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COVID-19 RESTRICTIONS REDUCED ABORTION CLINIC VISITS, EVEN IN BLUE STATES

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ABSTRACT

Due to COVID-19, 33 states banned elective medical procedures, and 13 of these states included surgical abortions. We collected street addresses of abortion clinics and linked them to SafeGraph's data on visitor counts. We found at least a 6% decrease in clinic visits in February-May 2020 versus 2019. States that banned elective procedures or imposed other measures (e.g., stay-at-home orders) saw a substantial additional decrease (18.5% and 24.1%, respectively). There was also a significant additional 12.7% decrease from explicit surgical abortions bans, driven entirely by clinics that provided surgical abortions. Additionally, elective procedure bans reduce abortion clinic visits even in states supportive of abortion, suggesting our results are salient even in a post-Roe U.S. We estimate that the decrease in foot traffic over these four months reduced abortions by 7% in 2020 relative to 2019, or approximately 32,000 fewer abortions.

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Introduction

COVID-19 has infected almost 86 million Americans since January 2020 and caused more than one million deaths as of June 2022. Early in the pandemic, health authorities, governors, and other local leaders were concerned that there were shortages of key health care resources such as masks, gloves, and gowns that would increase the risk of disease transmission to health care providers. To reduce demand for these resources, political leaders in forty-two states sought to reduce interpersonal interactions that contribute to the spread of the virus through measures to encourage or mandate that residents stay home. In addition, thirty-three states either explicitly prohibited or actively discouraged health care providers from performing non-essential and elective procedures, including surgeries. Beyond these broad restrictions, many states explicitly targeted surgical abortion (as opposed to medical or pharmaceutical abortion, which involves only orally taken medications) as part of their COVID-19 restrictions. States included these procedures as prohibited elective surgeries that could be reasonably deferred until after the pandemic had subsided despite the obvious persistent growth of an embryo, eventually becoming a fetus that would have to be aborted through more invasive (and often banned) procedures.

The temporary pandemic-related abortion restrictions exist in the context of other permanent restrictions, including gestational age limits, mandatory waiting periods, multiple visit requirements, detailed building codes, and admitting privileges requirements. While these targeted regulations of abortion providers (TRAPs) have been studied previously in the health economics literature and beyond (e.g., Slusky and Lu 2016; Packham 2017; Slusky 2017; Lu and Slusky 2019; Fischer, Royer, and White 2018; Venator and Fletcher 2019; Lindo and Pineda-Torres 2019; Myers and Ladd 2020 Lindo, Myers, Schlosser, and Cunningham 2020), to our knowledge there is no nationwide study of the impact of COVID-19-related restrictions on abortion in the United

States. However, other countries have been studied; for example, stay-at-home orders were related to a significant decrease in abortions in Mexico City (Marquez-Padilla and Saavedra, 2020), though those countries did not have abortion-specific restrictions related to COVID-19.

In this paper, we empirically evaluate the impact of elective procedure and surgical abortion bans on mobility to abortion clinics in the United States. We use two primary data sources: daily cellular location data from SafeGraph[1] that counts the number of visits to outpatient healthcare providers; and lists of abortion providers across the United States. We use data from February to May for 2019 and 2020.[2,3]

Using two-way fixed-effect Poisson regressions, controlling for clinic and week-by-day-of-week fixed effects, we examined how abortion clinic visit volume was impacted by several variables, including the year (i.e., a dummy for the COVID-19 pandemic), elective procedure bans, surgical abortion bans, stay-at-home or non-essential business closure orders, the number of COVID-19 cases in the county, and the county unemployment rate. In our balanced panel of 478 abortion clinics, we find that abortion clinic visits dropped by 4 percent in 2020 compared to 2019.

[1] As described at https://www.safegraph.com/blog/demystifying-the-safegraph-facts, SafeGraph recently decided going forward to remove all Family Planning Centers from the data it makes available to researchers to "curtail any potential misuse of its data". This paper is not affected by that change, as we only use data from 2019 and 2020.

[2] We attempted to include 2018 data from SafeGraph but the number of abortion clinics we can match drops from 478 to 188, and many of those we lose are from states that had explicit surgical bans. Therefore, we cannot include the results of the type of multi-year pretrends test we would otherwise perform.

[3] Due to data limitations, we are unfortunately unable to quantify time spent engaged in sexual relations using the American Time Use Survey (ATUS) per Barreca, Deschenes, and Guldi (2018) and Grossman and Slusky (2019) (which used variables for "having sex, private activity (unspecified), making out, personal activity (unspecified), cuddling partner in bed, spouse gave me a massage"). As described at https://www.bls.gov/covid19/effects-of-covid-19-pandemic-on-employment-and-unemployment-statistics.htm#ATUS, "Data collection was suspended when the call center in which ATUS interviewers operate to collect the ATUS data was closed on March 19, 2020. Data collection resumed, at a reduced capacity, on May 11, 2020."

We are also unable to use the new Census Household Pulse Survey, designed specifically to measure the social and economic impact of the COVID-19 pandemic, as the questionnaires for the relevant months did not contain questions about sexual activity, fertility, reproduction, or contraception. See https://www2.census.gov/programs-surveys/demo/technical-documentation/hhp/household-pulse-survey-questionnaire-week1-5.pdf from https://www.census.gov/programs-surveys/household-pulse-survey/technical-documentation.html#phase1.

Elective procedure bans led to an additional 18 percent decrease in the volume of abortion clinic visits. Surgical abortion bans resulted in an additional 11 percent decline in visits to abortion providers. The reduction due to surgical abortion bans was concentrated in clinics that provided surgical abortions, indicating that women were not substituting to other abortion clinics in the state. At the state-level, surgical abortion bans reduced the total number of visits to abortion clinics per week by 11 percent, primarily from in-state visitors, and increased the number of visits from state residents to clinics in other states by 254 percent. Extrapolating from our foot-traffic data, we estimate that elective procedure bans were associated with 20,000 fewer abortions in the United States in 2020. More targeted surgical abortion bans were associated with 900 fewer abortions but affected a smaller share of the population for a shorter duration than elective procedure bans.

Background

In response to the COVID-19 pandemic, many states chose to enact restrictions on medical procedures to conserve the use of personal protective equipment and minimize interpersonal contact. Thirty-three states banned elective medical procedures, and thirteen of these states included surgical abortion in these bans despite the time-sensitive nature of this procedure (Figure 1). The Centers for Medicare and Medicaid Services, which directs the Medicare program, also advised health care providers to defer elective, non-essential procedures when possible.[4]

Although we do not have information on the causal relationship between policy decisions and abortions during the pandemic, there is some preliminary information from survey data. Around one-third of women reported having delayed or canceled reproductive health appointments

[4] https://www.cms.gov/newsroom/press-releases/cms-releases-recommendations-adult-elective-surgeries-non-essential-medical-surgical-and-dental

during the pandemic (Guttmacher 2020). Additionally, a survey of South African clinics showed a decrease in contraceptive implant application and abortion care (Adelekan et al. 2020).

More broadly, there has been as much as a 40 percent decrease in non-COVID healthcare utilization during the spring of 2020 (Ziedan, Simon, and Wing 2020), not all of which can be attributed to state policies on elective healthcare. The non-policy-related reduction in healthcare utilization indicates a decrease in demand for healthcare due to the pandemic. It is plausible to expect that reproductive healthcare, such as abortion, could experience a similar decrease in demand. Still, we lack a nationwide examination of the impact of the pandemic and related restrictions on abortion care.

There has also been plenty of academic speculation and commentary on the topic. Robinson et al. (2020), for example, write that "Contraception and abortion care remain essential, and we need to work at the local, state, and federal levels on policies that preserve access to these critical services," Similar opinion pieces were published in a variety of publications including Sexual and Reproductive Health Matters (Todd-Gher and Shah 2020), The Lancet (Tran et al, 2020), and the Journal of Law and the Biosciences (Donley et al. 2020).

Baird and Millar (2020) argue that the pandemic has exacerbated the recent trend of compromised abortion access in the United States. Many of the states with the strictest pre-pandemic abortion laws ended up restricting it during the pandemic. The concern over this trend is echoed by Viveiros and Bonomi's (2020) warning that the pandemic-related restrictions could increase the risk of domestic violence and restrictions to abortion or contraception access.

One proposal to maintain abortion access while minimizing interpersonal contact is increased application of at-home medication abortion. Raymond et al. (2020) write that this is a safe solution for patients. The authors lay out a treatment protocol for telemedical provision of

medication abortion using remote screening based on medical history and forgoing administration of RhD immunoglobulin; they believe the latter is acceptable because of recent studies indicating Rh sensitization is unlikely after early abortions. This method also forgoes lab testing or the use of ultrasound to estimate gestational age, instead using the last menstrual period to date the pregnancy. However, the telemedicine provision of medication abortion faces many legal hurdles in the United States, as outlined by Romanis et al. (2020) and the U.S. Supreme Court ruling in January 2021 that the FDA was not required to increase the flexibility of at-home medication abortions during the COVID-19 pandemic.

Additionally, at present, the long-term impact of COVID-19 on fetuses or neonates is unknown. Early in the pandemic (May 2020), Schwandt (2020) used differences in the mortality profile of COVID-19 and the 1918 flu to argue that COVID-19 is unlikely to have long-term adverse effects, while a fetus whose mother was infected with influenza during pregnancy had worse long-term economic outcomes compared to their siblings who did not have the same exposure (Schwandt 2018). More recent studies have documented vertical transmission (mother to fetus) of COVID-19 and an increased risk of miscarriage (Shende et al. 2020). This corroborates the findings from earlier studies (Dong et al. 2020) in Wuhan at the beginning of the pandemic. The overall impact on maternal health is still unclear. While pregnant patients did not present any differently than other adults (Lei et al. 2020), maternal mental health could be adversely impacted by the pandemic and the response to it (Topalidou et al. 2020). Pregnant women who are SARS-CoV-2 positive are also at a significantly greater risk of hospitalization, admission to the ICU, and mechanical ventilation than women who were not pregnant (Ellington et al. 2020). Finally, regarding reproductive care, second-trimester abortions can be performed on COVID-positive patients without compromising physician safety in areas with high community spread, as long as

proper precautions with personal protective equipment were taken (Fang, Castano and Davis 2020).

Data

Provider-level data

We collected data on visits from SafeGraph's Weekly Patterns (July 2021 release) data files. These files provide weekly, daily, and hourly counts of arriving visits to over five million locations. These data are derived from anonymized GPS data from applications on over 18 million cellular devices. While SafeGraph does not disclose the applications or other datastreams that they use, typical sources for these data include weather and shopping applications. In some cases, SafeGraph cannot assign a GPS ping to a specific point of interest. This issue is particularly salient when multiple points of interest are nearby either horizontally (neighboring stores) or vertically (different levels of the same structure). As a result, our ability to identify specific points of interest is attenuated in more developed areas, which is reflected in the set of clinics that we can identify.

The size of the SafeGraph panel of devices evolves as individuals install and remove apps from their phones and because immobile devices do not provide GPS pings. To address the evolving number of devices in the sample (as shown in Appendix Figure 1), we assume that the devices in the sample in a state on any given day correspond to a random sample of the people in that state. As a result, we scale our device-based metrics by the ratio of state population (from the 2020 Census count) to the number of devices observed on that day. For the same reason—because of the evolving size of the SafeGraph panel—we weight our regression models, described below, by the number of devices seen in a state on a given day (Solon et al. 2015) (or averaged over a week in the case of variables that are only observed on a weekly basis). SafeGraph does not provide these figures at a finer spatial resolution than state.

We can use SafeGraph data to proxy for visits to abortion clinics assuming that the population of smartphone users who visit abortion providers is comparable to the population of users of abortion providers. If this assumption is correct, then the number of visits we observe in the cellular data should be proportional to the number of visits to the clinic. This is the best we can do without individual-level data on clinic visits, which few researchers have been able to access. It is also a limitation we share with all of the other COVID-19-related papers that use SafeGraph data.

We validated the SafeGraph data as a measure of foot traffic to abortion clinics by comparing total SafeGraph visits to the clinics in our sample with Guttmacher institute data from 2019 and 2020, as shown in Appendix Table 4. If the SafeGraph data are providing a reasonable proxy for abortions in a state then we would expect the coefficient on the SafeGraph visits in a regression of log abortions on log SafeGraph visits to be close to 1. The true value is likely to be less than one if the production function for abortions has decreasing returns to scale. When we run this regression, we get a point of estimate 0.930 with a standard error of 0.219, which is statistically indistinguishable from 1. We also present these results graphically in Appendix Figure 3 which shows the entire year of 2019 in panel A and 2020 in panel B. The points lie along the 45-degree reference line, indicating that the sums of Safegraph visits are similar to the Guttmacher state data points. Appendix Table 14 presents point estimates and standard errors from rgressions of abortions on log abortion clinics visits and demonstrate that in neither year can we rule out that the true relationship between visits to abortion clinics and counts of abortions is equal to 1.

We also collected the names and street addresses of abortion clinics listed on several publicly available online aggregators: Planned Parenthood, NARAL, the ANSIRH Abortion

Facility Database, and Abortion Clinics Online.[5] Our first attempt to match these with Safegraph locations was to fuzzy match (with Stata command reclink) by address and then by name; this allowed us to identify several hundred matches between our list and Safegraph's outpatient center location database. Additionally, we geocoded the clinics to facilitate Vincenty calculations (via Stata command geonear) of the distances between our clinics and the Safegraph locations. This process uncovered several matches that were not found in either round of the fuzzy matching process. Geocoding the clinics also enabled us to map the clinics as shown in Figure 1. The clinics we could not match with either method were excluded from our analysis, since we lacked any of Safegraph's visit data for those locations. This required us to drop several states from our analysis as mentioned previously.

Some of our clinics do not appear in some days of the Safegraph data. Based on our understanding of how Safegraph's data is constructed, these missing observations are likely days with zero visits to the location. Given this, for the analysis in this paper we interpolate zeros for days with no visits in the Safegraph data which have both at least one prior and subsequent nonzero visit day for that clinic. In many cases we can confirm that these values are true zeros by using the Monthly patterns file, which includes a location for the entire month if it had a non-negative number of visits in that month.

Policy Data

We gathered data on elective procedure and surgical abortion bans from the COVID State Policy Database (Raifman et al 2020) and the Kaiser Family Foundation (Sobel et al. 2020).[6] Elective procedure bans varied in how they covered surgical abortions. In some cases, surgical

[5] https://www.plannedparenthood.org/abortion-access, https://prochoice.org/patients/find-a-provider/, https://www.ansirh.org/abortion-facility-database, https://www.abortionclinics.com/

[6] Please see Appendix Table 1 and Appendix Table 2 for list of implementation dates for each state policy.

abortions were explicitly permitted, under at least some circumstances, while in other cases there was explicit language banning surgical abortions. In addition, some state abortion bans were restrained or enjoined by federal courts, with some bans having particularly complex legal paths. Arkansas' initial regulation banning surgical abortions (effective April 3), for example, was enjoined ten days later, but that injunction was later lifted. Subsequently, Arkansas relaxed the ban by requiring women to have a negative COVID-19 test within the immediate 48 (April 27), 72 (May 18), or 120 hours (July 6) before a surgical abortion could be performed. The state lifted the regulation in its entirety on August 1. Oklahoma's abortion ban also followed a complex procedural path, with a statewide temporary restraining order on April 6 preventing the state from enforcing its ban prior to the ban being enjoined on April 21.

