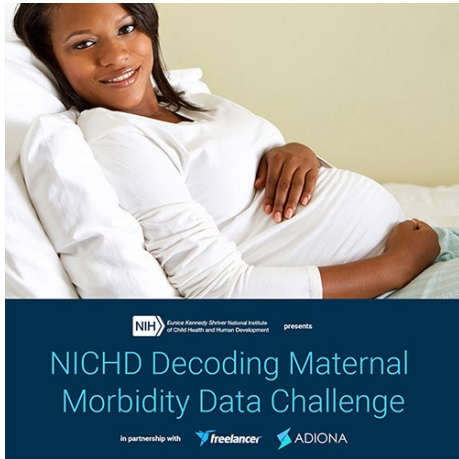


Decoding Maternal Morbidity Data Challenge

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Overview



In 2021, NICHD launched the Decoding Maternal Morbidity Data Challenge to help advance research on maternal health and promote healthy pregnancies. The goal of the challenge was to devise new ways of analyzing data from NICHD's [Nulliparous Pregnancy Outcomes Study: Monitoring Mothers-to-be \(nuMoM2b\)](#) to identify factors that impact maternal morbidity and severe maternal morbidity so that clinicians can more quickly and accurately identify and treat pregnancy-related conditions and prevent severe illness or

death for a pregnant woman. Twelve prizes totaling \$400,000 were awarded to seven proposals.

Topic Areas

The goal of the challenge is not to replicate prior findings but to focus on new discoveries using the nuMoM2b data. Potential areas for exploration include prescription drug use, diet, the quality of healthcare including health provider, insurance or access to healthcare, risk factors for adverse outcomes, and the intersection of multiple factors.

Because maternal mortality and maternal morbidity adversely impact disadvantaged racial and ethnic minorities at a much higher rate than other groups, additional credit was given to solutions addressing these communities.

Seven prizes of \$50,000 were awarded for innovation, and an additional five prizes of \$10,000 were awarded for health disparities. The following are winning teams/individuals (in alphabetical order); asterisks denote winners of both prize categories:

Columbia University and Hunter College, New York City

On Predicting and Understanding Preeclampsia: A Machine Learning Approach

Ansaf Salieb-Aouissi, Ph.D., *Team Lead* (Columbia)

Adam Catto (Hunter)

Andrea Clark-Sevilla (Columbia)

Alisa Leshchenko (Hunter)

Adam Lin (Columbia)

Daniel Mallia (Hunter)

Itsik Pe'er (Columbia)

Anita Raja (Hunter)

Ron Wapner (Columbia)

Qi Yan (Columbia)

Delfina, San Francisco*

Random Forests for Accurate Prediction of the Risk of Hypertensive Disorders of Pregnancy at Term

Ali Ebrahim, Ph.D., *Team Lead*

Anna Buford

Senan Ebrahim

Adesh Kadambi

Timothy Wen

Emory University, Atlanta*

Social Determinants of Health Phenotype Predicts Unplanned Cesarean Birth in the Path to Maternal Morbidity Among Healthy Participants of the NuMoM2b Study

Nicole Carlson, Ph.D., *Team Lead*

Elise Erickson

Feng Ya, LLC, Watkinsville, Georgia

A Fair Diagnosis Proposal of Maternal Morbidity with a Demonstrative Example in Predicting Stillbirths

Yaping Li, *Team Lead*

Yueying Wang

Zhao Wang

Ruochi Zhang

IBM Data Science and AI Elite, San Francisco*

Tracking Changes in Health Metrics Between Visits to Model Adverse Pregnancy Outcomes Among Nulliparous Women

Ainesh Pandey, *Team Lead*
Demian Gass
Gabriel Gilling
Andre Violante

Johnston and Company, LLC, Salt Lake City*

The Relationship Between Marginalizing Behaviors and Postpartum Complications for Nulliparous Women Receiving an Undesired C-section

Britnee Johnston

University of Washington, Seattle*

Structural Equation Model Identifies Causal Pathways Between Social Determinants of Maternal Health, Biomarkers of Allostatic Load, and Hypertensive Disorders of Pregnancy Among U.S. Racial Groups

Monica Keith, Ph.D., *Team Lead*
Melanie Martin

More Information

- [NICHD Decoding Maternal Morbidity Data Challenge Winners' Webinar](#)
- [News Release: NIH data challenge seeks innovative methods for identifying complication risks in first-time pregnancies](#)
- [News Release: NIH announces winners of data challenge to identify risk factors for first-time pregnancies](#)
- Archive of the challenge is available at: <https://www.challenge.gov/?challenge=decoding-maternal-morbidity-data-challenge>
- [Roster of data challenge judges](#) (PDF 169 KB)
- NICHD Contact: [Monica Longo](#)