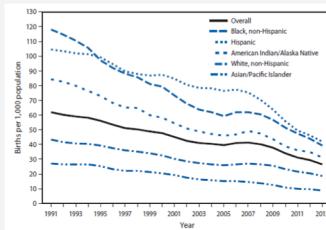


A Spatial Investigation of the United States Birth Rate

Lucas Brown, Lily Irvin, Jeremy Krovitz, Gina Qian, Eva Stromgren

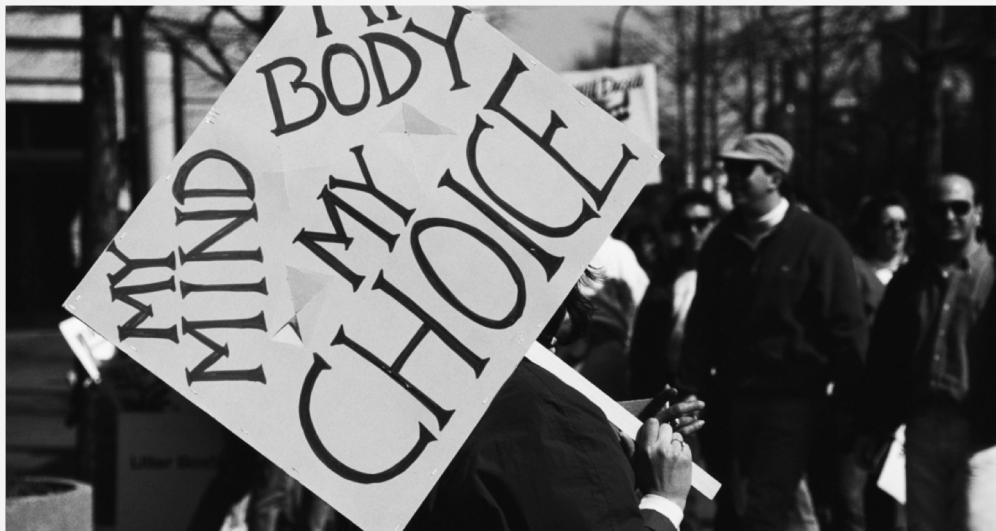
Birth Rate

- By some projections, Americans are not bearing enough children to replace themselves, which has the potential to lead to a significant drop in the United States' population in the coming decades
- Below two births per woman
- Can be influenced by:
 - ◆ Income level (Affordability for housing and education)
 - ◆ Infertility
 - ◆ Reproductive rights (contraception and abortion)



What are Reproductive Rights?

- Reproductive rights are defined as the rights of an individual to decide whether they want to and how they want to reproduce and maintain their reproductive health



Research Question

Were reproductive rights spatially associated with the number of total births at the state level in the U.S. in 2014?



