Long-Acting Reversible Contraception Uptake Following the 2016 United States Presidential Election: An Interrupted Time Series Analysis of Patients at Planned Parenthood of Northern New England, 2012–2021

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Abstract

Objective. To determine whether contraceptive method choice changed following the November 2016 United States presidential election among patients at a regional family planning provider, in a population that includes uninsured and publicly insured patients excluded from prior claims-based studies.

Study design. Retrospective analysis of 536,588 visits by 172,744 patients at all Planned Parenthood of Northern New England (PPNNE) health centers in Maine, New Hampshire, and Vermont, 2012–2021. We used an interrupted time series (segmented regression) design centered on the 2016 election to estimate the change in the share of visits associated with long-acting reversible contraception (LARC), separating a discontinuous level change at the election from the pre-existing secular trend in LARC use. Models adjusted for calendar month, state, payer type, and race, with standard errors clustered by calendar month. Exploratory subgroup analyses (payer, race, state) and sensitivity analyses were conducted.

Results. LARC use was already rising before the election (approximately 1.5 percentage points per year). After accounting for this trend, the

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LARC share of visits increased by a further 1.8 percentage points at the election (95% CI, 1.1–2.5; baseline 21%), with an offsetting 1.3-percentage-point decrease in short-acting methods (95% CI, 0.2–2.3). LARC use plateaued rather than continuing to climb afterward. The increase was present in all three states, including politically conservative New Hampshire. Differences across payer and racial subgroups were not robust to trend adjustment, and minority subgroups were underpowered. No comparable discontinuity was evident at the 2018 Kavanaugh confirmation; an estimate around the 2020 death of Justice Ginsburg was confounded by the COVID-19 pandemic.

Implications. In a real-world family planning population including uninsured and publicly insured patients, a major national political event was followed by a modest but robust shift toward longer-acting contraception. Providers and health systems may anticipate a durable shift in the mix of contraceptive care toward LARC around politically salient reproductive-rights events.

Keywords: long-acting reversible contraception, IUD, family planning, reproductive policy, interrupted time series, Planned Parenthood

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1. Introduction

Long-acting reversible contraceptives (LARCs), including intrauterine devices (IUDs) and contraceptive implants, are the most effective form of long-term birth control, with typical-use failure rates below 1% per year compared with approximately 9% for oral contraceptives [1]. Once inserted or implanted, they require little to no maintenance or user intervention, eliminating the need to remember daily pills or regular contraceptive appointments. LARCs vary in the duration of effectiveness, with IUDs providing protection against pregnancy for 3–10 years and contraceptive implants for 3–5 years. In contrast, methods such as oral contraceptives and injections require routine attendance to doctors' appointments and consistent access to health insurance while in use [2]. Following the Affordable Care Act, which eliminated contraceptive cost-sharing for most privately insured women [3], mean out-of-pocket costs for an IUD insertion fell from $262 to $84, and the share of privately insured women paying nothing out of pocket for an IUD rose from 37% to 88% between 2010 and 2013 [4, 5].

The November 2016 election generated immediate concern about reproductive health access. Women perceived Trump's platform as a direct threat along several dimensions: he campaigned on appointing Supreme Court justices who would overturn *Roe v. Wade* and publicly committed to defunding Planned Parenthood [6], and he opposed the Affordable Care Act and vowed to repeal it, threatening the contraceptive coverage mandate written into the law. In the hours after the election was called, Google searches for "IUD" spiked, with the top rising related queries being "IUD Trump" and "get an IUD now" [7].

A survey of 2,158 women conducted in January 2017 found that 42 percent had concerns about future access to contraception following the election, and that 5.3 percent had already obtained a LARC [8]. The current medical research on this topic has shown a positive relationship between Trump's election and the number of insurance claims made for LARC [9]. This study, however, leaves out all uninsured women, who are the most vulnerable to government interference in reproductive rights, and does not separate any post-election change from the secular upward trend in LARC use already under way.

This study documents how women's contraceptive method choices changed around a major political event, using complete encounter data from a family planning provider whose patients include the uninsured and publicly insured—a population largely invisible to claims-based research—and an interrupted time series design that explicitly separates a discontinuous change at the election from the pre-existing trend.

