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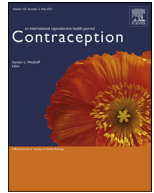
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Original research article

Declines in contraceptive visits in the United States during the COVID-19 pandemic

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ABSTRACT

Objective: To document the change in contraceptive visits in the United States during the COVID-19 pandemic.**Study design:** Using a nationwide sample of claims we analyzed the immediate and sustained changes in contraceptive visits during the pandemic by calculating the percentage change in number of visits between May 2019 and April 2020 and between December 2019 and December 2020, respectively. We examined these changes by contraceptive method, region, age, and use of telehealth, and separately for postpartum individuals.**Results:** Relative to May 2019, in April 2020, visits for tubal ligation declined by 65% (95% CI, -65.5, -64.1), LARCs by 46% (95% CI, -47.0, -45.6), pill, patch, or ring by 45% (95% CI, -45.8, -44.5), and injectables by 16% (95% CI -17.2, -15.4). The sustained change in visits in December 2020 was larger for tubal ligation (-18%, 95% CI, -19.1, -16.8) and injectable (-11%, 95% CI, -11.4, -9.6) visits than for LARC (-6%, 95% CI, -6.6, -4.4) and pill, patch, and ring (-5%, 95% CI, -5.7, -3.7) visits. The immediate decline was highest in the Northeast and Midwest regions. Declines among postpartum individuals were smaller but still substantial.**Conclusions:** There were large declines in contraceptive visits at the start of the COVID-19 pandemic and visit numbers remained below pre-pandemic levels through the end of 2020.**Implications:** Declines in contraceptive visits during the pandemic suggest that many people faced difficulties accessing this essential health service during the COVID-19 pandemic

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1. Introduction

The coronavirus disease 2019 (COVID-19) pandemic has brought widespread disruptions to provision of preventive health care in the United States [1]. Contraception is one of the most commonly used preventive medical services used by persons of reproductive age. Between 2017 and 2019, approximately 45% of women aged 15 to 49 in the United States used contraception that can only be accessed through a medical provider [2]. More specifically, over this period, 29% of women aged 12 to 50 used tubal ligation or long-acting reversible methods (LARC), including the intrauterine device (IUD) and contraceptive implant, which are the most effective

forms of contraception and require an in-person visit. Another 17% used other methods that require a prescription, including the contraceptive pill, patch, ring, and the contraceptive injectable [2]; an outpatient visit is required in most states for initial prescription and then periodically to obtain a refill [3, 4]. Adolescents are more likely than adult women to use short-acting methods (i.e., contraceptive pills and the contraceptive injectable), which require more frequent visits [5].

More than half (54%) of obstetrician/gynecologists (OBGYNs) reported seeing fewer patients between March and June 2020 [6]. OBGYNs attributed the decline to patient reluctance to seek in-person care (45%) and practice-specific restrictions (37%). Changes in service availability were largest in the Northeast region, where 26% of OBGYNs temporarily closed their practice, compared to 9–10% in other regions in the United States [6]. During the first week of May 2020, one-third of women reported pandemic-related can-

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cellations or delays in contraception or other sexual and reproductive health care [7].

Clinicians have used several strategies to try to meet family planning needs during COVID-19, including prescribing contraceptives through telehealth, accepting patient report of blood pressure before starting combined oral contraception, and providing postpartum individuals access to LARCs before leaving the hospital after childbirth [8–10]. Despite these efforts, some women may have experienced access challenges. For example, adolescents may have faced particular barriers due to lack of privacy in their homes during telehealth visits [11]. Postpartum individuals may have had reduced access to LARCs because postpartum contraception is often prescribed during postpartum visits, which were increasingly conducted through telehealth during the pandemic. While Medicaid and commercial payers have both modified their policies to expand telehealth, the allowable modalities (e.g., audio-only, video) and provider reimbursement rates continue to vary by state and payer [12].

