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# New prescription fills of selective serotonin reuptake inhibitors before and during the COVID-19 pandemic in Los Angeles County, California

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## ABSTRACT

**Objective:** This study examined whether the COVID-19 pandemic was associated with changes in new selective serotonin reuptake inhibitor (SSRI) prescription fills.

**Methods:** Using IQVIA Xponent data on new SSRI fills in Los Angeles (L.A.) County from March 2019 to June 2021, the authors implemented an interrupted time series analysis comparing the monthly volume and trend of overall fills and fills by age and gender from before to after the pandemic declaration.

**Results:** The rate of new SSRI prescription fills briefly decreased after the pandemic declaration but then consistently increased through the rest of the study period. These increases were primarily driven by women, young adults (i.e., 18–39 year-olds), and those under 18 years old.

**Limitations:** Sample is limited to one county and may not be generalizable to other municipalities.

**Conclusions:** The COVID-19 pandemic was associated with significant increases in new SSRI fills among women, young adults, and those under 18. These increases were relatively small compared to increases in depressive symptoms during the same time period.

## 1. Introduction

Prior research has found that despite increased prevalence of major depressive disorder symptoms during the COVID-19 pandemic (Czeisler et al., 2020), the rate of new antidepressant prescriptions declined in the first five months of the pandemic (Nason et al., 2021), coinciding with widespread stay-at-home orders. However, as increases in major depressive disorder symptoms have persisted after stay-at-home orders ended (Vahratian et al., 2021), few studies have examined longer-term associations between the pandemic and antidepressant use. We examined new selective serotonin reuptake inhibitor (SSRI) fill rates before and after the pandemic declaration in March 2020 to determine if documented increases in major depressive disorder symptoms were associated with changes in the rates of new SSRI prescriptions.

## 2. Methods

IQVIA Xponent data provided monthly volume, stratified by age and gender, of new SSRI fills in Los Angeles (L.A.) County from March 2019 to June 2021 (IQVIA, 2022). Xponent considered fills to be “new” if they

were (1) obtained by individuals without prior SSRI prescriptions, (2) changes in days' supply or dosage, or (3) obtained by individuals who have exhausted their SSRI refills. The Xponent data are summed estimates of prescription fills from retail pharmacies, mail orders, and long term care (LTC) facilities. We divided SSRI volume by the 2019 L.A. County population estimate from the American Community Survey to calculate the number of new SSRI prescription fills per 100,000 residents per month.

We created plots displaying the monthly ratio of new SSRI fills post versus pre-pandemic declaration. To generate the ratio, we divided the monthly rate of new SSRI fills during the COVID-19 pandemic by the rate for the same month before COVID-19, overall and stratified by age and gender. Repeat months during the post-pandemic declaration period (e.g., April 2020 and April 2021) were each divided by the same denominator of the month during the pre-pandemic period (e.g., April 2019). We then implemented an interrupted time series analysis (ITSA) using ordinary least-squares regressions with robust standard errors and calendar month and year fixed effects to estimate changes in the volume and trend of new SSRI fills by comparing the pre-pandemic declaration period (March 2019–February 2020) to the post-pandemic declaration

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period (April 2020–June 2021). March 2020 was excluded from the models because it could not be classified in either period with our monthly data.

### 3. Results

During the pre-pandemic period, the average overall monthly new SSRI fill rate was 955 per 100,000 residents (Table 1). The ratio of fills post-pandemic declaration to pre-declaration initially declined (i.e., ratio < 1.0), but from June 2020 through June 2021, it consistently exceeded 1.0, indicating that fills were higher than the same month pre-pandemic (Fig. 1A). ITSA modeling showed a significant decrease of 74 per 100,000 new fills immediately after the pandemic declaration, but thereafter, we observed a significant increase of 11 fills per 100,000 per month, corresponding to 1071 new fills in June 2021.

In the pre-pandemic period, 18 to 39 year-olds accounted for the most new SSRI prescriptions compared to other age groups, at approximately one-third of new fills, and women filled about two-thirds of new SSRIs (Table 1). After the pandemic declaration, 18 to 39 year-olds and women experienced larger increases compared to other age groups and men (Fig. 1B and C). ITSA modeling revealed significant decreases for all age groups and genders in the 2 months after the pandemic declaration, followed by significant, sustained increases for those under 18, 18 to 39 year-olds, and women (Table 1).

### 4. Discussion

During the COVID-19 pandemic, we found an initial decrease, followed by consistent increases in new SSRI fills in L.A. County, primarily among women, young adults, and those under 18. The estimated increases in SSRIs are relatively low compared to the documented 3-fold increase in major depressive disorder symptoms during COVID-19 (Czeisler et al., 2020).