Several states listed exceptions to these bans; for example, in Iowa, abortions were permitted if delaying an abortion until the relevant executive order had expired would mean a pregnancy exceeded Iowa's existing gestational age limit (Mehaffey 2020). Similarly, a federal judge ruled that abortion providers could determine a surgical abortion necessary on an individual basis, including if delaying the procedure would push the pregnancy past viability (Borchardt 2020.)

States varied in how strictly they enforced surgical abortion bans. In Iowa, for example, enforcement was relatively lax. Texas, on the other hand, went as far as including medication abortion in its elective procedure restrictions (Najmabadi 2020.) Although Indiana's governor stated in a press conference that surgical abortions should not continue unless medically necessary for maternal health, providers in Indiana indicated to a newspaper that they did not stop providing

abortions and had not faced interference from the state (Cook and Sikitch 2020).[7] The ACLU of Alaska made similar comments regarding their state's own de jure abortion ban (Carter 2020.) Meanwhile, Louisiana's attorney general attempted to inspect a Shreveport abortion clinic to determine if they had performed non-medically necessary abortions (Westwood 2020.) Additionally, while other states enacted de jure bans on abortion by classifying it as an elective surgery, South Dakota's travel quarantine guidelines made it infeasible for medical providers to come to the state's sole clinic to perform abortions. This led to a de facto abortion ban because the clinic does not employ any doctors who reside inside the state borders (McCammon 2020).

At least two states attempted or discussed surgical abortion bans that never came to fruition. Kentucky's state legislature passed a bill that would have restricted abortion as part of the pandemic response, but it was vetoed by Governor Andy Beshear (Sobel et al. 2020.) Utah's legislature discussed a surgical abortion ban, but the measure never came to a vote (Keating et al. 2020.) Therefore, neither of these states are included in our count of those that banned surgical abortion at some point during the pandemic. We did not attempt to index differences in surgical abortion policy for our analysis, but it is important to note that these restrictions were not consistent from state to state.

We also used a variety of sources, mostly local newspapers, to identify which states attempted to ban surgical abortion as part of their emergency response to the pandemic. We also made use of a crowdsourced collection of state pandemic responses to identify if and when a state restricted elective medical procedures. We coded our two dummy variables to turn on the day a state enacted an order banning elective procedures (and surgical abortion, when it was included in

[7] We coded Indiana as not having a surgical abortion ban, despite the Governor's statement, since there does not appear to have been any official effort to ban surgical abortions.

these orders.) They turned back off when the relevant order expired or was halted by a court decision, which occurred in a few cases. If the court order was appealed and overturned, the variable turned back on. Although we found several instances of court orders requiring abortions be allowed to continue, we did not find information about this occurring for general elective procedure bans. Therefore, the indicator for surgical abortion bans turned on and off intermittently for some states whereas the indicator for elective surgery bans turned on and then off once per state. Finally, we used data from Johns Hopkins University (Center for Systems Science and Engineering 2020) for the count of COVID-19 cases in each county.

Methods

Using a balanced panel of abortion clinics, we estimated fixed effect Poisson regressions to examine the impact of state policies on visits to abortion clinics during the pandemic.

$$ClinicVisits_{csdwy} = f(\alpha + \beta year_y + \gamma ElectiveProcedureBan_{sdwy} + SurgicalAbortionBan_{sdwy} + StayHome_{sdwy} + \mathbf{X}_{csdwy} + \mathbf{clinic}_c + \mathbf{dayweek}_{dw} + \varepsilon_{cst})$$

Where *ClinicVisits* is the volume of clinic visits for clinic *c* in state *s* on day *d* (e.g., Monday) of week *w* (e.g., week 10 of the year) and year *y* (e.g., 2020) after rescaling to account for day-to-day variation in the number of devices in the sample for a given state. We also weight our regressions by the number of devices seen in the state on each day so that our estimates correspond to the national effect.[8]

We created two dummy variables for state restrictions on elective medical procedures. One dummy (*ElectiveProcedureBan*) indicated if a state restricted elective medical procedures in

[8] We can explain over 90% of the variability in the number of devices seen per day using state and date fixed effects, while weather explains an additional 10% of the within variation, prior to 2020.

general, while the second (*SurgicalAbortionBan*) indicated if a state defined surgical abortions as an elective procedure that ought to be canceled or postponed. To our knowledge, there were no instances of a state banning surgical abortion without banning elective medical procedures in general. We also included a third indicator (*StayHome*) for a state implementing a stay-at-home order in order to capture efforts to discourage all movement, rather than more targeted efforts to reduce the demand for healthcare resources.[9]

In **X**, we also incorporated a control for public holidays such as Memorial Day and President's Day, allowing us to control for decreased traffic on those clinic-dates, and the monthly unemployment rate in the county. The final controls had to do with the incidence of COVID-19 in the county each clinic is located in. We tested several COVID-19-related parameters, including the raw number of cumulative cases, new cases on a given clinic-date, cumulative cases per 100 thousand, and new cases per 100 thousand on a given clinic-date. [10]

We also controlled for clinic fixed effects (**clinic**) and day of the week-week fixed effects (**dayweek**), e.g. Thursday of week 14. Controlling for day of the week-by-week fixed effects allow us to compare days in 2020 to comparable days in 2019. We only used weekday visits in our analysis, so this gave us 85 day-of-the-week-by-week groups (e.g., Monday of week 11). Our time period encompassed epidemiological weeks 6 through 22, which is roughly February through May. Finally, robust standard errors were clustered at the state level.

Code and data availability

[9] Please see Appendix Table 3 for a list of the dates of state-at-home orders and non-essential service closures.

[10] In Appendix Figure 2, we show that there isn't a clear relationship between rising COVID cases and the restrictiveness types of policies we're considering.

Source code for data cleaning and analysis are available at https://github.com/andersen-hecon/Andersen_Bryan_Slusky_Abortion_Covid/. The SafeGraph patterns data can be acquired from SafeGraph at https://shop.safegraph.com/ and the ANSIRH location database can be requested from https://www.ansirh.org/abortion-facility-database. All other datasets can be downloaded directly from the links in the references section.

Results

Although our original sample included over 600 clinics, our balanced panel includes 478 clinics located in 47 states and the District of Columbia (see Figure 1). For various reasons, some states were omitted from the analysis. Louisiana, Kentucky and North Dakota were excluded because we were unable to match any abortion providers in these states with locations in the Safegraph database.[11]

Table 1 shows our summary statistics. We have 81,260 clinic-day observations in our data, corresponding to 478 clinics over 85 weekdays in each of two years. Of those observations, 15% (30% of the 2020 days) are from when an elective procedure ban was in effect, and 1.3% (2.6% in 2020) are from when an explicit surgical abortion ban was also in effect. Because our sample is at the clinic level, we have relatively few observations in states that explicitly banned surgical abortion since those states have very few abortion clinics.

Figure 2 plots the raw daily difference in visit counts between 2020 and 2019. There is a notable decline in visits beginning around March 16, 2020, which is when many states announced

[11] South Dakota did not explicitly restrict surgical abortion in the same manner as other states whose policies we analyze. However, due to a combination of factors, abortion services were unavailable in the state of South Dakota for a a several month period during the pandemic. Prior to the onset of COVID-19, the state's sole abortion provider relied on flying out-of-state doctors in on a regular basis to provide services. This was not feasible for the majority of 2020; therefore, abortion was not available in the state beginning in March 2020 and extending into that autumn. Instead, the clinic referred patients to neighboring states such as Nebraska. Although South Dakota is excluded from our primary analyses due to its different nature than the de jure abortion restrictions in other states, we do include it in our analysis of out-of-state visits in unrestricted states which neighbor restricted states (McCammon 2020).

states of emergency and began to take other steps to contain the pandemic and reduce mobility. On March 13, President Trump declared a nationwide state of emergency.

Our event study (Figure 3) shows a steep drop-off in clinic visits after procedure bans went into effect. Visits do not begin to increase again until at least 28 days after procedure bans were enacted, which is around mid-to-late May for most states. There is a slight decline before the bans took effect, however, so we cannot rule out that there was no pre-trend in our data. A pre-trend would be consistent with Ziedan, Simon, and Wing (2020), which found a steep decline in non-COVID healthcare utilization during the spring of 2020, not all of which can be attributed to state policies on elective healthcare.

We used several combinations of variables in our Poisson regressions, although a dummy for the year 2020 was always included. In Table 2, we show that there was a significant decrease in traffic to abortion clinics in 2020 compared to 2019 and higher levels of unemployment were associated with reductions in daily visits. For example, when we control for COVID incidence using incident cases per 100 thousand people (column 2), states that banned elective medical procedures saw a 26.3 percent decrease[12] in visits to abortion clinics. This effect was significant at the 95 percent level. In the model that did not control for stay-at-home orders, there was no significant additional impact in the states that specifically categorized surgical abortion as an elective procedure that ought to be postponed, although when we control for stay-at-home orders, surgical abortion bans are associated with a 10.6 percent reduction in visits, significant at the 95 percent level. Finally, we found a 1.0 percent decrease for each new case per 100 thousand people in the county, an effect that was significant at the 99 percent level.

[12] Percentage change = $\exp(\beta)-1$

When we used cumulative cases per 100 thousand instead of incident cases, we found a 27.6 percent decrease from elective procedure bans, which was significant at the 95 percent level. Again, we did not find a significant impact from specific surgical abortion bans in this permutation without controlling for stay-at-home orders. However, when we also controlled for stay-at-home orders, surgical abortion bans were associated with an additional 9.9 percent reduction in visits, which was significant at the 95 percent level. Each new case per 100 thousand people was responsible for a further 0.02 percent decrease in visits, and this effect was significant at the 99 percent level. Areas with higher levels of unemployment also had fewer visits to abortion clinics, with a one percentage point increase in the unemployment rate decreasing clinic visits by 1.6 percent in models that do not control for stay-at-home orders.

We also modeled the impact of stay-at-home orders and non-essential service closures on clinic visits. As shown in Table 2, stay-at-home orders and non-essential service closures were statistically significant, reducing abortion clinic visits by 24.1 to 25.4 percent, depending on the specification. The main takeaways from this table are that abortion clinic visits declined between 2019 and 2020, broad sub-federal policies reduced abortion clinic visits further, and specific surgical abortion bans had a mixed effect on visits and was only statistically significant in models that control for stay-at-home orders.

Table 3 uses visitor characteristics that we observe at the weekly level to draw inferences about the effect of elective procedure bans and targeted surgical abortion bans on visitor characteristics. Column (1) replicates our main specification from Table 2 using the total number of visits each week and demonstrates that elective procedure bans reduce the number of visitors to a clinic by 17.2 percent each week. Corresponding to the reduction in visits, we find an 20.4 percent reduction in unique visitors per week after a ban takes effect. Surgical abortion bans were

associated with a 10.9 percent reduction in visits and a 15.9 percent reduction in unique visitors each week to clinics associated with surgical abortion bans. Despite these changes in the number of visits and visitors, we find no evidence that the distance traveled for each visit changed following elective procedure or surgical abortion bans, while the median visit to the clinic became shorter.

We conduct a similar exercise at the state level (Table 4), which demonstrates comparable reductions in the weekly number of visits and visitors due to elective procedure bans and surgical abortion bans. Using the state-level data, we also look at the number of visitors who are from the same state, out-of-state, or who left the state, based on the home location of the device. We decompose our outcome measure into visitors to clinics in that state from the same state and visitors from other states. In both cases the policy variables are assigned by the state of the clinic. We find 22.5 and 18.1 percentage point reductions in same-state visitors due to elective procedure bans and surgical abortion bans, respectively. In states that implemented an elective procedure ban, we also find a 51.2 percent reduction in the number of people from outside the state traveling to abortion clinics within the state, indicating a reduction in cross-border movement due to elective procedure bans. Unexpectedly, we do not find a statistically significant effect of surgical abortion bans on visitors from out of state, though perhaps we lack the statistical power to estimate such an effect precisely.

To determine whether state policies cause residents to travel to a clinic out of state, we now reframe the analysis to look at the subset of clinic visitors from a particular state who went to a clinic out of state (regardless of which state that clinic was located in). In this case, we assign the respective policies by the visitor's state of residence. Here, we find a 254 percent increase in the number of people who visit abortion clinics in other states following an in-state surgical abortion

ban, indicating that people may be moving across state lines in order to get abortions in states that did not ban surgical abortions.

Tables 5 and 6 stratify the sample into abortion clinics that do (Table 5) and do not (Table 6) provide surgical abortions. Among clinics that provide surgical abortions we find significant reductions in visits and unique visitors due to both elective procedure surgical abortion bans. Conversely, we find no effect of surgical abortion bans on visits to clinics that do not provide surgical abortions, although these estimates are imprecise.

Table 7 stratifies are samply by clinics in states openly hostile to abortion as opposed to states supportive of abortion.[13] Panel A includes a surgical abortion ban indicator, while panels B and C exclude it since only one state among those that were not hostile to abortion had a surgical abortion ban. The results on the elective procedure ban indicator are remarkably similar for visits, weekly visits, and weekly visitors, all showing statistically significant and substantial negative coefficients.

Robustness Checks

To ensure that interpolating 0s for missing clinics did not bias our results, we re-estimated our models using a panel of clinics that were never interpolated. Appendix Table 5 presents the results of this analysis, which are consistent with our main results. The one notable exception is that we find a statistically significant increase in the median visit duration after an elective

[13] https://www.guttmacher.org/sites/default/files/article_files/attachments/hostile_supportive_states_updated_12-30-2020_as_of_date.pdf.

procedures ban and after a stay-at-home order, while surgical abortion bans were associated with a reduction in the median visit duration.

Additionally, we engage with the new two-way fixed effects literature, given that our analytical structure uses a time-staggered treatment (e.g., Sun and Abraham 202l; Goodman-Bacon 2021; Callaway and Sant'Anna 2021). Because these methods have not yet been extended to non-linear models, we estimate log-linear OLS regression models. As a reference, Appendix Table 6 presents the corresponding models estimated in a conventional log-linear or inverse hyperbolic sine two-way fixed effects framework, which yields results that are similar to our main results. Appendix Table 7 shows our results using the Sun and Abraham interaction-weighted estimator, which gives consistent (albeit statistically less precise) results using a log-linear (rather than a Poisson) model.

We then repeat our analysis using a variety of alternative specifications and stratifications. First, given the large number of zeros values for our dependent variable (as shown in Appendix Figure 4), we include a zero-inflated Poisson model (Appendix Table 8) and a negative binomial model (Appendix Table 9), both of which produce consistent results. Second, we stratify our regressions by states where a pharmacist must dispense contraceptives (Appendix Table 10) as opposed to states where a pharmacist can refuse for reasons of conscience (Appendix Table 11)[14]. Finally, in Appendix Table 12 we include controls for all visits to any location in SafeGraph's data to see if broad changes in mobility patterns (as shown in Appendix Figure 5) are driving our results. Overall, we find consistent results that both elective procedure bans and surgical abortion bans reduced abortion clinic visits.

[14] https://www.guttmacher.org/state-policy/explore/refusing-provide-health-services

Discussion

The CDC has reported an increase in abortions in the past two years, so in the absence of a pandemic it would be expected that more abortions would take place in 2020 than in 2019. Using the most recent data, we can attempt to estimate how many abortions did not occur due to the pandemic and related policies. As of June 2022, the most recent data available on abortions per state per year is the Guttmacher Institute's report for 2020. Guttmacher reported that 916,490 abortions took place in the United States in 2019, which is about a 6.3 percent increase from 863,320 in 2017.