A study that used data from a commercial insurance plan in Michigan found a 72% decline in LARC placements in April 2020, and that pharmacy-obtained contraception was between 15% to 30% lower throughout 2020 relative to 2019 [13]. In this study, we examined the extent and duration of changes to contraceptive visits for all contraceptive methods during the COVID-19 pandemic in the United States, which has not to our knowledge been documented nationally. We analyzed changes in contraceptive visits overall, as well as changes in specific types of contraceptive visits. Finally, we examine changes in contraceptive visits across groups of patients and mode of visit (telehealth vs other).

2. Materials and methods

2.1. Data

We used health insurance claims covering 280 million patients, 1.8 million prescribers, and 16,000 health plans nationwide between May 1, 2019 and December 31, 2020. These data are from the Symphony Health claims clearinghouse, a software used to send medical claims to commercial insurers, Medicaid managed care plans, and state Medicaid programs.

2.2. Sample

The study sample included claims from individuals aged 15 to 45 years with at least one contraceptive visit during the study period. We also identified a subgroup of individuals who had a birth during the study period using the diagnosis and procedure codes for births in the definition from the Office of Population Affairs (OPA) [13]. Childbirth date was derived based on the last date of service associated with any childbirth claim.

2.3. Outcomes

The study outcomes were (1) overall number of method-specific visits (i.e., visits for tubal ligation, LARC, the contraceptive injectable, and contraceptive pills, patch and rings), (2) number of method-specific visits among postpartum individuals and (3) number of telehealth visits for the contraceptive pill, patch and ring. Contraceptive visits were defined as a visit for provision or prescription of contraception and were measured as any medical claim for contraceptive prescription, supply, or placement (for LARC) using diagnosis and procedure codes compiled by the OPA (Appendix Table 1) [14]. Visits for contraceptive counseling only and pharmacy claims with national drug codes for contraception were not included. Multiple claims for a contraceptive visit on the same date of service were counted as one visit. In-person and

telemedicine visits for provision of the contraceptive pill, patch and ring were distinguished using telephone and digital evaluation and management procedure codes and place-of-service codes for telehealth visits.

We defined postpartum contraceptive visits as a contraceptive visit with a service date between 0 and 90 days after the childbirth date, consistent with guidelines from the American College of Obstetricians and Gynecologists [15]. Therefore, contraception provided before hospital discharge, including immediate postpartum LARC, is included in this outcome.

2.4. Analyses

We examined the change in visits after the pandemic at 2 points in time. First, for the immediate change, we compared the number of contraceptive visits in April 2020 with the number in May 2019. We chose April 2020 for the immediate change, since this was when all of the 42 state and territory stay-at-home orders began, and all orders were in place through at least April 24th [16]. In principle, to control for seasonality in contraceptive visits, we would have compared April 2020 to April 2019; however, as May 2019 was the first full month available in the data, we calculated the immediate change as the percentage change in the number of visits between May 2019 and April 2020. Second, to understand the sustained change in visits, we compared visit levels in December 2019 with December 2020.

Individuals who gave birth in February 2020 had a 3-month postpartum window that overlapped with the initial stay at home orders. Therefore, to measure the immediate change in visits for postpartum individuals, we compared postpartum contraceptive visits for individuals who gave birth in February 2020 with those who gave birth in May 2019. We also compared individuals who gave birth in September 2019 with those who gave birth in September 2020 to measure the sustained change in visits.

To compare contraceptive visit counts between months, we calculated the percentage change in visits using log-linear regressions with the model constant suppressed. We then exponentiated the difference in the coefficients for months of interest to obtain the percent difference between months and the associated 95% confidence interval.

To compare changes in postpartum contraceptive visits we tested the difference in the proportion of postpartum individuals with a contraceptive visit between time periods. This difference can be interpreted as the percentage point change in the proportion of postpartum individuals with a contraceptive visit within 3 months postpartum.

We examined changes in contraceptive visits by contraceptive method (tubal ligation, IUD, implant, contraceptive injectable, and contraceptive pill, patch, or ring), age group (adolescents 12–19 and adults 20–50), and geographic region of patient residence (Northeast, South, Midwest, and West). In addition, we examined changes in visits by payer (commercial compared to Medicaid) in Appendix Figure 1.

