

# Using Google Trends Data to Assess Reproductive Health Needs in Nigeria During COVID-19

**Arnab Dey, Nabamallika Dehingia, Anita Raj**

Center on Gender Equity and Health, University of California San Diego, USA

## Background

Recent research has documented the impact of the COVID-19 pandemic and consequent lockdowns on access to key health services, including family planning, in various countries.<sup>1-3</sup> Nigeria is of particular concern, given the unmet need for contraception<sup>4</sup> and high rates of unintended pregnancies in the country<sup>5</sup> prior to the pandemic. Nigeria also has restrictive abortion laws that impede access except in cases to save a woman’s life.<sup>6</sup> Such restrictive laws can result in illegal abortion, which may be unsafe, increasing risk of maternal morbidities and mortality.<sup>5,7,8</sup> Studies from other countries indicate declines in contraceptive use and increases in unplanned pregnancies and abortions<sup>9</sup> due to the pandemic and related lockdowns,<sup>10</sup> but we continue to lack such data for Nigeria.

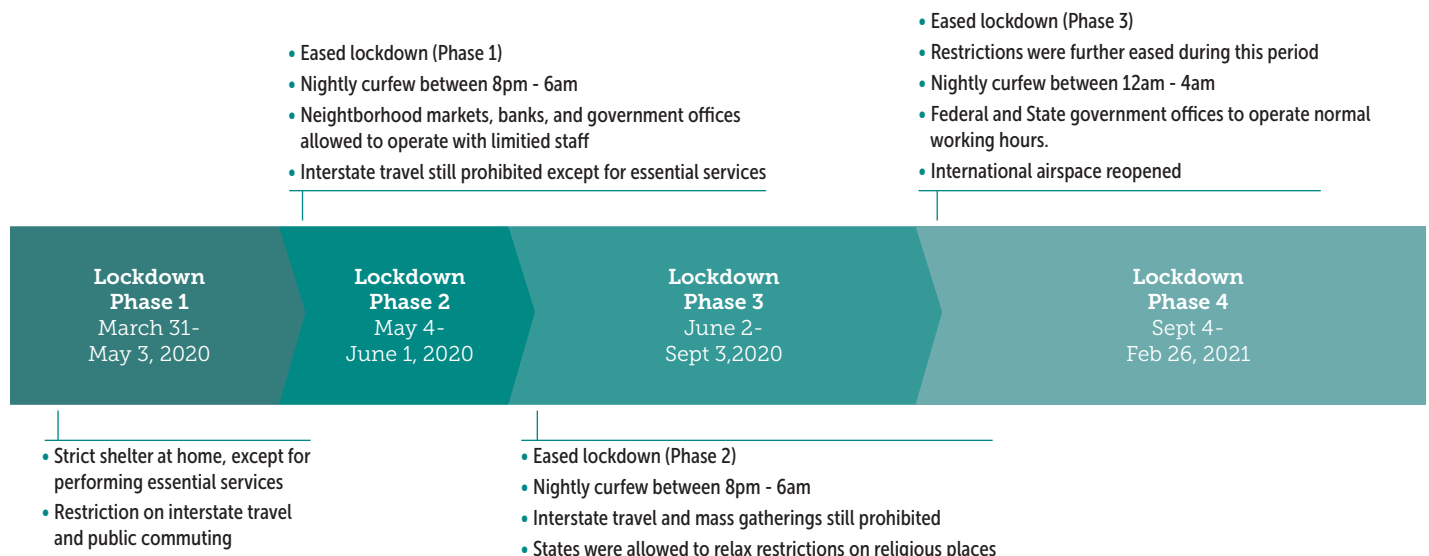
In the absence of direct data on these outcomes, analysis of big data can be useful. Big data platforms such as Google Trends, Twitter, and other social media are proving highly beneficial during the COVID-19 pandemic, filling the void

of data availability around important issues such as family planning. Google Trends data, which reflects searches made on the Google search engine, offers insights into topics of importance for people within a given country, and over time. Given the reduced access to healthcare services, especially around family planning, under the pandemic and related lockdown,<sup>1-3</sup> women may be relying more on the internet to access important information on family planning. In this context, Google Trends data can enable an ecological assessment of potentially increasing needs related to women’s reproductive health.

## Our Approach

We utilized the Google Trends Explorer tool<sup>11</sup> to download and analyze search patterns around pregnancy and abortion in Nigeria. We selected the search terms *pregnancy* and *pregnancy test* to understand trends in people’s interest in pregnancy, and *abortion* and *misoprostol* (a pill used in self-managed medication abortions<sup>12,13</sup>) for trends in interests in abortion.

