Safely Lowering Cesarean Rates *With Quarto!!*

New York Date Science & AI Conference | August 26, 2025

Xilin Chen, MPH

Analytics Manager, the Obstetrics Initiative (OBI)

Blue Cross Blue Shield Blue Care Network of Michigan

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OBSTETRICS INITIATIVE

Disclosures

Support for OBI is provided by Blue Cross Blue Shield of Michigan and Blue Care Network as part of the BCBSM Value Partnerships program.

Although Blue Cross Blue Shield of Michigan and OBI work collaboratively, the opinions, beliefs, and viewpoints expressed by the author do not necessarily reflect the opinions, beliefs, and viewpoints of BCBSM or any of its employees.



Why Reduce the Cesarean Rate?



Cohort: Low-Risk Births



First Birth

+



≥37 weeks

+



Singleton baby

+



Head-down

Collecting Data



Data



>150,000 low risk births from over 70 Michigan hospitals



Over 400 variables are collected for each case



From Electronic Health Record system at each hospital

Building Reports



+



Interpretable

Standardized

Scalable

Interpretable

Visuals and Callout boxes

OBI Insights

- **Congratulations - your site does not need to avert any NTSV Cesareans to reach its expected rate!**
- **Consider using the Healthy People 2030 goal of 23.6% as your next target. Your site would need to avert 42 NTSV Cesareans to get there over a 12-month period.**
- Your site has >100 NTSV births per month. The Number Needed to Avert calculated by OBI only applies to the cases you abstract to OBI (i.e. the first 100 NTSV births each month)

Number Needed to Avert in 2025

			Number of Cases	
NTSV Cesarean rate[1]	2025 Expected Rate	O:E Ratio[2]	To Expected Rate	To Healthy People
28.2%	28.2%	0.97	0 per Year	42 per Year / 4 per Month

OBI Takeaway

- **Due to low response rates, the data presented in this report may not be representative of your patient population.**
- **Please review the data with caution and consider the limitations of the data when interpreting the results.**
- Responses with counts < 5 are not displayed in plots.

Your Site's Response Rate	# of PRO Responses / # Patients Contacted
	212 / 1962 = 10.81%



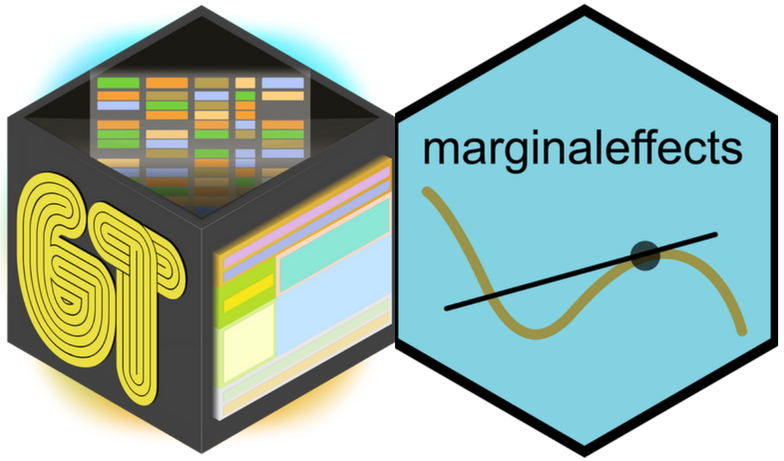
Target and Tracking

Number Needed to Avert in 2025		
		Number c
2025 Expected Rate	O:E Ratio[2]	To Expected Rate
25.1%	1.31	20 per Year / 2 per Month

NTSV Performance Monthly Results April 2025				
NNA*	Cesareans Averted**	Expected Rate	April 2025	Year-to-Date***
20	6	< 25.1%†	15.8% (3/19)	28.3% (26/92)

lme4

+



PDF Print

OBSTETRICS INITIATIVE

NTSV Performance Report

Sample Site

Published: April 2025

About this report

- This report is limited to Nulliparous, Term, Singleton, Vertex (NTSV) births
- This report contains Year 2024 cases abstracted within the OBI registry. The delivery date is between 01-01-2024 and 12-31-2024, unless otherwise specified.

