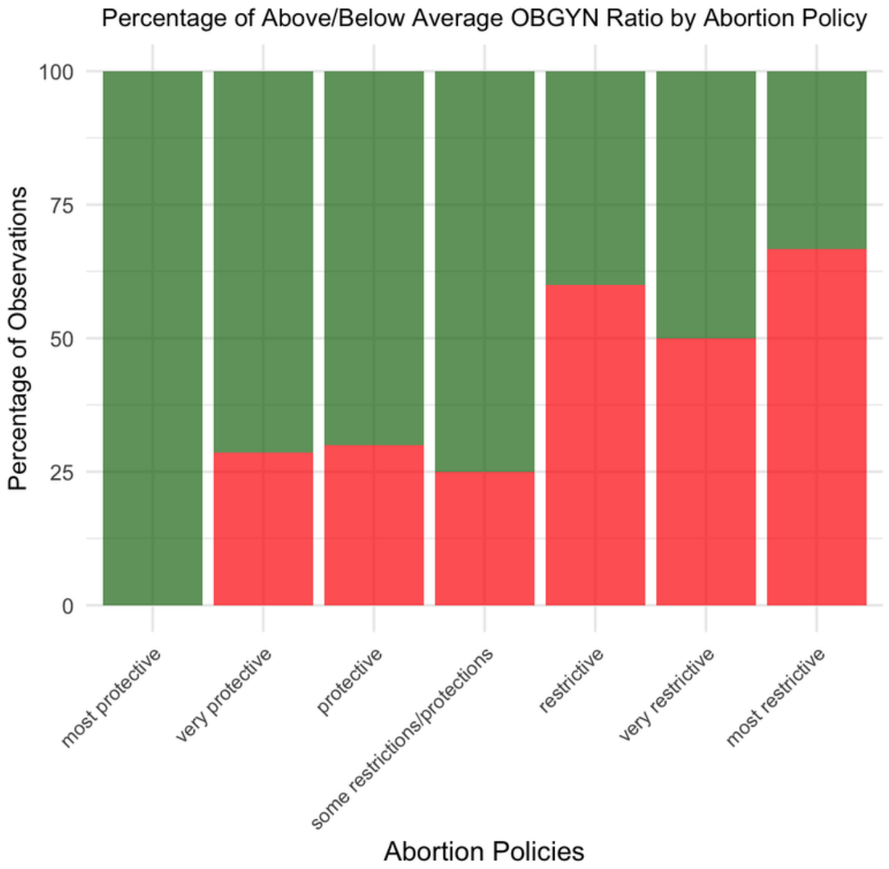
- Fischer's Exact Test: 0.01764
- Exact Logistic Regression p-val: 0.0419

