Abortion-Related Laws and Concurrent Patterns in Abortion Incidence in Indiana, 2010–2019

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Objectives. To analyze abortion incidence in Indiana concurrent with changes in abortion-related laws.

Methods. Using publicly available data, we created a timeline of abortion-related laws in Indiana, calculated abortion rates by geography, and described changes in abortion occurrence coincident with changes in abortion-related laws between 2010 and 2019.

Results. Between 2010 and 2019, Indiana's legislature passed 14 abortion-restricting laws, and 4 of 10 abortion-providing clinics closed. The Indiana abortion rate decreased from 7.8 abortions per 1000 women aged 15 to 44 years in 2010 to 5.9 in 2019. At all time points, the abortion rate was 58% to 71% of the Midwestern rate and 48% to 55% of the national rate. By 2019, nearly 1 in 3 (29%) Indiana residents who obtained abortion care did so outside the state.

Conclusions. Access to abortion in Indiana over the past decade was low, required increases in interstate travel to obtain care, and co-occurred with the passage of numerous abortion restrictions.

Public Health Implications. These findings preview unequal abortion access and increases in interstate travel as state-level restrictions and bans go into effect across the country. (*Am J Public Health*. Published online ahead of print February 16, 2023:e1–e9. https://doi.org/10.2105/AJPH.2022.307196)

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The United States has experienced a surge in abortion-related legislation over the past decade,[1] culminating in the overturning of federal protections for abortion by the US Supreme Court's *Dobbs v Jackson Women's Health Organization* opinion in June 2022.[2] In the 12 years leading up to the *Dobbs* opinion, states passed more than 470 state-level abortion restrictions that limited abortion access in direct (e.g., requiring unnecessary hospital admitting privileges)[3] and indirect (e.g., medically unnecessary waiting periods that can cause increases in travel)[4] ways and approximately 70 policies that protected abortion access.[5]

Compared with other state governments, Indiana's government has a particularly hostile legislative and policy history toward abortion[6]: the state enacted more abortion restrictions between 1973 and 2020 than most other states[7] and has consistently been categorized as very hostile toward abortion.[6] Restrictions have included an 18-hour waiting period following state-directed counseling, written and notarized parental consent or judicial bypass requirements for minors, prohibition on the use of telemedicine to administer medication abortion, limitations on abortion provision beyond 14 weeks gestation, and severe restrictions on public funding for abortion.[8] With the removal of constitutional protections for abortion, however, Indiana became the first state in the country to pass a ban on abortion at zero weeks and immediate delicensure of all freestanding abortion clinics.[9] The law went into effect on September 15, 2022, with limited exceptions for rape and incest (up to 12 weeks of pregnancy dated from last menstrual period), fatal fetal diagnoses (up to 22 weeks after last menstrual period), and the life and health of the pregnant person. One week later, a judge granted a preliminary injunction on the ban. On October 12, 2022, the Indiana Supreme Court allowed the injunction to stand and abortions to continue at least until a ruling is issued following oral arguments that took place on January 19, 2023—typically issued at least 2 months after the hearing.

Counter to their stated intention of protecting pregnant people's health, laws restricting abortion access have been demonstrated to increase mortality and morbidity during pregnancy,[10] to delay or block access to necessary health care, and to otherwise burden or harm abortion seekers and providers.[3,11] But abortion care access is not just a critical component of public health, it is also essential to reproductive autonomy and justice.[12] At its core, abortion access recognizes each individuals' fundamental right to bodily autonomy, and the repercussions of granting versus denying that right are profound. Among the many established benefits of abortion access are improved physical health,[13] lower risk of intimate partner violence,[14] improved socioeconomic conditions,[15] and better developmental outcomes for one's existing and subsequent children.[16]

