

# Identifying children at malnutrition and relapsing risk through ML models

Team 79

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## Background

Child malnutrition is defined as the deficiency in a child's intake of energy and/or nutrients. It increases the risk of contracting diseases and slows the physical and intellectual growth.

It affects

**22.0%** of children globally  
**10.8%** of children in Colombia

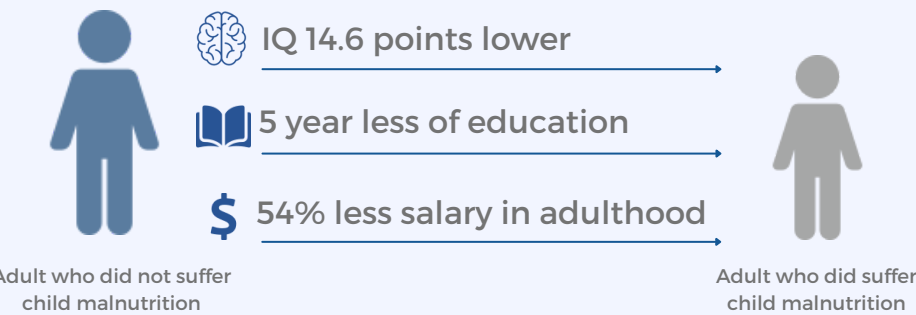
## Current Situation



Corrective measures: Programs “1000 días para un mundo mejor” and “Centros de recuperación nutricional”

Preventive measures: Bienestarina at ICBF households and distribution to vulnerable communities.

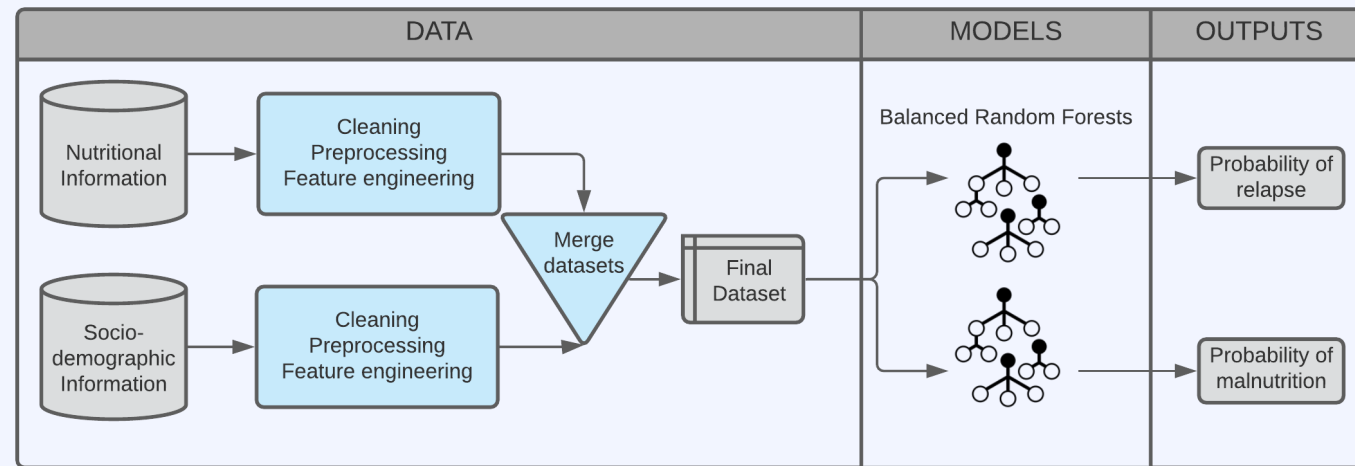
## Why does it matters to prevent malnutrition?



## Impact

Our novel data-driven approach seeks to provide insights into the physical and sociodemographic factors that can be helpful to identify children at risk of malnutrition or relapse. Our team developed two models to predict the probability of malnutrition or its relapse of a child within the next six months. This information can be used by the ICBF, to focus its resources on saving the lives of children whose malnutrition may threaten their integral development.

