

# Association Between Publicly Funded Contraceptive Services and the Abortion Rate in Texas, 2010–2015

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**OBJECTIVE:** To evaluate how the availability of contraceptive services was associated with a change in the abortion rate before and after Texas' legislative changes to the family planning budget in 2011 and abortion access in 2013.

**METHODS:** In this cross-sectional study, we obtained 2010 and 2015 data on contraceptive provision (number of publicly funded clinics and number of contraceptive clients served per 1,000 reproductive-aged women) from the Guttmacher Institute and county-level abortion data from the Texas Department of State Health Services. We categorized counties as having an abortion rate that increased or declined less than the national rate between 2010 and 2015 (*low-decline counties*) compared with those having an abortion rate that declined equal to or greater than the national rate between 2010 and 2015 (*high-decline counties*). We evaluated differences in contraceptive provision between high-decline and low-decline counties and evaluated county characteristics

(racial and ethnic composition, unemployment, poverty, uninsured, education, distance to an abortion clinic, deliveries covered by Medicaid, and Catholic hospital marketplace dominance) as potential confounders.

**RESULTS:** Of 157 counties that had at least one contraceptive clinic in either 2010 or 2015, 49 were low-decline counties and 108 were high-decline counties. Although the total number of publicly funded family planning clinics increased by 10.8%, there was a 4.7% decrease in the total number of contraceptive clients served statewide. Compared with low-decline counties, high-decline counties had a higher median number of contraceptive clients served per 1,000 women aged 18–44 years (31.9 vs 60.7,  $P < .05$ ) in 2015. Between 2010 and 2015, the abortion rate decreased 19.7% for each 1.0% increase in contraceptive clients served.

**CONCLUSION:** Texas counties with higher abortion-rate declines had more publicly funded contraceptive clinics and served more contraceptive clients than counties with lower declines, which may indicate the importance of greater access to publicly funded contraceptive services.

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The U.S. abortion rate decreased between 2010 and 2015, which was likely attributable to the increased use of highly effective contraceptive methods that resulted in fewer pregnancies.<sup>1–8</sup> In contrast, during this time, Texas passed legislation that resulted in reduced access to highly effective contraception, particularly among residents who rely on the state-funded family planning program.<sup>9</sup> In 2011, the Texas legislature cut its family planning budget from \$111 million to \$38 million and diverted funds from specialized family planning clinics and abortion providers and toward state-funded primary health care centers, causing 25% of family planning clinics to close, reduce hours, or stop providing family planning services.<sup>9</sup> This caused a loss in funding



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through the Medicaid Women's Health Program, which provided subsidized contraceptive services.<sup>10</sup> This loss of funding and tiered allocation of funding led to a decrease in long-acting reversible contraceptives being provided in Texas.<sup>9</sup> The replacement, state-only-funded program had a 15% decrease in enrollees and a 41% decrease in contraceptive claims in 2015 compared with 2011.<sup>11-14</sup> Additionally, the Texas legislature chose to forgo Medicaid expansion under the Affordable Care Act, which mandated contraceptive coverage by insurers.<sup>15,16</sup> Two years later, in 2013, the Texas legislature passed the most restrictive abortion law for that time, resulting in closure of more than half of the state's abortion clinics.<sup>17</sup> This restrictive abortion legislation was associated with a decreased abortion rate.<sup>17-19</sup>

Our objective was to evaluate the association between contraceptive provision and abortion-rate decline in Texas between 2010 and 2015. We compared the number of publicly funded clinics and the number of clients served between counties with a high decline in the abortion rate and counties with a low decline. Our secondary objective was to evaluate abortion availability and other county-based characteristics as potential confounders in the relationship between contraceptive provision and abortion-rate decline.

## METHODS

In this cross-sectional study, we collected publicly available, de-identified data from 2010 to 2015 (before and after Texas enacted legislation that changed the family planning budget in 2011 and restricted abortion in 2013). Data on contraceptive services were abstracted from the Data Center of the Guttmacher Institute and included the number and type of publicly funded contraceptive clinics (federally qualified health centers [FQHCs], health department clinics, hospital-based clinics, Planned Parenthood clinics, and other contraceptive clinics, which included independent, private, or nonprofit organizations that did not overlap with the other clinic categories) and number of contraceptive clients served.<sup>20</sup> These data represent the county where clients received contraceptive services. We decided to focus on female contraception clients, because previous studies have shown a decrease in vasectomy rate and condom use during this time period.<sup>21,22</sup> Using county-level population data from the Texas Demographic Center to determine the female population, we calculated the number of contraceptive clients served at each clinic type and number of contraceptive clinics per 1,000 women aged 18-44 years in

2010 and 2015.<sup>23</sup> Although we recognize that all people who can get pregnant may not identify as women, we used the term women in this study because our data sources used women and females.