Our Variables

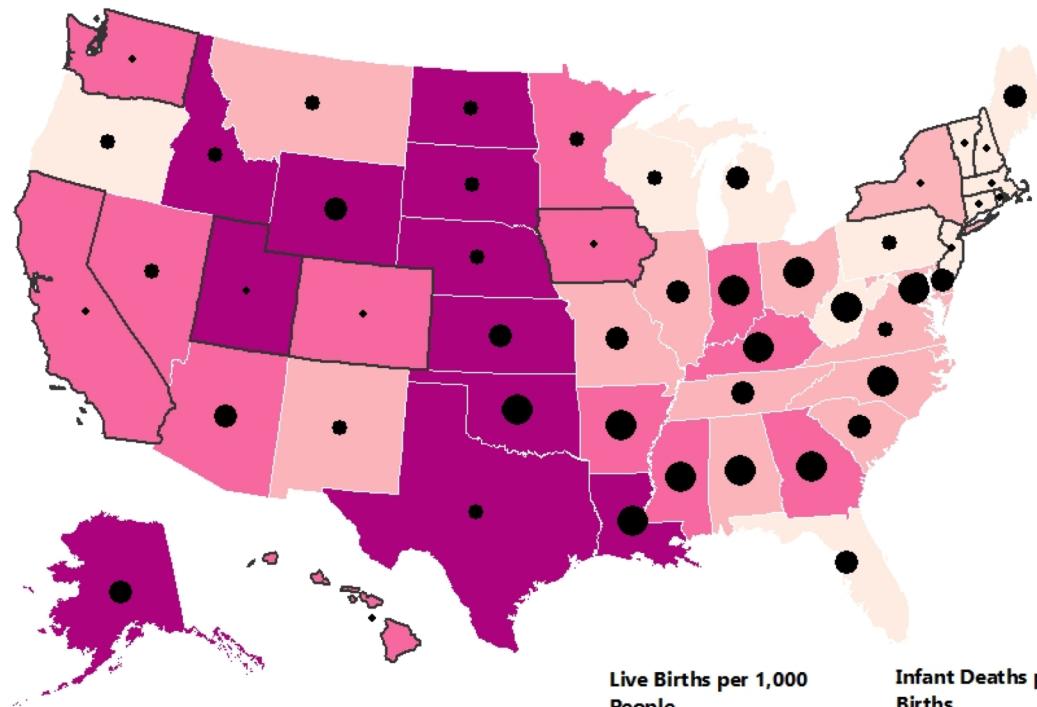


- Choropleth of birth rate on every map- ACS 5-Year Estimates, Guttmacher Institute
- Graduated symbols of:
 - Infant Mortality Rates - CDC
 - STD Rates- Chlamydia, Gonorrhea, and Syphilis - CDC
 - Per Capita Incomes - ACS 5-Year Estimates
 - Health insurance coverage - ACS 5-Year Estimates
 - Needs met by title X funded centers - Guttmacher Institute
 - Access to Abortion Providers - Guttmacher Institute
 - Abortion Rates - Guttmacher Institute

Geoprocessing Tools

- **Join** - each reproductive factor to the U.S. shapefile
- **Intersection** - all three sexually transmitted disease (STD) layers that were used in the index map
- **Select by attribute** - 25% of states doing the best for the reproductive rights factor

Birth Rate and Infant Mortality, U.S. 2014



*Top 25% of states with the lowest rates of infant mortality (infant deaths 1,000 live births)