Using the regression coefficients from Table 2, Column (3) and Guttmacher data on state abortion rates in 2017 and 2019, we can attempt to estimate the impact of the pandemic and related state policies at the state level and sum to the national effect. We are making a strong assumption here that the decrease in abortion is the same relative percentage decrease as the decrease in clinic visits. Without more granular individual level data on clinic visits or specific data on abortion rates we are not able to increase the precision of this estimate.

Our time period was 4 months, so these effects would impact about a third of the year. For the United States as a whole, in a non-pandemic scenario with a consistent rate of increase year to year, assuming that the (state-specific) trend from the prior two years continue, we would have expected about 950,055 abortions in 2020 (a 3.7 percent increase from 2019), based on state-specific growth rates from 2017 to 2019. However, in our regression there was a 4.3% percent decrease from 2019 to 2020 during the 4-month time period. Therefore, we would assume about 904,000 (916,490 times a third of a 4.3 percent decrease) abortions would take place in the United States in 2020, which is about a 4.9 percent (comparing 916,490 and 904,000) decrease from what we would have expected from the upward trend from before the pandemic.

However, elective procedure bans were also responsible for significant decreases in clinic visits according to our regression. Therefore, states with this policy would see an even larger decrease in abortions. For example, Pennsylvania banned elective procedures for about 5 weeks (Raifman et al. 2020), or about 10 percent of the year. Since there were 31,250 abortions in Pennsylvania in 2019, virtually flat from 2017, in the non-pandemic scenario outlined above we might expect around 31,245 abortions in 2020. With the impact of the pandemic and elective procedure ban causing additional decreases, we would expect around 30,155 abortions (31,250 times a third of a 4.3 percent decrease and a tenth of an 18.5 percent decrease) to take place in Pennsylvania in 2020, a 3.5 percent decrease (comparing 30,155 and 31,245) from the non-pandemic scenario. Repeating this process for each state, we estimate that elective procedure bans reduced the number of abortions in 2020 by 2.1% (to 884,400) while surgical bans resulted in an additional 800 fewer abortions in 2020. Appendix Table 13 presents our estimated change in abortions for each state using the estimates from Table 2 and state-specific growth-rates to predict the baseline 2020 abortion count. These results demonstrate that there was significant heterogeneity in the impact of the pandemic on abortion visits reflecting, in part, differences in underlying trends across states (e.g. Missouri versus Connecticut).

These estimates of the change in abortions assume that the reduction in visits was spread proportionally across visits for abortions and visits for other services. This is a reasonable assumption because more targeted surgical abortion bans had no effect on the number of visits to abortion clinics. If reductions in visits were disproportionally arising from visits for non-abortion services, so that the number of abortion visits remained constant, then a targeted surgical abortion ban should be effective at reducing visits to affected clinics. This strategy differs from the Mexico City study; due to the public provision of abortions in Mexico City there is more explicit data

dealing with the number of abortions provided in any given timeframe. Furthermore, the Mexico City data is complemented with analysis of the government's pregnancy helpline. This indicated an increase in unwanted pregnancies, so the decrease in abortions cannot be attributed to a decrease in pregnancies overall at least in Mexico (Marquez-Padilla and Saavedra, 2020.)

The majority of states which explicitly banned surgical abortions had restrictive abortion environments prior to the pandemic. NARAL characterizes each of the surgical abortion ban states with the exception of Alaska, Iowa and West Virginia[15] as having severely restricted access, the most restrictive environment possible according to their scale (NARAL 2020.) In contrast, the other elective procedure ban states have grades across the spectrum, with a median environment of some access. Across all 50 states the median environment is restricted access. Guttmacher also grades states; their metric ranges from very hostile to very supportive. Again, all of the surgical abortion ban states are characterized as hostile or very hostile with the exceptions of Alaska and Iowa[16] (Nash 2019.) Similar to the NARAL scale, the other elective procedure ban states have a median characterization of middle ground. The median characterization of all 50 states is leans hostile.

A large number of clinics in our sample were Planned Parenthood health centers. Planned Parenthood claims that abortion accounts for only 3 percent of the services provided at their clinics (Planned Parenthood 2014.) Although the true proportion of Planned Parenthood's services constituted by abortion has been a source of controversy (Ye Hee Lee 2015), the 3 percent figure does have validity by at least one measure. The organization's 2013-14 annual report shows that abortion services made up 327,653 of 10.6 million services provided (though a patient may receive

[15] NARAL characterizes Alaska as having protected access, Iowa as having some access and West Virginia as having restricted access.

[16] On the Guttmacher scale, Alaska is characterized as leans supportive and Iowa is characterized as leans hostile.

multiple services in one visit[17]), which is about 3.1 percent (Planned Parenthood 2014.) In 2018-19, the proportion was 4 percent (Planned Parenthood 2019.) This statistic could explain why elective procedure bans (which would impact other Planned Parenthood services such as contraception or STD testing) had a steep impact on clinic visits while targeting surgical abortion specifically did not have a significant impact.

Another factor contributing to the decrease in clinic visits is the increase in telemedicine services throughout the pandemic. Among independent abortion providers, 20 percent reported implementation of "quick pick up" for medication abortion prescriptions, and over 40 percent reported forgoing pre-abortion tests such as for Rh negativity; 71 percent reported moving follow-up appointments to telehealth (Upadhyay et al 2020). These shifts may mean that we are overestimating the reduction in abortions since changes in follow-up appointment modalities and pre-testing would also appear as a reduction in visits. However, during the period that we study there were no changes in overall access to medication abortion: FDA regulations require that women pick up mifepristone in-person and this requirement was only enjoined by a Maryland court on July 13th 2020 (after our study period) and that injunction was stayed by the Supreme Court on January 12th 2021.

Conclusion

In this paper, we estimate the effects of a new Targeted Restriction of Abortion Providers (TRAP): explicitly prohibiting surgical abortions as elective surgery during a global pandemic.

[17] See https://www.washingtonpost.com/news/fact-checker/wp/2015/08/12/for-planned-parenthood-abortion-stats-3-percent-and-94-percent-are-both-misleading/.

Our hypothesis was that these restrictions, like many other TRAP laws and policies, were going to reduce the volume of abortion services.

We found that this was the case. In our preferred specification that includes controls stay-at-home orders, the overall volume of visits to abortion clinics decreased significantly in 2020 compared to 2019, and states that banned elective surgical procedures saw an additional 18.5 percent decrease in visits, states that also explicitly banned surgical abortions saw an additional 10.6 percent decrease, with stay-at-home orders leading to an additional 24.1 percent drop. Out-migration in response to surgical abortion bans is also consistent with our hypothesis that these bans were effective at reducing the supply of surgical abortions during the early phase of the COVID-19 pandemic.

A clear picture emerges when we stratify by whether a clinic provides surgical abortions, as surgical abortion bans only affect clinics that provide surgical abortions. We find that while elective procedure bans affected both types of clinics, surgical abortion bans only reduced visits to abortion clinics that provide surgical abortions. Pooling the noisy zero from the clinics that don't offer surgical abortions with the precise negative effects from clinics that do yields the noisy negative effect of surgical abortion bans in the full sample. While these restrictions were lifted by the summer of 2020, states have re-imposed bans on nonessential hospital procedures when COVID-19 hospitalization rise (e.g., in Texas, as described by Svitek 2021).

Finally, our results are still salient in light of the Supreme Court decision overturning Roe v. Wade.[18] As we show above, elective procedure bans reduce abortion reduce abortion clinic visits in both states hostile to abortion and supportive of abortion. This suggests that broad policies restricting elective health care even in states supportive of abortion can reduce abortion access.

[18] https://www.supremecourt.gov/opinions/21pdf/19-1392_6j37.pdf

These states may need to take stronger action to prevent these unintended consequences, such as explicitly excluding abortions from these broad elective healthcare bans or increasing funding and outreach for abortions.

References

Adelekan, Tsholofelo, Belete Mihretu, Witness Mapanga, Sithembile Nqeketo, Lawrence Chauke, Zuko Dwane, and Laurel Baldwin-Ragaven. 2020. Early Effects of the COVID-19 Pandemic on Family Planning Utilisation and Termination of Pregnancy Services in Gauteng, South Africa: March-April 2020. Wits Journal of Clinical Medicine, 2(2), 145-152.

Allcott, Hunt, Levi Boxell, Jacob C. Conway, Matthew Gentzkow, Michael Thaler, David Y. Yang. 2020. Polarization and Public Health: Partisan Differences in Social Distancing during the Coronavirus Pandemic. NBER Working Paper No. 26946.

Baird, Barbara, and Erica Millar. 2020. Abortion at the Edges: Politics, Practices, Performances. Women's Studies International Forum 80: 102372.

Barreca, A., Deschenes, O., & Guldi, M. (2018). Maybe next month? The dynamic effects of ambient temperature on fertility. Demography, 55, 1269–1293.Bohrer, Becky. 2020. Alaska puts abortion on list of medical procedures that should be delayed during coronavirus crisis. *Anchorage Daily News*, April 8. https://www.adn.com/politics/2020/04/08/alaska-puts-abortions-on-list-of-medical-procedures-that-should-be-delayed-during-coronavirus-crisis/

Borchardt, Jackie. 2020. Coronarvirus in Ohio: Federal judge says some surgical abortions allowed under state's elective surgery ban. *Cinncinnati Enquirer,* April 23. https://www.cincinnati.com/story/news/2020/04/23/coronavirus-ohio-federal-judge-says-some-abortions-allowed-under-states-elective-surgery-ban/3015214001/

Callaway, Brantly and Pedro H.C. Sant'Anna. 2021 Difference-in-Differences with multiple time periods. Journal of Econometrics 225(2), 200–230.

Carter, Dennis. 2020. I Had Trouble Confirming COVID-19 Abortion Policies–and I'm a Reporter. *Rewire News*, May 5. https://rewire.news/article/2020/05/05/i-had-trouble-confirming-covid-19-abortion-policies-and-im-a-reporter/

Center for Systems Science and Engineering (CSSE) at Johns Hopkins University. (2020). *CSSEGISandData/COVID-19*. https://github.com/CSSEGISandData/COVID-19.

Cook, Tony and Chris Sikich. 2020. What a coronavirus executive order means for abortions in Indiana. IndyStar, March 31. https://www.indystar.com/story/news/politics/2020/03/31/coronavirus-indiana-what-executive-order-means-abortions/5096617002/

Dong, L., Tian, J., He, S., Zhu, C., Wang, J., Liu, C., and Yang, J. 2020. Possible Vertical Transmission of SARS-CoV-2 From an Infected Mother to Her Newborn. JAMA, 323(18), 1846-1848.

Donley, Greer, Beatrice A Chen, and Sonya Borrero. 2020. The Legal and Medical Necessity of Abortion Care Amid the COVID-19 Pandemic. Journal of Law & the Biosciences, *Forthcoming*, U. of Pittsburgh Legal Studies Research Paper No. 2020-14.

Ellington, S., Strid, P., Tong, V. T., Woodworth, K., Galang, R. R., Zambrano, L. D., Nahabedian, J., Anderson, K., & Gilboa, S. M. 2020. Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status - United States, January 22-June 7, 2020. MMWR. Morbidity and mortality weekly report, 69(25), 769–775.

Fang, Nancy Z., Paula M. Castaño, and Anne Davis. 2020. A Hospital-Based COVID-19 Abortion Case in the Early Phase of the Pandemic. Contraception, 102(2), 137-138.

Fischer, Stefanie, Heather Royer, and Corey White. 2018. The impacts of reduced access to abortion and family planning services on abortions, births, and contraceptive purchases. Journal of Public Economics, 167: 43–68.

Goodman-Bacon, Andrew. 2021. Difference-in-differences with variation in treatment timing. Journal of Econometrics, 225(2), 254–277.

Grossman, Daniel and David Slusky. 2019. The Impact of the Flint Water Crisis on Fertility. Demography, 56(6): 2005–2031.

Guttmacher Data Center. 2020. Number of abortions by state of occurrence. Guttmacher Institute. https://data.guttmacher.org/states/trend?state=US&topics=66&dataset=data

Kortsmit K, Mandel MG, Reeves JA, et al. 2021. Abortion Surveillance — United States, 2019. CDC MMWR Surveillance Summaries 70(9): 1–29.

Keating, Dan, Lauren Tierney, and Tim Meko. 2020. In these states, pandemic crisis response includes attempts to stop abortion. *The Washington Post*, April 23. https://www.washingtonpost.com/nation/2020/04/21/these-states-pandemic-crisis-response-includes-attempts-stop-abortion/?arc404=true

Lei, Gang, Jinghua Tian, Shuangqin Peng, Xiaoji Hu, Pei Zhang, Wen-Ning Wu, and Guoping Xiong. 2020. Clinical Observation of Different Treatment Strategies in Pregnant Women with COVID-19: a Retrospective Study. Research Square PPR: PPR171425.

Lindberg, Laura D., Alicia VandeVusse, Jennifer Mueller, and Marielle Kirstein. 2020. Early Impacts of the COVID-19 Pandemic: Findings from the 2020 Guttmacher Survey of Reproductive Health Experiences. New York: Guttmacher Institute.

Lindo, Jason, Caitlin Myers, Andrea Schlosser, and Scott Cunningham. 2020. How Far Is Too Far?: New Evidence on Abortion Clinic Closures, Access, and Abortions. Forthcoming, Journal of Human Resources.

Lindo, Jason and Maria Pineda-Torres. 2019; New Evidence on the Effects of Mandatory Waiting Periods for Abortion. NBER Working Paper No. 26228.

Lu, Yao and David Slusky. 2016. The Impact of Women's Health Clinic Closures on Preventive Care. American Economics Journal: Applied Economics, 8(3): 100–124.

Lu, Yao and David Slusky. 2019. The Impact of Women's Health Clinic Closures on Fertility. American Journal of Health Economics, 5(3): 334–359.

Lyman, Brian. 2020. Coronavirus: Federal judge rules abortion procedures can continue during outbreak. *Montgomery Advertiser*, March 30. https://www.montgomeryadvertiser.com/story/news/2020/03/30/coronavirus-federal-judge-blocks-alabama-attempt-stop-abortions-during-outbreak/5091465002/

Marquez-Padilla, Fernanda and Biani Saavedra. 2020. COVID-19 and (Un)Desired Fertility: The Effect of Stay-At-Home Orders on Abortions in Mexico City. SSRN Abstract No. 3703581.

Mehaffey, Trish. 2020. Abortion Clinics Won't Contest Covid-19 Order. *Muscatine Journal*, April 2. https://muscatinejournal.com/news/state-and-regional/iowa/abortion-clinics-won-t-contest-covid-19-order/article_3acb7d22-c07c-5f95-a4d7-ebe690344e3e.html

McCammon, Sarah. 2020. More Patients Seek Abortion Pills Online During Pandemic, But Face Restrictions. *NPR*, May 28. https://www.npr.org/2020/05/28/863512837/more-patients-seek-abortion-pills-online-during-pandemic-but-face-restrictions

Myers, Caitlin and Daniel Ladd. 2020. Did parental involvement laws grow teeth? The effects of state restrictions on minors' access to abortion. Journal of Health Economics, 71: 102302.

Najmabadi, Shannon. 2020. Federal appeals court says Texas can block pill-induced abortions during pandemic. *The Texas Tribune*, 2020. https://www.texastribune.org/2020/04/20/texas-abortion-pill-coronavirus/

NARAL. 2020. State Governments. NARAL Pro Choice America. https://www.prochoiceamerica.org/laws-policy/state-government/ Accessed December 16, 2020.