Given its history of abortion restrictions, Indiana can serve as a case study for examining how changes in abortion policy coincide with changes in abortion utilization, especially as more states enact extremely restrictive abortion bans—including total abortion bans and bans after the detection of fetal cardiac activity—following the loss of federal abortion protections. The demographic makeup of the state allows some examination of how abortion restrictions may affect abortion seekers unevenly in terms of geography: Indiana's 92 counties are almost equally split between metropolitan (44) and nonmetropolitan (48).[17,18]

However, the peer-reviewed research on abortion incidence or abortion care–seeking experiences in Indiana is extremely scarce. A 1997 study examined the impact of parental involvement laws on abortion incidence among minors in Indiana and found that these laws reduced the in-state abortion rate for minors, delayed them in obtaining abortion care, and increased their out-of-state travel.[19] Aside from this 1997 study, we identified no peer-reviewed public health research on abortion access in Indiana. To address this gap in the literature, we endeavored to provide a descriptive review of Indiana's regulatory environment over the past decade and to conduct an empirical analysis of abortion incidence patterns in the state. We evaluated abortion incidence overall and by duration of pregnancy in the state versus in the region and in the nation. We also determined abortion incidence by Indiana county as well as Indiana residents' out-of-state abortion utilization between 2010 and 2019, the most recent years for which data are available.

METHODS

Data on individual abortion-related laws, including dates of proposal and enactment, were from the Indiana General Assembly Web site, supplemented by researcher review of news reports, court filings, and legal advocacy organization reports. Specifically, we used the search by subject function on the Indiana General Assembly Web site to locate each piece of abortion-related legislation signed into law between 2014 and 2019, and we then reviewed the Indiana General Assembly's list of archived bills to locate those related to abortion between 2010 and 2013. We cross-referenced the list of legislation with Indiana abortion laws included in the LawAtlas (https://lawatlas.org) and Guttmacher Institute Web sites. From these sources, we extracted and organized information on abortion-related laws in Indiana into a table, including content and dates of enactment. Using this compiled data set, we then created a timeline that depicts Indiana's new abortion-related laws over the past decade and plotted these alongside concurrent abortion-providing clinic closures and openings.

Data on the number and location of sites providing abortions in Indiana were from Indiana Department of Health Clinical Licensing Program materials (publicly available on the Indiana Department of Health Web site between 2008 and 2020) as well as from newspaper articles, court records, and digital archives (via the Wayback Machine). From these data, we determined the number of abortion facilities in the state for each year. We used this to calculate the facility density (i.e., facilities per million women aged 15–44 years) by extracting the number of facilities in the state from the Indiana State Licensing program data and dividing this by the US Census estimate of the number of women aged 15 to 44 years in the state for that year. We similarly estimated facility density for the Midwest and the United States, extracting data on the number of facilities from Guttmacher Institute data[20]; however, because Guttmacher Institute data on facility numbers are available only for 2014 and 2017, we calculated facility density for the Midwest and the United States for these 2 years only. We used the word "women" in our description of denominators to be consistent with the language of the US Census methods that generated these estimates, but we acknowledge that this is a limitation of the measure because transgender, nonbinary, and gender-expansive people also have abortions.

Measures

To calculate abortion rates (number of abortions per year per 1000 women

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aged 15–44 years) over time by county, state, region, the United States, and percentage of patients leaving their state of residence for abortion care, we accessed several publicly available state- and national-level data sets. Publicly available data included Centers for Disease Control and Prevention (CDC) annual abortion surveillance reports,[21] Indiana Department of Health Terminated Pregnancy Reports,[22] and the US Census.[23] To calculate the abortion rate in Indiana, we extracted the number of abortions that took place in Indiana (abortions by occurrence) for each year between 2010 and 2019 from CDC data and divided this by the US Census estimate of the number of women aged 15 to 44 years in Indiana for that year.

To calculate the abortion rate in the Midwestern region, we similarly extracted the number of abortions that took place in all states with a Midwestern designation in the US Census (IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, and WI) and divided this annual total of Midwestern abortions by the US Census estimate of the number of women aged 15 to 44 years in those 12 states for each year. Finally, to calculate the national abortion rate, we extracted the total number of abortions reported in the United States for each year and divided each annual abortion total by the US Census estimate for the number of women aged 15 to 44 years in the states that reported abortions in that year.