2. Materials and methods

2.1. Data source and population

Data come from Planned Parenthood of Northern New England (PPNNE), an affiliate of Planned Parenthood Federation of America that operates in Vermont, New Hampshire, and Maine. The sample consists of all patients seeking birth control of some form over the period 2012–2021 at all PPNNE locations: four in Maine, five in New Hampshire, and thirteen in Vermont. Patient data include the date of the appointment, age, race, ethnicity, payer type, location, and birth control choice of each patient. All patients in this sample are women. Each patient has a unique identifier so patients can be followed over time. All data were anonymized by PPNNE and researchers received no identifying or confidential information. The sample comprises 172,744 patients and 536,588 visits, with patients returning to Planned Parenthood an average of 3.1 times over the period. Patients are less likely to be white and more likely to be Latino than the general population of Maine, New Hampshire, and Vermont.

2.2. Measures

The primary outcome was an indicator for whether a LARC method (IUD or implant) was received at a visit. The secondary outcome was an indicator for short-acting methods (oral contraceptives, injection, ring, patch, or barrier methods). Each visit records the contraceptive method associated with that visit; for LARC this comprises insertion and subsequent follow-up or management visits rather than insertions alone, so the outcomes measure the method mix of contraceptive care delivered at the clinic. Payer type was categorized as private, public (Medicaid or Medicare), or self-pay. We additionally examined the share of visits at which a patient presented as pregnant.

2.3. Statistical analysis

We used an interrupted time series design with the running variable defined as the number of calendar months relative to December 2016, the first full calendar month after the November 8 election; November 2016, which the election splits, was included in the pre-election period, and sensitivity analyses varied this choice. We estimated a segmented linear regression at the visit level [10]:

$$Y_{it} = \alpha + \beta_1 \, \mathrm{month}_t + \beta_2 \, \mathrm{post}_t + \beta_3 \, (\mathrm{month}_t \times \mathrm{post}_t) + X_{it}'\gamma + \varepsilon_{it}, \tag{1}$$

where Y_{it} indicates that the visit was associated with LARC (or with a short-acting method), month_t is months relative to the election, and post_t indicates the post-election period. The coefficient β_1 captures the pre-election trend, β_2 the discontinuous level change at the election (the primary estimate of interest), and β_3 the change in slope afterward. Covariates X_{it} comprised calendar-month, state, payer-type, and race fixed effects; a separate year term is collinear with the linear trend and is not separately identified. Standard errors were clustered by calendar month (47 monthly clusters in the primary window) to allow for within-month correlation across visits. The primary analysis restricted the sample to a 24-month window on either side of the election (238,140 visits). The same specification was estimated for the secondary outcomes (short-acting methods and pregnancy at presentation). We also display the post-election trajectory using a complementary specification with six-month period indicators referenced to the six months immediately preceding the election.

Exploratory subgroup analyses repeated the segmented regression within strata of payer type, race/ethnicity, and state, with covariates excluding the stratifying variable.

2.4. Sensitivity analyses

We assessed the robustness of the estimated level change in four ways. First, we re-estimated the segmented regression across alternative analysis windows (±12, ±18, ±24, and ±36 months) to confirm the estimate was not an artifact of the chosen window length. Second, because the election fell mid-month, we re-estimated the model defining the interruption at November 2016 rather than December 2016, and again excluding November 2016 entirely. Third, because segmented regressions on time series can exhibit serially correlated errors, we re-estimated the model on the monthly-aggregated series using Newey–West heteroskedasticity- and autocorrelation-consistent standard errors and tested the residuals for serial correlation (Durbin–Watson and Breusch–Godfrey tests). Finally, because the primary outcome is a share of visits, we estimated the same segmented model on monthly *counts* of LARC, short-acting, and total visits (Newey–West standard errors), to distinguish changes in the contraceptive care delivered from changes in visit composition.

2.5. Ethics

This study was reviewed by the Institutional Review Board of the University of Pittsburgh and determined to be exempt (secondary analysis of de-identified data; 45 CFR 46.104(d)(4); Protocol STUDY21020042). The Xavier University Institutional Review Board separately determined that the study did not constitute human-subjects research requiring IRB review (April 2026). Because data were fully de-identified before transfer and do not constitute Protected Health Information under HIPAA, patient consent was not required.

3. Results

3.1. Sample characteristics

The 172,744 patients in the sample presented for a total of 536,588 visits. Patients paid using private insurance at 44.4% of visits, public insurance at

35.6%, and self-pay at 19.6%. The method associated with the visit was a LARC at 21.5% of visits, oral contraceptives at 26.3%, and barrier methods at 14.6%. Patients were on average 27 years of age at the time of appointment. The population was 88% White and 3.1% Black, with 4.9% identifying as Hispanic. Sample characteristics are summarized in Table 1.

