Child stuntedness

An overview from Machine Learning

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[1]http://www.unicamp.br/unicamp/

Growth stunting

"Growth stunting is defined by comparing measurements of children's heights to the NCHS[2] growth reference population: children who fall below the fifth percentile of the reference population in height for age are defined as stunted. As an indicator of nutritional status, comparison of children's measurements with growth reference curves may be used differently for populations of children than for individual children. However, if substantially more than 5% of an identified child population have height for age that is less than the fifth percentile on the reference curve, then the population is said to have a higher-than-expected prevalence of stunting, and inadequate nutrition is generally the first cause considered."

[2] National Center for Health Statistics

Child malnutrition

Stunting trending

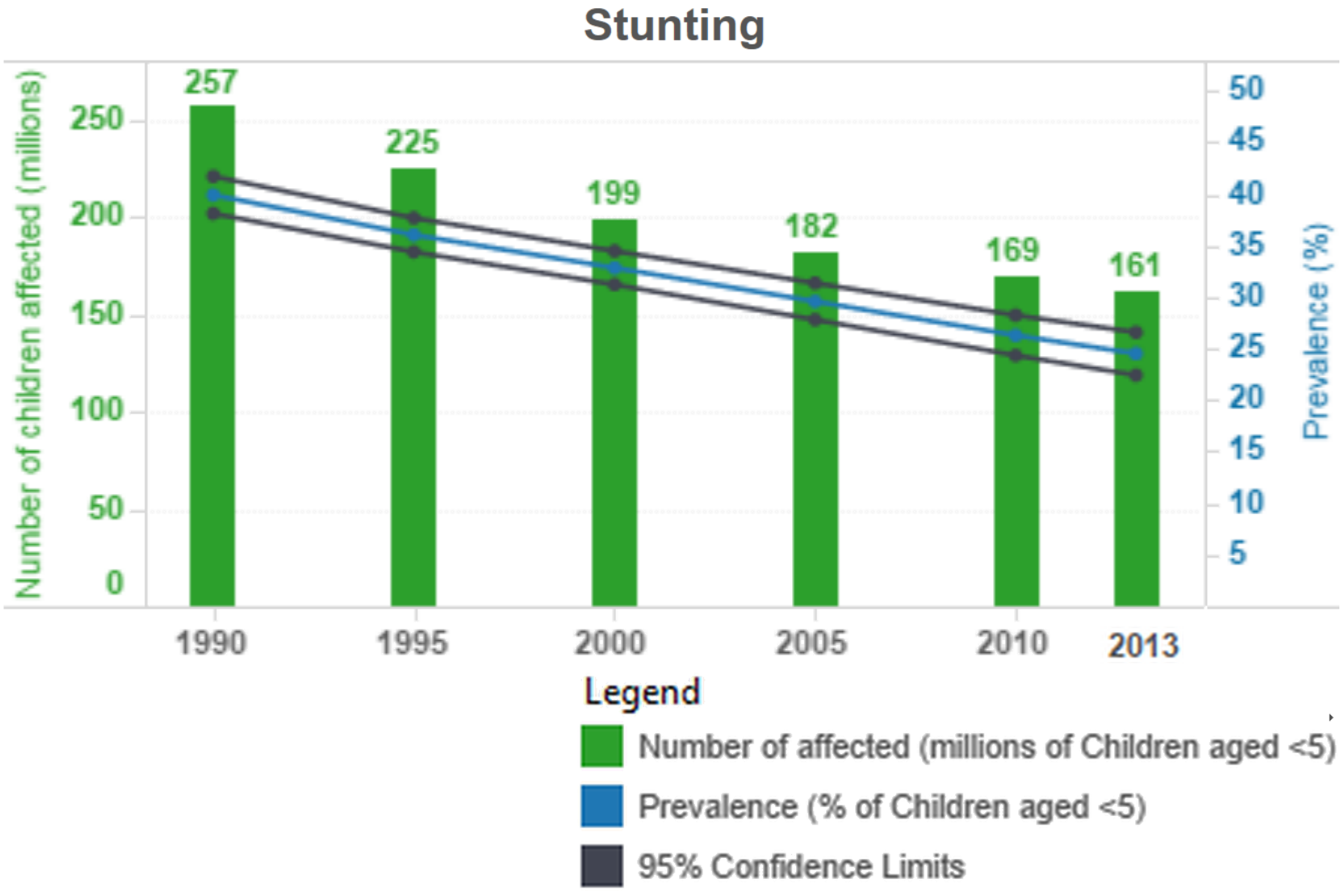

Figure: Child malnutriotion trend for stunting (According to Unicef).