We obtained data on the total number of abortions and abortions per patient by county of residence from the Texas Department of State Health Services Induced Termination of Pregnancy Vital Statistics.<sup>4</sup> We included reported abortion cases only among Texas residents. Self-managed abortions are not reported to the state, so we did not include these in our analyses. Additionally, our data set did not measure abortions that were obtained out of state by Texas residents. We calculated the number of abortions per 1,000 women aged 18-44 years in 2010 and 2015 by county. Using Centers for Disease Control and Prevention abortion surveillance data from 2010 to 2015, we calculated that the nationwide decline in the abortion rate for all reporting regions, excluding Texas, was 17.5%.<sup>2,3</sup> Thus, we categorized each Texas county by its change in abortion rate as either greater than or equal to the 17.5% decline seen nationally between 2010 and 2015 (*high-decline counties*) or less than the 17.5% decline seen nationally between 2010 and 2015 (*low-decline counties*).

We developed a conceptual model from prior studies to identify factors that influence access to contraceptive and abortion care nationally and in Texas and included potentially confounding variables where data were available (Appendix 1, available online at <http://links.lww.com/AOG/C996>).<sup>24,25</sup> We compiled data on county-based characteristics, including racial and ethnic composition, unemployment, poverty, uninsured, low education, deliveries covered by Medicaid, and Catholic hospital marketplace dominance. Race and ethnicity data were obtained from the Texas Demographic Center, based on Census data, and were categorized as Black, Hispanic, White, and additional races and ethnicities (including Native American and Asian).<sup>23</sup> Race and ethnicity data were included in this analysis based on prior work that demonstrated relevant systemic and historical disparities in access to family planning services by racial and ethnic categories.<sup>26-28</sup> Data on county population characteristics, including the female unemployment rate, percent uninsured females, percent of population living in poverty, and percent of women aged 25 years and older without a high school diploma, were obtained from the American Community Survey 5-year aggregate for 2015.<sup>29</sup> Data on deliveries covered by Medicaid from 2010 to 2015 were obtained from the Texas Health and Human Services database. We included deliveries covered by Medicaid to examine



whether the decline in the abortion rate and decreased access to contraceptive services correlated with an increase in births. Hospital characteristics were retrieved from the American Hospital Association Annual Survey Database from 2015, which included the location and Catholic affiliation of each general acute care hospital according to self-identified Catholic hospital status.<sup>30</sup> Of all Catholic hospitals in Texas (n=54), 83.3% (n=45) offered obstetric and gynecologic services. Catholic hospital marketplace dominance represents the share of discharges from Catholic hospitals per county compared with all hospital discharges and was categorized as minimal-to-low (20% or less) and high-to-dominant (more than 20%).<sup>30</sup> To evaluate the effect of abortion restrictions, we calculated distance to an open abortion clinic per county centroid before and after Texas' 2013 legislation shuttered more than half of the state's clinics.<sup>26</sup>

For our primary objective, we compared the number of contraceptive clinics and the number of contraceptive clients served per 1,000 women aged 18–44 years in 2010 and 2015 by publicly funded clinic type among high-decline counties and low-decline counties. We limited our bivariate analyses to exclude counties that had no contraceptive clinic in both 2010 and 2015 and thus had no reported contraceptive clients. Given the right-skew of the data, we compared and reported medians and interquartile ranges. We also reported medians and interquartile ranges for the percent change in abortions, contraceptive clients, and contraceptive clinics per 1,000 women aged 18–44 years between 2010 and 2015.

To address our secondary objective, we compared other county-based characteristics described above among high-decline counties and low-decline counties. We calculated the number and proportion of unemployed females, population living in poverty, uninsured females, females without a high school diploma from the female reproductive-aged population in 2015, and numbers and proportions of deliveries covered by Medicaid for 2010 and 2015. We also reported the medians and interquartile ranges for the distance to an open abortion clinic in 2010 and 2015 and the percent change between the two years. We compared medians using the Wilcoxon rank sum test and frequencies using  $\chi^2$  tests of association.

