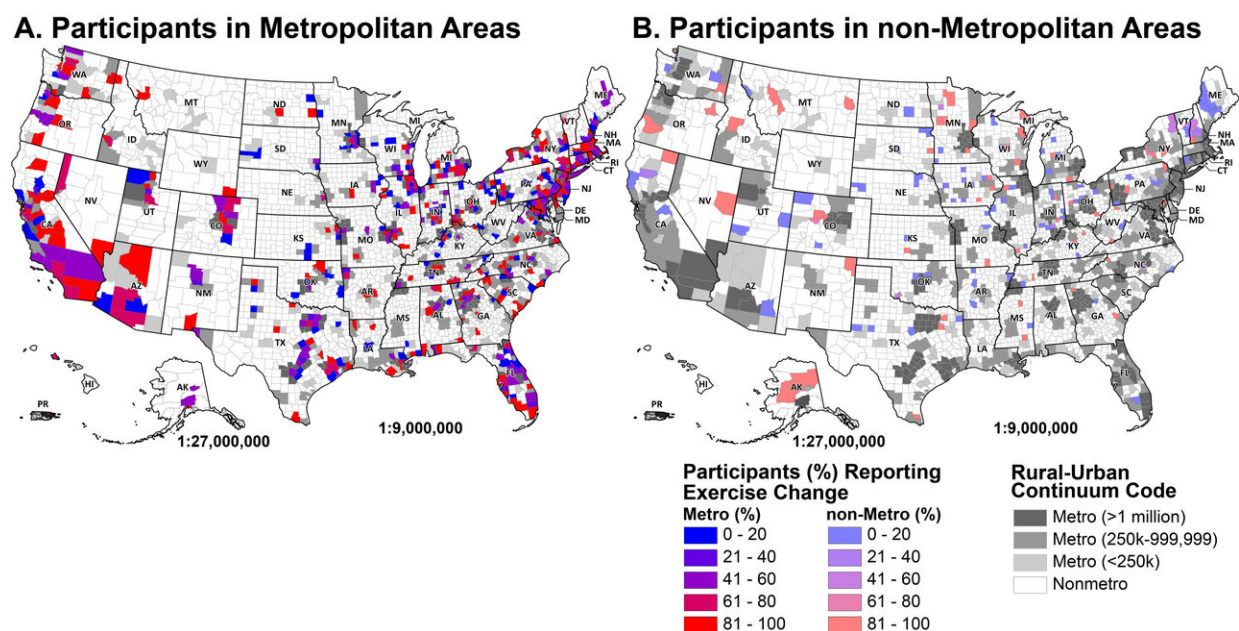


Pregnant women whose exercise routines disrupted by COVID-19 show higher depression scores

December 21 2020



U.S. maps of participants by percentage reporting exercise change in metropolitan versus non-metropolitan areas. Credit: Elise J. Laugier.

The COVID-19 pandemic has disrupted daily life, including many people's ability to exercise, which can boost mood, reduce stress and benefit one's physical and mental health. A Dartmouth study finds that pregnant women whose exercise routines were impacted by the pandemic have higher depression scores than those who have continued

to exercise as usual. The study, whose findings are published in *PLOS ONE*, is among the first to examine the links between COVID-19, exercise changes and prenatal depression.

Given the physiological changes that [pregnant women](#) experience, they are at a higher risk for [depression](#) than the public. The research team set out to find out if pregnant women's [exercise](#) routines had changed due to the pandemic, if disruptions were linked to depression and how this affect may vary between women living in metropolitan versus non-metropolitan areas.

The study was based on data from the [COVID-19 and Reproductive Effects \(CARE\) Study](#) for which more than 1,850 pregnant women were surveyed online from April to June 2020, on how COVID-19 had affected their prenatal and post-partum well-being and healthcare. Pregnant women from all 50 U.S. states and Puerto Rico took part in the study. At the time that the survey was conducted, 92 percent of participants indicated that stay-at-home orders were in effect.