Stunting around the world

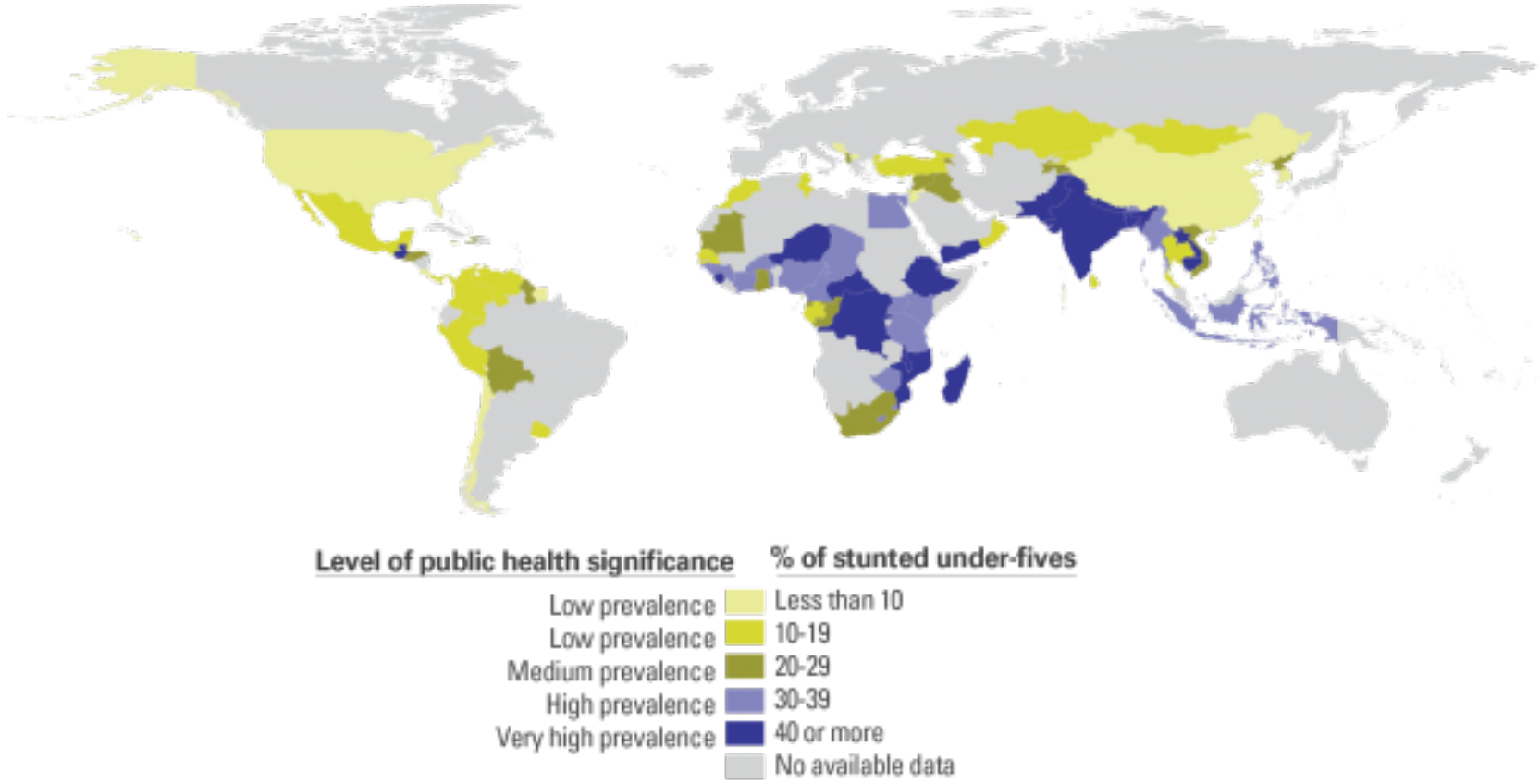

Figure: Undernutrition contributes to half of all deaths in children under 5 and is widespread in Asia and Africa Percentage of under-five children who are stunted, 2008 - 2013).