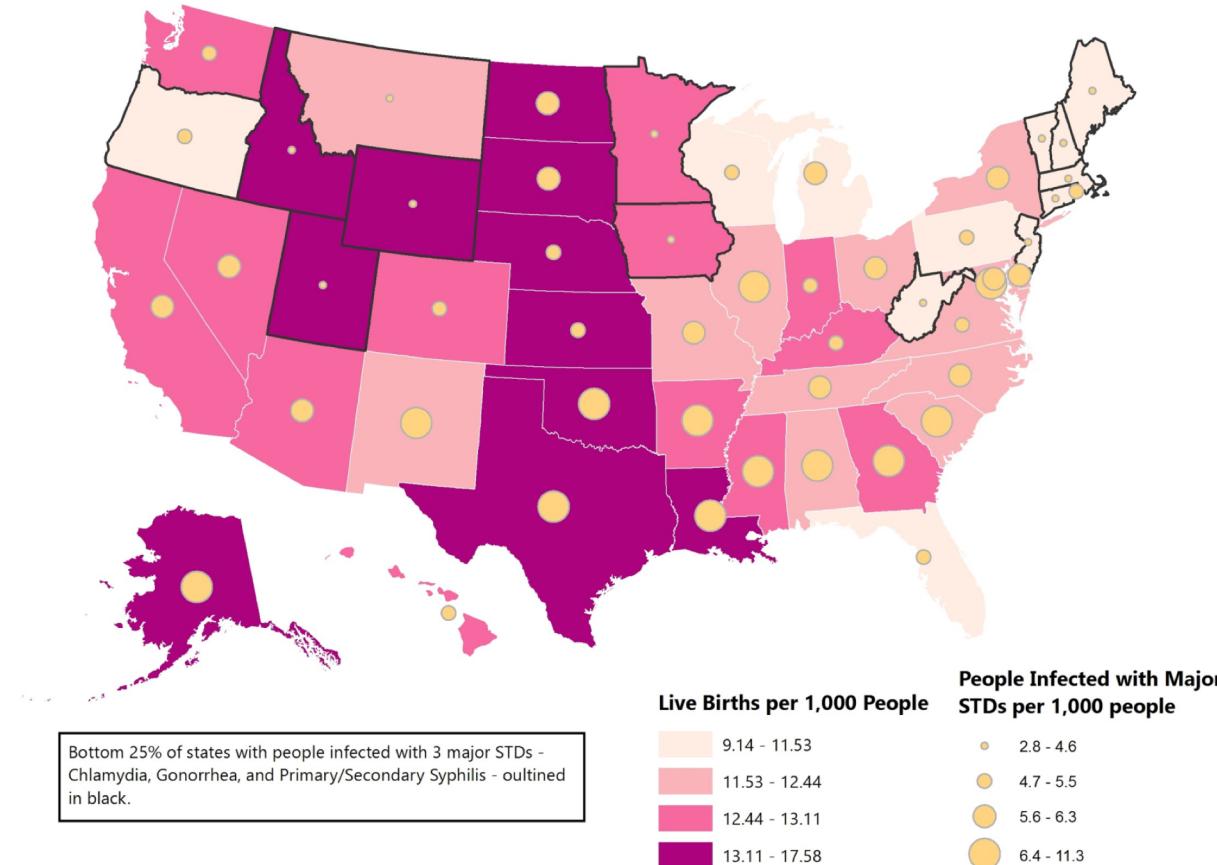
Live Births per 1,000
People

9.14 - 11.53
11.54 - 12.44
12.45 - 13.11
13.12 - 17.58

Infant Deaths per 1,000
Births

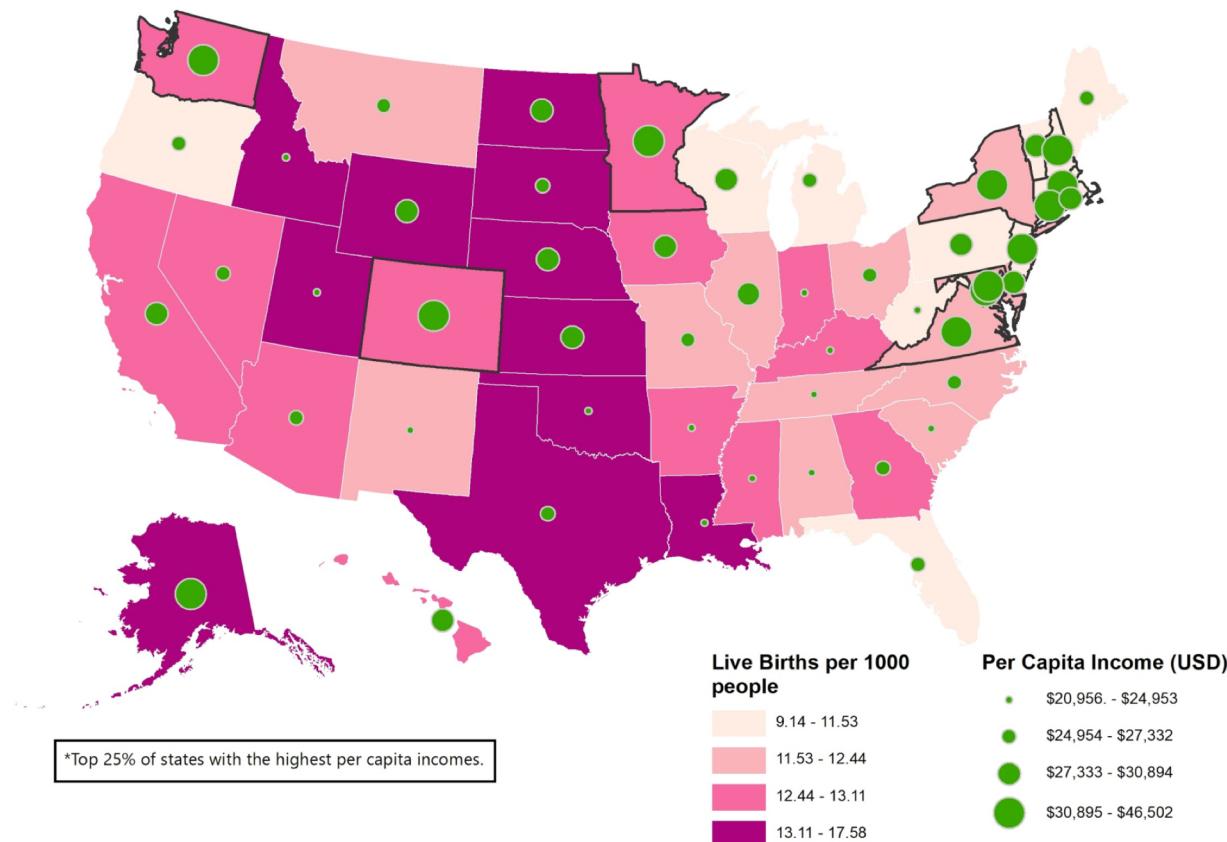
4.32 - 4.91
4.92 - 5.89
5.90 - 6.88
6.89 - 8.67