Because reporting data to the CDC is voluntary, not all states report abortion counts to the CDC and thus are missing from the CDC estimates. Specifically, we excluded the following states when calculating national abortion rates because of either not reporting to the CDC or not following reporting guidelines: California, Maryland, New Hampshire, and New Jersey (2010–2019); District of Columbia and Wyoming (2010–2018); Maine (2012); and Florida (2010–2016, for rates by residence only).

To create abortion rates for each county in Indiana, we extracted the total number of abortions reported for each county in each year from the Terminated Pregnancy Reports data and divided that by the US Census data's estimated number of women aged 15 to 44 years in each county. To explore abortion rates by county classification (metro, urban, or rural), we relied on a county classification system based on the US Department of Agriculture rural–urban continuum codes, most recently updated in 2013.[17] Specifically, the Department of Agriculture designates counties as "metro" (based on Office of Management and Budget metro designations[24]), "nonmetro–urban" (nonmetro and ≥ 2500 people), and "nonmetro–rural" (nonmetro and < 2500 people). The Indiana Termination of Pregnancy Reports designated counties that saw between 1 and 5 abortions per year as missing; to include these 10 counties in the analysis, we assigned them as having 3 abortions each (the median value in the possible range).

To calculate the percentage of Indiana residents who left the state to obtain an abortion, we extracted the number of abortions Indiana residents obtained out of state each year from the CDC surveillance reports and divided this out-of-state abortion count by the total number of abortions that Indiana residents received (inside and outside the state) for that year, per Smith et al.[25] For Midwest and national estimates, we repeated the steps using counts for each specific region. We excluded all states that were missing or had incomplete data from any of our study years to keep consistent the states represented across years. To examine the states to which Indiana residents traveled to obtain their abortions, we used the same CDC data to obtain the total number of abortions Indiana residents received each year in each of the states that reported abortions given to Indiana residents for each year between 2010 and 2019.

Data Analysis

To evaluate patterns in abortion rate over the full period, we calculated percentage changes in abortion rates as follows: $(rate_{2019} - rate_{2010})/rate_{2010}$. To calculate average abortion rates for metro, urban, and rural counties, we summed county-level rates for all counties with the specific classification and divided by the number of counties with that designation. To present findings visually, we plotted key results over time via line graphs or maps.

We used Stata version 17 (StataCorp, College Station, TX) for all analyses and ArcGIS Pro (Esri, Redlands, CA) for all maps.

RESULTS

Between 2010 and 2019, Indiana's state legislature passed 14 abortion-restricting bills; all contained multiple provisions (Table A, available as a supplement to the online version of this article at http://www.ajph.org). Although each bill was signed into law by the governor, 6 were blocked from going into effect—in whole or in part—because of court cases challenging their constitutionality. Those that went into effect included requirements for abortion providers to have written admitting

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privileges at nearby hospitals (i.e., formal agreements between a physician and a specific hospital allowing the physician to directly admit patients to the hospital and provide services to their patients in that hospital as medical staff), restrictions on judicial bypass options for minors, and a telemedicine ban.

Abortion-Providing Facilities

During this period, shifts occurred in the number of abortion-providing facilities in Indiana (Figure 1). In 2010, there were 9 clinics that provided procedural abortions and 1 additional clinic that provided only medication abortion services. Between 2010 and 2019, 4 of these 10 abortion-providing clinics closed and 1 new clinic opened in 2019, so that Indiana had a facility density of 7.7 in 2010 and 5.4 in 2019. The densities are slightly lower than are those in the Midwest (7.4 in 2014 and 7.0 in 2017) and less than half those in the United States (15.3 in 2014 and 15.5 in 2017).