3.2. Primary analysis

LARC use was rising before the election, by approximately 1.5 percentage points per year (Table 2). After accounting for this pre-existing trend, we estimated a discontinuous increase of 1.8 percentage points in the LARC share of visits at the election (95% CI, 1.1–2.5; $p < 0.001$), from a baseline of 21%. A local linear specification that does not separate the trend yielded a larger estimate of approximately 3 percentage points, indicating that roughly 40% of the naive before-after difference reflected continuation of the secular trend rather than a discrete change. Short-acting method use showed an offsetting and significant decrease of 1.3 percentage points (95% CI, 0.2–2.3; Table 2), consistent with substitution toward longer-acting methods rather than a change in the overall share of visits at which contraception was provided. Method switching provides scope for such substitution in this population: of the approximately 91,000 patients first observed using a short-acting method, 28,612 switched to a LARC at some point during 2012–2021, although we did not estimate whether switching rates changed at the election.

The post-election trajectory is shown in Figure 1. LARC use jumped at the election and then plateaued—the post-election slope approximately offset the pre-election trend—a pattern consistent with a one-time anticipatory shift rather than an acceleration of the existing trend.

The share of visits at which patients presented pregnant fell by 1.1 percentage points at the election (95% CI, 0.8–1.5; $p < 0.001$). Because a change in contraceptive behavior at the election could not affect pregnancies presenting until months later, this immediate shift is more plausibly a change in the composition of visits than a fertility effect, and we do not interpret it causally.

3.3. Subgroup analyses

Trend-adjusted estimates by payer, race, and state are reported in Tables 3–5. The increase was statistically significant in all three states, including politically conservative New Hampshire (1.3–2.4 percentage points), indicating the response was not confined to politically liberal areas. Differences across payer type and racial/ethnic groups were not robust to trend adjustment: after accounting for group-specific pre-existing trends, the large unadjusted differences attenuated substantially, and estimates for Black ($n =$ 6,934 visits in the analysis window) and Hispanic ($n = 11{,}832$) patients were imprecise and statistically indistinguishable from the overall estimate. We therefore do not interpret the subgroup point estimates as evidence of differential response by payer or race.

3.4. Sensitivity

The estimated level change was stable across analysis windows: 1.9, 1.8, and 1.3 percentage points at ± 18, ± 24, and ± 36 months, respectively (all $p < 0.01$; Table 6). The narrowest (± 12-month) window was too short to separately identify the level change from the calendar fixed effects and trend terms and is not interpretable. The estimate was likewise insensitive to the handling of November 2016, the partial month containing the election: defining the interruption at November 2016 yielded a level change of 1.6 percentage points, and excluding November 2016 entirely yielded 1.8 percentage points (both $p < 0.001$). We also re-estimated the model on the monthly-aggregated series using Newey–West standard errors and tested the residuals for serial correlation. The Newey–West estimate of the level change (1.99 percentage points, SE 0.42) was nearly identical to the primary estimate and remained highly significant ($p < 0.001$). Breusch–Godfrey tests did not reject the null of no residual autocorrelation at conventional levels ($p = 0.11$, 0.20, and 0.07 at lags 1–3), and the Durbin–Watson statistic (1.43) indicated at most mild positive autocorrelation; accounting for autocorrelation therefore did not materially change inference.

Monthly visit counts clarify what changed. At the election, short-acting visits fell by approximately 9% ($p < 0.001$) and total visits by approximately 7% ($p = 0.01$), while LARC visits continued on their pre-existing upward trend, with the largest single-month count of the analysis window in January 2017, two months after the election. This pattern is what method switching implies at the visit level: a patient who switches to LARC stops generating recurring short-acting visits while adding few LARC visits beyond insertion and follow-up. The rise in the LARC share of visits therefore reflects a durable change in the mix of contraceptive care delivered rather than a sustained increase in the monthly number of LARC visits.

3.5. Other political events

Formal estimates at the two secondary federal events do not reproduce the clean discontinuity seen in 2016. At the October 2018 confirmation of Justice Kavanaugh, the estimated level change in LARC use was small and not statistically significant (0.7 percentage points, $p = 0.21$; $\pm$18-month window). The estimate around the September 2020 death of Justice Ginsburg was larger (1.5 percentage points, $p = 0.08$), but this window coincides with the COVID-19 pandemic and the associated disruption and recovery of PPNNE services, so it cannot be cleanly attributed to the event. (The narrowest, $\pm$12-month, windows could not separately identify the level change from the calendar fixed effects.) Taken together, only the 2016 election is associated with a clear, well-identified discontinuity in contraceptive method choice.

