

From the National Perinatal Information Center: Impact of COVID-19 on Prematurity: Exploration of Premature Birth and COVID Status within the NPIC Perinatal Database

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The National Perinatal Information Center (NPIC) is driven by data, collaboration and research to strengthen, connect and empower our shared purpose of improving patient care.

For over 30 years, NPIC has worked with hospitals, public and private entities, patient safety organizations, insurers and researchers to collect and interpret the data that drives better outcomes for mothers and newborns.



“On February 11, 2020, the World Health Organization (WHO) officially named the novel coronavirus COVID-19, and one month later, on March 11, 2020, the WHO declared COVID-19 a global pandemic (3). Infectious disease outbreaks and pregnancy create unique and significant challenges to public health strategies.”

SARS-CoV-2 is the seventh coronavirus known to infect humans and cause a significant disease burden (1). The first case of COVID-19 in the United States was reported on January 20, 2020, in Snohomish County, Washington (2). On February 11, 2020, the World Health Organization (WHO) officially named the novel coronavirus COVID-19, and one month later, on March 11, 2020, the WHO declared COVID-19 a global pandemic (3). Infectious

disease outbreaks and pregnancy create unique and significant challenges to public health strategies.

This NPIC Perinatal Database exploration reviewed deliveries during the reporting period April 1, 2020 – March 31, 2021, for COVID-19 infection impact. Beginning in April 2020, The Centers for Disease Control (CDC) had issued several iterations of coding and diagnostic criteria for COVID documentation (<https://www.cdc.gov/nchs/data/icd/COVID-19-guidelines-final.pdf>) that NPIC has been utilizing for determination of inclusion for documented cases.

“Early in the pandemic, case reports and state surveillance described increasing preterm birth rates among patients with confirmed COVID-19 diagnosis in 2020(4-7). Reports have described both unchanged as well as increased preterm birth rates; however, these reports do continue to describe disparities in outcomes related to race and ethnicity.”

Early in the pandemic, case reports and state surveillance described increasing preterm birth rates among patients with confirmed COVID-19 diagnosis in 2020(4-7). Reports have described both unchanged as well as increased preterm birth rates; however, these reports do continue to describe disparities in outcomes related to race and ethnicity. This exploration utilizes the gestational age included in the mother’s chart at the time of delivery. Table 1 provides an overview of maternal gestational age by race and ethnicity by COVID status within the NPIC Perinatal Database. The NPIC COVID Database included 308,977 deliveries, of which 7,105 were coded with a positive COVID-19 diagnosis (2.3%), and 301,872 with no positive COVID-19 diagnosis code (97.7%).

Notable observations:

American Indian/Alaska Native:

- Extremely preterm: 4.4% COVID-19 vs 1.0% non-COVID-19
- Very preterm: 6.7% COVID-19 vs 1.1% non-COVID-19

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National Perinatal Information Center

04/01/2020 – 03/31/2021

n = 308,977

Gestational Age by Race/Ethnicity and COVID Status Deliveries

	Race							Ethnicity		
	AI/AN	Asian	Black	Other	PI	Unknown	White	Hispanic	Non-Hispanic	Other Ethnicity
COVID (n = 7,105)										
Extremely Preterm	4.4%	1.2%	0.9%	0.8%	0.0%	0.9%	0.4%	0.6%	0.8%	0.0%
Very Preterm	6.7%	1.2%	2.5%	0.9%	0.0%	0.9%	1.6%	1.0%	1.9%	2.6%
Moderate or Late Preterm	11.1%	10.9%	15.6%	11.1%	5.7%	11.4%	9.2%	10.8%	11.6%	10.4%
Term	77.8%	86.7%	81.0%	87.2%	94.3%	86.7%	88.8%	87.7%	85.7%	87.0%
Non-COVID (n = 301,872)										
Extremely Preterm	1.0%	0.3%	1.3%	0.5%	0.2%	0.5%	0.4%	0.4%	0.7%	0.6%
Very Preterm	1.1%	0.5%	1.6%	0.8%	0.7%	0.8%	0.7%	0.7%	1.0%	0.7%
Moderate or Late Preterm	11.5%	6.3%	11.1%	7.8%	6.5%	8.3%	7.9%	7.7%	8.8%	6.4%
Term	86.5%	92.9%	86.0%	90.8%	92.6%	90.4%	91.0%	91.2%	89.6%	92.3%

AI/AN: American Indian/Alaska Native
PI: Pacific Islander

Table 1. Maternal Gestational Age by Race/Ethnicity and COVID Status

Asian:

- Extremely preterm: 1.2% COVID-19 vs 0.3% non-COVID-19
- Very preterm: 1.2% COVID-19 vs 0.5% non-COVID-19

Discussion:

“Outcome disparities in maternal and neonatal health continue to resonate within the literature and data analyses; however, there is still evolving information and research surrounding SARS-CoV-2, COVID-19, and its impact on preterm birth.”

