

## Mapping Abortion Access: Teaching about Abortion through Geography

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### Cover Page Footnote

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## Introduction and Rationale

On June 24, 2022 the Supreme Court of the United States' decision in *Dobbs v. Jackson Women's Health Organization* overturned *Roe v. Wade*, eliminating the constitutional right to abortion and redirecting abortion regulation to the states. Though *Roe* established a federal right to abortion in 1973, a 1992 Supreme Court case, *Planned Parenthood of Southeast Pennsylvania v. Casey*, allowed for states to regulate abortion in ways that have impacted abortion availability and access. Analyzing how states regulated abortion under *Casey* prepares students to understand and anticipate state variation in abortion legality and availability in a post-*Dobbs* context. We introduce an activity where students map county abortion rates and the locations of abortion clinics to analyze how state legislative changes correspond to changes in population abortion patterns.

We teach about abortion from a feminist perspective that centers how policy shapes the availability of abortion care. The abortion landscape matters because when individuals seek abortions, they do so in environments which are more or less conducive to obtaining safe and effective care (Calkin 2019; Calkin and Freeman 2018). Feminist geographers have shown mapping can demonstrate the spatial dimensions of oppression and interrogate social structures (Krupar 2015; Rose 1993). One way that abortion access has been stratified in the United States is through the geographic distribution of abortion providers (Bearak et al 2017). We give students the tools to share this knowledge outside of the classroom by teaching students how to use publicly-available data to demonstrate the deterioration of abortion availability in an abortion-hostile state. This activity puts ideas into action by moving students from consuming information about abortion to forming their own knowledge by transforming raw data into maps.

This assignment is suitable for upper-level undergraduate or graduate courses in geography, sociology, women's and gender studies, public health, public policy, or political science, especially courses or modules in feminist methodology or feminist geography. This activity is best-suited for these groups due to the specificity of the subject matter and methods. Prior to commencing, instructors should discuss legal attacks on abortion in the United States, introducing the concept of Targeted Regulation of Abortion Providers (TRAP) laws. We also recommend two readings to further contextualize this activity. The first reading (Bearak et al 2017) focuses on the spatial challenge of abortion access in the United States and will help orient students to the study of abortion access through mapping. The second (McLafferty 2002) describes how feminist methodologies can be combined with geographic information systems (GIS) to create new forms of feminist knowledge.

This activity focuses on analyzing population abortion rates and abortion clinic locations in the context of state abortion legislation. We situate this assignment in the perspective of *feminist geography* to link social problems of interest to feminist activists and scholars to environmental or geographic factors (Nelson and Seager 2005). This project empowers students to use geographic tools in a feminist analysis of abortion regulations. Our activity is an innovative way for instructors to introduce the topic of abortion regulation and access into the classroom while teaching basic mapping functions in ArcGIS (ESRI 2020).<sup>1</sup> Students transform and map two

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<sup>1</sup> ArcGIS is a program used to analyze data and form maps. ArcGIS has both software and online versions and is widely used by universities, non-profits, and government agencies. Not all components of the software are free to access for all. Many colleges have computers with ArcGIS licenses. However, students can access basic functionalities by creating a free public account through ArcGIS Online (ESRI 2022). Instructors who wish to learn more about how to make maps using ArcGIS can use these simple mapping instructions posted by ESRI: <https://www.esri.com/arcgis-blog/products/mapping/mapping/map-making-step-by-step/>

forms of data in ArcGIS to analyze patterns in specific state legislative contexts. This assignment is based off a mapping project the authors conducted to study the relationship between increased abortion regulation and dwindling numbers of abortion clinics in Ohio between 2007 and 2020 (Johns-Wolfe et al. 2021). Educators who wish to use this activity could use Ohio as an exemplar of an abortion-hostile regulatory environment (Nash 2019), or they could develop data for their own state. Using data from the state in which one is teaching would equip students with knowledge of how abortion has been regulated where they live.