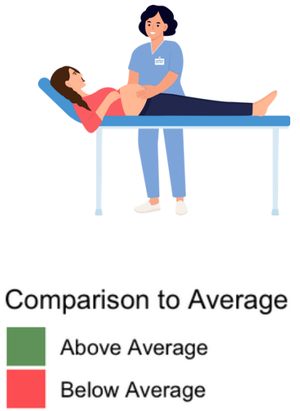




OB-GYN Access



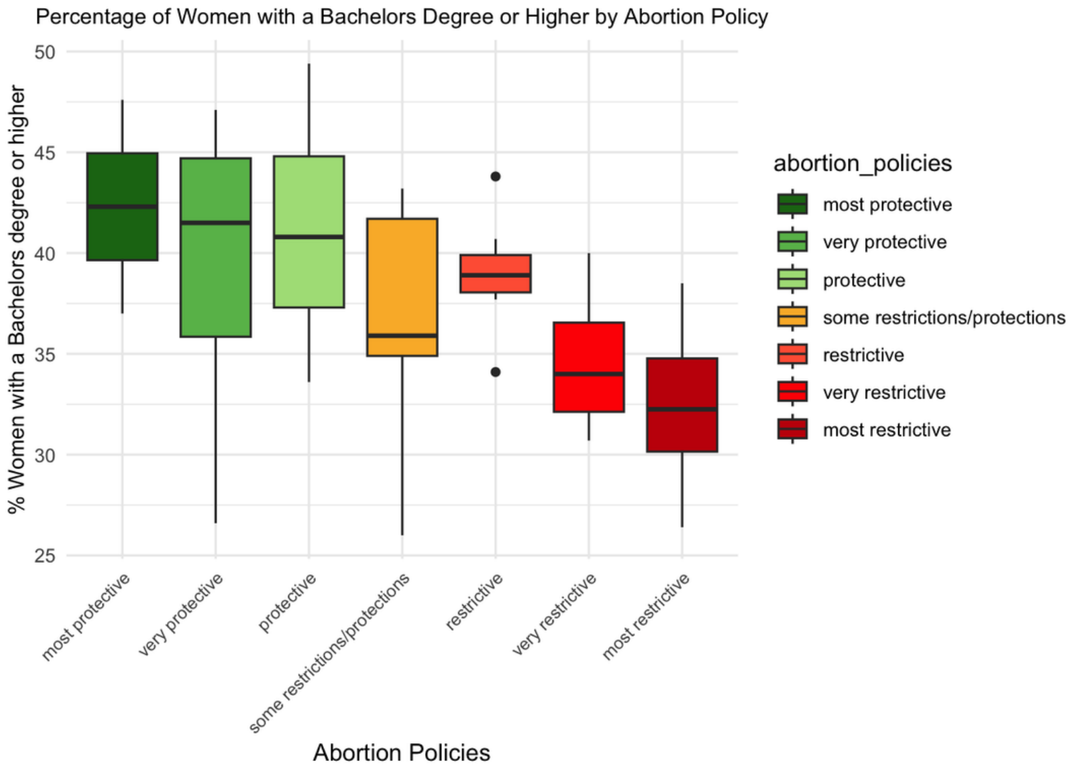


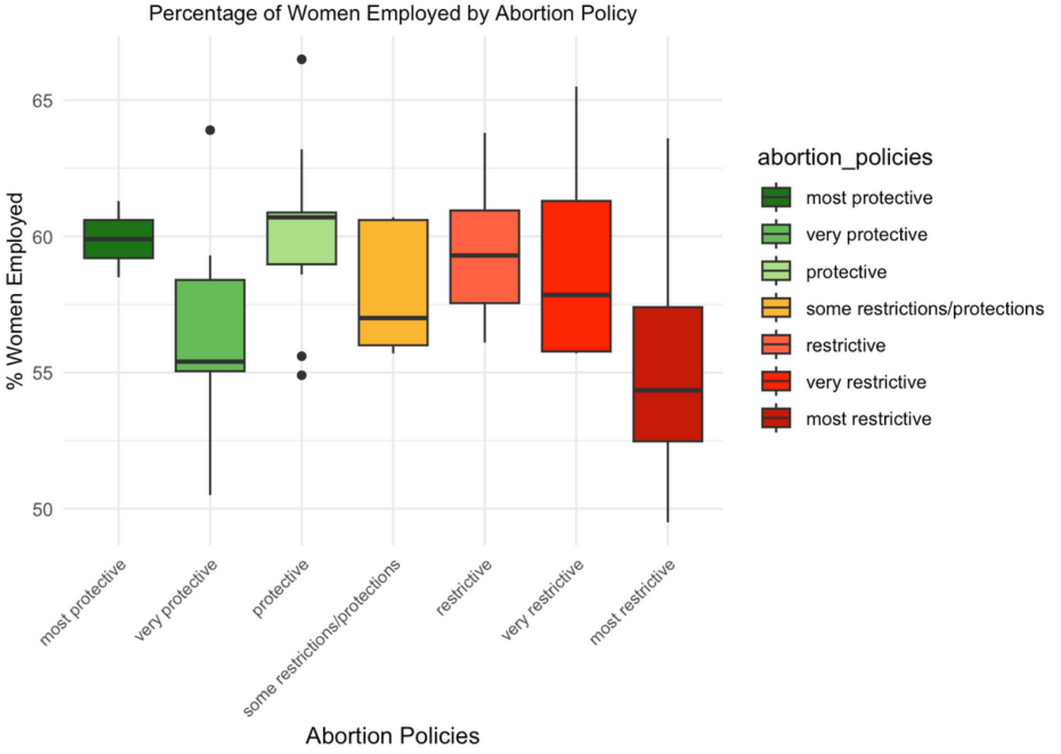


- Permutation test p-val: 0.15428
- Kruskal-Wallis p-val: 0.1683

Maternal Wellness

Female Education & Employment

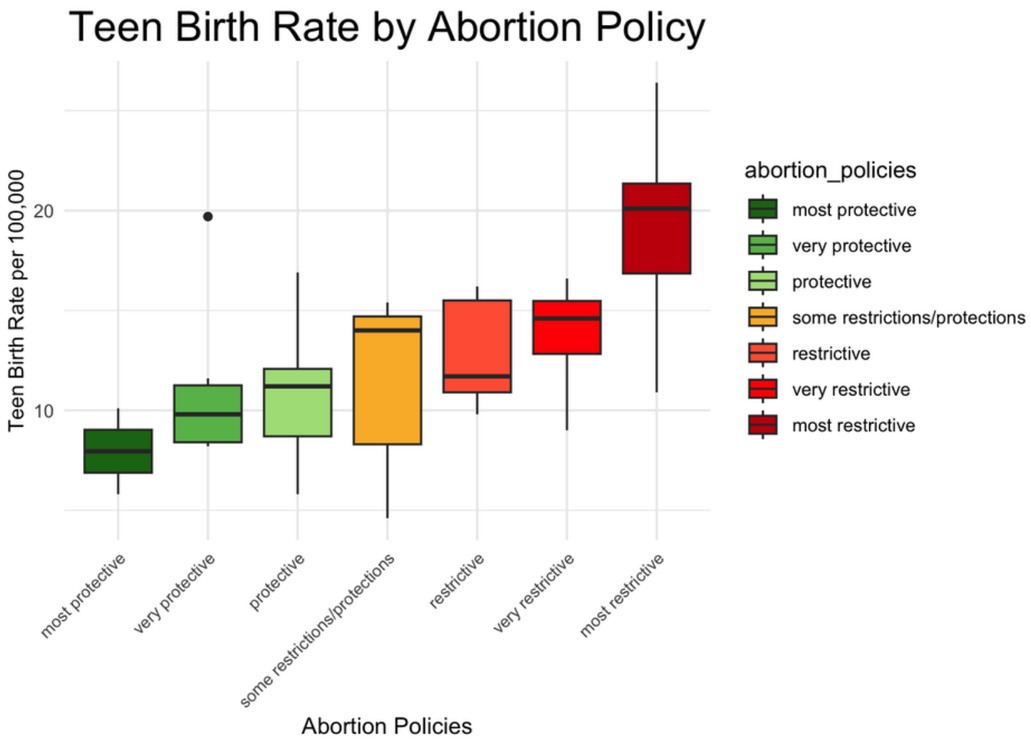


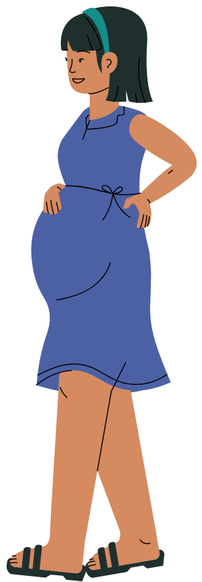