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1. Expected Rate and Number Needed to Avert

OBI Insights

- **Congratulations - your site does not need to avert any NTSV Cesareans to reach its expected rate!**
- **Consider using the Healthy People 2030 goal of 23.6% as your next target. Your site would need to avert 30 NTSV Cesareans to get there over a 12-month period.**

Number Needed to Avert in 2025

			Number of Cases	
NTSV Cesarean rate[1]	2025 Expected Rate	O:E Ratio[2]	To Expected Rate	To Healthy People
27.1%	29.5%	0.99	0 per Year	30 per Year / 3 per Month

[1] Cesarean rate from 2024-Jan-01 to 2024-Dec-31

[2] O:E Ratio is based on data from 2024-Jan-01 to 2024-Sep-30

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Case Mix Adjustment - O:E Ratios

OBI Insights

- The O:E ratio is made up of your site's Observed cesarean rate and it's Expected rate. Expected rates are based on the medical and social complexity of the birthing people you serve.
- O:E ratios are one of many tools OBI uses to assess hospital performance. O:E ratios can be used along with Observed cesarean rates and balancing measures (e.g., severe maternal and neonatal morbidity) to holistically assess care quality and identify improvement opportunities.
- **Celebrate - your site's O:E ratio is less than one! You are performing better than we would expect based on the risk profile of birthing people that deliver at your site.**
- **Congratulations - your site does not need to avert any NTSV Cesareans to reach its expected rate!**
- **Consider using the Healthy People 2030 goal of 23.6% as your next target. Your site would need to avert 30 NTSV Cesareans to get there over a 12-month period.**

Observed Cesarean Rate	**Number Cesareans / Number Births** 113 Cesareans / 386 Births = 29.3%
Expected Cesarean Rate	**Based on Statistical Model** 29.5%
O:E Ratio	**Observed Rate / Expected Rate** 29.3 / 29.5 = 0.99
NNA^ per Year	**(Observed-Target Rate)*Births** **Expected Rate: 0 cases** **HealthyPeople Rate: 30 cases**

NNA^: Number Needed To Avert
Based on complete cases from the OBI registry 2024-01-01 to 2024-09-30

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Standardized

Style Once, Apply Everywhere




```css
h1.title {
  margin-top: 10px;
  text-align: center;
  color: #1e3668;
  font-family: Semplicita;
  font-size: 24px;
  font-family: Arial;
  margin-bottom: 0;
  margin-top:0;
  padding: 0
}

p.subtitle {
    color: #3277b0;
    text-align: center;
    font-size: 20px;
    font-family: Arial;
    margin-bottom: 0;
    margin-top:0px;
}
```




```yaml
---
title: |
  <h1 class="title">ENTER TITLE HERE
subtitle: ""
date: last-modified
author: "Obstetrics Initiative"
title-block-banner: "#d9acc3"
format:
  html:
    embed-resources: true
    toc: true
    toc-location: left
    number-sections: false
    css: reports/styles.css
editor: source
execute:
  echo: false
  warning: false
  error: false
---
```

Internal Package

obstinit

```
gt |> gt_obi()
```

Cesarean Rates at Your Site from Mar '24 to Feb '25 Target: 26.7%†											
Mar '24	Apr '24	May '24	Jun '24	Jul '24	Aug '24	Sep '24	Oct '24	Nov '24	Dec '24	Jan '25	Feb '25
17.6% (3/17)	12.5% (2/16)	18.8% (3/16)	33.3% (5/15)	26.3% (5/19)	22.2% (2/9)	35% (7/20)	30% (6/20)	7.7% (1/13)	19% (4/21)	25.9% (7/27)	29.2% (7/24)

```
plot |> theme_obi()
```



Includes all responses to the PRO survey received from 2023-08-30 to 2024-09-12

Scalable

Parameters

```yaml
subtitle: "`r params$select_site_name`"
params:
  select_site_name: "Sample Site"
```

```
walk(sites_name, render_report_pdf)
```



[params]





Pushing Out the Key Points



Use Quarto with R to build reports



Build internal packages



Parameterize your reports



Want PDF, print your html

Acknowledgement



Althea Bourdeau



Rebecca Wardrop



Jessica Yaser

Thank You!



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