Nash, Elizabeth. 2019. State Abortion Policy Landscape: From Hostile to Supportive. *Guttmacher Institute,* August 29. https://www.guttmacher.org/article/2019/08/state-abortion-policy-landscape-hostile-supportive# Accessed December 16, 2020.

Nash, Elizabeth and Joerg Dreweke. 2019. The U.S. Abortion Rate Continues to Drop: Once Again, State Abortion Restrictions Are Not the Main Driver. *Guttmacher Institute,* September 18. https://www.guttmacher.org/gpr/2019/09/us-abortion-rate-continues-drop-once-again-state-abortion-restrictions-are-not-main

Packham, Analisa. 2017. Family planning funding cuts and teen childbearing. Journal of Health Economics, 55: 168–185.

Pfannenstiel, Brianne. 2020. 'Essential' abortions can continue in Iowa despite coronavirus outbreak, the state and advocates agree. *Des Moines Register,* April 1.

https://www.desmoinesregister.com/story/news/politics/2020/04/01/coronavirus-in-iowa-essential-abortions-can-continue-covid-19/5103533002/

Planned Parenthood. 2014. 2013-14 Annual Report. Planned Parenthood Federation of America. https://www.plannedparenthood.org/files/6714/1996/2641/2013-2014_Annual_Report_FINAL_WEB_VERSION.pdf

Planned Parenthood. 2019. 2018-19 Annual Report. Planned Parenthood Federation of America. https://www.plannedparenthood.org/uploads/filer_public/2e/da/2eda3f50-82aa-4ddb-acce-c2854c4ea80b/2018-2019_annual_report.pdf

Raifman, Julia, K. Nocka, D. Jones, J. Bor, S. Lipson, J. Jay, and P. Chan. 2020. COVID-19 US State policy database. www.tinyurl.com/statepolicies

Raymond, Elizabeth G., Daniel Grossman, Alice Mark, Ushma D. Upadhyay, Gillian Dean, Mitchell D. Creinin, Leah Coplon, et al. 2020. Commentary: No-Test Medication Abortion: A Sample Protocol for Increasing Access during a Pandemic and Beyond. Contraception 101(6), 361-366.

Robinson, Erica F., Janelle K. Moulder, Matthew L. Zerden, April M. Miller, and Nikki B. Zite. 2020. Call to Action: Preserving and Advocating for Essential Care for Women during the COVID-19 Pandemic. American Journal of Obstetrics and Gynecology 223(2), 219-220.

Romanis, Elizabeth Chloe, Jordan Parsons, and Nathan Hodson. 2020. COVID-19 and Reproductive Justice in Great Britain and the United States: Ensuring Access to Abortion Care during a Global Pandemic. Journal of Law and the Biosciences 7(1).

Schwandt, Hannes. 2017. The Lasting Legacy of Seasonal Influenza: In-utero exposure and labor market outcomes. IZA Discussion Paper No. 10589.

Schwandt, Hannes. 2020. Pregnancy during the Pandemic: Why we can be cautiously optimistic about how COVID-19 affects pregnant women and their children. ASHEcon Newsletter 2020(2). https://www.ashecon.org/newsletter/newsletter-issue-20202/pregnancy-during-the-pandemic-why-we-can-be-cautiously-optimistic-about-how-covid-19-affects-pregnant-women-and-their-children/

Sharp, Ryan and Cameron Forman. 2020. Gov. Kevin Stitt says abortions included in suspended elective surgeries. *The Oklahoman*, March 27. https://www.cincinnati.com/story/news/2020/04/23/coronavirus-ohio-federal-judge-says-some-abortions-allowed-under-states-elective-surgery-ban/3015214001/

Shende, P., Gaikwad, P., Gandhewar, M., Ukey, P., Bhide, A., Patel, V., . . . Modi, D. 2020. Persistence of SARS-CoV-2 in the first trimester placenta leading to vertical transmission and fetal demise from an asymptomatic mother. Medrxiv Preprint 2020.08.18.20177121.

Slusky. David. 2017. Defunding Women's Health Clinics Exacerbates Hispanic Disparity in Preventive Care, Economic Letters, 156: 61–64.

Smith, Kate. 2020. Mississippi Governor Tate Reeves calls for abortion ban during coronavirus outbreak. *CBS News*, March 25. https://www.cbsnews.com/news/abortion-ban-mississippi-governor-tate-reeves-coronavirus/

Sobel, Laurie, Amrutha Ramaswamy, Brittni Frederiksen, and Alina Salganicoff. 2020. State Action to Limit Abortion Access During the COVID-19 Pandemic. *Kaiser Family Foundation*, August 10. https://www.kff.org/coronavirus-covid-19/issue-brief/state-action-to-limit-abortion-access-during-the-covid-19-pandemic/

Solon, G., Haider, S. J., & Wooldridge, J. M. (2015). What are we weighting for?. *Journal of Human resources*, *50*(2), 301-316.

Sun, Liyang and Sarah Abraham. 2021. Estimating dynamic treatment effects in event studies with heterogeneous treatment effects, Journal of Econometrics 225(2), 175–199.

Svitek, Patrick. 2021. Gov. Greg Abbott asks Texas hospitals to delay nonessential procedures as COVID-19 patients strain capacity. Texas Tribune, August 9. https://www.texastribune.org/2021/08/09/texas-hospitals-elective-procedures-covid-greg-abbott/

Topalidou, Anastasia, Gill Thomson, and Soo Downe. 2020. COVID-19 and Maternal Mental Health: Are We Getting the Balance Right? Medrxiv Preprint 2020.03.30.20047969.

Todd-Gher, Jaime, and Payal K Shah. 2020. Abortion in the Context of COVID-19: a Human Rights Imperative. Sexual and Reproductive Health Matters 28(1).

Tran, Nguyen Toan, Hannah Tappis, Nathaly Spilotros, Sandra Krause, and Sarah Knaster. 2020. Not a luxury: a call to maintain sexual and reproductive health in humanitarian and fragile settings during the COVID-19 pandemic. The Lancet Comment 8(6), E760-E761.

Upadhyay, Ushma D., Rosalyn Schroeder, and Sarah C.M. Roberts. 2020. Adoption of no-test and telehealth medication abortion care among independent abortion providers in response to COVID-19. Contraception: X 2 100049.

Venator, Joanna and Jason Fletcher. 2019. Undue Burden Beyond Texas: An Analysis of Abortion Clinic Closures, Births, And Abortions in Wisconsin. NBER Working Paper No. 26362.

Viveiros, Nelia, and Amy E. Bonomi. 2020. Novel Coronavirus (COVID-19): Violence, Reproductive Rights and Related Health Risks for Women, Opportunities for Practice Innovation. Journal of Family Violence, June 6, 1-5.

Westwood, Rosemary. 2020. The Coronavirus Abortion Rights Battle Hits Louisiana. *New Orleans Public Radio*, April 16. https://www.wwno.org/post/coronavirus-abortion-rights-battle-hits-louisiana

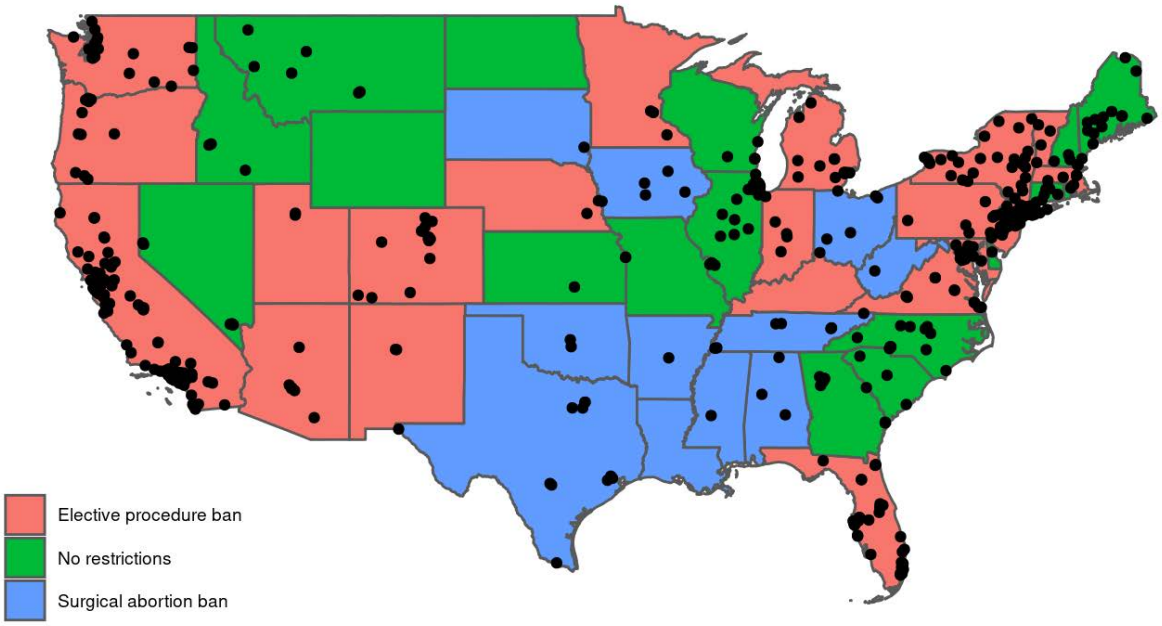
Ye Hee Lee, Michelle. 2015. For Planned Parenthood Abortion Stats, '3 percent' and '94 percent' are both misleading. *The Washington Post*, August 12.

https://www.washingtonpost.com/news/fact-checker/wp/2015/08/12/for-planned-parenthood-abortion-stats-3-percent-and-94-percent-are-both-misleading/

Ziedan, Engy, Kosali I. Simon, and Coady Wing. 2020. Effects of State COVID-19 Closure Policy on NON-COVID-19 Health Care Utilization. NBER Working Paper 27621.

Zionts, Arielle. 2020. South Dakota Abortions Halted in March due to pandemic. *Rapid City Journal*, October 2. https://rapidcityjournal.com/news/local/south-dakota-abortions-halted-in-march-due-to-pandemic/article_f06e1f75-d8f6-50f4-b6b6-15f48afcc197.html

Figure 1: Procedure restrictions and clinic locations in the contiguous United States

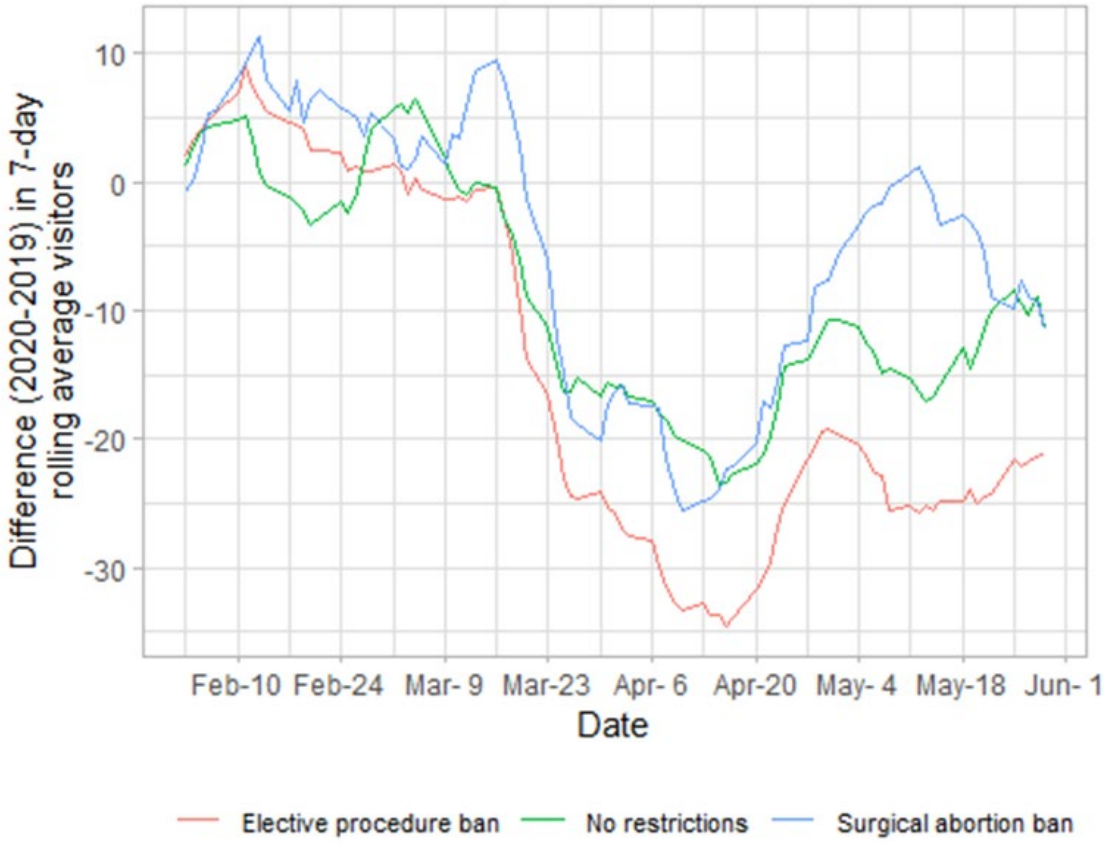


Notes: Dots indicate clinics included in the balanced panel. Not mapped are clinics without a Safegraph match. Alaska also restricted surgical abortion. Hawaii restricted elective procedures, not including abortion; however, it was excluded from analysis because it did not have any clinics with complete data in the relevant timeframe.