- Permutation test p-val: 0.0019
- Kruskal-Wallis p-val: 0.003362

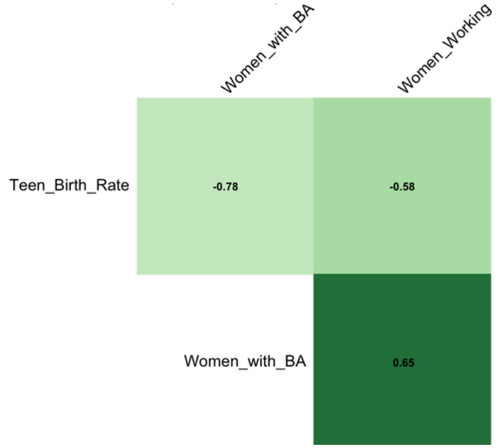
- Permutation test p-val: 0.0296
- Kruskal-Wallis p-val: 0.0309

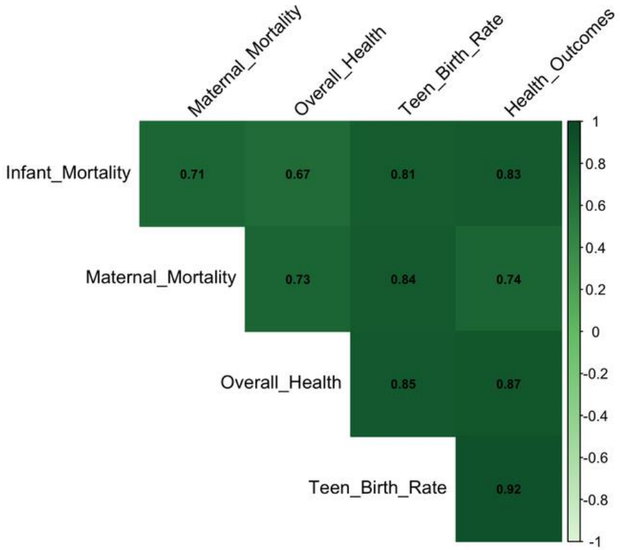
Teen Birth Rate





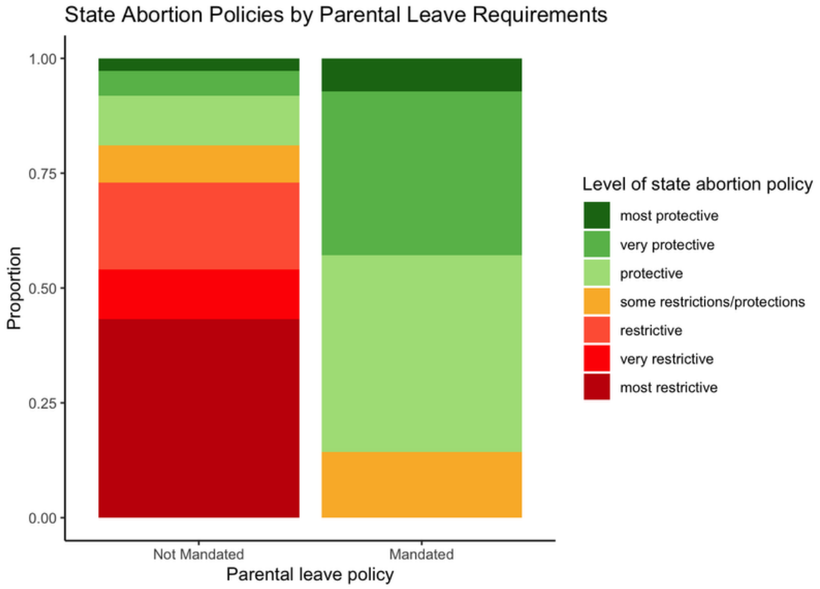
- Permutation test p-val: 0.00005
- Kruskal-Wallis p-val: 0.0002706