3. Results

3.1. Change in the full population by contraceptive method

In total during the study period, there were 712,119 visits for tubal ligation, 1,115,086 visits for LARCs, 1,539,580 visits for injectables, and 1,400,927 visits for the pill, patch, and ring (Table 1). Before the pandemic, contraceptive visits varied within a bandwidth of ($\pm 10\%$ relative to May 2019) but maintained a consistent flat trend (Fig. 1). In April 2020, contraceptive visits declined for all methods (Fig. 1). Relative to May 2019, in April 2020, tubal ligation procedures declined by 65% (95% CI: -65.5%, -64.1%), visits

Table 1

Average monthly contraceptive visits by region and age group, United States, May 2019 to December 2020

Before COVID-19 pandemic (May 1, 2019–March 31, 2020)				
	Tubal ligation(n = 421,592)	LARC(n = 665,348)	Injectable(n = 879,589)	Pill/patch/ring(n = 793,876)
Northeast	5,971 (15.9)	11,303 (19.1)	13,958 (17.7)	16,679 (23.6)
South	15,127 (40.3)	20,550 (34.7)	26,979 (34.3)	21,900 (30.9)
Midwest	10,458 (27.9)	16,248 (27.4)	25,570 (32.5)	18,553 (26.2)
West	5,963 (15.9)	11,192 (18.9)	12,151 (15.4)	13,638 (19.3)
Age 12-19	–	8,489 (14.4)	20,868 (26.5)	17,156 (24)
Age 20-50	37,383 (99.9)	5,0502 (85.6)	58,015 (73.5)	54,395 (76)
During COVID-19 pandemic (April 1, 2020–December 31, 2020)				
	Tubal ligation(n = 290,527)	LARC(n = 491,738)	Injectable(n = 659,991)	Pill/patch/ring(n = 607,051)
Northeast	4,685 (15.1)	9,546 (18.0)	12,471 (17.4)	14,689 (22.4)
South	12,753 (41.0)	18,199 (34.3)	24,427 (34.0)	20,454 (31.1)
Midwest	8,694 (28.0)	14,865 (28.0)	23,869 (33.3)	17,712 (27.0)
West	4,949 (15.9)	10,390 (19.6)	10,999 (15.3)	12,809 (19.5)
Age 12-19	–	8,856 (16.5)	20,745 (28.6)	18,028 (26.9)
Age 20-50	31,652 (99.9)	44,675 (83.5)	51,794 (71.4)	48,935 (73.1)

Source: Authors' analysis of Symphony Health claims clearinghouse data from the COVID-19 Research Database from May 1, 2019 to December 31, 2020.

NOTE: Percent change in visits for tubal ligation for adolescents not shown due to the small number of observations for this group. Northeast CT, MA, ME, NH, NJ, NY, RI, VT, DE, PA; South DC, MD, NC, SC, VA, WV, AL, FL, GA, MS, TN, AR, LA, OK, TX; Midwest IN, KY, MI, OH, IA, MN, MT, ND, SD, WI, IL, KS, MO, NE; West AZ, CO, ID, NM, NV, UT, WY, AK, CA, HI, OP, WA