The distribution of number of contraceptive clients served per 1,000 women aged 18–44 years in 2015 was also right-skewed such that there were no clients served below the 50th percentile of counties. Thus, we compared counties that fell within the 50th–74th percentile of contraceptive clients served per 1,000 women aged 18–44 years with the top counties

(75th–100th percentile, referent). We then fit a logistic regression model to evaluate the association between top quartiles of contraceptive clients served per 1,000 women aged 18–44 years in 2015 and the abortion-rate decline, adjusting for potentially confounding variables that were associated with both variables at  $P<.05$ . We fit a log-linear regression model with county-fixed effects on the pooled panel data that estimated the difference in the association between number of contraceptive clients served and abortion rate in 2010 and 2015. More specifically, due to the skewed distribution of independent and dependent variables, we fit the model using the logs of abortion rate on log contraceptive clients served, including a dummy variable for year and its interaction with log contraceptive clients served. All data analyses were conducted using Stata 15. This study was deemed exempt by the IRB due to the use of publicly available databases.

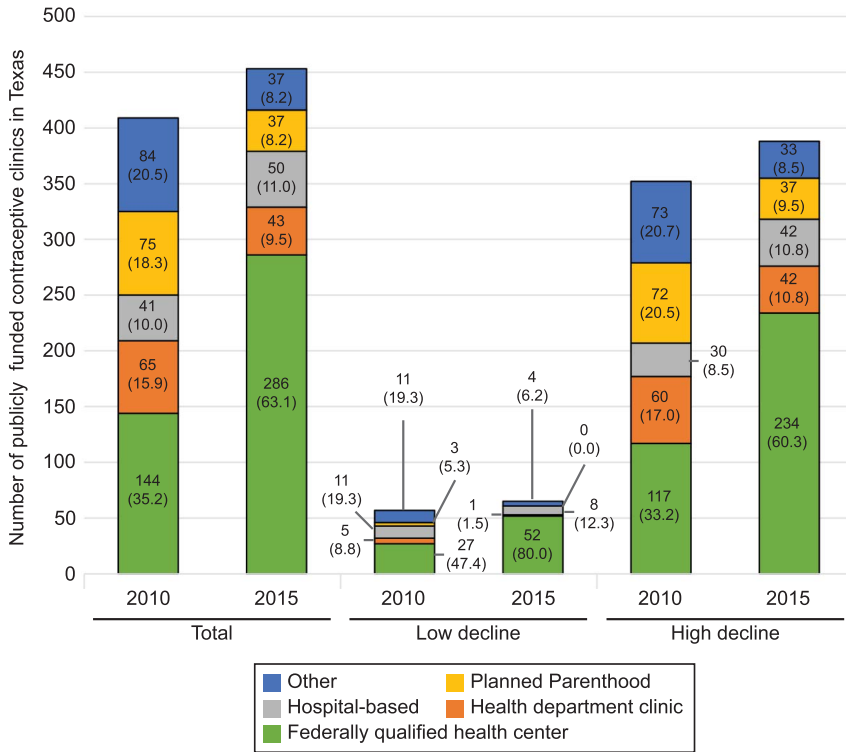
## RESULTS

Of 254 Texas counties, 97 (38.2%) had no contraceptive clinics in 2010 and 2015. Among the remaining 157 counties that had at least one contraceptive clinic in either year, 49 (31.2%) had a decrease in the abortion rate that was less than the national average (low-decline counties) and 108 (68.8%) had a decrease in the abortion rate that either matched the national average or was higher (high-decline counties).

The total number of publicly funded family planning clinics increased 10.8% between 2010 and 2015 (from 409 to 453). Federally qualified health centers comprised 35.2% of these clinics in 2010 and 63.1% in 2015. Hospital-based contraceptive clinics increased from 10.0% to 11.0% in this time period. There was a decrease in health department contraceptive clinics (15.9% to 9.5%), Planned Parenthood clinics (18.3% to 8.2%), and other contraceptive clinics (20.5% to 8.2%) during this time (Fig. 1).

Despite the overall increase in contraceptive clinics and an increase in the female population, there was a 4.7% decrease in the total number of contraceptive clients served. In 2010, FQHCs served 11.6% of clients who obtained contraceptive services at publicly funded clinics and increased to 23.9% in 2015. Both health department (9.4% to 12.1%) and hospital-based (11.2% to 19.6%) contraceptive clinics covered an increased share of total clients in this time period. The share of total clients served by Planned Parenthood clinics (42.5% to 27.1%) and other contraceptive clinics (25.3% to 17.2%) decreased between 2010 and 2015 (Fig. 2).