4. Discussion

4.1. Principal findings

In a regional family planning population spanning a decade, the 2016 presidential election was followed by a modest but statistically robust increase in long-acting reversible contraception, with an offsetting decline in short-acting methods. Importantly, this increase persisted after explicitly accounting for the secular upward trend in LARC use—a trend that prior descriptive work did not isolate—and was broad-based across all three states.

4.2. Comparison with prior work

Our findings are consistent in direction with survey evidence on post-election contraceptive concern [8] and with claims-based evidence of increased LARC insertions [9], and with work modeling contraceptive choice under reproductive-policy uncertainty [11]. We extend this literature in two ways: by capturing patients excluded from claims data, including the uninsured and publicly insured, and by separating the genuine discontinuous change from the underlying trend, which tempers the magnitude relative to naive before-after comparisons.

4.3. Implications

The shift toward methods with substantially lower typical-use failure rates [1] implies a meaningful increase in average contraceptive effectiveness among patients presenting for care. For providers and health systems, the results suggest that politically salient reproductive-rights events may be followed by a durable shift in the mix of contraceptive care delivered toward LARC—in these data, the acute increase in LARC visits was concentrated one to two months after the election, and the elevated LARC share persisted for at least two years—with implications for counseling, scheduling, and supply.

4.4. Limitations

This is a descriptive analysis without a contemporaneous control group; we cannot exclude other factors coinciding with the election. In particular, state policy changes during the post-election window—most notably Maine's June 2017 contraceptive-coverage mandate [12]—may contribute to state-specific post-period estimates, although they postdate the immediate change at the election. The sample is drawn from three northeastern states and may not generalize to regions with different political or insurance environments. Subgroup analyses by race were underpowered and cannot speak to differential response. The analysis captures patients presenting at PPNNE and not the broader population. The unit of analysis is the visit: because LARC requires few visits after insertion while short-acting methods generate recurring refill visits, visit-level shares do not map one-to-one onto the share of patients using each method. Finally, as with any single-series interrupted time series, inference relies on correctly modeling the underlying trend; we mitigated this by testing alternative analysis windows and accounting for autocorrelation.

4.5. Conclusion

Using complete encounter data from a family planning provider whose patients include the uninsured and publicly insured, we find that the 2016 presidential election was followed by a modest, robust, and broad-based shift toward long-acting reversible contraception, beyond the pre-existing upward trend. The finding documents a real-world behavioral response to reproductive-policy uncertainty in a population largely invisible to claims-based research.

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Declaration of competing interest

The author has no competing interests to declare.

CRediT authorship contribution statement

Sierra Arnold: Conceptualization, Methodology, Formal analysis, Data curation, Writing – original draft, Writing – review & editing.

Data availability

The data analyzed in this study are confidential patient records provided by Planned Parenthood of Northern New England for research purposes and cannot be shared publicly.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author used a large language model (Anthropic Claude) to draft and edit portions of the manuscript. After using this tool, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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Tables and figures

Table 1: Sample characteristics, PPNNE contraceptive visits, 2012–2021

Characteristic	**Value**
Unique patients	172,744
Total visits	536,588
Mean visits per patient	3.1
Mean age, years	27
Payer (% of visits)	
Private	44.4
Public (Medicaid/Medicare)	35.6
Self-pay	19.6
Baseline method (% of visits)	
LARC (IUD or implant)	21.5
Oral contraceptive	26.3
Barrier	14.6
Injection	12.0
Race/ethnicity (% of patients)	
White	88
Black	3.1
Hispanic (ethnicity)	4.9

Table 2: Interrupted time series estimates: change in contraceptive method use at the November 2016 election

	LARC	Short-Acting
Level shift (post-election)	0.0181***	-0.0125**
	(0.00342)	(0.00522)
Linear trend	0.00126***	-0.00256***
	(0.000205)	(0.000275)
Post-election trend change	-0.00141***	0.00143***
	(0.000267)	(0.000340)
Observations	238140	238140

Standard errors in parentheses

Standard errors clustered by month.

Controls: month, state, payer type, race fixed effects.