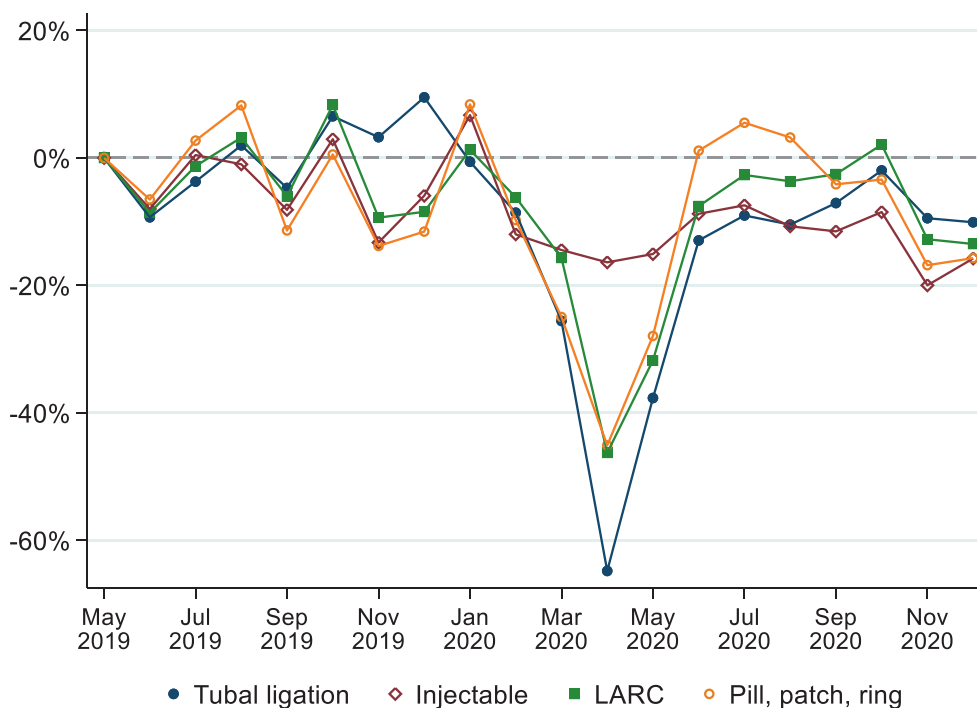


Fig. 1. Percent change in contraceptive visits relative to May 2019 by contraceptive method, United States, May 2019 to December 2020
Source: Authors' analysis of Symphony Health claims clearinghouse data from the COVID-19 Research Database from May 1, 2019 to December 31, 2020.

for LARCs by 46% (-47.0%, -45.6%), visits for the pill, patch, or ring by 45% (-45.8%, -44.5%), and visits for injectables by 16% (-17.2%, -15.4%) (Fig. 1, Appendix Table 2).

Contraceptive visits began to increase after April 2020 but did not consistently return to prepandemic levels. Comparing levels in December 2019 with those in December 2020, the sustained change in contraceptive visits was larger for tubal ligation [-18% (-19.1%, -16.8%)] and injectable contraception [-11% (-11.4%, -9.6%)] visits than for LARC [-6% (-6.6%, -4.4%)] and pill, patch and ring [-5% (-5.7%, -3.7%)] visits (Fig. 1, Appendix Table 2).

3.2. Change by region

The immediate decline in visits for tubal ligation, LARC, and pill, patch, and ring were greater in the Northeast and Midwest compared to the South and West (Fig. 2). The largest regional difference was for LARC visits, which decreased by 61% (-62.3%, -59.7%) in the Northeast compared to 50% (-51.5%, -48.9%), 40% (-41.1%, -38.5%), and 39% (-40.3%, -36.7%) in the Midwest, South and West, respectively. The immediate decline in injectable contraception was larger in the Northeast [-26% (-27.8%, -24.2%)], than in the South