Problem statement

Using the statement described in [1], we have the goal to determine a combination of early measures that would be a good predictor for birth weight. In pursuit of this goal, we have collected time series data from ultrasounds on pregnant mothers. We would like you to use this data to predict a child's birth weight and birth date (days from pregnancy start).
For each fetus given sex, status, and multiple ultrasound measurements(columns 5-12) during the pregnancy (time being the variable t.ultsnd). The data from the repeated ultrasounds provides a small time series that can be used for predicting the birth weight and day.

Dataset

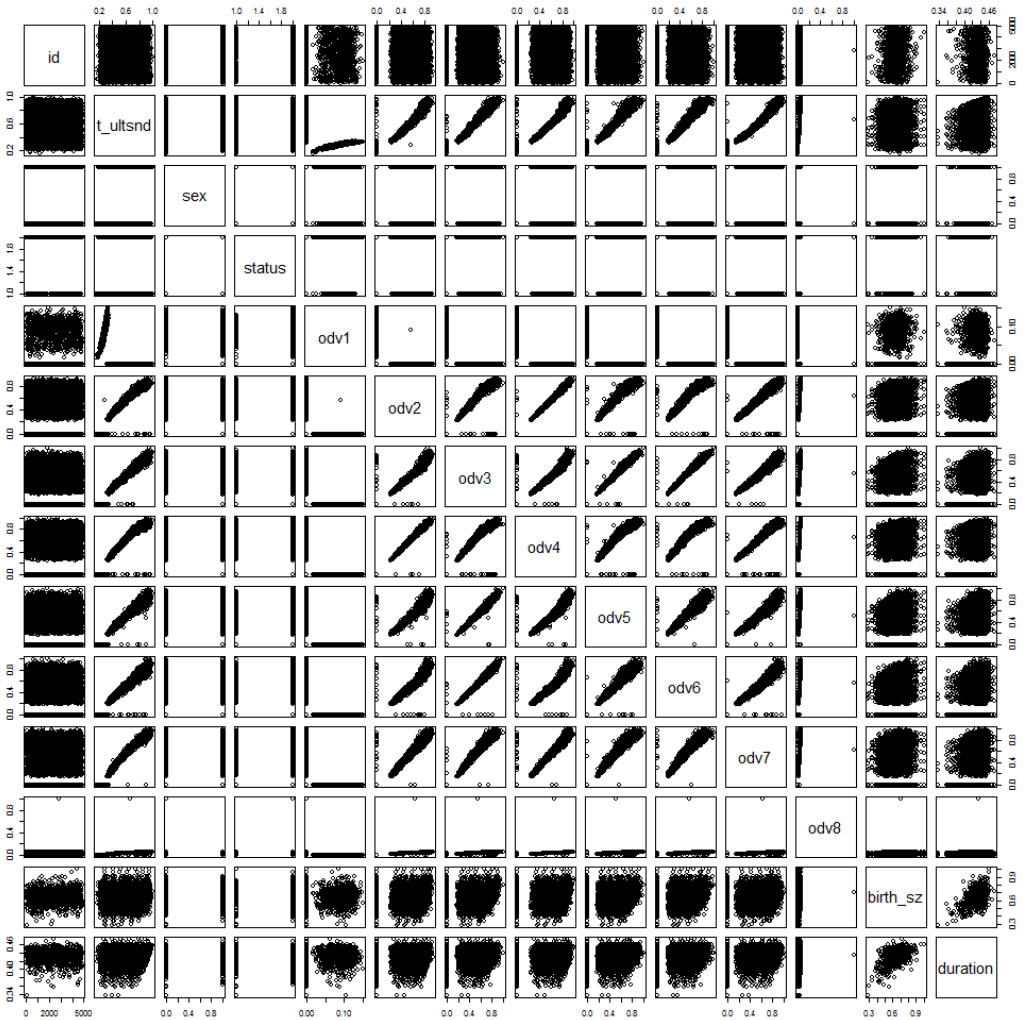

Figure: The whole dataset plotted.