Table 1: Summary Statistics

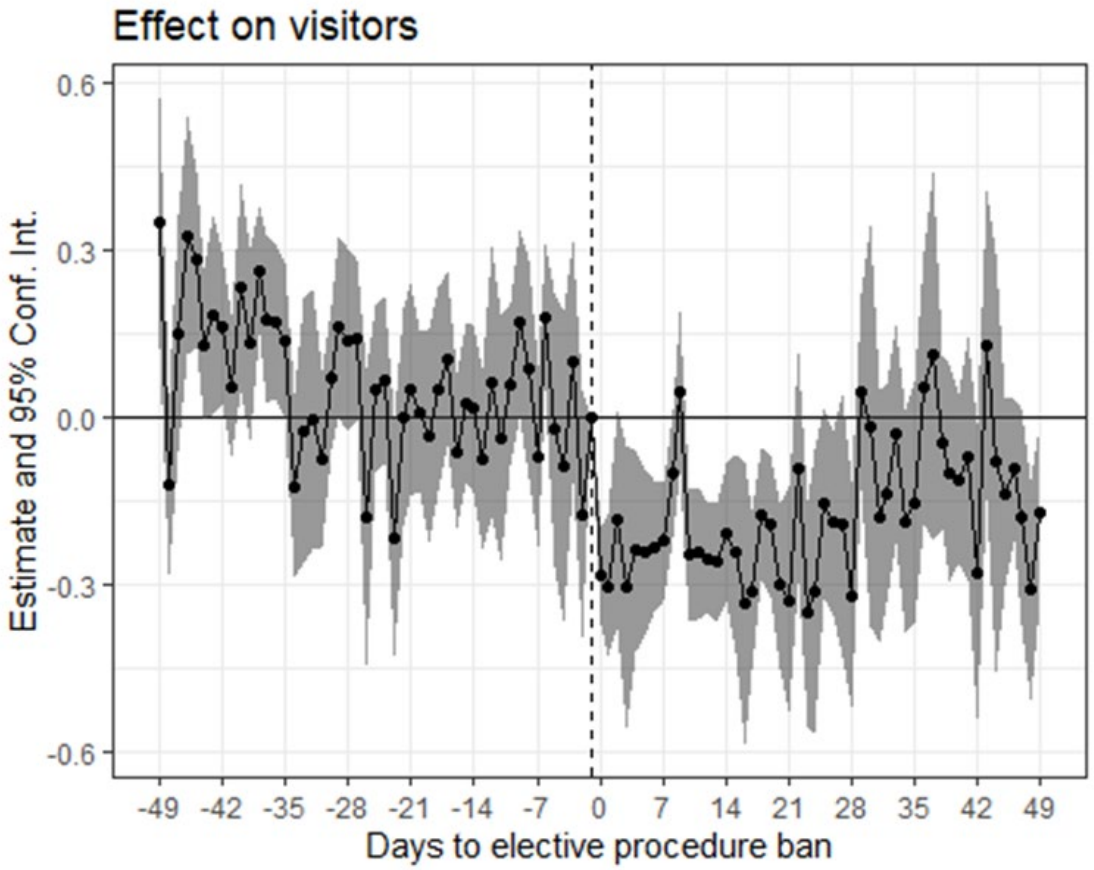
	(1) N	(2) Mean	(3) Std. Dev.	(4) Min.	(5) Max.
County Population	81260	1566621	2437322	16233	10039107
Cumulative Cases per 100k	81260	100.60	338.35	0.00	4021.01
New Cases per 100k	81260	2.57	8.05	0.00	139.97
Holiday	81260	0.02	0.13	0	1
Surgical Abortion Ban	81260	0.01	0.08	0	1
Elective Procedure Ban	81260	0.15	0.36	0	1
Year 2020	81260	0.50	0.50	0	1

Figure 2: Raw Differences in Abortion Clinic Visits (2020 visits minus 2019 visits)



Notes: States with no restrictions (green) include Connecticut, Delaware, Washington D.C., Georgia, Idaho, Illinois, Kansas, Maine, Missouri, Montana, Nevada, New Hampshire, North Carolina, North Dakota, Rhode Island, South Carolina, and Wisconsin. States restricting elective procedures (red) include Arizona, California, Colorado, Florida, Indiana, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Utah, Vermont, Virginia, and Washington. States restricting elective procedures and surgical abortion (blue) include Alabama, Alaska, Arkansas, Iowa, Mississippi, Ohio, Oklahoma, South Dakota, Tennessee, Texas, and West Virginia. Kentucky, Louisiana, North Dakota, and Wyoming did not have clinics with sufficient data to include in this analysis.

Figure 3: Elective Procedure Ban Event Study



Notes: Y axis shows the average difference in visits by clinic-date, comparing visits on a given day (e.g. Wednesday of epidemiological week 16) in 2020 with the same day in 2019. Shaded area represents 95% confidence interval for the difference between 2020 and 2019. Clinics are dropped from the sample at the end of an elective procedure ban.

Table 2: Daily Visits Regression Results

	(1) Daily Visits	(2) Daily Visits	(3) Daily Visits	(4) Daily Visits	(5) Daily Visits
Year 2020	-0.0655***	-0.0646***	-0.0429**	-0.0684***	-0.0456**
	(0.013)	(0.0121)	(0.0172)	(0.0134)	(0.0185)
Elective Procedure Ban	-0.299***	-0.263***	-0.185***	-0.276***	-0.191***
	(0.026)	(0.0252)	(0.0196)	(0.0216)	(0.0165)
Surgical Abortion Ban	0.00498	-0.0509	-0.106**	-0.0353	-0.0987**
	(0.0465)	(0.0539)	(0.0419)	(0.0496)	(0.039)
Holiday	-0.0103	-0.0075	-0.0204	-0.0138	-0.0277
	(0.0405)	(0.0412)	(0.0439)	(0.0388)	(0.0413)
COVID-19 incidence		-0.0107***	-0.0105***		
		(0.00247)	(0.00198)		
Stay at home / Non-Essential closure			-0.241***		-0.254***
			(0.0348)		(0.0322)
Cumulative COVID-19 cases per 100,000				-0.00018***	-0.000196***
				(6.06e-05)	(4.64e-05)
Unemployment rate	-0.0201***	-0.015***	-0.000198	-0.016***	0.000178
	(0.00401)	(0.00537)	(0.00221)	(0.00565)	(0.00242)
Observations (clinic-days)	81,260	81,260	81,260	81,260	81,260
$Cor(y, \hat{y})^2$	0.673	0.679	0.681	0.677	0.68
Number of clinics	478	478	478	478	478
Joint significance of Year 2020 and unemployment rate	<0.001	<0.001	0.011	<0.001	0.017

Notes: Coefficients are average marginal effects from Poisson regressions. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day. *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Table 3: Clinic level metrics of visitors

	(1) Weekly visits	(2) Weekly visitors	(3) Distance from home	(4) Median visit duration
Year 2020	-0.0511**	-0.0011	0.0622***	0.0677**
	(0.0218)	(0.0299)	(0.0214)	(0.0323)
Elective Procedure Ban	-0.172***	-0.204***	0.105**	0.0646
	(0.0219)	(0.0284)	(0.0473)	(0.0681)
Surgical Abortion Ban	-0.109***	-0.159**	0.0337	-0.0944**
	(0.0356)	(0.0624)	(0.11)	(0.0404)
Holiday	-0.149***	-0.144***	0.0465	0.0537*
	(0.0161)	(0.0164)	(0.041)	(0.0301)
COVID-19 incidence	-0.00979***	-0.00777***	-0.00386*	-0.0063**
	(0.00178)	(0.00258)	(0.00222)	(0.00267)
Stay at home / Non-Essential closure	-0.255***	-0.249***	0.0997**	0.0603
	(0.0426)	(0.0517)	(0.0417)	(0.09)
Unemployment rate	-7.86e-05	-0.006*	0.00147	-0.00432
	(0.00224)	(0.00354)	(0.00233)	(0.00452)
Observations (clinic-weeks)	16,252	16,252	9,306	16,249
$Cor(y, \hat{y})^2$	0.828	0.837	0.235	0.25
Number of clinics	478	478	411	478
Joint significance of Year 2020 and unemployment rate	0.069	0.231	0.007	0.0871

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. Models are weighted by the average number of devices seen in the state on each day for that week. *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week fixed effects and clinic fixed effects are included in all models.

Table 4: State level metrics of visitors

	(1) Weekly visits	(2) Weekly visitors	(3) Visitors from same state	(4) Visitors from out-of-state	(5) Residents who left state
Year 2020	-0.0339*	0.0138	0.0528*	0.164	-0.0655
	(0.0195)	(0.0279)	(0.0299)	(0.169)	(0.105)
Elective Procedure Ban	-0.183***	-0.221***	-0.225***	-0.512***	-0.114
	(0.0264)	(0.0292)	(0.0301)	(0.118)	(0.114)
Surgical Abortion Ban	-0.11***	-0.153**	-0.181***	0.115	2.54***
	(0.0381)	(0.0612)	(0.0539)	(0.551)	(0.743)
Holiday	-0.147***	-0.141***	-0.111***	-0.143	-0.101
	(0.015)	(0.0154)	(0.0134)	(0.11)	(0.136)
COVID-19 incidence	-0.0085***	-0.00488**	-0.00582*	0.000465	-0.0323***
	(0.00175)	(0.00223)	(0.00318)	(0.00912)	(0.00755)
Stay at home / Non-Essential closure	-0.187***	-0.205***	-0.286***	-0.0612	-0.16
	(0.0406)	(0.0542)	(0.0491)	(0.186)	(0.219)
Unemployment rate	-0.0103***	-0.0141***	-0.00715*	-0.0452	-0.0223
	(0.00255)	(0.00258)	(0.00428)	(0.0297)	(0.0309)
Observations (state-weeks)	1,598	1,598	1,598	1,496	1,530
$Cor(y, \hat{y})^2$	0.991	0.991	0.982	0.6	0.559
Number of states	47	47	47	44	45
Joint significance of Year 2020 and unemployment rate	<0.001	<0.001	0.158	0.329	0.546

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week fixed effects and state fixed effects are included in all models. Models are weighted by the average number of devices seen in the state on each day for that week.

Table 5: Estimates from clinic-level models that provide surgical abortions

	(1) Visits	(2) Weekly visits	(3) Weekly visitors	(4) Distance from home	(5) Median visit duration
Year 2020	-0.102***	-0.121***	-0.0728***	0.0353	0.0195
	(0.0183)	(0.0213)	(0.019)	(0.025)	(0.0553)
Elective Procedure Ban	-0.173***	-0.151***	-0.195***	0.147***	0.102
	(0.0241)	(0.0262)	(0.0272)	(0.0458)	(0.0732)
Surgical Abortion Ban	-0.127***	-0.12***	-0.185***	0.0267	-0.066*
	(0.0428)	(0.0401)	(0.0539)	(0.126)	(0.0386)
Holiday	-0.0402	-0.12***	-0.114***	0.0436	0.00472
	(0.0241)	(0.0115)	(0.00881)	(0.0506)	(0.0499)
COVID-19 incidence	-0.00682	-0.00433	-0.00451	-0.00414	-0.00245
	(0.00545)	(0.00538)	(0.0039)	(0.00333)	(0.00266)
Stay at home / Non-Essential closure	-0.198***	-0.209***	-0.151***	0.0711	0.0249
	(0.0317)	(0.0398)	(0.0367)	(0.0516)	(0.0644)
Unemployment rate	0.00327	0.00224	-0.00419	0.00386	-0.00547
	(0.00353)	(0.00366)	(0.00345)	(0.00337)	(0.00753)
Observations	51,510	10,302	10,302	6,275	10,299
$Cor(y, \hat{y})^2$	0.671	0.827	0.819	0.218	0.235
Number of clinics	303	303	303	265	303
Joint significance of Year 2020 and unemployment rate	<0.001	<0.001	<0.001	0.167	0.745

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (column 1) or the average over the week (columns 2-5). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Table 6: Estimates from clinic-level models that do not provide surgical abortions

	(1) Visits	(2) Weekly visits	(3) Weekly visitors	(4) Distance from home	(5) Median visit duration
Year 2020	0.0527	0.0716**	0.123***	0.121***	0.169***
	(0.0416)	(0.0292)	(0.024)	(0.0386)	(0.0557)
Elective Procedure Ban	-0.197***	-0.188***	-0.208***	-0.0175	0.0297
	(0.047)	(0.0468)	(0.0476)	(0.0938)	(0.109)
Surgical Abortion Ban	-0.0427	-0.119	-0.154	0.014	-0.0638
	(0.276)	(0.304)	(0.245)	(0.194)	(0.284)
Holiday	-0.0028	-0.2***	-0.196***	0.059	0.133
	(0.0827)	(0.0171)	(0.0237)	(0.0485)	(0.0932)
COVID-19 incidence	-0.0125**	-0.0133***	-0.00911*	-0.00322**	-0.0123***
	(0.00507)	(0.00488)	(0.00492)	(0.00152)	(0.00446)
Stay at home / Non-Essential closure	-0.325***	-0.367***	-0.418***	0.233***	0.0225
	(0.0393)	(0.0275)	(0.0384)	(0.0459)	(0.168)
Unemployment rate	-0.00321	-7.47e-05	-0.00404	-0.00593**	0.000531
	(0.00304)	(0.00354)	(0.00348)	(0.00266)	(0.00362)
Observations	29,750	5,950	5,950	3,031	5,950
$Cor(y, \hat{y})^2$	0.694	0.834	0.855	0.324	0.275
Number of clinics	175	175	175	146	175
Joint significance of Year 2020 and unemployment rate	0.384	0.023	<0.001	<0.001	0.004

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (column 1) or the average over the week (columns 2-5). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Table 7: Estimates from clinic-level models stratifying by state hostility to abortion

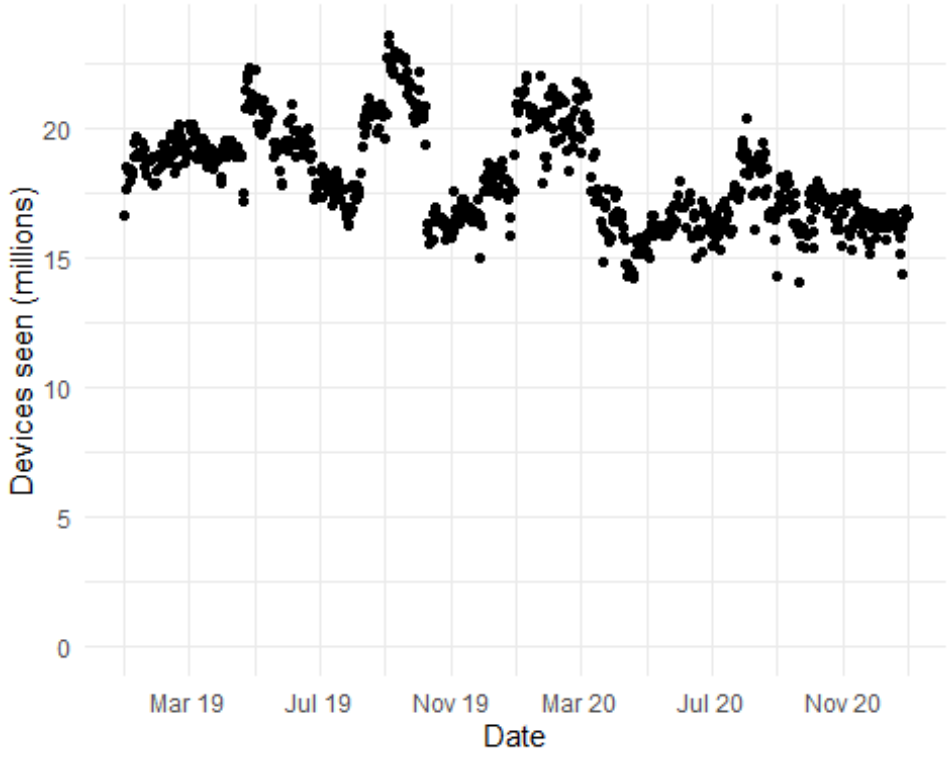
	Visits	Weekly visits	Weekly visitors	Distance from home	Median visit duration
Panel A: Clinics in States Hostile to Abortion, Controlling for Surgical Abortion Bans					
Year 2020	-0.0937***	-0.118***	-0.0896**	0.063	-0.00896
	(0.0262)	(0.0303)	(0.0343)	(0.0425)	(0.0397)
Elective Procedure Ban	-0.165***	-0.151***	-0.183***	0.119***	0.258***
	(0.0284)	(0.031)	(0.0243)	(0.0453)	(0.0821)
Surgical Abortion Ban	-0.175***	-0.164***	-0.22***	0.0632	-0.0989
	(0.0397)	(0.0418)	(0.0625)	(0.115)	(0.0638)
Holiday	-0.0103	-0.114***	-0.118***	0.0121	0.043
	(0.0433)	(0.0173)	(0.0198)	(0.0632)	(0.0517)
COVID-19 incidence	-0.023***	-0.0236***	-0.0247***	0.00163	-0.0194
	(0.00776)	(0.00811)	(0.00689)	(0.00549)	(0.0135)
Stay at home / Non-Essential closure	-0.105**	-0.109**	-0.0654	0.0628	-0.14*
	(0.0409)	(0.0514)	(0.0516)	(0.0699)	(0.0713)
Unemployment rate	0.00553	0.00591**	0.00189	0.00246	0.0124**
	(0.00359)	(0.00251)	(0.00234)	(0.00283)	(0.00603)
$Cor(y, \hat{y})^2$	0.696	0.85	0.851	0.347	0.285
Joint significance of Year 2020 and unemployment rate	0.00138	0.00013	0.00194	0.0588	0.116
Panel B: Clinics in States Hostile to Abortion, Not Controlling for Surgical Abortion Bans					
Year 2020	-0.0942***	-0.118***	-0.0905**	0.0609	-0.0111
	(0.0285)	(0.0326)	(0.0375)	(0.0426)	(0.0384)
Elective Procedure Ban	-0.21***	-0.199***	-0.239***	0.14***	0.229***
	(0.056)	(0.0607)	(0.0563)	(0.0373)	(0.0781)
Holiday	-0.0113	-0.113***	-0.116***	0.0113	0.0437
	(0.0431)	(0.0168)	(0.0179)	(0.064)	(0.0515)
COVID-19 incidence	-0.021***	-0.0216***	-0.0223***	0.000557	-0.0185
	(0.00769)	(0.00793)	(0.00706)	(0.00512)	(0.0127)
Stay at home / Non-Essential closure	-0.0956**	-0.0941*	-0.0518	0.0539	-0.137*
	(0.0403)	(0.0541)	(0.0545)	(0.0727)	(0.0691)
Unemployment rate	0.00445	0.00431*	0.000356	0.00405	0.0128**
	(0.00327)	(0.00221)	(0.00219)	(0.00357)	(0.00648)
$Cor(y, \hat{y})^2$	0.696	0.85	0.851	0.346	0.284
Joint significance of Year 2020 and unemployment rate	0.005	0.001	0.010	0.091	0.139
N	27,710	5,542	5,542	3,504	5,540
Number of clinics	163	163	163	146	163