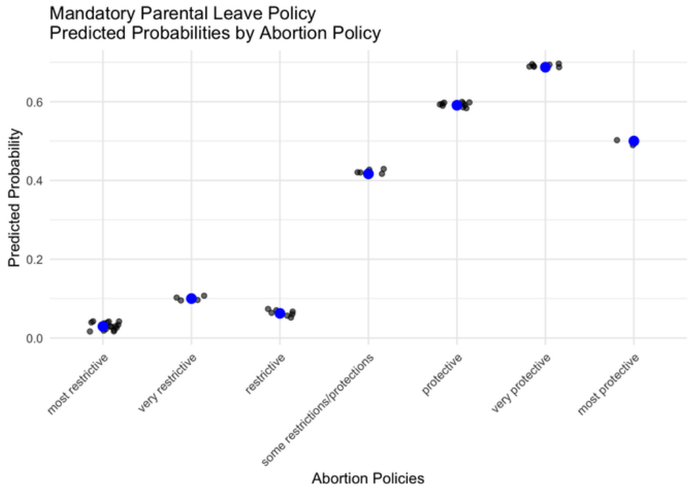


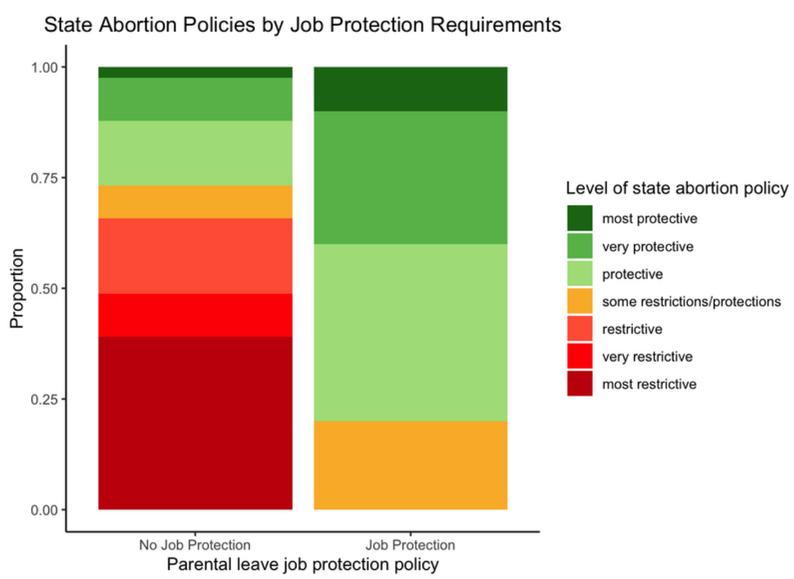
There are strong correlations between infant mortality, maternal mortality, teen birth rates, health, education, and women in the workforce

Parental Leave

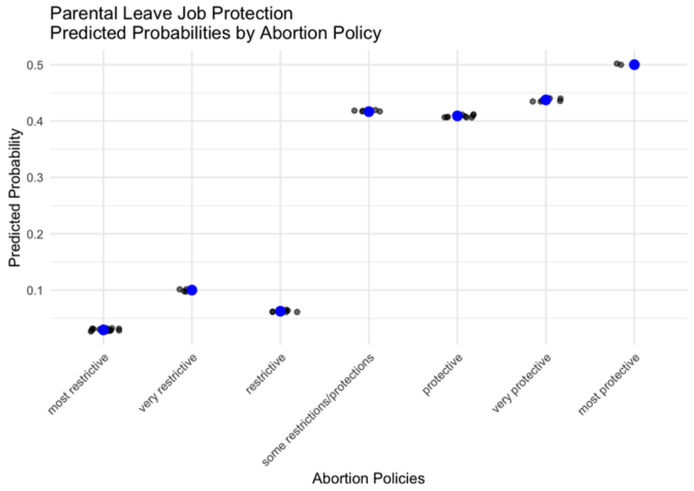


- Fisher's Exact Test p-val: 0.00006816
- Exact Logistic Regression p-val: 0.0010263