Abortion Incidence

The abortion rate by state of provision in Indiana decreased from 7.8 abortions per 1000 women aged 15 to 44 years in 2010 to 5.9 abortions in 2019 (Table B, part 1, available as a supplement to the online version of this article at http://www.ajph.org; Figure 2a). Although the United States and the Midwestern regions also saw a decline in the abortion rate by state of provision over this period, the decline in the abortion rate in Indiana (24%) was more than 3 times that of the decrease in the Midwest region (7%) and slightly more than the decrease in the United States (20%). Notably, the in-state Indiana abortion rate is lower than are the regional and national rates throughout this period; in any given year, the Indiana abortion rate by state of provision was only 48% to 55% of the national abortion rate and 58% to 71% of the Midwestern rate.

Conversely, the abortion rate by state of residence did not decrease as sharply over the same period (Table B, part 2; Figure 2b). The abortion rate among Indiana residents, including Indiana residents who traveled out of state for their abortions, decreased by 11%—only 46% of the decrease seen in the abortion rate in Indiana and like the decrease observed nationally (10%). Thus, the abortion rate among Indiana

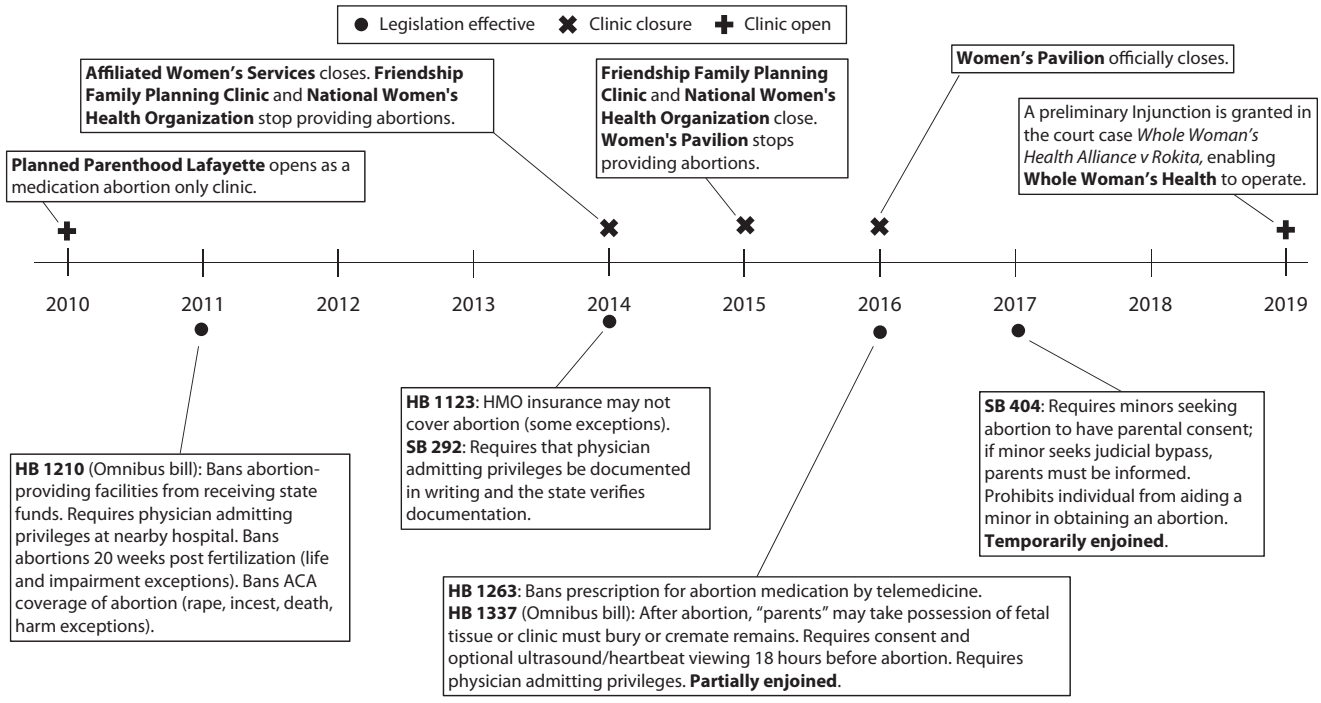

FIGURE 1— Abortion-Related Legislation and Facility Closures in Indiana: 2010–2019

Note. ACA = Affordable Care Act; HMO = health maintenance organization.