Birth Rate and Sexually Transmitted Diseases, U.S. 2014

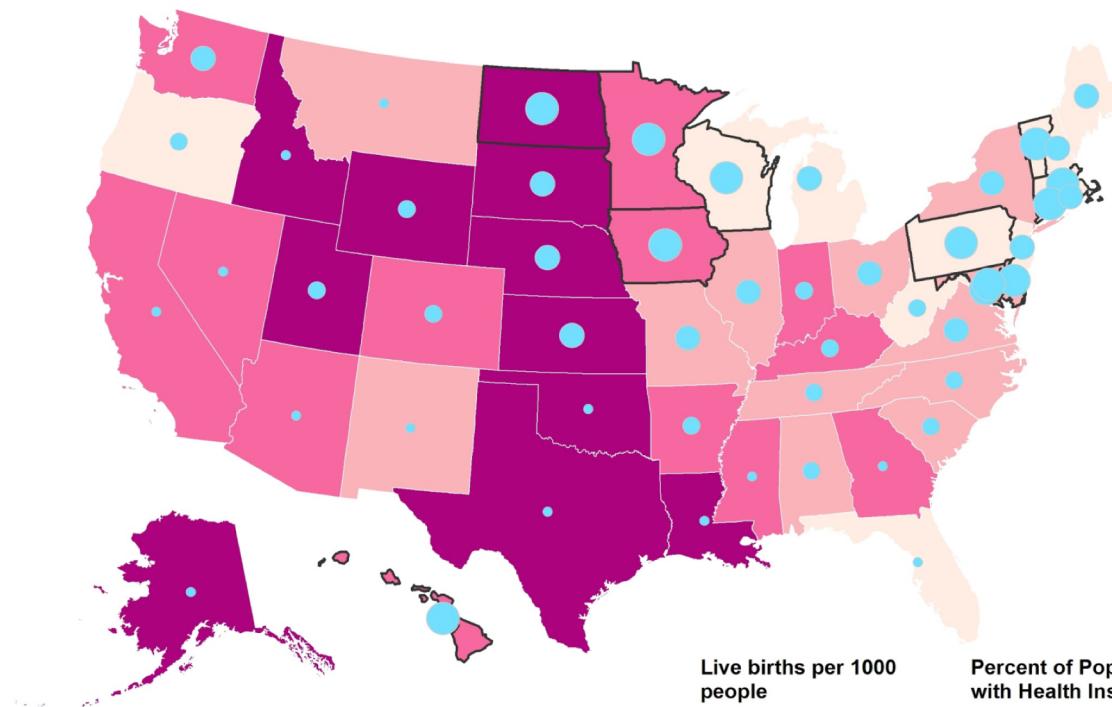


Cartographer: Gina Qian 4/23/2019; Sources: Esri 2012 (U.S. 50 States DC Shapefiles), CDC WONDER STDs by Age, Race/Ethnicity, and Gender, 2014, U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates; Projections: USA Contiguous Albers Equal Area, Alaska Contiguous Albers Equal Area, Hawaii Contiguous Albers Equal Area; Data Classification: Quartiles