The discrepancy between new SSRI fills and symptoms of major depressive disorder has at least three potential explanations. First, SSRIs may increase the risk of suicide among children and adults under 25 years old (Chu and Wadhwa, 2022), which may discourage clinicians from prescribing them to these age groups. Second, a number of evidence-based therapies have been demonstrated to improve major depressive disorder (Guideline Development Panel for the Treatment of

Depressive Disorders, 2021), so it is possible that individuals experiencing these symptoms during the pandemic were receiving non-pharmacologic treatments (i.e., counseling), which are not captured in our data. However, as rates of antidepressant fills are more than double the rate of counseling, both prior to and during the pandemic, it is unlikely that counseling rates can explain much of this gap in treatment (Coley and Baum, 2022; Olfson et al., 2019). Third, the discrepancy may reflect unmet need for depression treatment due to costs, lack of access to a prescriber, and stigma, among other factors (Devine et al., 2018; Mojtabai, 2009).

This analysis had several limitations. For example, the “new” label for SSRI fills does not exclude individuals who exhausted their refills, so our results may overestimate the true rate of new SSRI fills. The data also do not disaggregate fills by race or ethnicity, so we are unable to examine potential inequities among different demographic groups. As these data are not linked to claims data or electronic health records, we do not have information on diagnosis codes, and while SSRIs are a common first-line medication for major depressive disorder, they are also indicated for other mental health conditions such as generalized anxiety disorder and obsessive-compulsive disorder. It is also possible to determine whether our estimated changes were due to changes in mental health need or changes in access to care resulting from telehealth availability. Finally, our sample is limited to a single county, so our estimates may not reflect trends in other municipalities. However, the age and gender distribution in L.A. County is comparable to the age and gender distribution of the United States as a whole (United States Census Bureau, 2022), which is important given the wide variation we observed in SSRI fills among these sub-populations. Moreover, the ratio of population to mental health providers is also similar between L.A. County and the United States (County Health Rankings, 2022; United Health Foundation, 2022).

Our estimates of new SSRI fills by gender and age are consistent with research suggesting that adolescents, young adults, and women have experienced increased depressive symptoms during the pandemic (Hawes et al., 2021). Given the unmet need for mental health care exacerbated by COVID-19, especially for young adults, people of color, and women (Vahratian et al., 2021), public health and health system leaders can monitor prescription fill data to help address impacts of COVID-19 on emotional wellbeing and ensure equitable access to mental health care.

**Table 1**  
Interrupted Time Series Analysis (ITSA) estimates for monthly new SSRI fills in L.A. County, March 2019–June 2021.

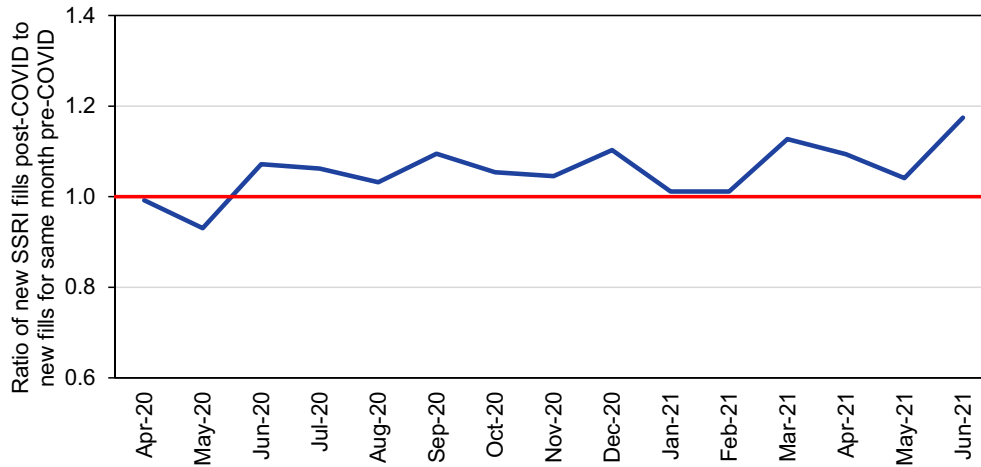
Rate by population	Average pre-COVID new SSRI fill rate	ITSA estimate: change in volume in the month after the pandemic was declared (i.e., April 2020) (95 % CI)	ITSA estimate: change in monthly trend after the pandemic was declared (95 % CI)
<b>Overall</b>	954.5	−74.4 (−115.4, −33.5)**	10.7 (1.0, 20.3)*
<b>Age Group</b>			
Ages under 18	65.7	−9.6 (−12.8, −6.5)**	1.1 (0.5, 1.8)**
Ages 18 to 39	312.8	−25.8 (−39.8, −11.8)**	5.0 (1.9, 8.2)**
Ages 40 to 59	290.1	−16.3 (−30.7, −1.9)*	2.4 (−0.4, 5.2)
Ages 60+	285.6	−23.2 (−37.4, −9.0)**	2.1 (−1.2, 5.5)
<b>Gender</b>			
Women	624.5	−43.7 (−71.2, −16.2)**	8.1 (1.5, 14.7)*
Men	329.7	−30.9 (−45.1, −16.8)**	2.6 (−0.5, 5.8)

Notes: Adjusted analysis of IQVIA Xponent data from Los Angeles County. Interrupted time series analysis (ITSA) estimates were derived from models estimating changes in the volume and trend of new SSRI fills from before to after the pandemic was declared. Models used month and year fixed effects with robust standard errors.