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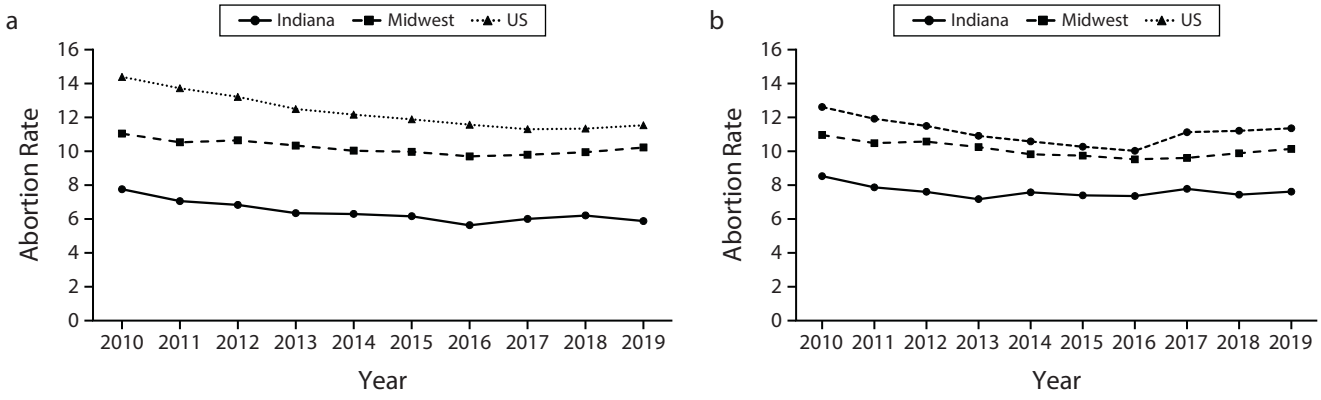

FIGURE 2— Abortion Rate (Abortions per 1000 Women Aged 15–44 Years) in Indiana, the Midwest, and the United States by (a) State of Provision, and (b) State of Residence: 2010–2019

Note. Midwestern states include IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, and WI. We excluded the following states in national totals for the following years: CA, MD, NH, and NJ (2010–2019); DC and WY (2010–2018); ME (2012); and FL (2010–2016 for rates by residence).

residents did not decrease as steeply as the abortion rate within the borders of the state.

Abortions by County

The average abortion rate from 2010 to 2019 was highest among people from Indiana's metropolitan counties (6.7 per 1000 women aged 15–44 years), followed by those from urban, nonmetropolitan counties (3.1 per 1000 women aged 15–44 years) and then by rural, nonmetropolitan counties (1.5 per 1000 women aged 15–44 years; Figure 3). The metropolitan rate has decreased over time, whereas the urban and rural rates have remained extremely low. When comparing abortion rates and facility locations in 2010 versus 2019 (Figure 3), decreases in rates in the northwest corner of the state are particularly notable given the loss of a clinic there between 2010 and 2019.

Out-of-State Travel for Abortion Care

Both the number and percentage of Indiana residents traveling out of state for abortion care ("percentage leaving") increased between 2010 and 2019: from 13% of all abortions (1471) in 2010 to 29% (2868) in 2019 (Table C, available as a supplement to the online version of this article at http://www.ajph.org; Figure 4). Compared with the region and the United States, Indiana has a higher average percentage leaving over the 10-year period (22% vs 9% in the Midwest and 7% nationally), and Indiana's percentage leaving more than doubled over the period, whereas national and Midwest percentages leaving increased only slightly.