Birth Rate Versus Per Capita Income, U.S. 2014

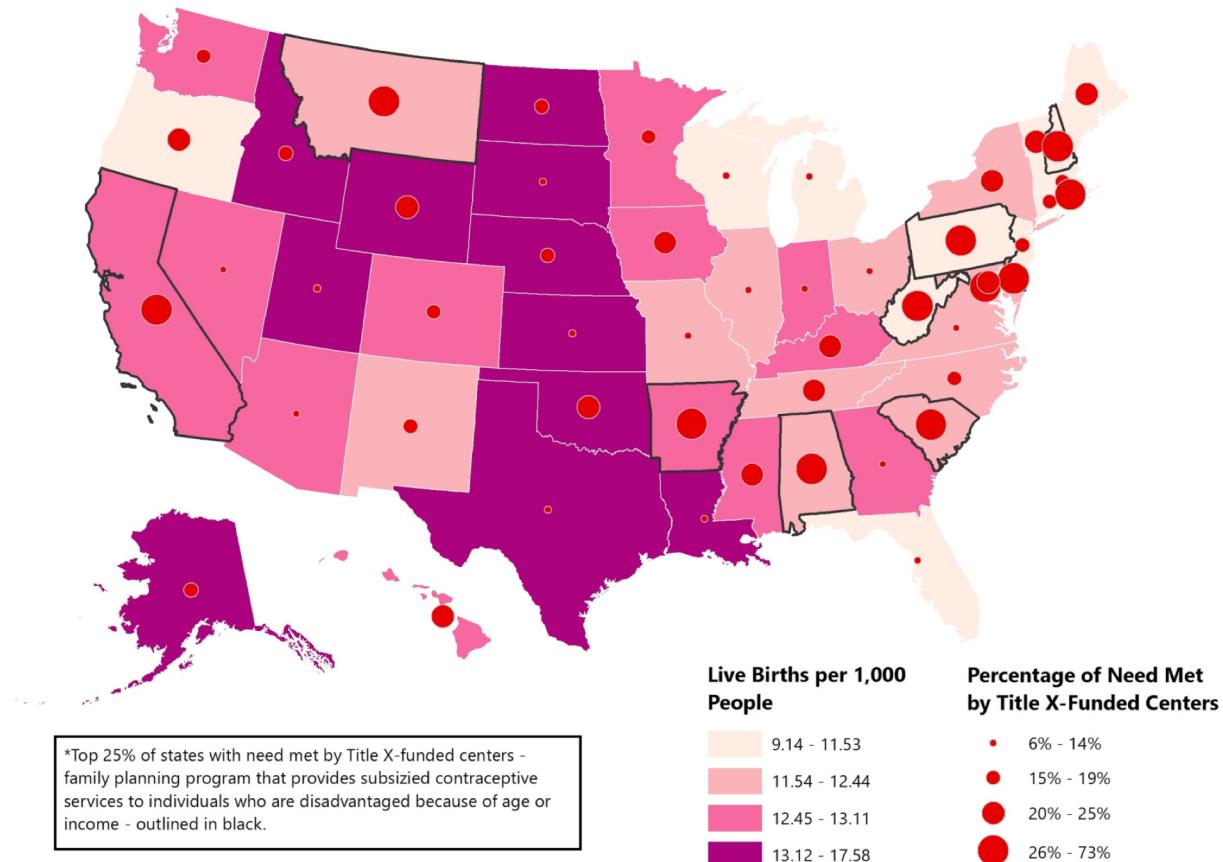


Birth Rate Versus Health Insurance Coverage, U.S. 2014