**Fig. 1.** Number of publicly funded contraceptive clinics in Texas in 2010 and 2015, by clinic type overall and in low-decline and high-decline counties. High decline, county with a decline in abortion rate greater than or equal to the national average from 2010 to 2015; low decline, county with a decline in abortion rate less than the national average from 2010 to 2015. Numbers in parentheses are percentages.

Madison. *Texas Contraceptive Service and Abortion Rate. Obstet Gynecol* 2023.

Low-decline counties had a decrease in the number of contraceptive clients served for all clinic types (other contraceptive clinics 19.8%, Planned Parenthood clinics 100.0%, hospital-based clinics 9.4%, and health department clinics 23.1%), except FQHCs, which had a 100.2% increase in contraceptive clients served from 2010 to 2015 (Fig. 2). On the other hand, high-decline counties had a decrease in contraceptive clients served for only other clinics (36.2%) and Planned parenthood clinics (38.3%) from 2010 to 2015. There was also an increase in contraceptive clients served among hospital-based clinics (92.6%), health department clinics (24.3%), and FQHCs (96.9%) for high-decline counties from 2010 to 2015. The figures also illustrate that contraceptive provision was dominated by hospital-based clinics in low-decline counties (panel A), whereas Planned Parenthood dominated contraceptive provision in the high-decline counties (panel B).

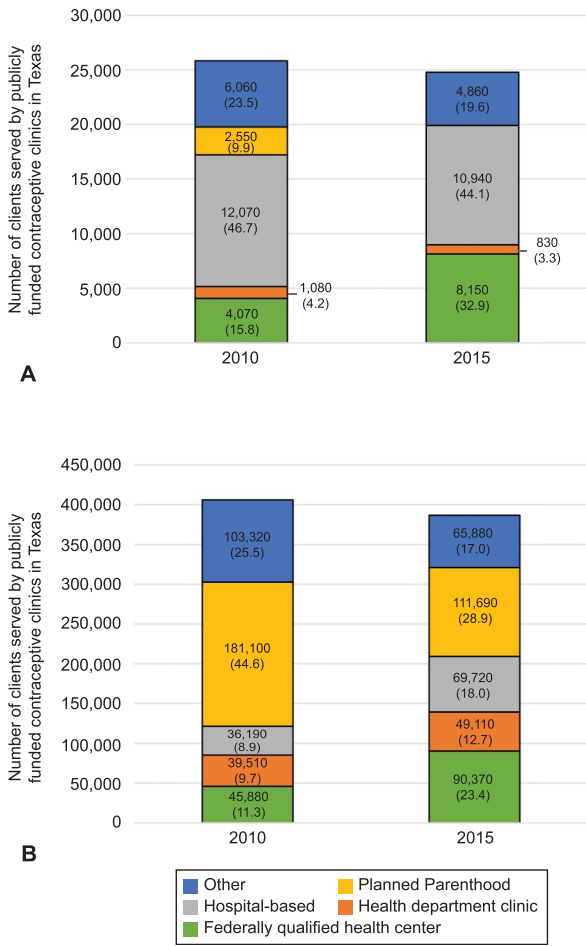
Abortion-rate decrease varied by county relative to the number of contraceptive clients served. In high-decline Texas counties, the median number of contraceptive clients served per 1,000 women of reproductive age in 2015 was significantly higher than in low-decline counties (Table 1). Similarly, a reduction in median percent change in contraceptive clients per 1,000 women of reproductive age between 2010 and 2015 was less pronounced for high-decline counties

compared with low-decline counties overall (−25.4% vs −34.9%,  $P=.54$ ) and specifically for health department contraceptive clinics (−13.9% vs −100.0%,  $P=.11$ ) and hospital-based contraceptive clinics (−6.7% vs −14.8%,  $P=.61$ ). Notably, for FQHCs, the percent change in contraceptive clients per 1,000 women of reproductive age increased in high-decline counties, whereas it decreased in low-decline counties (43.4% vs −6.5%,  $P=.33$ ). High-decline counties had a larger proportion of residents who were Black, Hispanic, and of other races and ethnicities compared with low-decline counties. The median distance to an open abortion clinic was shorter for high-decline counties compared with low-decline counties in 2010, but there was no significant difference in the median distance in 2015 or in the percent change in distance between 2010 and 2015. With regard to other county characteristics, there were significant differences between low-decline and high-decline counties for female unemployment, percent of population living in poverty, uninsured females, females without a high school diploma, and deliveries covered by Medicaid. There was no difference for Catholic hospital marketplace dominance (Table 1).