Indiana residents who left the state for abortion care between 2010 and 2019 traveled to 1 of 4 states: Illinois, Kentucky, Michigan, or Ohio (Figure A, available as a supplement to the online version of this article at https://www.ajph.org). From 2011 through 2019, an increasing majority of those who traveled for abortion care went to neighboring Illinois, a state with fewer abortion restrictions.[1]

DISCUSSION

This retrospective analysis of abortion-related laws and abortion incidence in Indiana between 2010 and 2019 highlights that (1) abortion utilization was strikingly lower in Indiana than the region and the nation, (2) abortion utilization was unequal across the state, and (3) a high and increasing proportion of Indiana residents traveled outside the state for abortion care. With abortion incidence in Indiana consistently lower than that in Midwestern regional levels, and with nearly 1 in 3 patients who had abortions leaving the state to obtain abortion care, Indiana residents did not have sufficient abortion care access in their home state—even before the enactment of the full abortion ban in September 2022 and the legal uncertainty following injunction.

Study findings demonstrate inequities in abortion access in Indiana by geography. Residents in rural counties had an extremely low abortion rate over the period analyzed—only 22% of the abortion rate of Indiana residents who lived in metropolitan counties. This pattern is similar to that observed in neighboring Ohio, where abortion is also accessed more frequently by people living in urban areas and least by people living in rural areas.[26] This may be the result of

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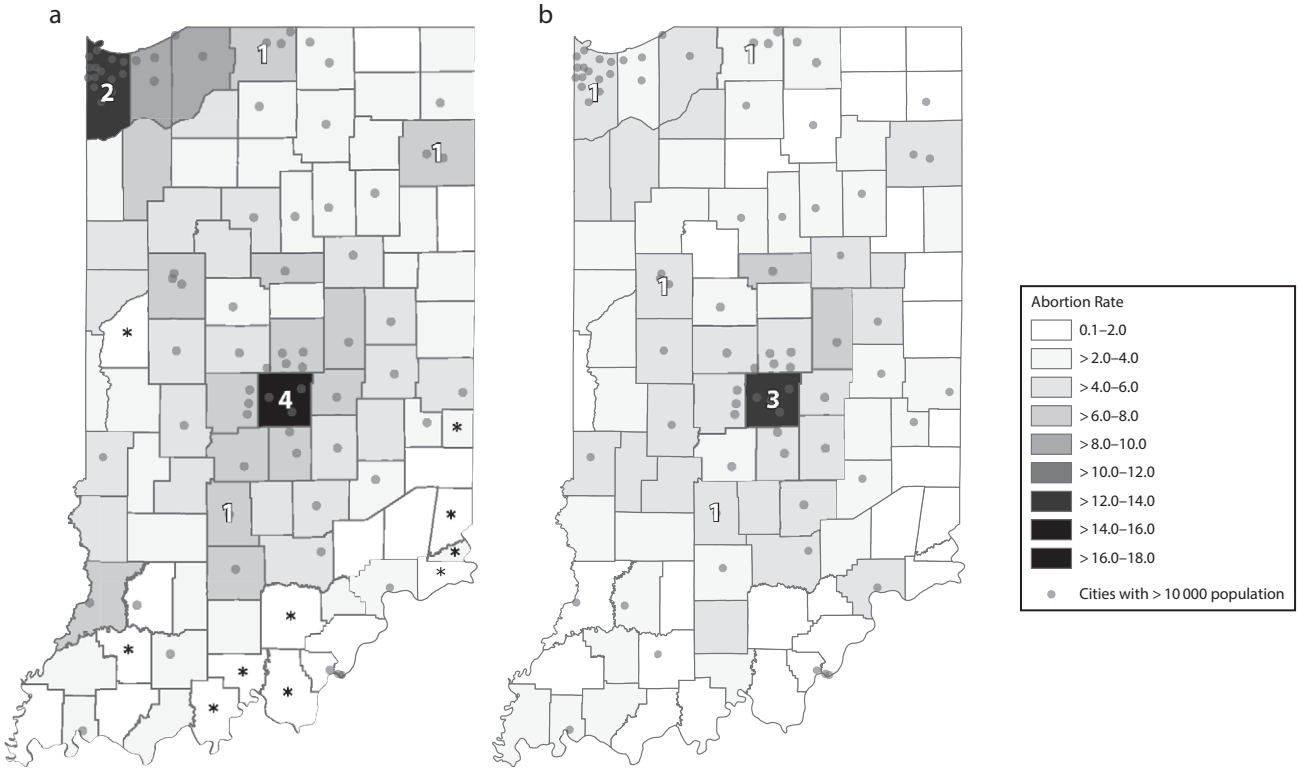