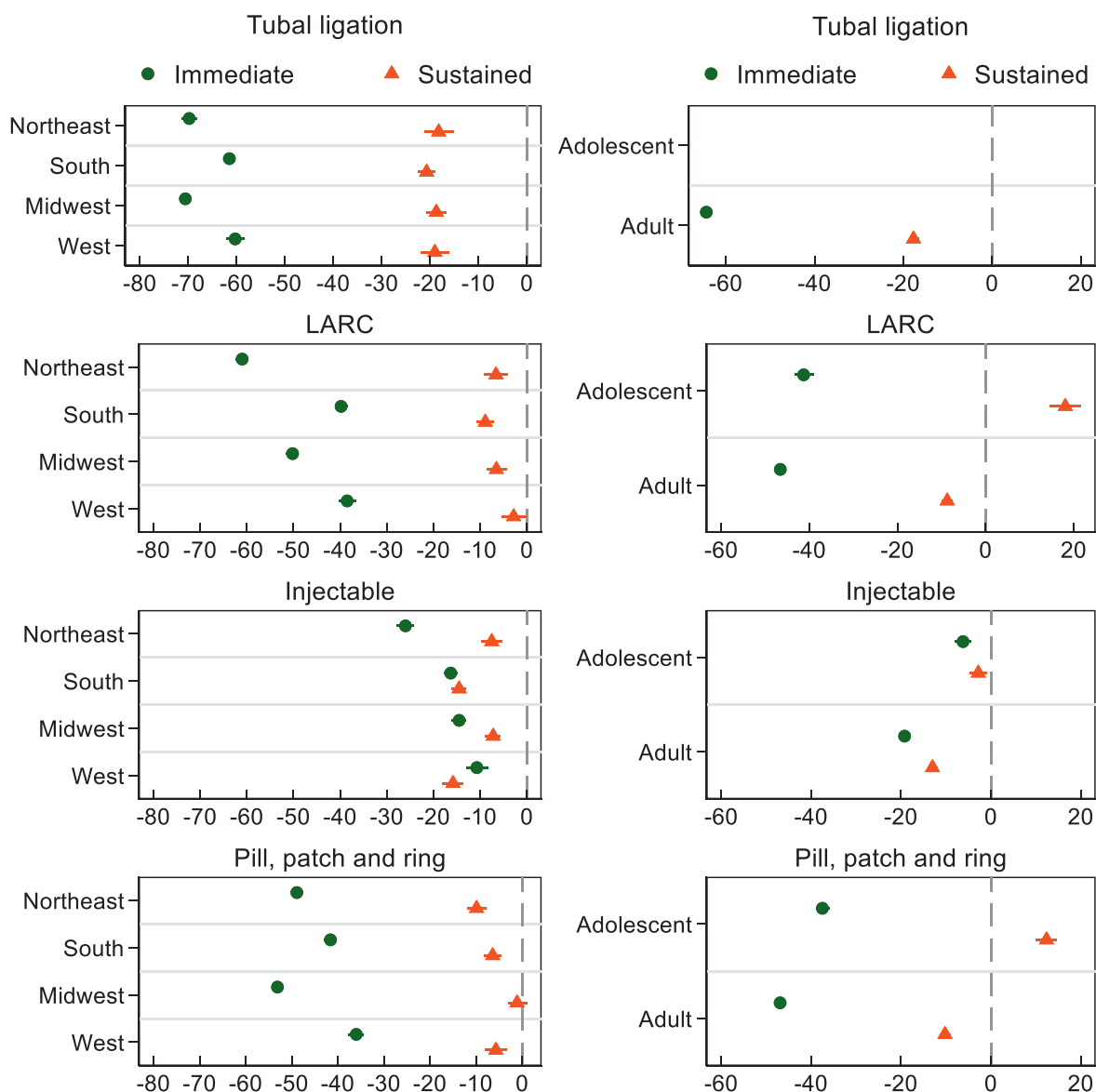


Fig. 2. Percent change in contraceptive visits during the COVID-19 pandemic, immediately (between May 2019 and April 2020) and sustained (between December 2019 and December 2020) in the United States

NOTE: Percent change for tubal ligation among adolescents not shown due to the small number of observations for this group. Northeast CT, MA, ME, NH, NJ, NY, RI, VT, DE, PA; South DC, MD, NC, SC, VA, WV, AL, FL, GA, MS, TN, AR, LA, OK, TX; Midwest IN, KY, MI, OH, IA, MN, MT, ND, SD, WI, IL, KS, MO, NE; West AZ, CO, ID, NM, NV, UT, WY, AK, CA, HI, OP, WA

Source: Authors' analysis of Symphony Health claims clearinghouse data from the COVID-19 Research Database from May 1, 2019 to December 31, 2020.

[-16% (-17.7%, -14.8%)], Midwest [-15% (-16.0%, -13.0%)], and West [-11% (-13.0%, -8.4%)]. The sustained decline in contraceptive visits was generally similar across regions (Fig. 2).

3.3. Change for adolescents vs adults

The immediate decline in LARC visits was similar among adolescents and adults. However, adolescents had a smaller immediate decline in visits for injectable contraceptives [-6.2% (-8.1%, -4.4%) vs -19.2% (-20.1%, -18.2%)] and in visits for the pill, patch, and ring [-37.5% (-39.0%, -35.9%) vs -46.9% (-47.7%, -46.2%)] compared to adults (Fig. 2).

The sustained change in contraceptive visits also varied by age group. LARC visits for adults remained below December 2019 levels [-8.7% (-9.9%, -7.5%)], whereas LARC visits among adolescents increased by 18% (14.6%, 21.6%) in December 2020 compared to December 2019. Similarly, visits for the pill, patch, and ring decreased

by 10.2% among adults (-11.4%, -9.1%) but increased among adolescents by 12.4% (10.0%, 14.7%) in December 2020 compared to December 2019 (Fig. 2). There was no sustained change in injectable visits among adolescents, but among adults, injectable visits were 13.0% lower (-14.1%, -12.0%) in December 2020 compared to December 2019 (Fig. 2).

3.4. Change among postpartum individuals

Declines in contraceptive visits among postpartum individuals were smaller than those observed in the full sample but were still considerable. The percent of postpartum individuals who had tubal ligation within 3 months of childbirth declined by 1.0 percentage point (95% CI: 0.8, 1.2), or 16%, at the start of the pandemic (Fig. 3 and Appendix Table 3). In addition, the percent of individuals who received a LARC method within 3 months of childbirth declined by 2.0 percentage points (1.7, 2.2) or 22%. There was no statistically

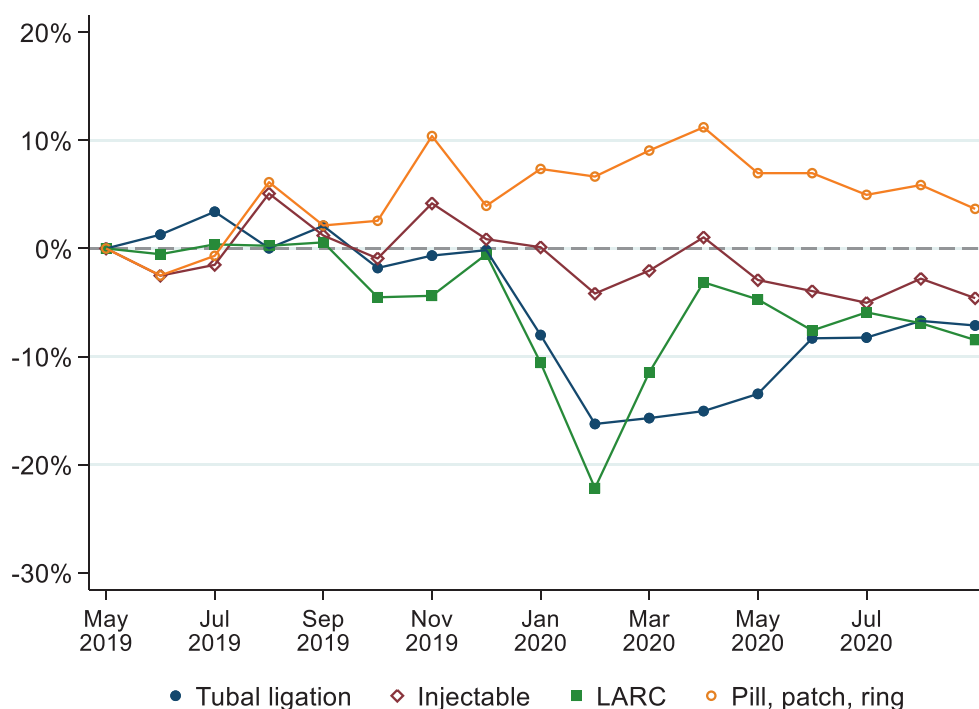


Fig. 3. Trends in the percent of postpartum individuals with a contraceptive visit relative to May 2019 by contraceptive method, United States, May 2019 to September 2020
Note: The x-axis represents the month when the childbirth took place. Each point measures the percent of individuals who had a contraceptive visit within 3 months after childbirth.