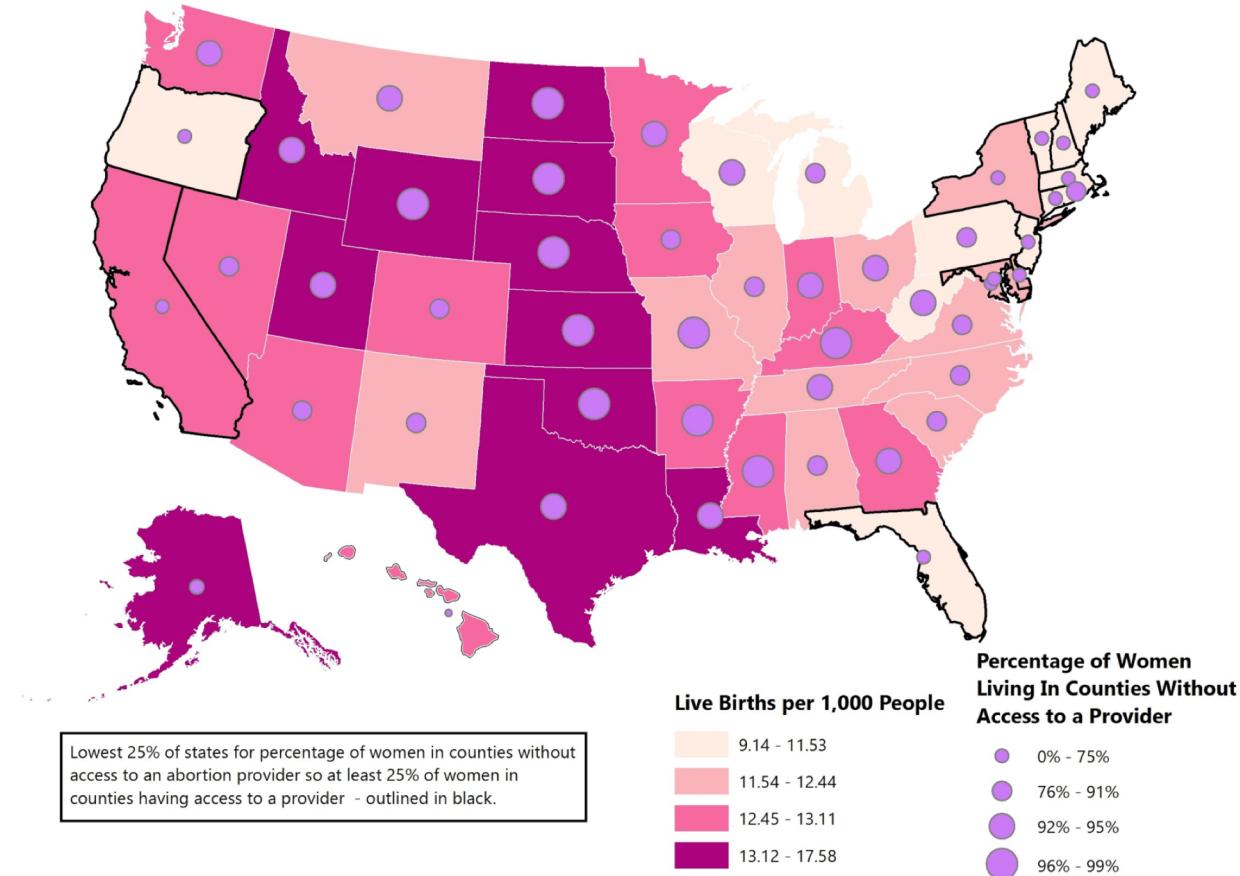


*Top 25% of states with the highest percentage of the population with health insurance.