### Learning Objectives

Students who complete this activity will be able to 1) describe and interpret existing state-level abortion legislation, 2) analyze abortion availability in an abortion-hostile state, 3) calculate abortion rates using spreadsheet software, and 4) map county- and clinic-level data in ArcGIS. The primary takeaway from this lesson is that increasing volume of TRAP laws are associated with abortion clinic closures and decreasing abortion rates in abortion-hostile states, like Ohio (Norris et al. 2020). Additionally, students will analyze the difference between abortion legality and abortion availability, and determine the relationship between TRAP laws, abortion clinic closures, and abortion rates. While there is considerable, and warranted, national attention focused on the impact the *Dobbs* decision on abortion legality in the United States, this activity shows how federal and state policy combine to mediate abortion availability regardless of whether abortion is federally protected (Mello et al 2021).

### Explanation

We estimate this activity will take three hours of class time to complete. For a standard course, this could be spread across two days of class, or could be completed in one longer course session. If split across two days, the first should be spent compiling and cleaning data in a spreadsheet software program, and the second should be spent mapping data in ArcGIS and writing about the patterns they observe. Students begin by compiling a database of county-level abortion counts for two years between 2007 and 2020 on a computer with spreadsheet software (e.g., Microsoft Excel or Google Sheets). In Ohio, and in select other states, the state Department of Health releases an annual induced abortion report that details the number of people who obtained abortions by the county in which patients resided (Ohio Department of Health 2021). We ask students to download abortion counts by county from the Ohio Department of Health website and create a spreadsheet.

Next, students download a second set of publicly available data from the United States Census Bureau's American Community Survey (ACS), an ongoing survey that collects demographic and household information. The Census Bureau provides estimates at different geographic levels (e.g., states, counties, census tracts, etc.) and, to protect respondents' privacy and reduce estimation errors, for different time periods (e.g., 1-year estimates or 5-year estimates) according to those geographic levels. To construct abortion rates, students should download ACS 5-year estimates for the number of females aged 15 to 44 by county in the selected state<sup>2</sup>. It is typical for researchers to center the year under examination when choosing which 5-year estimates to use (e.g., when studying 2017, use the 2015-2019 5-year ACS estimates). Once downloaded, the students merge these datasets by county. The resulting

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<sup>2</sup> Number of females aged 15 to 44 is a common denominator for calculating abortion rates since government institutions rely on assigned sex instead of gender to organize their data.

spreadsheet should have six columns: county name, county geoid (a standard identification number), abortion count year 1, abortion count year 2, females aged 15-44 year 1, and females aged 15-44 year 2. Students use these columns to calculate an abortion rate (i.e., number of abortions per 1,000 females aged 15-44) for each year in two additional columns. To calculate this rate, the students should divide the abortion count column by the number of females aged 15-44 column, and multiply this by 1,000. Finally, we provide students with a novel dataset that lists the longitude and latitude of abortion clinics in Ohio.<sup>3</sup> Instructors can create their own similar dataset if analyzing a different state and convert addresses to latitude-longitude through the Census Geocoder (<https://geocoding.geo.census.gov/geocoder/>).<sup>4</sup> In combination, these three sources of data form a database that students will use to map abortion rates and abortion clinic closures over time.

In the second hour, students create state maps for their analysis years using the datasets they created in the first hour<sup>5</sup>. This happens in two steps. First, the students upload a county shapefile for the state and their county-level spreadsheet to ArcGIS Desktop, ArcGIS Pro, or ArcGIS Online, whichever program the instructor chooses. A shapefile is the necessary geospatial file format for GIS software programs. Instructors can find shapefiles specific to their state on the TigerLINE Census Bureau website (<https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-line-file.html>). Next, students join<sup>6</sup> the spreadsheet to the shapefile using the common identifier (geoid) so that they can symbolize each county by its abortion rate. Instructors should encourage students to experiment with different ways of symbolizing the data using graduated colors—from quantiles to natural breaks to equal intervals—to understand how different methods emphasize different patterns. Second, the students upload the clinic spreadsheet. To show the clinics, they need to display XY coordinates. The students should choose different symbols to indicate whether the clinic was open or closed in their analysis years. Once the students experiment with different symbolization techniques, the class should reach a consensus on how to symbolize county abortion rates and the clinic statuses. Students then create one map per analysis year to submit to the instructor. Students can either choose or be assigned years, but the instructor should make sure all years are mapped so that they can be compared during discussion.