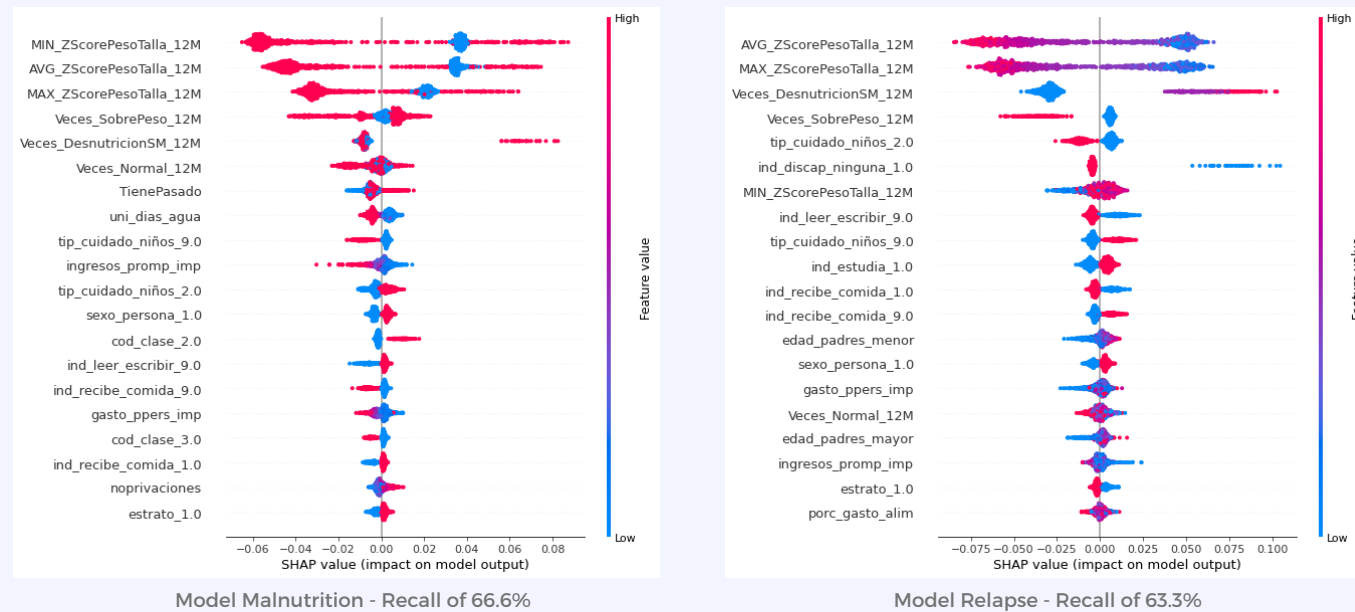
## Data Transformation



## Model

Since the aim is to prevent as many relapses and malnutritions as possible, the best models were determined by giving greater weight to the metric recall (proportion of actual relapses/malnutrition events that were classified correctly against all relapses/malnutrition events). Given this, and based on its potential interpretability, the model chosen for both targets was the Balanced Random Forest.

## Results



Lift Model Malnutrition: Indicates that ICBF could focus its efforts on children whose probability is in the top 10% (0.62 - 0.87) and could treat 28.6% of children with potential malnutrition problems.

Lift Model Relapse: Indicates that ICBF could focus its efforts on children whose probability is in the top 10% (0.64 - 0.82) and could treat 30.8% of children with potential relapse on malnutrition problems.

## Highlights

- We developed a data-driven approach to predict malnutrition and relapse on it within the next 6 months by using balanced random forests models with recalls greater than 63%.
- Our results help to optimize efforts in the preventive care of those children with a higher probability of malnutrition/relapse, identifying the most at-risk groups and their most critical variables.

## Application - Direct Access

Scan this QR to interact with our application



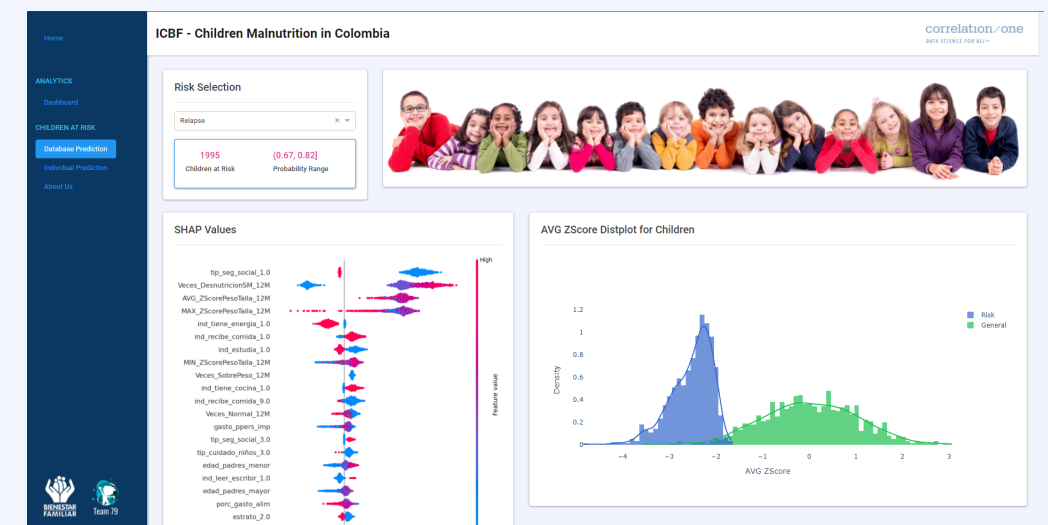
Or go to:  
[www.kidnutrilytics.com:8080](http://www.kidnutrilytics.com:8080)



\*Open it in desktop mode

## Application - Snapshot

Tab to analyze results and to interact with them:



Tab to predict the probability of malnutrition or relapse of a single child:

