Risk Adjustment & O:E Ratios: A Primer

WHY RISK ADJUST?

Although NTSV birthing people are considered low-risk, there are still person-level factors that can impact the risk of cesarean birth within the NTSV population.

Adjusting for the risk profile of patients at your site allows the Obstetrics Initiative (OBI) to:

- More accurately assess your site's performance.
- Isolate variation due to things your site may be able to change (i.e., clinical management).

HOW DOES OBI CALCULATE RISK-ADJUSTED CESAREAN RATES?

We use a statistical model where the outcome is cesarean birth, and the predictive factors include:

- Age
- Body Mass Index (BMI)
- Pre-pregnancy and gestational hypertension and diabetes
- Substance use during pregnancy
- Estimated gestational age
- Social vulnerability (based on zip code)

Based on the model and the risk profile of birthing people at your site, we generate an expected (risk-adjusted) cesarean rate for your site.

HOW DOES OBI USE RISK-ADJUSTED CESAREAN RATES?

OBI uses expected cesarean rates to create O:E ratios for our sites. The O:E ratio is a healthcare metric widely used in quality improvement and applied to NTSV cesarean to compare an observed rate to an expected rate. [1]

- **An O:E ratio < 1 indicates that your site is performing better than expected.**
- **An O:E ratio > 1 indicates that your site is performing worse than expected.**

O:E ratios are one of many tools OBI uses to assess performance, along with observed cesarean rates and balancing measures (severe maternal and neonatal morbidity). The OBI Coordinating Center can help your site understand the implications of your O:E ratio.

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[1] Pasko DN, et al. Obstet Gynecol. 2018;131(6):1039-1048. doi: 10.1097/AOG.0000000000002636. Howbert JJ, et al. *Am J Perinatol*. 2021;38(4):370-376. doi:10.1055/s-0039-1697590

OBSTETRICS INITIATIVE

O:E RATIO: A HOSPITAL CASE STUDY

Hospital A has a high observed cesarean rate. Clinicians at this hospital attribute that to a high-risk population of birthing people delivering there. However, incorporating an O:E ratio indicates that isn't the whole story:

Observed Cesarean Rate	**Number of Cesareans / Number Births** 33 Cesareans / 100 Births = 33%
Patient Case Mix	**Risk Factors** ↑ Age ↑ Gestational Diabetes **Protective Factors** ↓ Social Vulnerability ↓ Substance Use
Expected Cesarean Rate	**Based on Statistical Model** 28%
O:E Ratio	**Observed Rate / Expected Rate** 33 / 28 = 1.18

Hospital A's O:E ratio is greater than one. This tells us that Hospital A is performing **worse** than expected based solely on birthing persons' risk and that comorbidities alone cannot explain the high Cesarean rate.