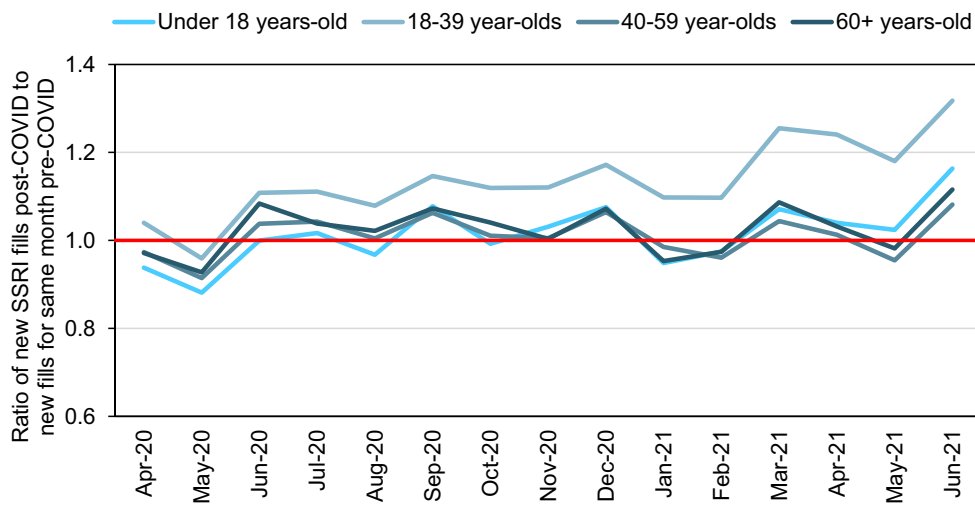
\*\* p < 0.01.

\* p < 0.05.

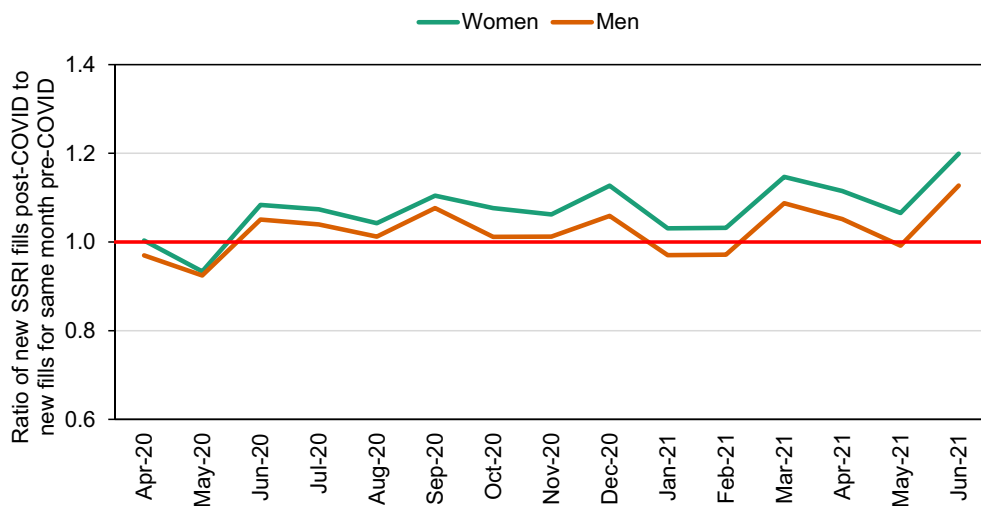
A. Overall



B. Stratified by Age Group



C. Stratified by Gender



**Fig. 1.** Ratio of new fills after the COVID-19 pandemic was declared to new fills for the same month before COVID-19  
 Notes: Unadjusted analysis of IQVIA Xponent data from Los Angeles County. Figure 1A displays the overall sample, Figure 1B displays the sample stratified by age group, and Figure 1C displays the sample stratified by gender.

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## Credit authorship contribution statement

Dr. Levin had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. All authors materially participated in the research and article preparation and have approved the final article. Individual contributions are listed below:

Concept and design: All authors.

Acquisition, analysis, or interpretation of data: All authors.

Drafting of the manuscript: Levin.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Levin.

Obtained funding: Acosta, Faherty.

Administrative, technical, or material support: All authors.

## Conflict of Interest

The authors declare no conflicts of interest.

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