Dataset

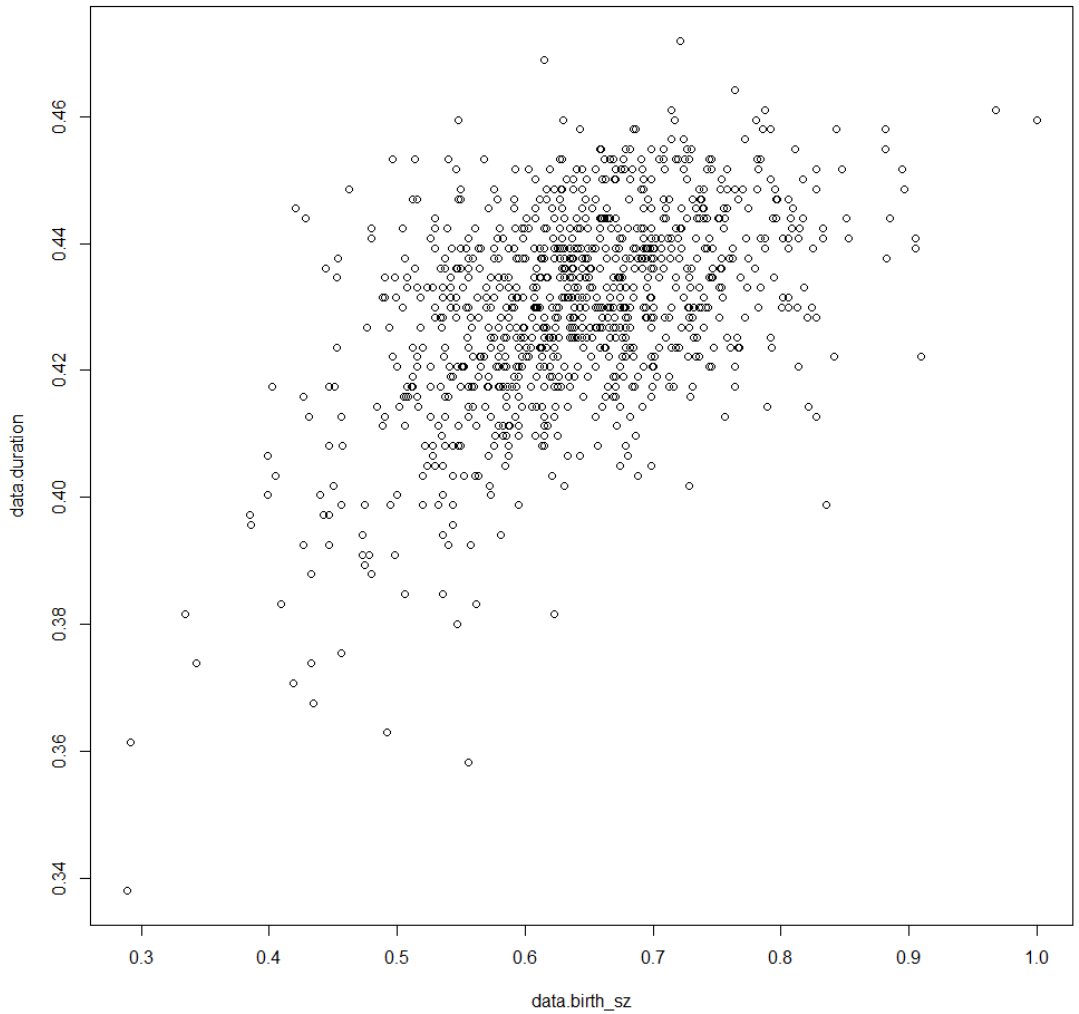

Figure: Birth vs Duration plot according the dataset.

Further studies

There's a lot of ways to understand the problem of stunting in child populations. The website Topcoder[3] recently released another two problems regarding this issue [4].
Some ways of understand of how to deal this problem permeates the ethnic differences, for instance.

[3] https://www.topcoder.com/

[4] http://community.topcoder.com/longcontest/?module=ViewProblemStatement&rd=16153&pm=13478 and https://www.topcoder.com/longcontest/?module=ViewProblemStatement&rd=16209&compid=45332

Further studies

This work clearly does not contain all the possibilities and variations that may occur in relation to the subject of malnutrition and stunting. The possibilities of dealing with this subject are diverse, so we propose the extrapolation to this discipline and continue the development of intelligent algorithms that can be in support of medical decisions to inform pregnant women about the nutrition of their children.

References