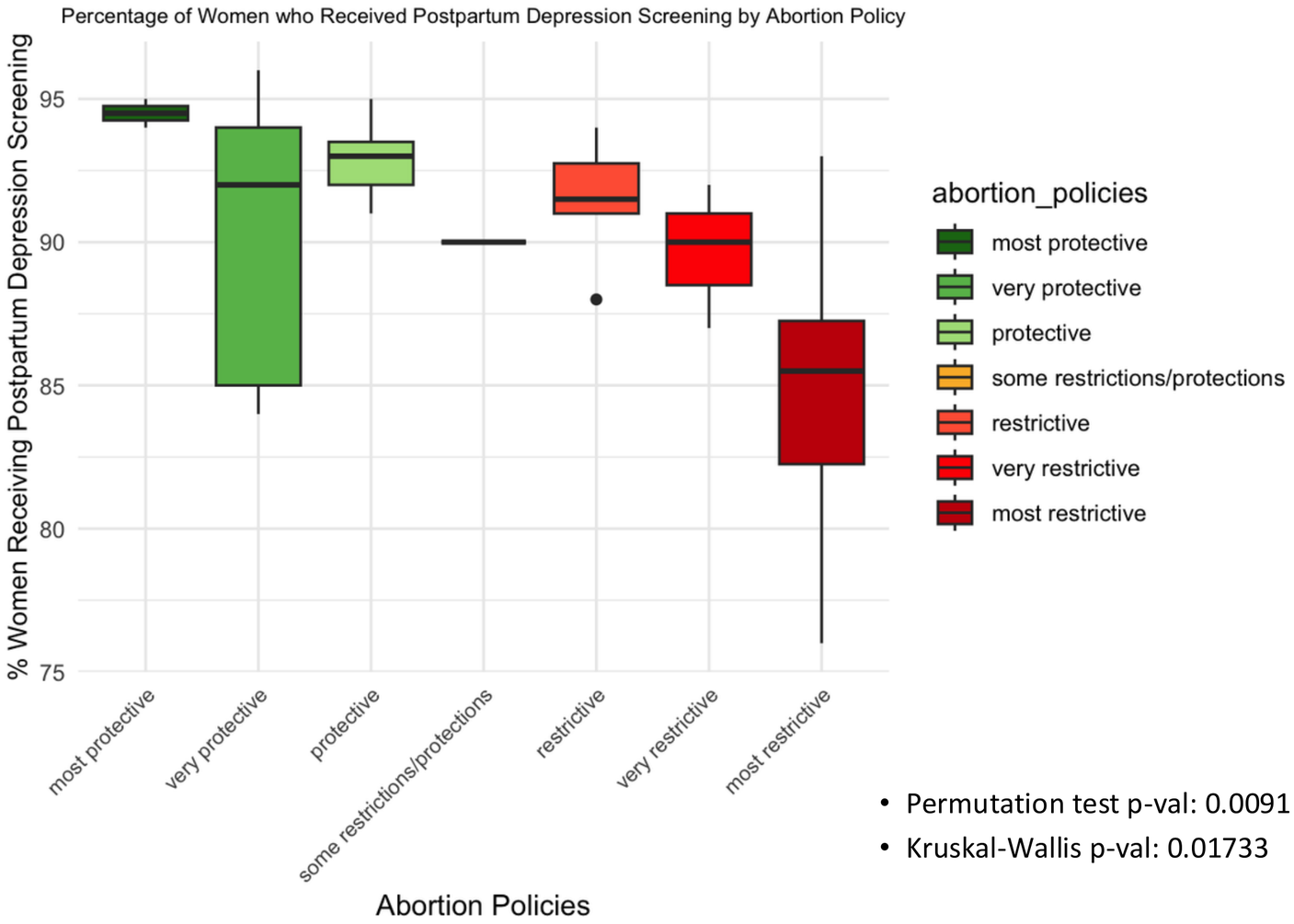




- Fisher's Exact Test p-val: 0.006869
- Exact Logistic Regression p-val: p=0.03880713