**Figure 1:** Lockdown phases and levels of restrictions implemented in Nigeria during the COVID-19 pandemic



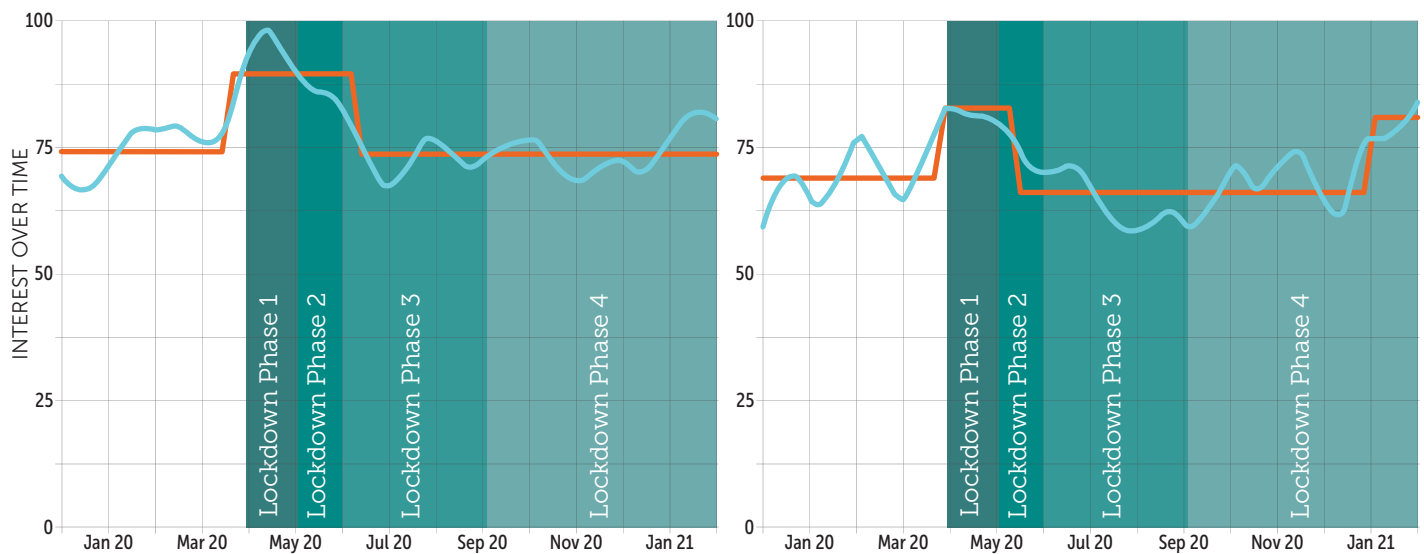
We specified the geography as *Nigeria* and the period of interest as December 1, 2019 and January 31, 2021 on Google Trends Explorer, and then downloaded the data corresponding to interest over time for each search term separately. It is important to note that data pulled from the Google Trends Explore tool is normalized to a scale of 0–100 by dividing each data point by the total searches made for a specific geography and study period.<sup>14</sup> Thus the data available to us did not indicate the actual number of searches made on our search terms but represented a scaled version of those searches made in Nigeria over our study period.

We first applied a local regression, LOESS, to the downloaded dataset and plotted over-time to understand how search patterns varied with time. LOESS is a statistical technique to

