



Understanding maternal health outcomes



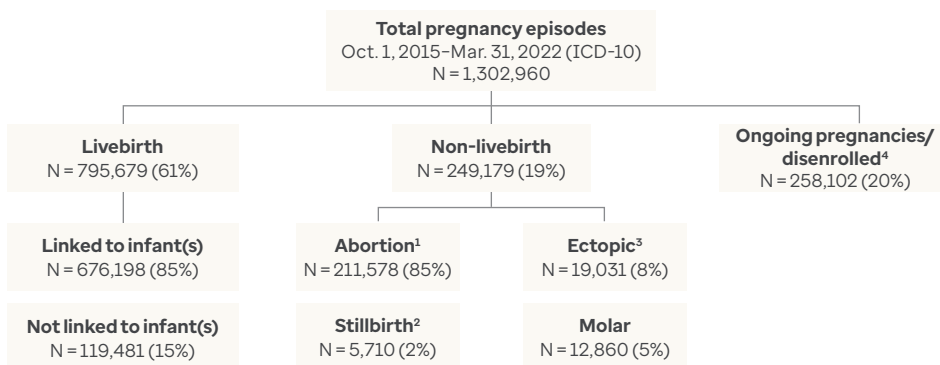
Studying the impact of treatments on pregnancy and infants can help patients, providers, regulatory agencies and pharmaceutical companies make key decisions.

The Optum® Dynamic Assessment of Pregnancies and Infants (DAPI) links women and their infants' health data to answer questions about maternal health, allowing researchers to link women's exposures to infants in utero to pregnancy and infant health outcomes.

Seminal publication

Bertoia ML, Phiri K, Clifford CR, Doherty M, Zhou L, Wang LT, Bertoia NA, Wang FT, Seeger JD. Identification of pregnancies and infants within a United States commercial healthcare administrative claims database. *Pharmacoepidemiol Drug Saf.* 2022 Aug;31(8):863-874.

ICD-10 era



Abbreviations: ICD-10, International Classification of Diseases, 10th revision.
An additional 735,839 pregnancies from ICD-9 era (Jan 1, 2007–Sept 30, 2015) are available.

1. Includes spontaneous, therapeutic and unknown type
2. Includes multi-gestation with a livebirth and stillbirth
3. Includes ectopic and molar
4. A small percentage had unknown outcome

DAPI uses the power of Optum data to satisfy FDA and EMA regulatory PASS requirements.

2M+

observed pregnancies, with approximately 200,000 added per year

- Includes live births and pregnancy losses

2007 to present

15 years of data

6x per year

data are refreshed frequently

Linked data

- Linked woman-infant data
- Linkage to medical records, National Death Index, electronic health records, etc.

Pregnancy attributes

Optum has the potential to link select women identified in claims data to their rich electronic health records (EHR). Variables of interest include the following:

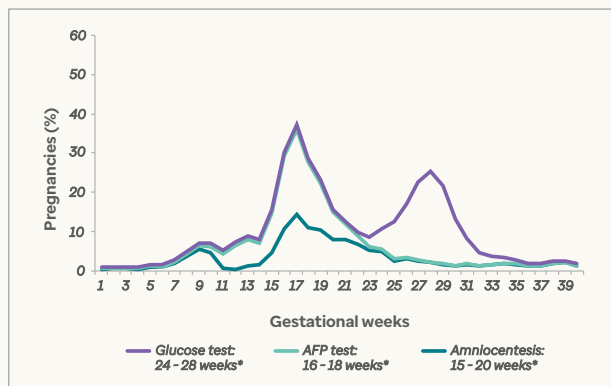
- Demographics
- Maternal comorbidities
- Pregnancy detail: estimated last menstrual period (LMP), pregnancy trimester, fetal testing⁵
- Pregnancy and infant health care utilization: physician visits, prescription dispensing
- Pregnancy outcomes: live birth, abortion, stillbirth, etc.
- Infant outcomes: major congenital malformations, small for gestational age, low birth weight, etc.
- BMI, weight, height*
- Blood pressure and heart rate*
- APGAR scores*
- Medication prescriptions and dispensings
- Glucose/A1c results and dates
- Pregnancy test dates and results
- Smoking, alcohol, substance abuse variables
- Ultrasound measurements and dates
- Obstetric history: gravida/para

* These variables are available in the EHR data only.

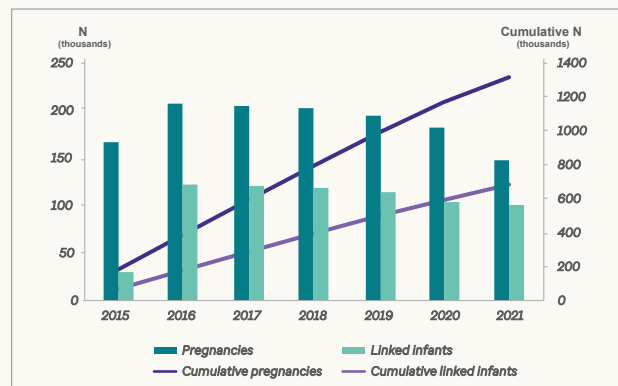
Medical records for outcome confirmation

Optum can seek medical records for select women and infants in claims data. This allows confirmation of pregnancy and infant outcomes that are initially identified from the claims, an essential element for pregnancy post-authorization safety studies (PASS).

Timing of prenatal testing by gestational week⁶



Linked mother and infant health data



*Expected schedule for prenatal test

Abbreviations: AFP, alpha-fetoprotein.

Note: To create the figure for each prenatal test, only pregnancies with at least one claim for the test were included. For each gestational week, the total number of pregnancies with a claim for the test was divided by the total number of pregnancies observed in that gestational week.

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5. Phiri K, Robin Clifford C, Doherty M, Fan Y, Wang F, Seeger J. Timing of Routine Prenatal Screening Tests Relative to the Last Menstrual Period Estimated from an ICD-10 Based Algorithm. Poster presented at: 35th International Conference on Pharmacoepidemiology and Therapeutic Risk Management (ICPE); 2019 Aug 24-28; Philadelphia, PA.

6. Chomistek AK, Phiri K, Calderbank JF, Doherty MC, Chiuve SE, McIlroy BH, Snabes MC, Enger C, Seeger JD. Validity of ICD-10 Z3A codes for estimating date of last menstrual period. PDS 2021. 30 (1):1-462. Oral presentation at the 37th International Conference on Pharmacoepidemiology and Therapeutic Risk Management, Virtual, August 23, 2021. <https://onlinelibrary.wiley.com/toc/10991557/2021/30/S1>



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