Participants were asked questions about their geographic location (i.e. where they lived, based on their zip code) and if their exercise routine had changed at all during the COVID-19 pandemic, as well as the number of days per week that they had engaged in moderate exercise for at least 30 minutes. They were screened for depression symptoms using the Edinburgh Postnatal Depression Survey (EPDS), which has long been considered the gold standard for measuring prenatal and post-partum depression. Participants were asked to respond to prompts on how they had been feeling in the past seven days, such as if they had been so unhappy that they had been crying, and to indicate the frequency in which they felt that way, ranging from "yes, most of the time" to "no, not at all." Participant characteristics associated with depression risk and exercise patterns were also collected, including age, current gestational week, race/ethnicity, household income, education level, if financial

stress had been caused by the pandemic, and whether the pregnancy was classified as high-risk. The researchers were then able to assess whether exercise routine change is associated with a depression score independent of these other important factors.

"Our results demonstrate that the COVID-19 pandemic may exacerbate the elevated risk that pregnant women have for prenatal depression," explains lead author Theresa Gildner, a research associate and the Robert A. 1925 and Catherine L. McKennan postdoctoral fellow in anthropology at Dartmouth. "Moderate exercise has been shown to decrease depression risk in pregnant women, so disruptions to exercise routines may lead to worse [mental health](#) outcomes."

On average, study participants were 31 years old and 26 weeks pregnant. Most women were physically active: 56 percent reported that they engaged in moderate exercise at least three times a week. The average Edinburgh Postnatal Depression Survey score for participants was 10.6. EPDS depression scores can range from zero to 30, and a score of 15 or higher indicates clinically significant depression.

Forty-seven percent of the pregnant women in the study indicated that they were exercising less during the pandemic, while nine percent indicated that they were exercising more.

Pregnant women who reported changes to their exercise routines exhibited significantly higher depression scores compared to women reporting no exercise change. In addition, women living in metropolitan areas of all sizes were more likely to experience exercise changes. Pregnant women in metropolitan areas were twice as likely to say that their exercise routines had changed than women living in non-metropolitan areas. These results coincide with the COVID-19 related stay-at-home orders and the shuttering of businesses this past spring. With many fitness and recreational centers closed, and no space to work

out at home, exercise routines for many pregnant women in [metropolitan areas](#) were upended. Pregnant women living in densely populated areas versus rural areas also may have been more reluctant to go outside for a walk, due to concerns of becoming infected with COVID-19.

Women who were financially stressed had higher depression scores. The majority of pregnant women in the study were white and had high levels of education and household income; yet, over 57 percent indicated that they were worried about finances due to the pandemic, illustrating that financial stress from COVID-19 transcends economic lines.

Older women and wealthier women however, had lower depression scores, demonstrating how age and wealth can have a mediating effect.

"With the COVID-19 pandemic disrupting exercise regimens, our study shows that pregnant [women](#) were not just missing going to CrossFit or yoga," explained co-author Zaneta M. Thayer, an assistant professor of anthropology at Dartmouth. "It's not just that exercise gives you endorphins but participants indicated that they were also missing that social connection that you get from having other people around you. Prior research has shown the mental health benefits of connecting with others," added Thayer.

"In the U.S., the prolonged nature of shelter-in-place orders and current uptick of COVID-19 cases in many parts of the country are likely to continue affecting one's ability to exercise, for months to come," said Gildner.

As the researchers explain, maternal healthcare providers and professionals should consider asking patients if their [exercise routines](#) have changed during the COVID-19 [pandemic](#), as this information could be potentially used to help identify those who may be at a higher risk for maternal depression.

The research team has created a list of [free resources](#) on COVID-19, pregnancy and self-care- including information on mental health, financial stress and free prenatal yoga— and has shared these resources with survey participants.

The study on COVID-19, exercise changes and prenatal depression is the second on maternal depression to be published by Gildner and Thayer, and is part of a broader series of studies using CARE data. Earlier, they published a CARE study on COVID-19, financial stress and depression among [pregnant women](#), and they are currently analyzing post-partum data.

More information: *PLOS ONE* (2020). journals.plos.org/plosone/article?id=10.1371/journal.pone.0243188

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