Outcome disparities in maternal and neonatal health continue to resonate within the literature and data analyses; however, there is still evolving information and research surrounding SARS-CoV-2, COVID-19, and its impact on preterm birth. Janevic, Glazer & Vieira (8) found no evidence for increased racial/ethnic disparities in preterm birth in New York City among women who tested positive or tested negative for SARS-CoV-2. A large cohort study in California found similar outcomes to the NPIC Perinatal Da-

tabase, including the highest rates of prematurity in American Indian/Alaska Native women (9), which provides additional support to highlight disparities among indigenous populations in the United States within COVID-19. Several publications describe a potentially “protective” element of quarantine due to job loss and reduced stressors associated with job and social responsibilities, which may have reduced the overall preterm birth rate (10-11).

While studies and data continue to be inconsistent within the sphere of preterm birth and COVID-19, providers and clinicians need to understand the rates and impacts of preterm birth within the communities they serve. While regional reports may highlight minimal differences in disparities or reductions in preterm birth during the pandemic, recognizing local impacts and trends continue to drive conversations surrounding the need for education, prevention, and treatment of those communities most impacted by preterm birth. Identification, recognition, and mitigation of social determinants of health (SDOH) is an essential element of care during and after hospitalization for mothers, babies, and families.

The National Perinatal Information Center was invited by the Department of Health and Human Services to participate in the inaugural White House Maternal Health Day of Action on December 7, 2021. NPIC has committed to partnering with organizations across the United States to amplify the urgency for accurate race and ethnicity reporting and to promote stratification of critical maternal and neonatal outcome metrics by race and ethnicity to support health equity initiatives. COVID-19 is one of many strategic initiatives connecting healthcare organizations and communities to their collective purpose.

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References:

1. Andersen KG, Rambaut A, Lipkin WI, Holmes EC, Garry RF. The proximal origin of SARS-CoV-2. *Nature Medicine*. 2020;26(4):450-452. doi:10.1038/s41591-020-0820-9
2. Holshue ML, DeBolt C, Lindquist S, et al. First Case of 2019 Novel Coronavirus in the United States. *New England Journal of Medicine*. 2020;382(10):929-936. doi:10.1056/NEJ-Moa2001191
3. World Health Organization. (2021). <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen>
4. Woodworth KR. Birth and Infant Outcomes Following Laboratory-Confirmed SARS-CoV-2 Infection in Pregnancy — SET-NET, 16 Jurisdictions, March 29–October 14, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69. doi:10.15585/mmwr.mm6944e2
5. Chinn J, Sedighim S, Kirby KA, et al. Characteristics and Outcomes of Women With COVID-19 Giving Birth at US Academic Centers During the COVID-19 Pandemic. *JAMA Network Open*. 2021;4(8):e2120456. doi:10.1001/jamanetworkopen.2021.20456
6. Matar R, Alrahmani L, Monzer N, et al. Clinical Presentation and Outcomes of Pregnant Women With Coronavirus Disease 2019: A Systematic Review and Meta-analysis. *Clinical Infectious Diseases*. 2021;72(3):521-533. doi:10.1093/cid/ciaa828
7. Mimouni F, Lakshminrusimha S, Pearlman SA, Raju T, Gallagher PG, Mendlovic J. Perinatal aspects on the covid-19 pandemic: a practical resource for perinatal–neonatal specialists. *Journal of Perinatology*. 2020;40(5):820-826. doi:10.1038/s41372-020-0665-6
8. Janevic, T., Glazer, K. B., Vieira, L., Weber, E., Stone, J., Stern, T., Bianco, A., Wagner, B., Dolan, S. M., & Howell, E. A. (2021). Racial/Ethnic Disparities in Very Preterm Birth and Preterm Birth Before and During the COVID-19 Pandemic. *JAMA Network Open*, 4(3), e211816. <https://doi.org/10.1001/jamanetworkopen.2021.1816>
9. Karasek, D., Baer, R. J., McLemore, M. R., Bell, A. J., Blebu, B. E., Casey, J. A., Coleman-Phox, K., Costello, J. M., Felder, J. N., Flowers, E., Fuchs, J. D., Gomez, A. M., Kar-

10. vonen, K., Kuppermann, M., Liang, L., McKenzie-Sampson, S., McCulloch, C. E., Oltman, S. P., Pantell, M. S., ... Jelliffe-Pawlowski, L. L. (2021). The association of COVID-19 infection in pregnancy with preterm birth: A retrospective cohort study in California. *The Lancet Regional Health - Americas*, 2, 100027. <https://doi.org/10.1016/j.lana.2021.100027>
11. Fisher, S. A., Sakowicz, A., Barnard, C., Kidder, S., & Miller, E. S. (2022). Neighborhood deprivation and preterm delivery during the coronavirus 2019 pandemic. *American Journal of Obstetrics & Gynecology MFM*, 4(1), 100493. <https://doi.org/10.1016/j.ajogmf.2021.100493>
12. Jay, J., Bor, J., Nsoesie, E. O., Lipson, S. K., Jones, D. K., Galea, S., & Raifman, J. (2020). Neighbourhood income and physical distancing during the COVID-19 pandemic in the United States. *Nature Human Behaviour*, 4(12), 1294–1302. <https://doi.org/10.1038/s41562-020-00998-2>

The author has no conflicts of interests to disclose.

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