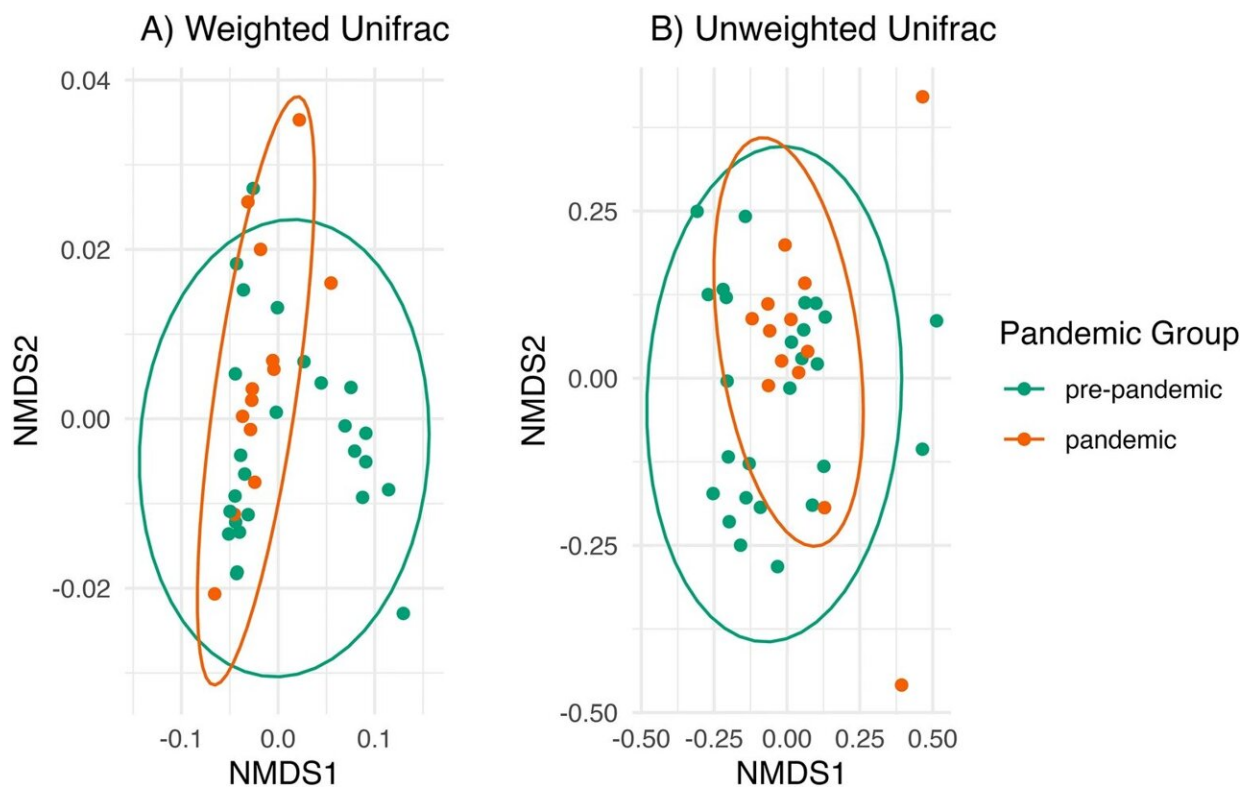


Pandemic may have changed the gut bacteria of infants, research finds

August 31 2023, by Jade McClain



Beta diversity by pandemic group. (A) Pandemic group had significantly different gut microbial richness measured with Unweighted Unifrac distance, which can be seen in that the pre-pandemic samples (N = 24; green) are more spread out along the x-axis (NMDS1) than the pandemic samples (N = 13; orange). (B) Pandemic groups violate homogeneity of dispersion using weighted Unifrac distance: the pandemic samples are less dispersed (more tightly packed together) than the pre-pandemic samples. Each dot represents a participant; the closer the dots are to each other, the more similar their microbial communities. There are N = 13 pandemic samples and 24 pre-pandemic samples as beta

diversity analyses were performed on the subsample with complete data on all covariates. Ellipses for each pandemic group are based on the 95% confidence level for a multivariate *t*-distribution. Credit: *Scientific Reports* (2023). DOI: 10.1038/s41598-023-40102-y

Infants who spent most of their first year in the pandemic have fewer types of bacteria in their gut than infants born earlier, according to a team of developmental psychology researchers.

The findings, published in *Scientific Reports*, showed that infants whose [gut microbes](#) were sampled during the pandemic had lower alpha diversity of the gut microbiome, meaning that there were fewer species of bacteria in the gut. The infants had a lower abundance of Pasteurellaceae and Haemophilus—bacteria that live within humans and can cause various infections—and significantly different beta diversity, which tells us how similar or dissimilar the gut microbiome for two groups may be.

The authors indicate in their article that the differences may have been influenced "by the [social changes](#) caused by the COVID-19 pandemic, with infants potentially experiencing more time at home, less time in daycare interacting with other children, increased hygiene in the environment, changes to diet and breastfeeding practices, and increased caregiver stress..."

"The COVID-19 pandemic provides a rare natural experiment to help us better understand how the social environment shapes the infant gut microbiome, and this study contributes to a growing field of research about how changes to an infant's social environment might be associated with changes to the gut microbiome," says Sarah C. Vogel, the article's co-lead author and recent doctoral graduate from NYU Steinhardt's

Developmental Psychology program.

For their study, the authors compared stool samples of two socioeconomically and racially diverse group of 12-month-olds living in New York City that were provided before the pandemic (34 infants) and between March and December of 2020 (20 [infants](#)).

The authors say that while speculating on the health implications of gut microbiome differences should be done with caution, gut diversity has been linked to [health outcomes](#) across the lifespan.

"In adults we know that lower diversity of the microbiota species in the gut has been linked to poorer physical and [mental health](#)," says Natalie Brito, senior author and associate professor at NYU Steinhardt. "But more research is needed on the development of the [gut microbiome](#) during infancy and how the early caregiving environment can shape those connections."

More information: Francesca R. Querdasi et al, A comparison of the infant gut microbiome before versus after the start of the covid-19 pandemic, *Scientific Reports* (2023). [DOI: 10.1038/s41598-023-40102-y](https://doi.org/10.1038/s41598-023-40102-y)

Provided by New York University

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