	Visits	Weekly visits	Weekly visitors	Distance from home	Median visit duration
Panel C: Clinics in States is Supportive of Abortion					
Year 2020	-0.0107**	-0.00495	0.0612***	0.0503***	0.114**
	(0.00453)	(0.0163)	(0.0181)	(0.0192)	(0.0478)
Elective Procedure	-0.192***	-0.174***	-0.199***	0.0769	-0.0154
Ban	(0.0255)	(0.0322)	(0.0491)	(0.0897)	(0.0884)
Holiday	-0.0302	-0.172***	-0.164***	0.0855*	0.0587*
	(0.0535)	(0.00664)	(0.0111)	(0.0505)	(0.0361)
COVID-19	-0.0089***	-0.00819***	-0.00624**	-0.0041	-0.00544**
incidence	(0.00159)	(0.00143)	(0.0026)	(0.00311)	(0.00264)
Stay at home / Non-	-0.287***	-0.328***	-0.348***	0.195***	0.125
Essential closure	(0.0302)	(0.0376)	(0.0435)	(0.0724)	(0.131)
Unemployment rate	-0.00127	0.000819	-0.0036	-0.00526	-0.00992***
	(0.00312)	(0.00363)	(0.00548)	(0.00487)	(0.00354)
N	53,210	10,642	10,642	5,768	10,641
Number of clinics	313	313	313	264	313
$Cor(y, \hat{y})^2$	0.679	0.824	0.836	0.205	0.244
Joint significance of Year 2020 and unemployment rate	0.015	0.882	<0.001	0.022	<0.001

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (column 1) or the average over the week (columns 2-5). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models. Note that in Panel C we omit the variable for whether a state had a surgical abortion ban as state supportive of abortion overall did not have those bans. We also do so in Panel B by comparison.

Appendix

Appendix Figure 1: Number of Devices Seen by Day



Appendix Table 1: Dates of Elective Procedure Ban

	Elective procedure ban	Elective procedures resume
Alabama	3/19/2020	4/30/2020
Alaska	3/19/2020	4/20/2020
Arizona	3/21/2020	5/1/2020
Arkansas	4/3/2020	4/27/2020
California	3/19/2020	4/20/2020
Colorado	3/23/2020	4/27/2020
Connecticut	n/a	n/a
Delaware	n/a	n/a
District of Columbia	n/a	n/a
Florida	3/20/2020	5/8/2020
Georgia	n/a	n/a
Hawaii	4/16/2020	4/26/2020
Idaho	n/a	n/a
Illinois	n/a	n/a
Indiana	3/16/2020	4/27/2020
Iowa	3/27/2020	4/27/2020
Kansas	n/a	n/a
Kentucky	3/18/2020	5/6/2020
Louisiana	3/18/2020	4/27/2020
Maine	n/a	n/a
Maryland	3/24/2020	5/7/2020
Massachusetts	3/18/2020	5/18/2020
Michigan	3/21/2020	5/29/2020
Minnesota	3/23/2020	5/10/2020
Mississippi	3/19/2020	4/24/2020
Missouri	n/a	n/a
Montana	n/a	n/a
Nebraska	4/3/2020	5/4/2020
Nevada	n/a	n/a
New Hampshire	n/a	n/a
New Jersey	3/27/2020	5/26/2020
New Mexico	3/27/2020	4/30/2020
New York	3/20/2020	6/8/2020
North Carolina	n/a	n/a
North Dakota	n/a	n/a
Ohio	3/18/2020	5/1/2020
Oklahoma	3/24/2020	4/24/2020
Oregon	3/18/2020	5/1/2020
Pennsylvania	3/20/2020	4/27/2020
Rhode Island	n/a	n/a
South Carolina	n/a	n/a
South Dakota	3/23/2020	4/28/2020
Tennessee	3/24/2020	5/1/2020
Texas	3/22/2020	4/21/2020
Utah	3/25/2020	4/22/2020
Vermont	3/20/2020	5/4/2020
Virginia	3/25/2020	5/1/2020
Washington	3/19/2020	4/29/2020
West Virginia	4/1/2020	4/20/2020
Wisconsin	n/a	n/a
Wyoming	n/a	n/a

Appendix Table 2: Dates of Surgical Abortion Ban

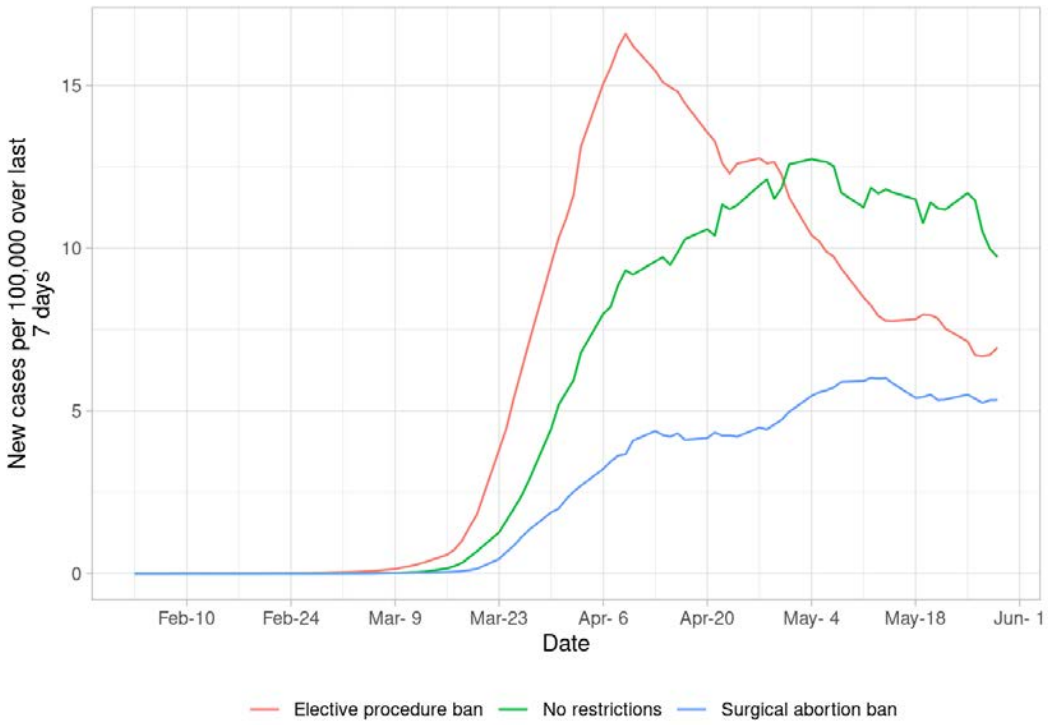
State	Ban began	Ban ended	Notes
Alabama	3/28/2020	4/12/2020	Enjoined
Alaska	4/7/2020	5/4/2020	Procedures were allowed to resume
Arkansas	1: 4/3/2020 2: 4/22/2020	1: 4/13/2020 2: 5/18/2020	Initial ban was enjoined, but the injunction was then lifted. Arkansas required a negative COVID-test within 72 hours before allowing an abortion.
Iowa	3/27/2020	4/1/2020	ACLU and state settled out of court
Louisiana	3/21/2020	5/1/2020	Clinics settled with state
Mississippi	4/10/2020	5/11/2020	Executive order expired
Ohio	3/17/2020	3/30/2020	Ended by temporary restraining order, affirmed on 4/6, permanently enjoined on 4/23.
Oklahoma	3/27/2020	4/6/2020	Temporary stay allowed some abortions before preliminary injunction on 4/21.
South Dakota	3/13/2020	10/01/2020	Effective ban because abortion services were provided by out-of-state physicians
Tennessee	4/8/2020	4/17/2020	Federal court blocked the ban
Texas	3/23/2020	4/22/2020	TRO from district court on 3/30, stayed by circuit court on 3/31, second TRO on 4/9, stayed on 4/10.
West Virginia	4/1/2020	4/30/2020	

Notes: In some cases, state bans were temporarily halted by court order and then reinstated after appeal. The first and second periods of these bans are noted by 1: M/DD/YYYY 2: M/DD/YYYY.

Appendix Table 3: Stay-At-Home Orders and Non-Essential Service Closures

State	Stay-At-Home Order Start	Stay-At-Home Order End	Non Essential Services Close	Non Essential Services Open
Alabama	4/4/2020	4/30/2020	3/28/2020	4/30/2020
Alaska	3/28/2020	4/24/2020	3/24/2020	4/24/2020
Arizona	3/31/2020	5/16/2020	3/31/2020	5/8/2020
Arkansas	n/a	n/a	4/6/2020	5/4/2020
California	3/19/2020	Ongoing	3/19/2020	5/8/2020
Colorado	3/26/2020	4/27/2020	3/19/2020	5/1/2020
Connecticut	3/23/2020	5/20/2020	3/23/2020	5/20/2020
Delaware	3/24/2020	6/1/2020	3/24/2020	5/8/2020
District of Columbia	4/1/2020	5/29/2020	3/25/2020	5/29/2020
Florida	4/3/2020	5/18/2020	4/3/2020	5/18/2020
Georgia	4/3/2020	5/1/2020	4/3/2020	5/1/2020
Hawaii	3/25/2020	5/31/2020	3/25/2020	5/7/2020
Idaho	3/25/2020	5/1/2020	3/25/2020	5/1/2020
Illinois	3/21/2020	5/29/2020	3/21/2020	5/29/2020
Indiana	3/25/2020	5/18/2020	3/25/2020	5/18/2020
Iowa	n/a	n/a	3/26/2020	5/15/2020
Kansas	3/30/2020	5/4/2020	3/30/2020	5/4/2020
Kentucky	3/26/2020	Ongoing	3/26/2020	5/11/2020
Louisiana	3/23/2020	5/15/2020	3/23/2020	5/1/2020
Maine	4/2/2020	5/31/2020	3/25/2020	5/1/2020
Maryland	3/30/2020	5/15/2020	3/23/2020	5/15/2020
Massachusetts	3/24/2020	5/18/2020	3/24/2020	5/18/2020
Michigan	3/24/2020	6/1/2020	3/24/2020	5/26/2020
Minnesota	3/28/2020	5/18/2020	3/28/2020	4/27/2020
Mississippi	4/3/2020	4/27/2020	4/3/2020	4/27/2020
Missouri	4/6/2020	5/4/2020	4/3/2020	5/4/2020
Montana	3/28/2020	4/26/2020	3/28/2020	4/27/2020
Nebraska	n/a	n/a	4/9/2020	6/1/2020
Nevada	3/31/2020	5/9/2020	3/21/2020	5/9/2020
New Hampshire	3/28/2020	6/16/2020	3/28/2020	5/11/2020
New Jersey	3/21/2020	6/9/2020	3/21/2020	5/18/2020
New Mexico	3/24/2020	Ongoing	3/24/2020	5/16/2020
New York	3/22/2020	6/27/2020	3/22/2020	6/8/2020
North Carolina	3/30/2020	5/22/2020	3/30/2020	5/8/2020
North Dakota	n/a	n/a	3/20/2020	5/1/2020
Ohio	3/24/2020	5/20/2020	3/24/2020	5/4/2020
Oklahoma	4/1/2020	5/15/2020	4/1/2020	4/24/2020
Oregon	3/23/2020	6/19/2020	3/23/2020	5/15/2020
Pennsylvania	4/1/2020	6/5/2020	3/21/2020	6/5/2020
Rhode Island	3/28/2020	5/9/2020	3/30/2020	5/9/2020
South Carolina	4/7/2020	5/4/2020	4/1/2020	4/20/2020
South Dakota	n/a	n/a	n/a	n/a
Tennessee	4/2/2020	4/29/2020	4/1/2020	4/27/2020
Texas	4/2/2020	5/1/2020	4/2/2020	5/1/2020
Utah	n/a	n/a	3/27/2020	5/1/2020
Vermont	3/24/2020	5/15/2020	3/25/2020	4/27/2020
Virginia	3/30/2020	5/29/2020	3/25/2020	5/29/2020
Washington	3/23/2020	6/1/2020	3/25/2020	6/1/2020
West Virginia	3/24/2020	5/5/2020	3/24/2020	5/4/2020
Wisconsin	3/25/2020	5/13/2020	3/25/2020	5/11/2020
Wyoming	n/a	n/a	3/19/2020	5/1/2020

Appendix Figure 2: Covid Cases by State Policy



Notes: States with no restrictions (blue) include Connecticut, Delaware, Washington D.C., Georgia, Idaho, Illinois, Kansas, Maine, Montana, Nevada, New Hampshire, North Carolina, Rhode Island, South Carolina, Wisconsin and Wyoming. States restricting elective procedures (red) include Arizona, California, Colorado, Florida, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, Pennsylvania, Utah, Vermont, Virginia, and Washington. States restricting elective procedures and surgical abortion include Alabama, Alaska, Indiana, Iowa, Mississippi, Ohio, Tennessee, and Texas. Arkansas, Hawaii, Kentucky, Louisiana, Missouri, North Dakota, South Dakota, and West Virginia did not have clinics with sufficient data to include in this analysis.