Counties that served the 50th–74th quartile of contraceptive clients per 1,000 women aged 18–44 years in 2015 had a smaller reduction in the median percentage change in the abortion rate between 2010







**Fig. 2.** Number of contraceptive clients in Texas in 2010 and 2015, by publicly funded clinic type in low-decline (A) and high-decline (B) counties. High decline, county with a decline in abortion rate greater than or equal to the national average from 2010 to 2015; low decline, county with a decline in abortion rate less than the national average from 2010 to 2015. Numbers in parentheses are percentages. *Madison. Texas Contraceptive Service and Abortion Rate. Obstet Gynecol 2023.*

and 2015, compared with the top quartile of counties (Table 2). Logistic regression estimates indicated that counties in the 50th–74th quartile of contraceptive clients served had reduced odds of having a high abortion-rate decline, compared with counties in the 75th–100th percentile of contraceptive clients served (Table 3). The log-linear model demonstrated that the abortion rate decreased approximately 19.7% for each 1.0% increase in contraceptive clients served.

## DISCUSSION

In Texas, between 2010 and 2015, the abortion-rate decline was higher in counties where more contra-

ceptive clients were served. These high-decline counties served a significantly greater median number of contraceptive clients per 1,000 women aged 18–44 years in both 2010 and 2015. Additionally, high-decline counties had a smaller reduction in contraceptive clients served per 1,000 women aged 18–44 years compared with low-decline counties between the two time periods. In low-decline counties, there was an increase in contraceptive clients served only at FQHCs, whereas in high-decline counties, the number of contraceptive clients served increased at FQHCs, hospital-based clinics, and health department clinics. We found that counties that served the 50th–74th quartile of contraceptive clients per 1,000 reproductive-aged women in 2015 had reduced odds of having a high abortion-rate decline compared with counties that served the top quartile of contraceptive clients. Our results also demonstrate that between 2010 and 2015, a 1.0% increase in contraceptive clients served was associated with a 19.7% reduction in abortion.

As a result of Texas legislative changes to the family planning budget in 2011, the number of FQHCs that provided contraception increased dramatically, whereas the remaining clinic types either stayed the same or drastically decreased between 2010 and 2015. This resulted in a doubling of the number of contraceptive clients served by FQHCs, yet this increase did not make up for the reduction in clients seen at other publicly funded clinics.<sup>31</sup>

Our study is consistent with previous studies that have shown an association between a decline in abortion rate and an increase in contraceptive use.<sup>32–34</sup> Yet, our finding that FQHCs comprised 63.1% of publicly funded family planning clinics in Texas in 2015 is concerning given previous literature that described suboptimal family planning services at FQHCs, compared with specialized family planning clinics.<sup>31,35,36</sup> Clinicians at FQHCs often lack training to provide intrauterine devices, contraceptive implants, and vasectomies and feel family planning is difficult to integrate because of clients' other health needs.<sup>21,31,35–37</sup> Additionally, specialized family planning clinics serve more contraceptive clients per week compared with primary care-focused clinics such as FQHCs,<sup>38</sup> consistent with our findings that even though the number of publicly funded family planning clinics increased by 10.8%, there was a 4.7% decrease in the total number of contraceptive clients served. Further, our analysis showed that, in high-decline counties, Planned Parenthood, a specialized family planning clinic, dominated the number of the clients being served, compared with the low-decline



**Table 1. Contraceptive Provision and County Characteristics by Decrease in Texas Abortion Rate Between 2010 and 2015\***