When students have formed two years of maps from their data, it is time to discuss their findings within the context of state-level abortion regulations. This is when the project moves from being a learning exercise focused on the development of technical skills to a feminist analysis of how policy impacts public health. Our team compiled a timeline of TRAP laws in Ohio which can be used to interpret the changes in rates which students help visualize with their maps (Heuerman et al 2021; Ohio Policy Evaluation Network 2022). When bringing students together for discussion, it's helpful to pull up both the series of completed maps, and the timeline of abortion regulations so the class can compare what laws passed in the years, or preceding the years, when there were major changes in abortion rates.

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<sup>3</sup> Instructors may also want to teach students to calculate abortion ratios. To do so, students will need to download the number of births by county for the state and years under examination. Ratios are calculated as the number of abortions divided by the number of births, then multiplied by 1,000. This results in the number of abortions per 1,000 live births.

<sup>4</sup> The dataset of coordinates for clinics in Ohio is available through request to authors.

<sup>5</sup> Instructors can adapt this activity by forming maps ahead of time and providing them for their students, then having their students engage in the analysis portion of this assignment.

<sup>6</sup> The word join in this context means merge, but within the field of geography and the program ArcGIS the word join is used to describe the function of merging multiple data sources

### Debriefing and Assessment

After class, instructors may assign a white-paper-style report, an infographic or zine, or another form of assessment based on the findings discussed in class. These outlets allow students to demonstrate what they learned, while also working on the skill of writing about and contextualizing findings within a federal and state policy landscape. Assignments can range in size depending on instructor preference; the goal is to have students demonstrate connections between data they produced and analyzed, and the corresponding policy landscape that informed abortion rates and clinic openings or closings.

While students, and Americans more broadly, are grappling with losing federal protections for abortion rights, this activity opens space for students to discuss how state-level regulation of abortion impacts availability and to theorize about the observed and expected impact on accessing timely abortion care (Society of Family Planning 2022). The debriefing for this assignment should begin in class, where instructors lead a group discussion with students about the impact that policy has on public health as it relates to abortion utilization. While debriefing, instructors can challenge students to make further connections about how recent changes in federal case law might impact the enforceability of TRAP laws, along with reviewing how access has changed after the repealing of federal protections. For example, prior to the overturning of *Roe*, Ohio's Heartbeat Bill, which criminalizes provision of abortion after detection of fetal cardiac activity (around 6-weeks gestation) was not in effect as a federal judge had placed an injunction on implementing the law while a legal challenge against it proceeded. The judge lifted the injunction the day *Roe* was overturned, and the law went into effect immediately, criminalizing provision of abortion after detection of fetal cardiac activity until a state court-issued injunction took effect in September 2022 (Ohio Policy Evaluation Network 2022).

Student perspectives on this topic might vary as abortion is highly politicized in the United States. Instructors might anticipate resistance from students to engage with this topic, or instructors might be hesitant to introduce this topic for fear of having to manage conflict in the classroom (Millar 2019). However, instructors should remind the class that the purpose of this assignment is to teach students about how TRAP laws have changed the geographic distribution of abortion in specific regulatory contexts, not to debate the morality of abortion, which may mitigate the potential for the debrief to devolve into an ethical debate. While abortion is typically viewed as a controversial and stigmatized topic to cover, this activity allows instructors to introduce a topic that has been central to feminist scholarship and advocacy without focusing on debating the morality of specific policies or procedures.

In post-*Dobbs* America, the importance of understanding the difference between abortion legality and abortion access has become central. This assignment helps students understand the differences that reproductive justice activists and scholars have long noted (SisterSong 2022). Since the data available for this exercise precede the *Dobbs* decision, we show students that even when abortion was federally-protected, states with ruling conservative majorities curtailed availability in the state without making abortion illegal. This matters because the *Dobbs* decision permits states to freely regulate abortion, while prior to the decision states were theoretically limited by *Roe* and *Casey* in the ways they could regulate abortion in the first and second trimesters of pregnancy.

Rapid changes in the abortion landscape in abortion-hostile states since the *Dobbs* decision illustrate an increase in the strictness of abortion regulations and new legal challenges in

the state courts. While Ohio's 6-week abortion ban is stayed during the legal case, other states have banned abortion outright, criminalizing the provision and obtainment of abortion care and imposing burdens on abortion seekers to travel out-of-state to obtain care (Center for Reproductive Rights 2022). In a highly dynamic regulatory landscape this analysis primes students for the futures they might expect in a country where state-by-state regulation is expected to result in increasingly inequitable proximity to legal abortion care.

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