Source: Authors' analysis of Symphony Health claims clearinghouse data from the COVID-19 Research Database from May 1, 2019 to December 31, 2020.

significant immediate change in postpartum visits for the contraceptive injectable, or the contraceptive pill, patch and ring.

The sustained change in contraceptive visits among postpartum individuals included a decline in tubal ligation of 0.6 percentage points (0.4, 0.8), or 9%, and a decline in LARC visits of 0.8 percentage points (0.6, 1.0), or 9%. There was no sustained change in visits for injectable contraception, or the contraceptive pill, patch and ring among postpartum individuals (Fig. 3 and Appendix Table 3).

3.5. Change in telehealth visits for the contraceptive pill, patch and ring

Telehealth use for contraceptive visits was very uncommon prior to March 2020 (Fig. 4). Between March and April 2020, there was an immediate 29.6 percentage point (29.1, 30.0) increase in the percent of visits for the contraceptive pill, patch and ring that were conducted via telehealth. Telehealth use subsequently declined over the course of the pandemic, but was still 7.5 percentage points (7.2, 7.7) greater in December 2020 compared to December 2019. While the initial increase in telehealth was similar between Medicaid and commercial payers, the sustained change was greater for visits paid for by Medicaid [10.3 percentage points (9.7, 10.9)] compared to visits paid for by a commercial payer [5.3 percentage points (5.1, 5.6)] (Fig. 4).

4. Discussion

Using a large national sample of public and commercial insurance claims, we found substantial decreases in visits for all contraceptive methods during the COVID-19 pandemic. The immediate decrease in contraceptive visits in April 2020 was largest, with declines ranging from 16% for the contraceptive injectable to 65% for tubal ligation. Visits increased over the next 2 months and nearly reached prepandemic levels, though even by December 2020, we

still observed sustained declines in all contraceptive types. These results suggest that many people faced difficulties accessing this essential health service during the COVID-19 pandemic.

For postpartum individuals, tubal ligation and LARC visits declined (immediately and sustained), while visits for contraceptive pills, patch and ring, and injectables were unchanged. This may be attributable to the use of telehealth for postpartum visits during the pandemic, which allowed providers to continue to provide methods that do not require an in-person visit. Limited access to tubal ligation and LARCs may have increased unintended short birth intervals and restricted contraceptive autonomy.

Tubal ligation may have seen the largest declines because the service is typically provided in a hospital setting and requires an operating room and personal protective equipment. [17]. Some state Medicaid offices, hospitals, and clinicians determined that tubal ligation was an elective procedure that could be delayed while the pandemic was most severe [17]. Further, Medicaid requires patients to sign a consent form 30 days prior to tubal ligation. Tubal ligation may have been further limited because state Medicaid agencies did not allow for oral consent or electronic signature [17].

Consistent with findings from a survey of OBGYNs early in the pandemic, we found that the immediate change in visits for LARC and injectable contraception was greatest in the Northeast [6]. The relatively larger early declines in the Northeast could be due to more limited clinic opening hours, as reported in the national provider survey [6]. It is also possible that patients in the Northeast had stronger preferences to avoid in-person medical care relative to other parts of the country early in the pandemic. However, the sustained change in visits was similar across regions.

Immediate declines in visits for the contraceptive injectable and pill, patch and ring among adolescents were lower than those of adults, and among adolescents, visits for LARCs and the contraceptive pill, patch and ring had actually increased in December 2020 relative to the previous year. Continued provision of contraception