	Decrease in Abortion Rate			<i>P</i> <sup>†</sup>
	Overall (N=157)	Low Decline (n=49)	High Decline (n=108)	
Abortions/1,000 women aged 18–44 y [median (IQR)]				
2010	7.8 (5.5)	5.4 (5.6)	8.4 (5.3)	<b>&lt;.05</b>
2015	5.4 (3.9)	6.9 (3.4)	5.0 (3.4)	<b>&lt;.05</b>
Percent change in abortion rate, 2010–2015	–30.2 (34.4)	1.1 (46.5)	–38.9 (25.8)	<b>&lt;.05</b>
No. of contraceptive clients at publicly funded clinics in Texas [n (row %)]				
2010	431,830	25,830 (6.0)	406,000 (94.0)	
2015	411,550	24,780 (6.0)	386,770 (94.0)	.44
Percent change 2010–2015 [median (IQR)]	–19.8 (99.7)	–33.3 (86.2)	–13.6 (108.0)	.66
Contraceptive clients/1,000 women aged 18–44 y [median (IQR)]				
All publicly funded clinics				
2010	80.9 (99.6)	54.1 (108.0)	93.3 (89.2)	<b>&lt;.05</b>
2015	47.7 (83.8)	31.9 (63.6)	60.7 (86.7)	<b>&lt;.05</b>
Percent change 2010–2015	–28.5 (103.5)	–34.9 (80.8)	–25.4 (118.7)	.54
No. of publicly-funded contraceptive clinics in Texas				
2010	409	57 (46.7)	352 (47.6)	
2015	453	65 (53.3)	388 (52.4)	.86
Percent change 2010–2015 [median (IQR)]	0 (50.0)	0 (50.0)	0 (50.0)	.75
Publicly funded contraceptive clinics/1,000 women aged 18–44 y [median (IQR)]				
2010	0.19 (0.4)	0.29 (0.5)	0.15 (0.4)	.66
2015	0.17 (0.4)	0.22 (0.4)	0.14 (0.3)	.36
Percent change 2010–2015	–3.9 (53.0)	–4.4 (53.3)	–2.7 (59.2)	.75
Race and ethnicity in 2015				
Total [n (row %)]	5,484,029	495,142 (9.0)	4,988,887 (91.0)	
Black [n (column %)]	699,874 (12.7)	46,202 (9.3)	653,672 (13.1)	
Hispanic [n (column %)]	2,461,007 (44.9)	162,871 (32.9)	2,298,136 (46.1)	
White [n (column %)]	1,917,275 (35.0)	265,969 (53.7)	1,651,306 (33.1)	
None of the above [n (column %)]	405,873 (7.4)	20,100 (4.1)	385,773 (7.7)	<b>&lt;.05</b>
Unemployed females in 2015 <sup>‡</sup>	373,752 (6.8)	31,180 (6.3)	342,572 (6.9)	<b>&lt;.05</b>
Living in poverty 2015 <sup>‡</sup>	876,126 (16.0)	70,516 (14.2)	805,610 (16.1)	<b>&lt;.05</b>
Uninsured females 2015 <sup>‡</sup>	1,083,307 (19.8)	86,424 (17.7)	996,883 (20.0)	<b>&lt;.05</b>
Females without a high school diploma 2015 <sup>‡</sup>	1,015,511 (18.5)	98,688 (19.9)	916,823 (18.4)	<b>&lt;.05</b>
Deliveries covered by Medicaid <sup>‡</sup>				
2010	152,298 (2.8)	15,007 (3.0)	137,291 (2.8)	
2015	147,646 (2.7)	14,636 (3.0)	133,010 (2.7)	<b>&lt;.05</b>
Percent change 2010–2015 [median (IQR)]	–5.4 (18.8)	–1.6 (18.3)	–6.1 (18.3)	.06
Catholic hospital marketplace dominance [no. of counties (%)]				
Minimal-to-low (20% or less)	98 (62.4)	35 (35.7)	14 (23.7)	
High-to-dominant (more than 20%)	59 (37.6)	63 (64.3)	45 (76.3)	.12
Distance to open abortion clinic [median (IQR)]				
2010	51.2 (44.5)	59.9 (44.7)	42.7 (47.3)	<b>&lt;.05</b>
2015	89.5 (90.5)	87.0 (67.1)	89.8 (121.5)	.90
Percent change 2010–2015	26.1 (219.5)	10.0 (75.5)	61.2 (255.4)	.06

IQR, interquartile range.

Data are n (%) unless otherwise specified.

Bold indicates statistical significance (*P*<.05).

\* Ninety-seven counties with no contraceptive clinic in 2010 and 2015 were not included in analysis.

<sup>†</sup> *P*-values represent comparison between high-decline and low-decline counties.

<sup>‡</sup> Reported percentages equal numerator listed in row for each variable divided by total female population (5,484,029 overall; 495,142 in low-decline counties; 4,988,887 in high-decline counties).