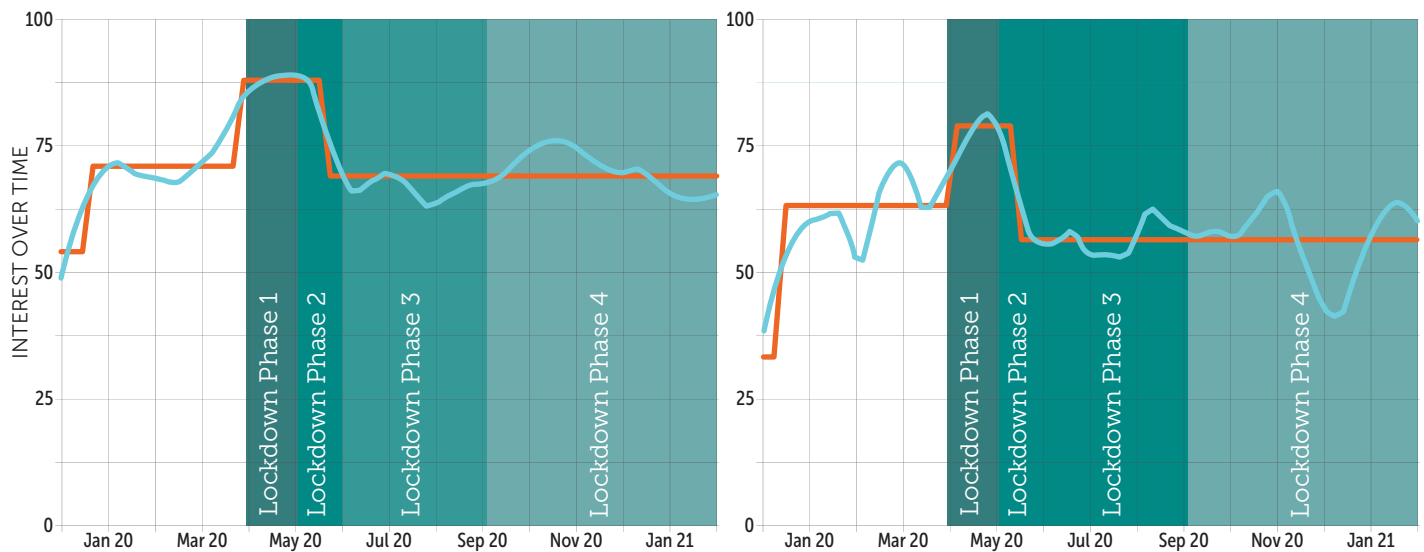
smooth data that is characterized by a lot of fluctuations.<sup>15</sup> We then used changepoint analysis to identify periods where there was a meaningful change in the interest over time for each search term. Changepoint analysis is a statistical method that identifies periods in time-series data that are substantially different from neighboring periods.<sup>16,17</sup>

To understand how these variations were affected by the COVID-19 pandemic and the lockdowns implemented in the country, we juxtaposed timelines of key lockdown phases in Nigeria on the time series plots. We considered four major phases of lockdowns and mapped different levels of restrictions implemented in Nigeria during these phases (Figure 1).<sup>18-24</sup>

**Figure 2:** Google Search Trends for “pregnancy” (left) and “pregnancy test” (right) in Nigeria between Dec 01, 2019 and Jan 31, 2021



**Figure 3:** Google Search Trends for “abortion” (left) and “misoprostol” (right) in Nigeria between Dec 01, 2019 and Jan 31, 2021



## Results

Findings from the Google Trends analysis mapped against the lockdown phases in Nigeria indicate that people's interest in all four search terms increased at the beginning of the first round of lockdown. Figure 2 shows that searches related to pregnancy peaked during the first phase of the lockdown in Nigeria. Interest in both the terms "pregnancy" and "pregnancy test" peaked and then gradually returned to pre-lockdown levels around June 2020. Figure 3 shows a similar trend in interest over time for searches related to abortion. The search terms "abortion" and "misoprostol" peaked in the first phase of the lockdown (March–April) and then stabilized from June 2020 onwards.

## Implications

Our analysis shows an increased interest in search terms related to pregnancy and abortion at the onset of the COVID-19 related lockdowns in Nigeria, suggesting that women may have had less control over family planning and greater concern about carrying a pregnancy and having a child during this period. While these findings are not definitive proof of the linkage between the pandemic and restricted access to reproductive care, they do suggest the need for prioritization of sexual and reproductive services, especially for abortion, under lockdowns in Nigeria. In addition, we do not know if the health system was able to respond to this increased demand for abortions during the period. As abortions are legally permitted in Nigeria only to save a woman's life, it is possible that this increased demand for abortion procedures and medication was met by informal health service providers<sup>25</sup> or was self-managed.<sup>13</sup> Informal providers may provide misinformation about the medication, its administration, and its possible side-effects,<sup>25</sup> putting the health of women at risk.

Our analysis also underscores the potential of Google Trends to provide insights related to women's sexual and reproductive health and rights (SRHR). This approach can easily be replicated with a focus on other countries. This could be particularly useful during situations like the present pandemic in which in-person data collection is challenging. Comparison of Google Trends data with survey data on availability of services and health facilities in sub-regions can also generate insights on demand-supply gaps.

These findings call for further research to understand the patterns of SRHR behaviors and need for services during the COVID-19 pandemic across national settings. Such an understanding can help shape policies that meet the SRHR needs of women, particularly in times of crisis.

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*The code for the analysis can be found here:*

<https://github.com/akdey01/Nigeria-srhr-google-trends>