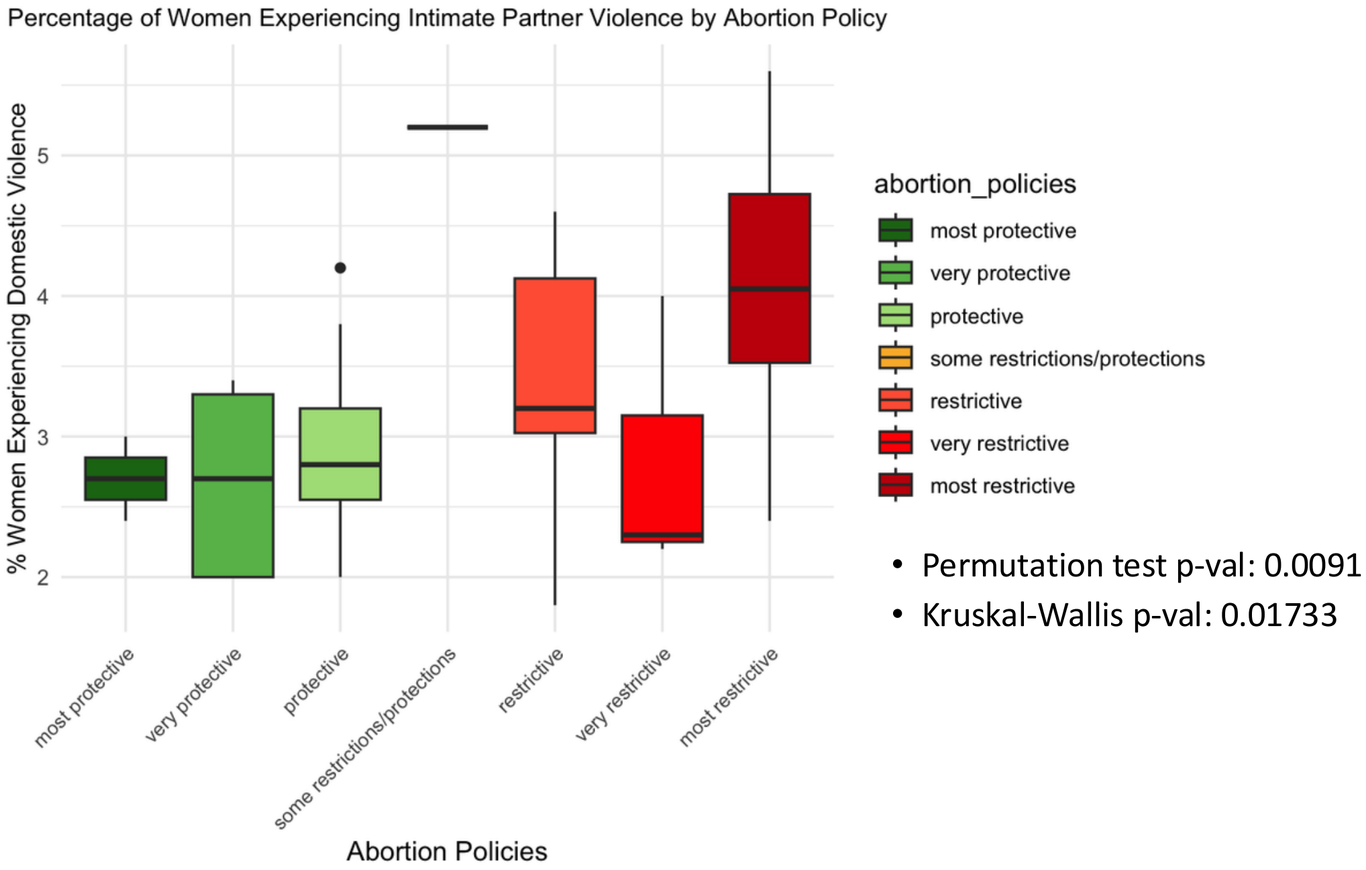
Postpartum Depression Screenings



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

- 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)

Intimate Partner Violence



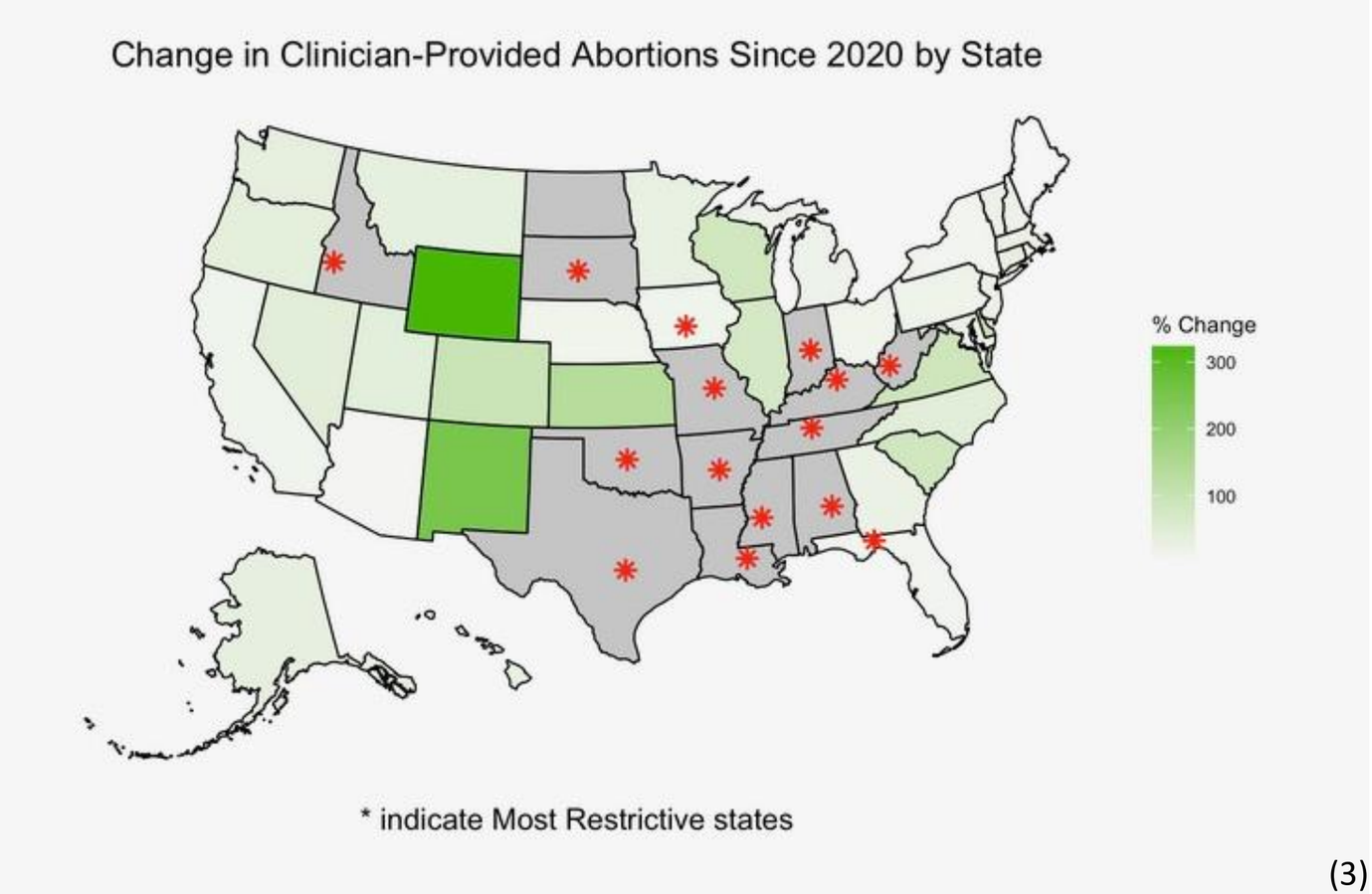
- Permutation test p-val: 0.0091
- Kruskal-Wallis p-val: 0.01733