**Table 2. Abortion Rate and County Characteristics by Contraceptive Clients Served per 1,000 Women Aged 18–44 Years in Top Quartiles in Texas, 2015\***

	Contraceptive Clients/1,000 Women Aged 18–44 y, 2015		
	75th–100th percentile (n=63)	50th–74th percentile (n=64)	P
Abortions per 1,000 women aged 18–44 y [median (IQR)]			
2010	9.3 (6.8)	7.8 (4.8)	<b>&lt;.05</b>
2015	5.5 (4.6)	6.2 (3.9)	.61
Percent change in abortion rate, 2010–2015	–32.6 (29.5)	–24.9 (30.2)	<b>&lt;.05</b>
Decrease in abortion rate [no. of counties (%)]			
Low decline	13 (20.6)	26 (41.2)	
High decline	50 (79.4)	38 (59.4)	<b>&lt;.05</b>
No. of contraceptive clients at publicly funded clinics in Texas [n (row %)]			
2010	293,030 (47.3)	121,720 (58.8)	
2015	326,370 (52.7)	85,160 (41.2)	<b>&lt;.05</b>
Percent change 2010–2015 [median (IQR)]	15.8 (68.7)	–33.3 (64.5)	<b>&lt;.05</b>
Contraceptive clients per 1,000 women aged 18–44 y [median (IQR)]			
2010	103.0 (115.4)	49.1 (67.9)	<b>&lt;.05</b>
2015	118.6 (222.6)	33.6 (24.2)	<b>&lt;.05</b>
Percent change 2010–2015	21.1 (75.8)	–38.3 (65.7)	<b>&lt;.05</b>
No. of publicly funded contraceptive clinics in Texas			
2010	254 (46.1)	125 (44.6)	
2015	297 (53.9)	155 (55.4)	.69
Percent change 2010–2015 [median (IQR)]	0 (29.2)	0 (50)	.42
Publicly funded contraceptive clinics/1,000 women aged 18–44 y [median (IQR)]			
2010	0.26 (0.38)	0.11 (0.26)	.09
2015	0.31 (0.47)	0.21 (0.37)	<b>&lt;.05</b>
Percent change 2010–2015	0.70 (31.0)	–0.61 (42.6)	.83
Race and ethnicity in 2015			
Total [n (row %)]	3,266,596 (61.6)	2,039,548 (38.4)	
Black [n (col %)]	472,651 (14.5)	209,490 (10.3)	
Hispanic [n (col %)]	1,638,661 (50.2)	760,163 (37.3)	
White [n (col %)]	898,829 (27.5)	926,410 (45.4)	
None of the above [n (col %)]	256,455 (7.8)	143,485 (7.0)	<b>&lt;.05</b>
Unemployed females in 2015 <sup>†</sup>	232,045 (7.1)	127,805 (6.3)	<b>&lt;.05</b>
Living in poverty 2015 <sup>†</sup>	565,132 (17.3)	280,283 (13.7)	<b>&lt;.05</b>
Uninsured females 2015 <sup>†</sup>	693,647 (21.2)	354,675 (17.4)	<b>&lt;.05</b>
Females without a high school diploma 2015 <sup>†</sup>	655,106 (20.1)	330,857 (16.2)	<b>&lt;.05</b>
Deliveries covered by Medicaid [n (row %)] <sup>†</sup>			
2010	93,244 (2.9)	51,222 (2.5)	
2015	90,903 (2.8)	50,077 (2.5)	<b>&lt;.05</b>
Percent change 2010–2015 [median (IQR)]	–7.1 (21.7)	–1.5 (11.8)	.08
Catholic hospital marketplace dominance [no. of counties (%)]			
Minimal-to-low (20% or less)	36 (57.1)	42 (65.6)	
High-to-dominant (more than 20%)	27 (42.9)	22 (34.4)	.33
Distance to open abortion clinic [median (IQR)]			
2010	51.2 (42.7)	42.1 (55.7)	.95
2015	89.7 (82.2)	80.4 (92.1)	.22
Percent change 2010–2015	42.3 (256.3)	0.70 (188.9)	.25

IQR, interquartile range.

Data are n (%) unless otherwise specified.

Bold indicates statistical significance ( $P < .05$ ).

\* Ninety-seven counties with no contraceptive clinic in 2010 and 2015 were not included in analysis.