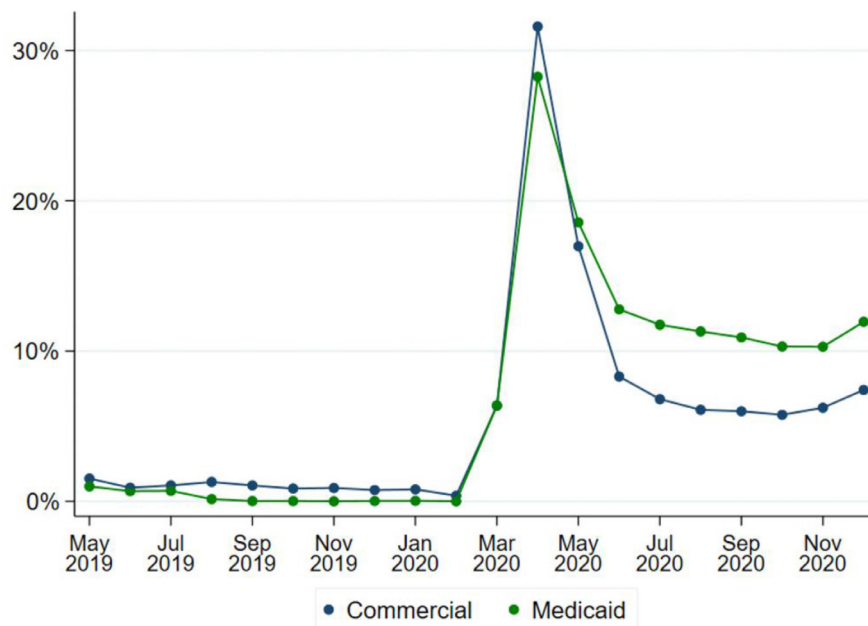


Fig. 4. Trends in the percent of total visits for the contraceptive pill, patch and ring conducted through telehealth by payer, United States, May 2019 to December 2020
Source: Authors' analysis of Symphony Health claims clearinghouse data from the COVID-19 Research Database from May 1, 2019 to December 31, 2020.

to adolescents is essential because most pregnancies among adolescents are unintended [18]. Adolescents may have been better able to adapt quickly to use of telemedicine or may have been prioritized by health clinics during periods with more limited operating hours.

Use of telehealth for contraceptive provision has the potential to reduce existing barriers to care for methods that do not require in-person visits [19]. The persistence of telehealth for provision of the contraceptive pill, patch and ring in late 2020, after the initial rebound in visits in the summer of 2020, is a promising sign that telehealth may be increasingly available to patients even after the end of the pandemic. However, for telehealth to have an equitable impact, public and private payers will need to provide payment parity (i.e., equal payment for in person and telehealth visits) and allow for audio-only telehealth, so that patients without a reliable broadband connection can use telehealth services [12].

This study has several limitations. First, it is possible that our measured use of telehealth is an underestimate if clinicians did not consistently use correct telehealth billing procedures. Second, this study was focused on contraceptive visits and our estimates do not translate directly to a change in the percent of people whose access to contraception decreased during the pandemic. Third, we focused on medical claims and did not analyze pharmacy claims because the sample of pharmacies that submit to the Symphony claims clearinghouse was independent from the sample of submitting providers. Therefore, this analysis would miss contraceptive provision if a provider refilled a prescription without billing for an office or telehealth visit. Fourth, if a postpartum woman in our sample received contraception from a provider that is not included in the claims clearinghouse, we would not observe the contraception claims for this visit. Fifth, due to data limitations, we were unable to examine trends by other sociodemographic factors including income, rurality, and race or ethnicity. Sixth, providers included in the Symphony clearinghouse may not be representative of all providers in the United States. Further, this study does not include people without insurance coverage and therefore does not provide information on the effect of the pandemic on contraceptive visits in this group. Finally, our results could reflect some decreased demand for contraception during the pandemic, and we cannot separate changes in access from changes in demand.

Access to the full range of medically safe contraceptive methods allows patients to select a method that is consistent with their preferences, which is an important component of patient-centered care and contraceptive autonomy. This study suggests that pandemic-related healthcare disruptions limited contraceptive access. Telehealth reimbursement for contraceptive services may have helped to maintain contraceptive choice during the pandemic; however, moving forward, policy and practice modifications should ensure that this option is available to patients regardless of payer and broadband access.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.contraception.2021.08.003](https://doi.org/10.1016/j.contraception.2021.08.003).

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