FIGURE 3— Abortion Rate by County of Residence (Abortions per 1000 Indiana Women Aged 15–44 Years) and Number of Abortion Clinics in the County in (a) 2010 and (b) 2019

*Ten counties (Crawford, Dearborn, Fountain, Harrison, Ohio, Perry, Pike, Switzerland, Union, and Washington) had between 1 and 5 patients who had abortions; rates included here are based on the median of 3 patients for these counties.

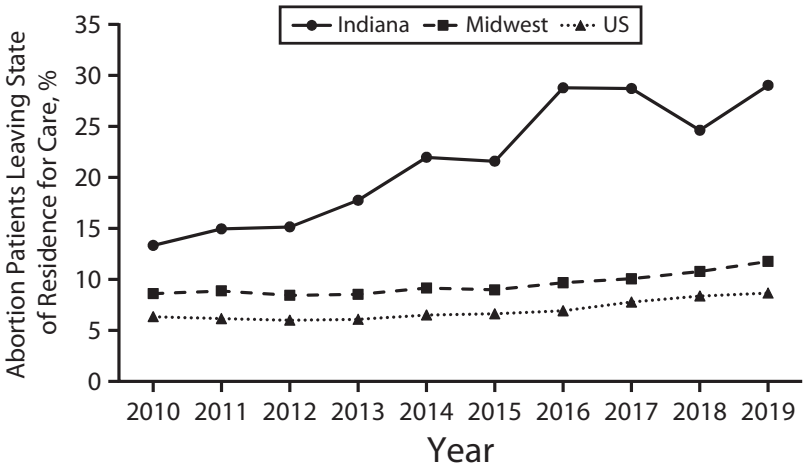

FIGURE 4— Percentage of Patients Who Had Abortions Leaving Their State of Residence for the Abortion: Comparing Residents in Indiana, the Midwest, and the United States: 2010–2019

a larger trend of reproductive health access deserts in rural areas[27–29] and could be exacerbated by Indiana laws that require abortion providers to have admitting privileges at nearby hospitals, thereby restricting abortion-providing facilities to being located primarily in urban areas near hospitals.[3]

Furthermore, these findings reveal a high and increasing percentage of Indiana residents who left the state to access abortion care. People seeking abortion care may travel out of their state of residence for many reasons, including policy-driven requirements related to gestational limits,[29] waiting

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periods,[30] parental notification, and judicial bypass[31] or simply location convenience (i.e., the closest clinic to them is in another state)[32] or shorter wait times.[33] Our finding that the percentage of people leaving Indiana for abortion care increased sharply from 13% to 29% alongside a decade of policy restrictions and facility closures reflects a larger US trend in which states with more restrictive abortion laws or a lower facility density have a higher percentage of patients leaving the state for care.[25] Although the rate of abortions taking place in Indiana decreased across our study period, the rate among people from Indiana was relatively consistent, reflecting a continued need for abortions among Indiana residents and thus the increasing percentage of those leaving over time.

