

Classification, The Cesarean Decision

23RD November 2021

Question/Need

The number of cesarean section births has risen sharply in the USA since 1990 beyond rates advised by the WHO. The drivers of this increase in rate may be attributed to maternal age, increased number rates in the number of scheduled births, and some studies have described a phenomenon described as “obstetric culture”. This project aims to develop a classification model with US birth data from two periods of time 1985-1990, and 2014-2019. The model will leverage maternal anthropometric, health, and obstetric attributes to predict whether a birth would be a cesarean section birth or not and then compare the performance of the model during these two periods of time. The goal of this project is to better understand the drivers in the increased rate of cesarean section births and create an advising tool to aid in the cesarean decision for health systems and maternal preparedness.

Data Description

This project leverages the work of two key studies for guidance on attribute selection and model design:

- Rydahl, E., Declercq, E., Juhl, M., & Maimburg, R. D. (2019). Cesarean section on a rise-Does advanced maternal age explain the increase? A population register-based study. PloS one, 14(1), e0210655. <https://doi.org/10.1371/journal.pone.0210655>
- Tontus, H. O., & Nebioglu, S. (2020). Improving the Caesarean Decision by Robson Classification: A Population-Based Study by 5,323,500 Livebirth Data. Annals of Global Health, 86(1), 101. DOI: <http://doi.org/10.5334/aogh.2615>

Data Source

- CDC Vital Statistics Online Data Portal
https://www.cdc.gov/nchs/data_access/Vitalstatsonline.htm

TOOLS

1. Python will be used to clean, collate, and extract attributes from the data from two periods of time: 1985-1990, and 2014-2019.
2. Python and associated libraries will be used for baselining, execution of a validation and testing scheme, expanding and refining the model, and then finalization, and testing of the model.
3. Tableau public and google sheets will be used to visualize the resultant model and initial findings.

MVP GOALS

Capturing and summarizing the differences in population between the two time periods as related to the increased rate in cesarean section births serves as an effective minimum viable product as this will provide insights into the drivers in the increased rates in tandem with a description of the population.