Sample restricted to +-24 months around the November 2016 election (post period begins December 2016).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

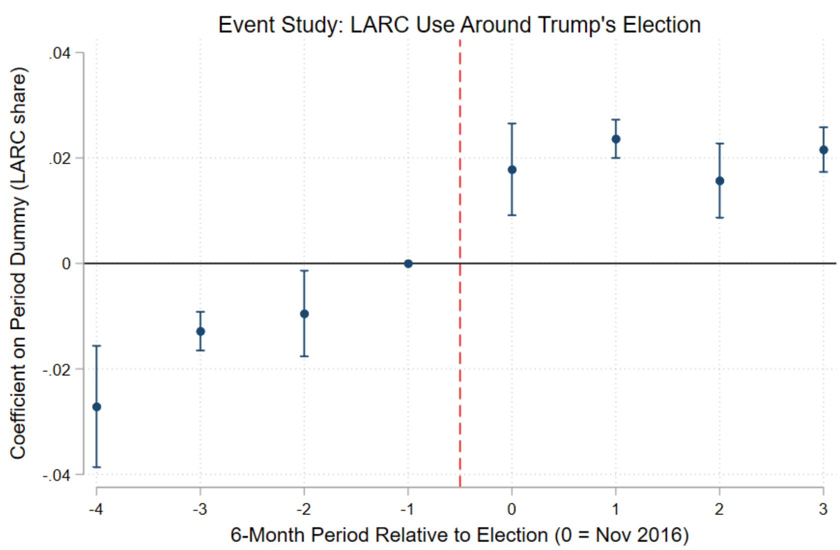

Figure 1: LARC use around the 2016 election. Points are coefficients from a segmented regression on six-month period indicators (reference: the six months ending November 2016; period 0 begins December 2016, the first full post-election month); bars are 95% confidence intervals. Pre-election points rise gradually toward the reference (the secular trend); the series jumps at the election and remains elevated.

Table 3: Trend-adjusted level change in LARC use at the election, by payer type

	Public	Private	Self Pay
Level shift (post-election)	0.0143*	0.0312***	-0.00965
	(0.00839)	(0.00543)	(0.00736)
Linear trend	0.00163***	0.00148***	0.000450
	(0.000427)	(0.000264)	(0.000426)
Post-election trend change	-0.00143***	-0.00203***	-0.000201
	(0.000477)	(0.000411)	(0.000553)
N	81442	111336	44984

Standard errors in parentheses

LARC use. Standard errors clustered by month. Controls: month, state, race FE.

Sample restricted to +-24 months around the November 2016 election (post period begins December 2016).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Trend-adjusted level change in LARC use at the election, by race/ethnicity

	White	Black	Hispanic
Level shift (post-election)	0.0187***	-0.00649	0.0240
	(0.00371)	(0.0199)	(0.0185)
Linear trend	0.00110***	0.00300**	0.000257
	(0.000200)	(0.00114)	(0.000803)
Post-election trend change	-0.00115***	-0.00419***	-0.00163
	(0.000269)	(0.00142)	(0.00123)
N	209380	6934	11832

Standard errors in parentheses

LARC use. Standard errors clustered by month. Controls: month, state, payer FE.

Sample restricted to +-24 months around the November 2016 election (post period begins December 2016).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Trend-adjusted level change in LARC use at the election, by state

	Vermont	New Hampshire	Maine
Level shift (post-election)	0.0128**	0.0198***	0.0237***
	(0.00595)	(0.00602)	(0.00699)
Linear trend	0.00201***	0.00117***	0.000322
	(0.000345)	(0.000343)	(0.000272)
Post-election trend change	-0.00164***	-0.00160***	-0.00105**
	(0.000420)	(0.000402)	(0.000390)
N	108713	67985	61442

Standard errors in parentheses

LARC use. Standard errors clustered by month. Controls: month, race, payer FE.

Sample restricted to +-24 months around the November 2016 election (post period begins December 2016).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Window-length sensitivity: level change in LARC use across analysis windows

	±12 mo	±18 mo	±24 mo	±36 mo
Level shift (post-election)	n.i.	0.0190***	0.0181***	0.0125***
		(0.00319)	(0.00342)	(0.00355)
Linear trend	0.00232***	0.00113***	0.00126***	0.00187***
	(0.000210)	(0.000154)	(0.000205)	(0.000157)
Post-election trend change	-0.000605*	-0.00127***	-0.00141***	-0.00207***
	(0.000331)	(0.000305)	(0.000267)	(0.000196)
N	117896	177301	238140	359312

Standard errors in parentheses

LARC use. Standard errors clustered by month.

Controls: month, state, payer, race FE.

n.i. = not identified: the ±12-month window cannot separately identify the level shift from the calendar fixed effects and trend terms.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$