Given the legal uncertainty following the total abortion ban enacted and enjoined in September 2022, the number of Indiana residents who will need support to travel across state lines to access abortion care in Illinois or another state may increase dramatically.[34] Previous research indicates that burdens associated with interstate travel include lack of insurance coverage as well as additional costs associated with transportation, overnight stays, missing work, and childcare.[25] Given that nearly one third of Indiana abortion recipients in 2019 were already traveling out of state for care and that there was an anticipated increase in this percentage following uncertainty induced by Indiana's contested abortion ban, the financial and logistical support that Indiana residents will need to obtain abortion care will correspondingly increase. Importantly, these burdens associated with increased travel are likely experienced disproportionately. Particularly affected are Black people, Indigenous people, and other people of color; transgender and nonbinary people; and those experiencing financial hardships. This is true especially given racism in the reproductive health care system[35–38] as well as experiences of reproductive oppression and coercion on the pathway to abortion care.[39,40] Targeted outreach and support for abortion seekers from these communities will be an important public health imperative.

Limitations and Strengths

Although these findings highlight important aspects of abortion access in Indiana, we note that these aggregate data do not provide information on individual experiences, particularly barriers or facilitators to abortion access in the state. Although we see aggregate differences in abortion incidence by geography, our data cannot speak to the overlapping barriers that Indiana residents may face when seeking reproductive health care, particularly for adolescents, those with marginalized racial or gender identities, and those who are struggling financially.[41] Future work should examine how systems of racial oppression intersect with class- and location-based forms of oppression to result in differential access to care. Our data also cannot illuminate the experience of people who wanted abortions and were unable to obtain one in Indiana or in a neighboring state, and yet certainly there are people unrepresented in our findings for whom the barriers were insurmountable.[42]

Furthermore, because of missingness in CDC data from several key states that do not routinely provide data on abortion incidence to the CDC, we likely underestimated the national abortion rate in this analysis. Therefore, our comparison of the Indiana abortion rate to the national abortion rate likely underestimates the magnitude of the difference between Indiana's trends and national trends and thereby underestimates how much lower abortion access is in Indiana than nationally. This is a conservative bias and is quantified in Table D (available as a supplement to the online version of this article at http://www.ajph.org), which presents the CDC and Guttmacher rates side by side for the years when Guttmacher estimates are available.

Finally, our descriptive public health analysis of laws related to abortion access and provision in Indiana does not provide causal analysis of individual or other factors that influence Indiana's abortion rates but instead illuminates concurrent changes in abortion incidence, location, and patient characteristics over time. Our analysis is strengthened by our use of multiple large, publicly available data sets with data reported across state, regional, and national geographies.

Public Health Implications

Based on this public health description of patterns in state, regional, and national abortion rates over time, we conclude that abortion access in Indiana over the past decade was strikingly low, required increases in interstate travel to obtain care, and cooccurred with the passage of numerous abortion restrictions. With the uncertainty Indiana's contested abortion ban imposes,[43] abortion access will be even more strongly curtailed, and these findings suggest that effects may be unevenly felt, with disproportionate impact across Indiana. The change in abortion utilization seen in Indiana that coincided with legislative restrictions can serve

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as a potential preview of what may be expected as state-level restrictions and complete bans go into effect in additional states across the country. AJPH

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CONTRIBUTORS

H. Moseson drafted the article with support from M. H. Smith and contributions, input, and review from all authors. H. Moseson and M. H. Smith extracted and analyzed the abortion incidence data and generated the related figures. H. Moseson, M. H. Smith, D. Bessett, and A. H. Norris designed the study. P. Chakraborty conducted the geospatial analyses and generated the related figures. H. J. Gyuras and A. Foster reviewed and extracted the data on state laws and clinic closures. T. A. Wilkinson provided clinical and scientific expertise on abortion provision in Indiana and verified and interpreted the results.

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CONFLICTS OF INTEREST

T. A. Wilkinson receives project funding from Organon, Merck, and Cooper Surgical. All authors declare no potential or actual conflicts of interest.

HUMAN PARTICIPANT PROTECTION

This study was exempt from institutional review board review under the federal regulations for human participants (45 CFR, part 46) research because this analysis involved only publicly available data sets and de-identified data.

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