Case Study:

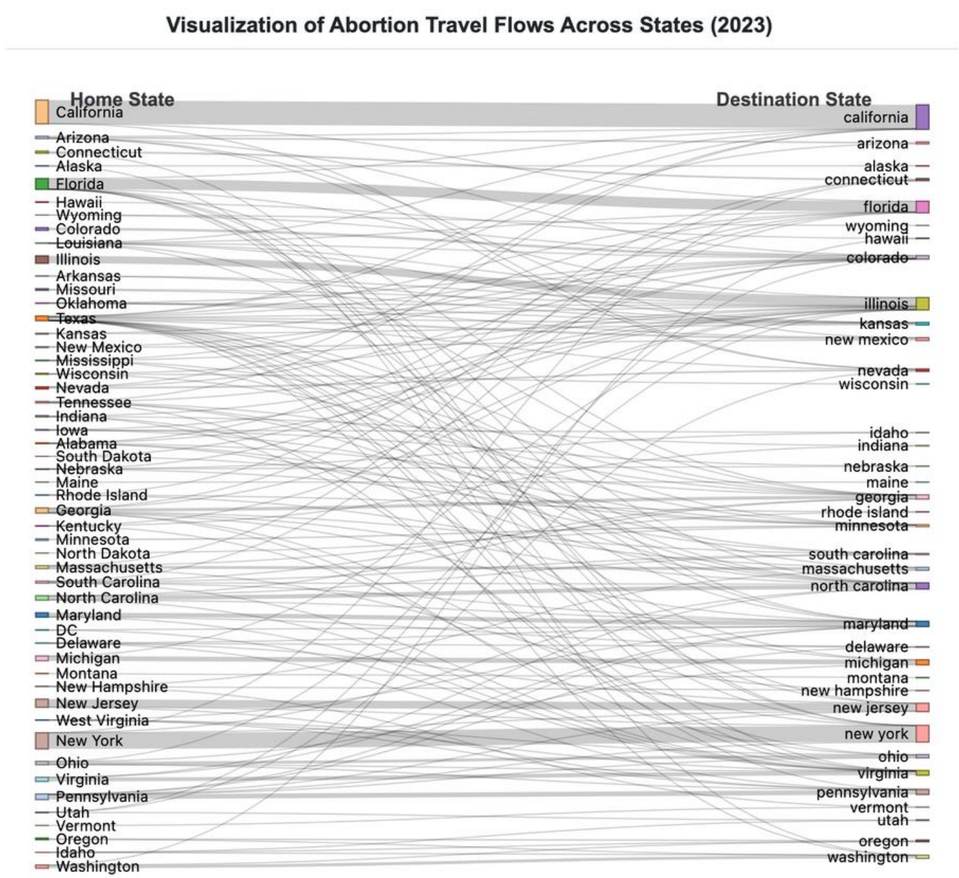
A study from 2019 showed that homicide during pregnancy or within 42 days of the end of pregnancy exceeded all the leading causes of maternal mortality by more than twice as much in the U.S. (9)

Conclusions

Travel


Change in Clinician-Provided Abortions Since 2020 by State
% Change
300
200
100
* indicate Most Restrictive states

(3)