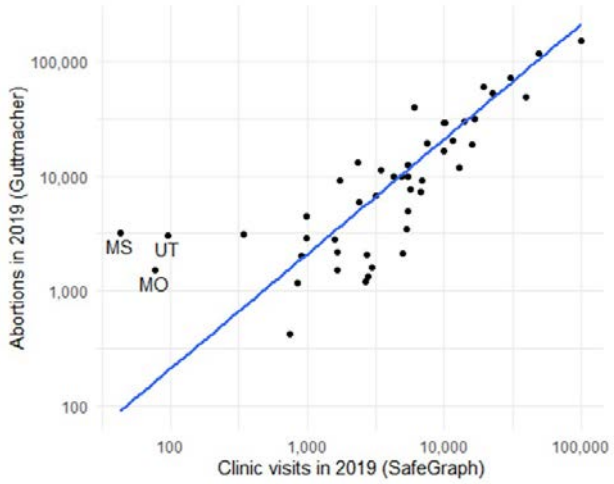
Appendix Table 4: Sum of Abortion Clinic Visits by State

	CDC Abortion data			SafeGraph abortion clinic visits			
State	All (2019)	Surgical (2019)	Medication (2019)	All clinics (2019)	Surgical clinics (2019)	Medication -only clinics (2019)	All clinics (2020)
Alabama	6009	3910	2088	2381	2381	0	1167
Alaska	1270	960	305	2756	2443	313	2364
Arizona	13097	7760	5190	2340	2331	9	2452
Arkansas	2963	1725	1237	984	0	984	2148
Colorado	9002	3389	4939	5408	4480	928	4941
Connecticut	9202	4570	4565	12700	7955	4745	7653
Delaware	2042	823	1182	906	906	0	592
District of Columbia	4552	2552	2000	4280	4280	0	2417
Florida	71914	34820	33780	30360	28035	2325	25498
Georgia	36907	18356	18549	5965	0	0	3707
Hawaii	2003	1224	776	339	339	0	209
Idaho	1513	878	629	1639	789	850	1962
Indiana	7637	4277	3359	5655	3661	1994	6458
Iowa	3566	1138	2404	5342	212	5130	5922
Kansas	6894	2445	4446	3177	2860	317	2569
Maine	2021	994	1023	4935	1651	3284	6294
Massachusetts	18593	10377	7958	7423	6908	515	4841
Michigan	27339	15675	11609	10125	8511	1614	7683
Minnesota	9940	6199	3737	3410	3266	144	2671
Mississippi	3194	911	2283	43	43	0	398
Missouri	1471	1443	15	77	77	0	18
Montana	1568	652	916	2965	1050	1915	2612
Nebraska	2068	808	1258	1662	1662	0	2087
Nevada	8414	5164	3201	4821	4040	781	3673
New Mexico	3942	1753	1735	973	973	0	676
New York	78587	48024	28489	49054	21355	27699	28508
North Carolina	28450	14319	12435	9835	9835	0	7148
Ohio	20102	12287	7807	11447	10150	1297	8818
Oklahoma	4995	2415	2493	1705	1705	0	1316
Oregon	8688	4161	4521	6843	5147	1696	6294
Pennsylvania	31018	17159	13845	16603	13998	2605	10553
Rhode Island	2099	1196	896	1565	1565	0	1166
South Carolina	5101	1995	3100	5377	5377	0	5200
South Dakota	414	272	137	749	749	0	960
Tennessee	9719	4758	4956	5377	3592	1785	4413
Texas	57275	34730	22539	19493	18669	824	16518
Utah	2922	1684	1234	96	96	0	112
Vermont	1195	481	708	2655	587	2068	2233
Virginia	15601	9767	5818	9890	9801	89	6599
Washington	17262	8838	8412	16044	8528	7516	10381
West Virginia	1183	694	489	854	854	0	593
Wisconsin	6511	4207	2165	6765	1146	5619	5356

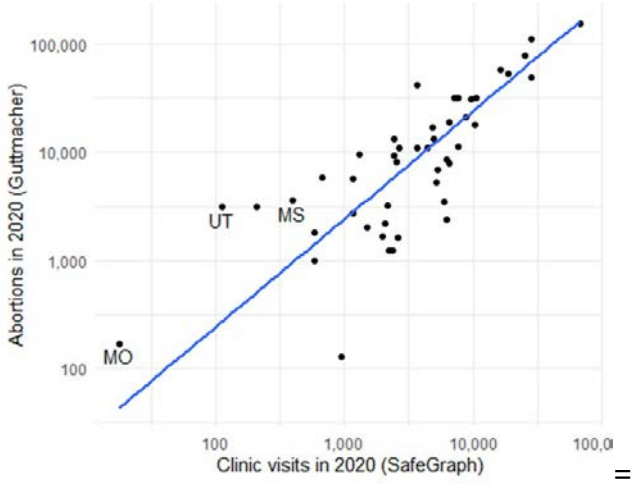
Notes: Clinics dropped from the balanced panel are included in these sums. CDC abortion data omits “Other” abortions.

Appendix Figure 3: Abortions per State and Clinic Visits, Full Year

Panel A: 2019



Panel B: 2020



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Notes: 45 degree line included for reference.

Appendix Table 5: Clinic-level results omitted interpolated weeks

	(1) Visits	(2) Weekly visits	(3) Weekly visitors	(4) Distance from home	(5) Median visit duration
Year 2020	-0.0581***	-0.0664***	-0.0161	0.0502**	0.0814***
	(0.0104)	(0.0168)	(0.0236)	(0.0241)	(0.0327)
Elective Procedure Ban	-0.172***	-0.153***	-0.194***	0.0732*	0.174***
	(0.0231)	(0.0245)	(0.0312)	(0.0423)	(0.0585)
Surgical Abortion Ban	-0.0795*	-0.0921**	-0.131*	0.0707	-0.254***
	(0.0446)	(0.0384)	(0.0643)	(0.121)	(0.0337)
Holiday	-0.0377	-0.151***	-0.146***	0.0287	0.095***
	(0.0492)	(0.0173)	(0.0165)	(0.0456)	(0.0221)
COVID-19 incidence	-0.0111***	-0.0105***	-0.00843***	-0.00368*	0.000335
	(0.00184)	(0.00172)	(0.00252)	(0.00223)	(0.00177)
Stay at home / Non-Essential closure	-0.242***	-0.256***	-0.246***	0.113***	0.148***
	(0.0396)	(0.0453)	(0.0554)	(0.0352)	(0.0451)
Unemployment rate	-0.000291	-0.000483	-0.00627*	0.00231	0.00201
	(0.00232)	(0.00233)	(0.00342)	(0.0021)	(0.00359)
Observations	47,090	9,418	9,418	7,995	9,418
$Cor(y, \hat{y})^2$	0.637	0.799	0.812	0.23	0.359
Number of clinics	277	277	277	277	277
Joint significance of Year 2020 and unemployment rate	0	0.00039	0.149	0.0387	0.00729

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (column 1) or the average over the week (columns 2-5). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Appendix Table 6: Log-linear Estimates of the Effect of Elective Procedure Bans

	(1) Log 1+Visits	(2) Log 1+Weekly visits	(3) Log 1+Weekly visitors	(4) Arcsinh Visits	(5) Arcsinh Weekly visits	(6) Arcsinh Weekly visitorss	(7) Log Distance from home	(8) Log median visit duration
Year 2020	-0.056	-0.0942**	-0.0597	-0.0621	-0.103**	-0.0696	0.0363**	0.0887***
	(0.0388)	(0.0415)	(0.0418)	(0.0434)	(0.044)	(0.0448)	(0.017)	(0.0265)
Elective Procedure Ban	-0.216***	-0.237***	-0.269***	-0.235***	-0.249**	-0.282***	0.0188	0.164***
	(0.0532)	(0.0752)	(0.0632)	(0.0606)	(0.0807)	(0.0683)	(0.0317)	(0.0628)
Surgical Abortion Ban	-0.179**	-0.245**	-0.255**	-0.197**	-0.247**	-0.259**	0.0737	-0.177***
	(0.074)	(0.0797)	(0.082)	(0.0841)	(0.0861)	(0.0878)	(0.0604)	(0.0375)
Holiday	-0.0604	-0.141***	-0.135***	-0.0671	-0.146***	-0.14***	0.086***	0.0434*
	(0.0559)	(0.0262)	(0.0242)	(0.0665)	(0.0281)	(0.0262)	(0.0317)	(0.0235)
COVID-19 incidence	-0.00684***	-0.00603**	-0.00523**	-0.00771***	-0.0063**	-0.00555**	-0.00292	-0.00381*
	(0.00164)	(0.00243)	(0.00222)	(0.00196)	(0.00269)	(0.00247)	(0.00222)	(0.0021)
Stay at home / Non-essential closure	-0.306***	-0.306***	-0.282***	-0.333***	-0.311***	-0.289***	0.0208	-0.0839*
	(0.0536)	(0.0706)	(0.0647)	(0.0599)	(0.0753)	(0.0694)	(0.0311)	(0.0451)
Unemployment	-0.00226	0.00375	0.0033	-0.00546	0.000919	0.00114	0.00258	-0.00885
	(0.00405)	(0.00851)	(0.00838)	(0.00504)	(0.0099)	(0.00968)	(0.00263)	(0.00571)
R-squared	73,881	14,851	14,851	73,881	14,851	14,851	8,599	13,360
Number of clinics	0.561	0.738	0.728	0.546	0.717	0.706	0.507	0.347
Observations	478	478	478	478	478	478	410	478

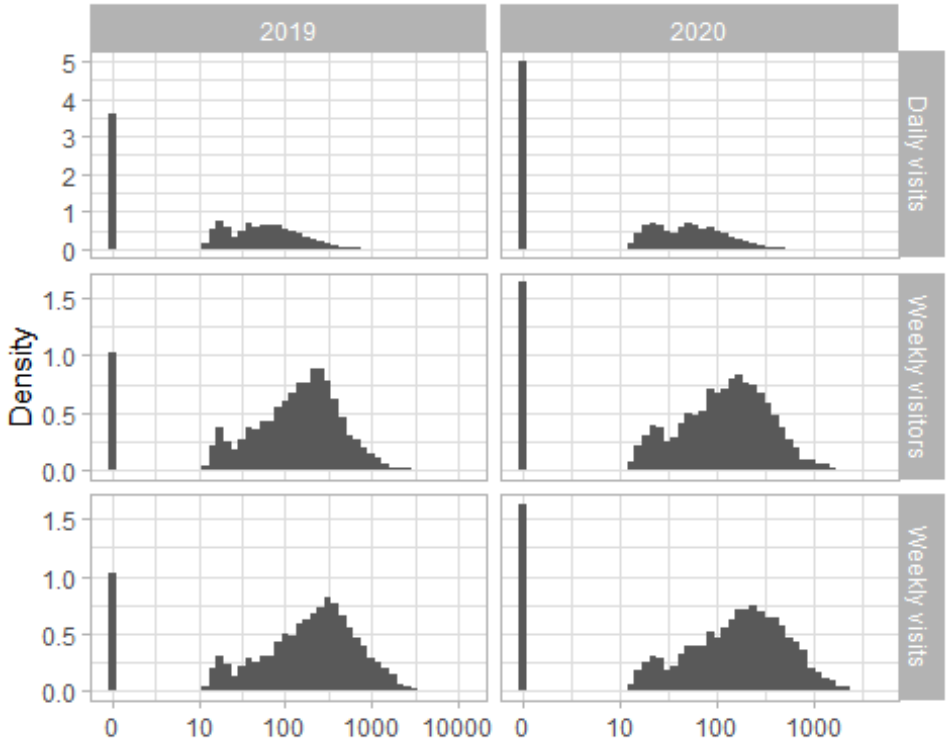
Notes: Results are point estimates from log-linear models estimated via OLS. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (column 1) or the average over the week (columns 2-5). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Appendix Table 7: Sun and Abraham Estimates of the Effect of Elective Procedure Bans

	(1) Log 1+Visits	(2) Log 1+Weekly visits	(3) Log 1+Weekly visitors	(4) Arcsinh Visits	(5) Arcsinh Weekly visits	(6) Arcsinh Weekly visitorss	(7) Log Distance from home	(8) Log median visit duration
Year 2020	-0.149	-0.184	-0.131	-0.146	-0.186	-0.134	0.19***	0.105
	(0.0864)	(0.099)	(0.0775)	(0.0862)	(0.106)	(0.0853)	(0.026)	(0.0857)
Elective Procedure Ban (ATT)	-0.289***	-0.215**	-0.271***	-0.285***	-0.214**	-0.273***	0.133	0.251***
	(0.092)	(0.0993)	(0.0808)	(0.091)	(0.105)	(0.0886)	(8.29e+03)	(0.0607)
Surgical Abortion Ban	-0.139	-0.206	-0.259*	-0.139	-0.207	-0.261	0.105	-0.209***
	(0.097)	(0.137)	(0.125)	(0.0956)	(0.154)	(0.141)	(0.0794)	(0.0513)
Holiday	-0.134	-0.167**	-0.18***	-0.135	-0.182**	-0.195**	-0.00592	0.0735
	(0.0864)	(0.0736)	(0.0605)	(0.0865)	(0.0785)	(0.0661)	(0.0272)	(0.0837)
COVID-19 incidence	-0.00775***	-0.00656*	-0.0065**	-0.00767***	-0.00694*	-0.00693*	-0.00333	-0.00572**
	(0.00169)	(0.0035)	(0.00315)	(0.00167)	(0.00391)	(0.00356)	(0.00253)	(0.00234)
Stay at home / Non-essential closure	-0.318***	-0.328***	-0.296***	-0.311***	-0.343***	-0.316***	-0.0513*	-0.141***
	(0.0584)	(0.0674)	(0.0611)	(0.0577)	(0.0689)	(0.0625)	(0.0255)	(0.0427)
Unemployment	0.00225	0.00345	0.00188	0.000576	0.000917	0.000374	0.00183	-0.00221
	(0.00627)	(0.0115)	(0.011)	(0.00616)	(0.0127)	(0.0121)	(0.00323)	(0.00719)
R-squared	73,881	14,851	14,851	73,881	14,851	14,851	8,599	13,360
Number of clinics	0.567	0.742	0.733	0.567	0.721	0.711	0.516	0.357
Observations	478	478	478	478	478	478	410	478

Notes: Results are point estimates from log-linear models estimated via OLS. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (column 1) or the average over the week (columns 2-5). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Appendix Figure 4: Density of outcome variables in 2019 and 2020



Appendix Table 8: Zero-Inflated Poisson Models

	Any Visits	Visits | Any	Any Weekly Visit	Weekly Visits | Any	Weekly Visitors | Any
2020	-0.0921**	-0.0414***	-0.238**	-0.0513**	-0.000776
	(0.0405)	(0.0114)	(0.0837)	(0.0214)	(0.0294)
Elective procedures ban	-0.154***	-0.15***	-0.212**	-0.165***	-0.198***
	(0.0323)	(0.0191)	(0.0737)	(0.0211)	(0.0277)
Surgical abortion ban	-0.113	-0.128***	-0.344*	-0.112***	-0.161**
	(0.0876)	(0.0391)	(0.155)	(0.034)	(0.0606)
Holiday	-0.0653	-0.00315	-0.0703	-0.15***	-0.143***
	(0.0931)	(0.0329)	(0.0728)	(0.0164)	(0.016)
New COVID-19 cases per 100,000	-0.00435*	-0.0091***	0.00118	-0.00986***	-0.00786***
	(0.00244)	(0.00147)	(0.0029)	(0.00171)	(0.00254)
Stay at home / Non-essential closure	-0.281***	-0.182***	-0.234***	-0.251***	-0.244***
	(0.0654)	(0.0283)	(0.0682)	(0.0442)	(0.0538)
Unemployment rate	-0.00974**	0.00115	-0.0184***	0.000362	-0.00544
	(0.00465)	(0.00271)	(0.00643)	(0.00217)	(0.00336)
N	79,050	53,956	6,766	14,572	14,572
Number of clinics	465	478	199	478	478
$Cor(y, \hat{y})^2$	0.412	0.64	0.336	0.819	0.828
Joint significance of Year 2020 and unemployment rate	0.0682	5e-05	0	0.0647	0.265

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (columns 1 and 2) or the average over the week (columns 3-6). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Appendix Table 9: Negative Binomial Estimates