Birth Rate and Needs Met by Title X-Funded Centers, U.S. 2014

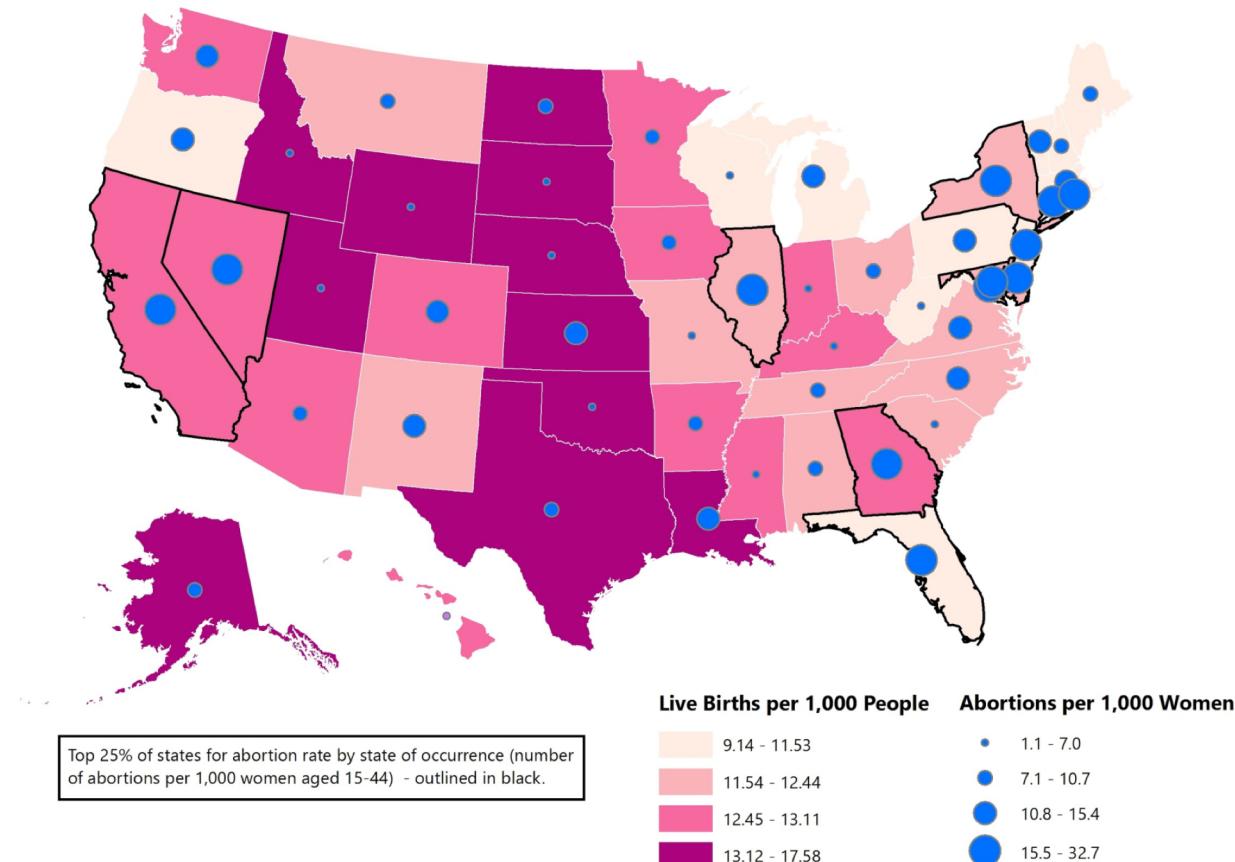


Birth Rate and Access to Abortion Providers, U.S. 2014



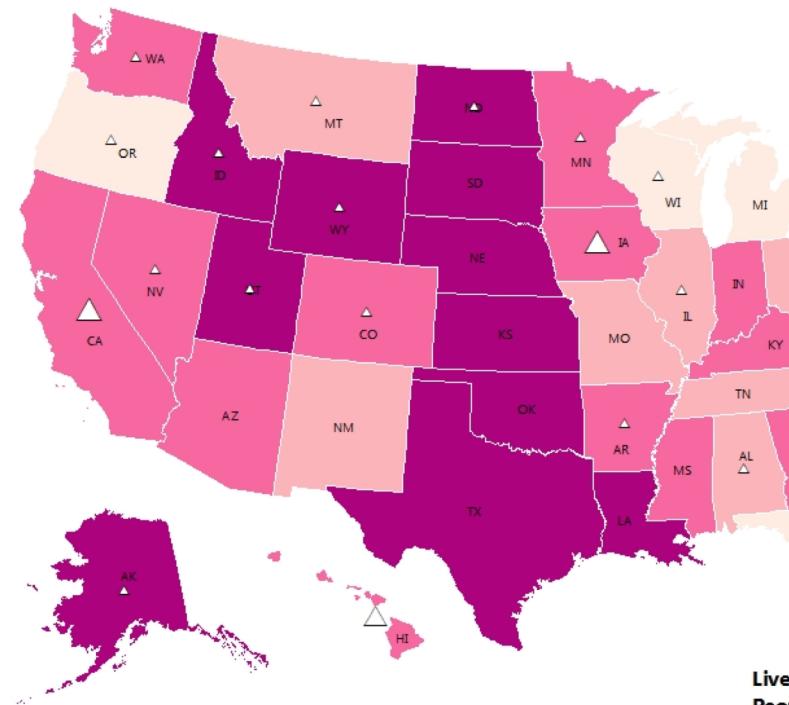
Cartographer: Eva Stromgren 4/23/2019; Sources: Esri 2012 (US 50 States DC Shapefile), Guttmacher Institute Data Center 2018 (No. of pregnancies ending in birth, 2014), Guttmacher Institute Data Center 2015, 2016 (% of women aged 15-44 living in a county without a clinic, 2014), U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates; Projections: USA Contiguous Albers Equal Area, Alaska Contiguous Albers Equal Area, Hawaii Contiguous Albers Equal Area;
Data Classification: Quartiles

Birth Rate and Abortion Rate, U.S. 2014

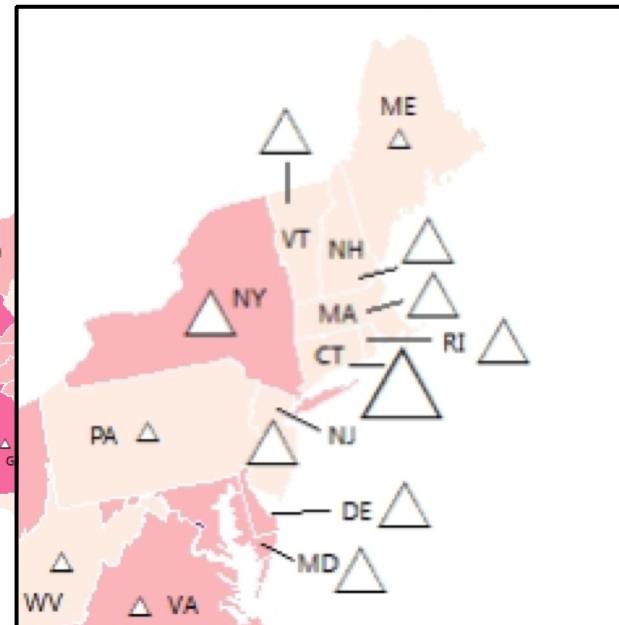


Cartographer: Eva Stromgren 4/23/2019; Sources: Esri 2012 (US 50 States and DC Shapefile), Guttmacher Institute Data Center 2018 (No. of pregnancies ending in birth, 2014), Guttmacher Institute Data Center 2016 (No. of abortions per 1,000 women aged 15-44) by state of occurrence 2014, U.S. Census Bureau, 2010-2014, American Community Survey 5-Year Estimates; Projections: USA Contiguous Albers Equal Area, Alaska Contiguous Albers Equal Area, Hawaii Contiguous Albers Equal Area; Data Classification: Quartiles

Birth Rate and Reproductive Rights, U.S. 2014



The graduated symbols on this map count the number of 'top 25th percentiles' a state was present in for each of the previous 7 factors, and compares it to each state's birth rate in 2014. States with 0 thresholds met do not have a symbol.



Live Births per 1,000 People	Number of Reproductive Rights Thresholds Met
9.14 - 11.53	△ 1 - 2
11.54 - 12.44	△ 3 - 4
12.45 - 13.11	△ 5 - 6
13.12 - 17.58	△ 1 - 2

Conclusions

- Access to Title X centers, access to abortion clinics, and higher abortion rates correlate with lower birth rates.
- New England had high levels of reproductive rights, Southern and Central parts of the country had the lowest levels.
- Further exploration can include more variables, different scales of data analysis

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