<sup>†</sup> Reported percentages equal numerator listed in row for each variable divided by total female population (5,484,029 overall; 495,142 in low-decline counties; 4,988,887 in high-decline counties).



**Table 3. Regression Analyses Evaluating Association Between Contraceptive Clients Served and Abortion-Rate Decline**

	High Abortion-Rate Decline	
	Unadjusted	Adjusted*
Logistic regression: odds of high abortion-rate decline by 2015 contraceptive client ratio in quartiles		
Contraceptive clients/1,000 women aged 18–44 y in 2015 [OR (95% CI)]		
75th–100th percentile	Ref	Ref
50th–74th percentile	0.38 (0.17–0.84)	0.36 (0.15–0.88)
Linear regression: percent change in abortion rate for a 1% change in contraceptive clients between 2010 and 2015		
Percent change in abortion rate for a 1% change in contraceptive clients, 2010–2015†	–19.7 (–27.4 to –12.1)	NA‡
[B-coefficient (95% CI)]		

OR, odds ratio.

\* Multivariable model includes the county abortion-rate decline, contraceptive clients per 1,000 women aged 18–44 years served in 2015, race and ethnicity, unemployed, living in poverty, uninsured, without a high school diploma, and deliveries covered by Medicaid variables.

† County fixed-effects log-linear regression: number of clients and abortion rate are modeled on the log scale.

‡ County fixed-effects accounts for all time-invariant observed and unobserved factors; not possible to include other fixed predictors.

counties, where hospital-based clinics served the most clients (Fig. 2). These findings suggest that FQHCs, alone, cannot keep up with the contraceptive client demand. Instead of restricting access to funds for specialized family planning clinics, partnerships between specialized family planning clinics, and other community-based providers may enhance contraceptive provision. Although our findings suggest that increased contraceptive provision may be associated with a greater decline in the abortion rate, there are limitations to our study. We were unable to calculate self-managed and out-of-state abortions, which may have increased due to more recent abortion restrictions in Texas, but were likely negligible during our study period.<sup>39–41</sup> Texas’ 2013 legislation that led to closure of more than half of the state’s abortion clinics has been associated with a decline in the state abortion rate.<sup>17,18</sup> We evaluated the association between median percent change in distance to an open abortion clinic and found no significant association with abortion-rate decline county categories, likely because the effect of distance is not linear.<sup>18</sup> After adjusting for a change in distance to open abortion clinic of at least 50 miles between 2010 and 2015, we found that counties that served the 50<sup>th</sup>–74<sup>th</sup> quartile of contraceptive clients per 1,000 reproductive-aged women in 2015 had similarly reduced odds (adjusted odds ratio 0.43, 95% CI 0.19–0.96) of having a high abortion-rate decline compared with counties that served the top quartile of contraceptive clients as in the unadjusted model. Although we attempted to account for all known variables that may affect the

association between contraceptive access and abortion rate, comprehensive data for all variables included in our conceptual model were not available (eg, privately insured female population). Use of data sources that reported the county in which contraceptive clients were served and abortions based on the county in which the patient resided may have led to overestimation of our results. This was true for both time periods, so the trend over time likely still holds. We also tried to account for this by excluding counties that had no contraceptive clinics in both time periods and creating catchment areas that combined the female population and abortion cases for a given region that had a contraceptive clinic (data not shown), and our results were similar. Additionally, due to the ecologic study design, caution is needed when applying grouped results to the individual level. In our study, we observed that increased contraceptive use was associated with a decline in abortion rate. However, it would be an ecologic fallacy to infer that the women who seek contraception are the ones who have abortions. Our use of data from 2010 to 2015 is likely still reflective of Texas’ family planning climate today. Many of the deficiencies of the Healthy Texas Women program that were present between 2011 and 2015 are still present today, with the addition of a more restrictive abortion ban. Our analyses provide insight into the effects of Texas’ restrictive abortion policies enacted in 2013, some of which are in effect in other states or may be enacted in additional states in the near future.

Despite concerted efforts by the Texas state legislature to restrict access to abortion, our study





suggests that increased availability of contraceptive services is a significant factor contributing to a decline in the abortion rate. Rather than supporting increased contraceptive access, the state of Texas has taken the opposite, and particularly punitive, approach of restricting availability to both abortion and contraception. This environment has restricted the ability of Texans to have control over their own reproductive health outcomes.

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