	Visits	Weekly visits	Weekly visitors	Distance from home	Median visit duration
Year 2020	-0.048	-0.0623	-0.0252	0.0828***	0.0592
	(0.0378)	(0.039)	(0.037)	(0.0209)	(0.0392)
Elective Procedure	-0.168***	-0.15***	-0.16***	0.0319	0.0674
Ban	(0.0335)	(0.0367)	(0.0343)	(0.0449)	(0.0561)
Surgical Abortion	-0.0634	-0.0857	-0.122	0.328	0.137
Ban	(0.119)	(0.133)	(0.135)	(0.275)	(0.224)
Holiday	-0.0533	-0.119***	-0.117***	0.0182	0.0659*
	(0.0436)	(0.0189)	(0.0174)	(0.0373)	(0.0379)
COVID-19	-0.00642***	-0.00625***	-0.00582***	-0.00285	-0.00294
incidence	(0.0018)	(0.00163)	(0.00163)	(0.0019)	(0.00288)
Stay at home / Non-	-0.192***	-0.223***	-0.216***	0.0779**	-0.112*
Essential closure	(0.0376)	(0.0426)	(0.0437)	(0.0337)	(0.0584)
Unemployment rate	-0.00284	2.54e-05	-0.00202	0.000495	0.00631
	(0.004)	(0.00398)	(0.00378)	(0.00255)	(0.00403)
Overdispersion	0.598***	3.86***	5.35***	33.8***	1.14***
	(0.0422)	(0.602)	(0.97)	(9.27)	(0.104)
N	81,260	16,252	16,252	9,306	16,249
Number of clinics	478	478	478	411	478
$Cor(y, \hat{y})^2$	0.665	0.812	0.822	0.232	0.249
Joint significance of Year 2020 and unemployment rate	0.249	0.253	0.564	0.00015	0.0524

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Appendix Table 10: States Where Contraceptives Must be Dispensed

	Visits	Weekly visits	Weekly visitors	Distance from home	Median visit duration
Year 2020	-0.0421**	-0.0505*	0.00353	0.048***	0.0668***
	(0.0203)	(0.0265)	(0.0356)	(0.0161)	(0.0216)
Elective Procedure	-0.187***	-0.169***	-0.195***	0.0826	-0.0216
Ban	(0.0229)	(0.0292)	(0.045)	(0.0697)	(0.0688)
Surgical Abortion	-0.1***	-0.106***	-0.164**	0.0348	-0.0632
Ban	(0.0361)	(0.0314)	(0.0603)	(0.12)	(0.0522)
Holiday	-0.0203	-0.159***	-0.154***	0.0498	0.0515
	(0.0506)	(0.0138)	(0.0136)	(0.0376)	(0.0379)
COVID-19	-0.00967***	-0.00917***	-0.00715***	-0.0029	-0.00453*
incidence	(0.00162)	(0.00132)	(0.00241)	(0.00188)	(0.00245)
Stay at home / Non-	-0.259***	-0.279***	-0.279***	0.11***	0.108
Essential closure	(0.0346)	(0.0487)	(0.0597)	(0.0438)	(0.0902)
Unemployment rate	-0.00056	-0.000216	-0.00707*	0.00113	-0.0032
	(0.0022)	(0.00283)	(0.00418)	(0.00292)	(0.00674)
N	62,390	12,478	12,478	7,192	12,475
Number of clinics	367	367	367	312	367
$Cor(y, \hat{y})^2$	0.689	0.832	0.843	0.229	0.236
Joint significance of Year 2020 and unemployment rate	0.0545	0.169	0.192	0.00018	0.00624

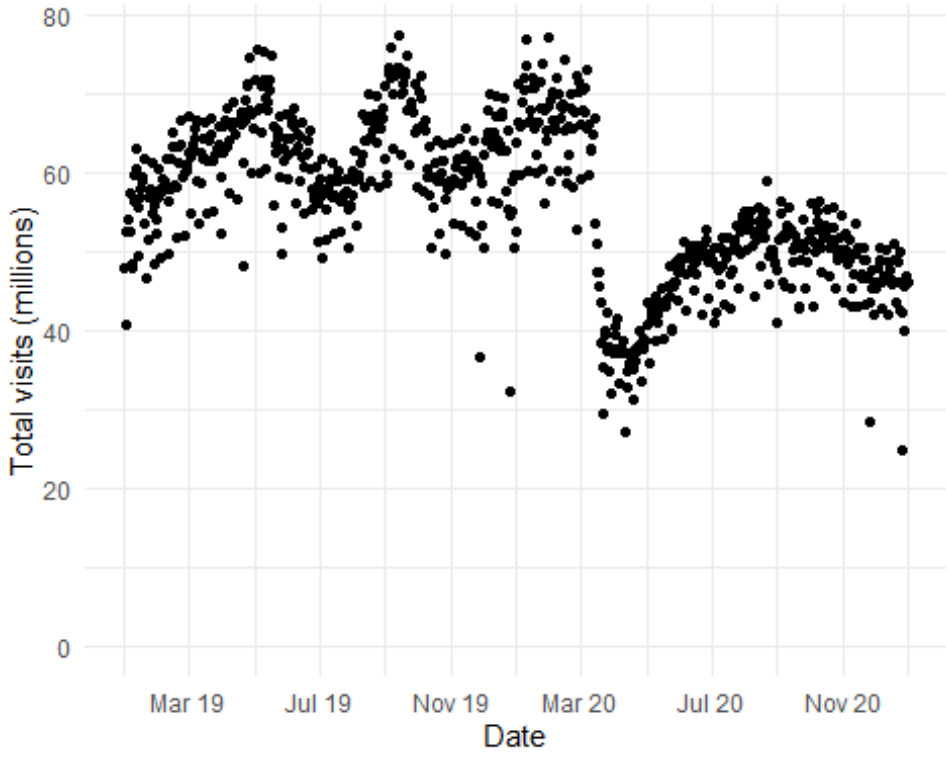
Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (column 1) or the average over the week (columns 2-5). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Appendix Table 11: States Where Pharmacist May Refuse to Dispense

	Visits	Weekly visits	Weekly visitors	Distance from home	Median visit duration
Year 2020	-0.0372	-0.0437*	-0.00615	0.111	0.0898
	(0.0271)	(0.0256)	(0.0241)	(0.0816)	(0.104)
Elective Procedure	-0.191***	-0.191***	-0.252***	0.148***	0.263***
Ban	(0.0354)	(0.0343)	(0.0272)	(0.0341)	(0.0602)
Surgical Abortion	-0.01	0.0329	0.00773	0.138	0.14
Ban	(0.134)	(0.209)	(0.234)	(0.131)	(0.482)
Holiday	-0.0258	-0.0998***	-0.0994***	0.027	0.0605*
	(0.0226)	(0.00992)	(0.0127)	(0.124)	(0.0366)
COVID-19	-0.0218**	-0.0189*	-0.0172**	-0.0122	-0.0243*
incidence	(0.0103)	(0.0108)	(0.00738)	(0.0107)	(0.0142)
Stay at home / Non-	-0.0716	-0.0828	-0.0577	0.136	0.0405
Essential closure	(0.0608)	(0.0937)	(0.0691)	(0.14)	(0.06)
Unemployment rate	0.00339	0.00415	0.00312	0.00116	-0.0123
	(0.00381)	(0.00344)	(0.00289)	(0.00457)	(0.0166)
N	18,870	3,774	3,774	2,114	3,774
Number of clinics	111	111	111	99	111
$Cor(y, \hat{y})^2$	0.564	0.782	0.792	0.279	0.32
Joint significance of Year 2020 and unemployment rate	0.188	0.0597	0.506	0.359	0.66

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (column 1) or the average over the week (columns 2-5). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Appendix Figure 5: Number of Visits by Day



Appendix Table 12: Includes Control for Trends in Total Mobility

	Visits	Weekly visits	Weekly visitors	Distance from home	Median visit duration
Year 2020	-0.0152	-0.038	0.0143	0.061***	0.046
	(0.0207)	(0.0243)	(0.0324)	(0.0225)	(0.0333)
Elective Procedure Ban	-0.128***	-0.105***	-0.134***	0.099**	0.0117
	(0.0261)	(0.0285)	(0.0323)	(0.0516)	(0.0714)
Surgical Abortion Ban	-0.115**	-0.109**	-0.16**	0.0347	-0.0863**
	(0.0434)	(0.0401)	(0.0635)	(0.11)	(0.0409)
Holiday	0.0208	-0.128***	-0.119***	0.0454	0.0459*
	(0.038)	(0.00927)	(0.00878)	(0.041)	(0.0276)
COVID-19 incidence	-0.0102***	-0.00938***	-0.00731***	-0.0039*	-0.00675***
	(0.00154)	(0.00135)	(0.00198)	(0.00216)	(0.00253)
Stay at home / Non-Essential closure	-0.0977***	-0.102***	-0.0814**	0.0888	-0.0551
	(0.0256)	(0.027)	(0.0363)	(0.0615)	(0.0741)
Unemployment rate	0.00898***	0.00918***	0.00406	0.000838	-0.0102**
	(0.00285)	(0.00279)	(0.00354)	(0.00153)	(0.00481)
Log total visits	0.658***	0.674***	0.753***	-0.0327	-0.299***
	(0.0954)	(0.088)	(0.078)	(0.0744)	(0.0923)
N	81,260	16,252	16,252	9,306	16,249
Number of clinics	478	478	478	411	478
$Cor(y, \hat{y})^2$	0.684	0.83	0.842	0.235	0.249
Joint significance of Year 2020 and unemployment rate	0.0047	0.00382	0.331	0.0187	0.064

Notes: Coefficients are average marginal effects. Standard errors clustered at the state level in parentheses. Models are weighted by the number of devices seen in the state on each day (column 1) or the average over the week (columns 2-5). *** p<0.01, ** p<0.05, * p<0.1. Epidemiological week by day of week fixed effects and clinic fixed effects are included in all models.

Appendix Table 13: Counterfactual Estimates of Abortions in the United States

State	2019	2020 (Est.)	Pandemic		Elective ban		Surgical ban		2020 actual
			Estimate	% Δ	Estimate	% Δ	Estimate	% Δ	
National	916490	950055	903778	-4.9	884404	-6.9	883553	-7.0	930200
Alabama	5910	5812	5828	0.3	5690	-2.1	5662	-2.6	5700
Alaska	1320	1351	1302	-3.7	1278	-5.4	1273	-5.8	1240
Arizona	13020	13342	12839	-3.8	12542	-6.0	12542	-6.0	13320
Arkansas	2920	2789	2880	3.2	2840	1.8	2827	1.3	3250
California	150660	160544	148570	-7.5	145883	-9.1	145883	-9.1	154060
Colorado	12410	12420	12238	-1.5	11996	-3.4	11996	-3.4	13420
Connecticut	11990	12030	11824	-1.7	11824	-1.7	11824	-1.7	11170
Delaware	2040	2114	2012	-4.8	2012	-4.8	2012	-4.8	1830
District of Columbia	9900	13128	9763	-25.6	9763	-25.6	9763	-25.6	9410
Florida	72210	72797	71208	-2.2	69236	-4.9	69236	-4.9	77400
Georgia	39980	41940	39425	-6.0	39425	-6.0	39425	-6.0	41620
Hawaii	3150	3125	3106	-0.6	3089	-1.2	3089	-1.2	3130
Idaho	1520	1650	1499	-9.2	1499	-9.2	1499	-9.2	1690
Illinois	52220	58172	51496	-11.5	51496	-11.5	51496	-11.5	52780
Indiana	7720	7725	7613	-1.5	7432	-3.8	7432	-3.8	7880
Iowa	3470	3333	3422	2.7	3362	0.9	3356	0.7	3510
Kansas	6740	6695	6647	-0.7	6647	-0.7	6647	-0.7	8190
Kentucky	3670	3930	3619	-7.9	3519	-10.5	3519	-10.5	4080
Louisiana	8150	7387	8037	8.8	7860	6.4	7763	5.1	7360
Maine	2100	2131	2071	-2.8	2071	-2.8	2071	-2.8	2370
Maryland	30030	30146	29613	-1.8	28877	-4.2	28877	-4.2	30750
Massachusetts	19050	19284	18786	-2.6	18138	-5.9	18138	-5.9	17060
Michigan	29160	30514	28756	-5.8	27634	-9.4	27634	-9.4	31510
Minnesota	11190	11422	11035	-3.4	10735	-6.0	10735	-6.0	11060
Mississippi	3190	3568	3146	-11.8	3082	-13.6	3069	-14.0	3560
Missouri	1520	863	1499	73.6	1499	73.6	1499	73.6	170
Montana	1610	1625	1588	-2.3	1588	-2.3	1588	-2.3	1630
Nebraska	2150	2218	2120	-4.4	2083	-6.1	2083	-6.1	2200
Nevada	9920	10037	9782	-2.5	9782	-2.5	9782	-2.5	11010
New Hampshire	2090	2032	2061	1.4	2061	1.4	2061	1.4	2050
New Jersey	48280	48365	47610	-1.6	45996	-4.9	45996	-4.9	48830
New Mexico	4470	4397	4408	0.3	4323	-1.7	4323	-1.7	5880
New York	117140	123503	115515	-6.5	110291	-10.7	110291	-10.7	110360
North Carolina	29320	29230	28913	-1.1	28913	-1.1	28913	-1.1	31850
North Dakota	1120	1101	1104	0.4	1104	0.4	1104	0.4	1170
Ohio	20400	20286	20117	-0.8	19617	-3.3	19540	-3.7	20990
Oklahoma	9070	12494	8944	-28.4	8787	-29.7	8719	-30.2	9690
Oregon	9130	8885	9003	1.3	8779	-1.2	8779	-1.2	8560

State	2019	2020 (Est.)	Pandemic		Elective ban		Surgical ban		2020 actual
			Estimate	% Δ	Estimate	% Δ	Estimate	% Δ	
Pennsylvania	31250	31245	30817	-1.4	30155	-3.5	30155	-3.5	32270
Rhode Island	2840	2558	2801	9.5	2801	9.5	2801	9.5	2760
South Carolina	5000	4941	4931	-0.2	4931	-0.2	4931	-0.2	5300
South Dakota	420	385	414	7.6	406	5.4	401	4.3	130
Tennessee	9970	9035	9832	8.8	9621	6.5	9592	6.2	10850
Texas	59290	61314	58468	-4.6	57476	-6.3	56973	-7.1	58030
Utah	3030	3050	2988	-2.0	2941	-3.6	2941	-3.6	3120
Vermont	1190	1139	1173	3.1	1144	0.4	1144	0.4	1230
Virginia	16470	16112	16242	0.8	15902	-1.3	15902	-1.3	18740
Washington	18570	18999	18312	-3.6	17888	-5.8	17888	-5.8	17980
West Virginia	1170	1058	1154	9.0	1141	7.8	1135	7.2	990
Wisconsin	7260	7757	7159	-7.7	7159	-7.7	7159	-7.7	6960
Wyoming	90	72	89	23.0	89	23.0	89	23.0	100

Appendix Table 14: Correlation of abortion clinic visits and abortions

	Abortions in 2019		Abortions in 2020	
	All states	Excl. MO, MS, UT	All states	Excl. MO, MS, UT
Log abortion clinic visits (2019)	0.93***	1.61***		
	(0.219)	(0.251)		
Log abortion clinic visits (2020)			1.20***	1.60***
			(0.203)	(0.359)
N	47	44	47	44
$Cor(y, \hat{y})^2$	0.58	0.72	0.61	0.60

* p < 0.1, ** p < 0.05, *** p < 0.01