Visualization of Abortion Travel Flows Across States (2023)
Home State
Destination State
California
Arizona
Connecticut
Alaska
Florida
Hawaii
Wyoming
Colorado
Louisiana
Illinois
Arkansas
Missouri
Oklahoma
Texas
Kansas
New Mexico
Mississippi
Wisconsin
Nevada
Tennessee
Indiana
Iowa
Alabama
South Dakota
Nebraska
Maine
Rhode Island
Georgia
Kentucky
Minnesota
North Dakota
Massachusetts
South Carolina
North Carolina
Maryland
DC
Delaware
Michigan
Montana
New Hampshire
New Jersey
West Virginia
New York
Ohio
Virginia
Pennsylvania
Utah
Vermont
Oregon
Idaho
Washington
california
arizona
alaska
connecticut
florida
wyoming
hawaii
colorado
illinois
kansas
new mexico
nevada
wisconsin
idaho
indiana
nebraska
maine
georgia
rhode island
minnesota
south carolina
massachusetts
north carolina
maryland
delaware
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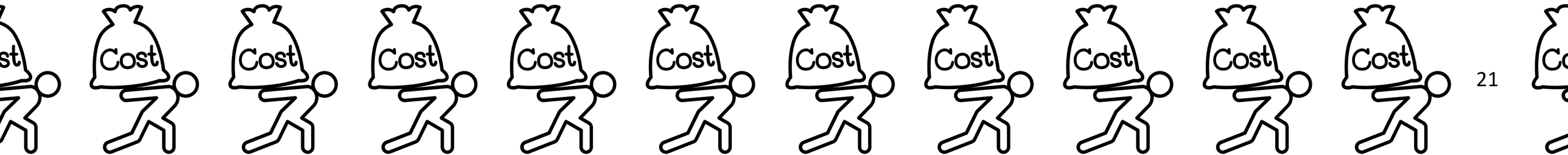
montana
new hampshire
new jersey
new york
ohio
virginia
pennsylvania
vermont
utah
oregon
washington


Cost
Cost
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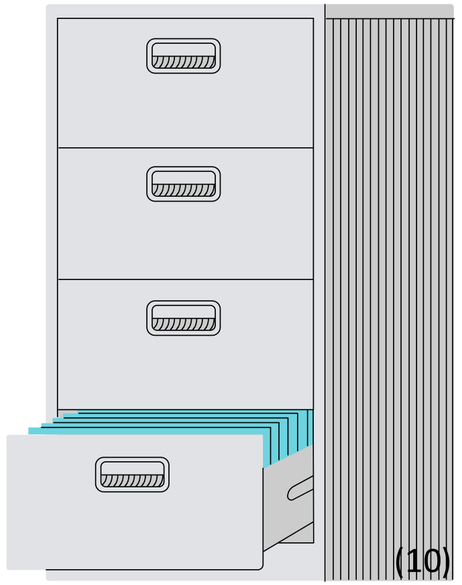
Cost
Cost

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


(10)

Conclusion

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

Further Exploration

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

References

1. Adkins, S., Talmor, N., White, M. H., Dutton, C., & O'Donoghue, A. L. (2024). Association Between Restricted Abortion Access and Child Entries Into the Foster Care System. JAMA pediatrics, 178(1), 37–44. https://doi.org/10.1001/jamapediatrics.2023.4738

2. Collins, S. R., et al. (2024). 2024 state scorecard on women's health and reproductive care: Appendices. The Commonwealth Fund. https://www.commonwealthfund.org/sites/default/files/2024-07/Collins_2024_state_scorecard_womens_health_APPENDICES.pdf

3. Guttmacher Institute. (n.d.). Interactive Map: US Abortion Policies and Access After Roe. Retrieved December 1, 2024, from https://states.guttmacher.org/policies/

4. Guttmacher Institute. (n.d.). Reproductive health indicators by U.S. states: Population estimates. Retrieved December 1, 2024, from https://data.guttmacher.org/states/table?state=US+AL+AK+AZ+AR+CA+CO+CT+DE+DC+FL+GA+HI+ID+IL+IN+IA+KS+KY+LA+ME+MD+MA+MI+MN+MS+MO+MT+NE+NV+NH+NJ+NM+NY+NC+ND+OH+OK+OR+PA+RI+SC+SD+TN+TX+UT+VT+VA+WA+WV+WI+WY&dataset=data&topics=151

5. Guttmacher Institute. (2024, June 21). Monthly Abortion Provision Study. Monthly Abortion Provision Study | Guttmacher Institute. (2024, June 21). https://www.guttmacher.org/monthly-abortion-provision-study

6. Guttmacher Institute. (2024, September). State Requirements for Insurance Coverage of Contraceptives. KFF. https://www.kff.org/other/state-indicator/state-requirements-for-insurance-coverage-of-contraceptives/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

7. Guttmacher Institute. (n.d.). Abortion Rights Ballot Measures Win in 7 out of 10 US States. Retrieved December 1, 2024, from https://states.guttmacher.org/policies/

8. Wallace, M. E., Stoecker, C., Sauter, S., & Vilda, D. (2024). States' Abortion Laws Associated With Intimate Partner Violence-Related Homicide Of Women And Girls In The US, 2014-20. Health affairs (Project Hope), 43(5), 682–690. https://doi.org/10.1377/hlthaff.2023.01098

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