Cristina Perez | chp2129

Project Book: Is the Scaling Up Nutrition Strategy being implemented effectively?

- Overview and Motivation:

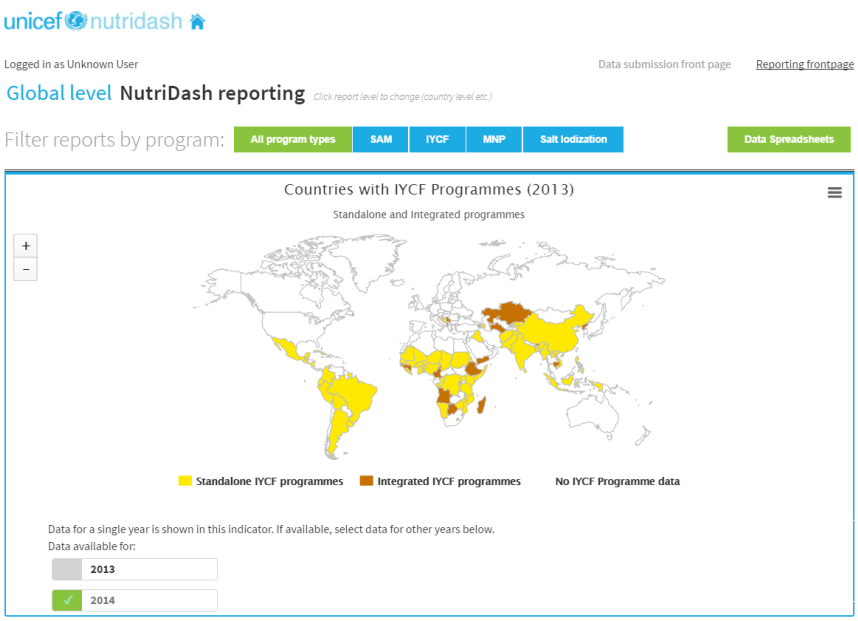
The project aims to provide a snapshot of the situations and global progress on key interventions to prevent and treat malnutrition. I was particularly interested in this project because I've been working in UNICEF as intern in NutriDash to clean, process and present data collected from over 100 countries.

The report is divided into four sections. The first is an overview of the global malnutrition situation that shows the prevalence of stunting and wasting, as well as the trends and gaps. The second and third present the progress of prevention interventions in Infant and Young Child Feeding and Micronutrient Powders, respectively. Finally, the fourth section presents the coverage and gaps in treatment of Severe Acute Malnutrition, which is the immediate intervention to be put in place when prevention strategies have failed.

- Related Work:

I was inspired by two main sources. NutriDash has a reporting section where some graphs and maps can be seen but the information is not updated and the indicators chosen don't reflect the current gaps and main challenges of global malnutrition. I also took the report drafts I've been working on to select the main variables that could be used to update the platform at a later time.

An example of maps in NutriDash



- Questions

The main question to address is whether the Scale Up Nutrition (SUN) Strategy is being effectively implemented at a global level. In order to analyze this, I decided to see the trends in malnutrition to understand if there are any significant changes in the stunting and wasting prevalence. I also analyzed data from program reporting to know the coverage, caseloads and implementation of the interventions under the SUN strategy.

- Data

I used two data sources. For the overview, I downloaded the joint child malnutrition estimates from UNICEF, World Bank and WHO. For nutrition programming information, the second source comes from NutriDash, the monitoring platform and reporting system for UNICEF. The NutriDash data collection and validation occurred between July and September 2016, with a total of 104 countries responding to at least one of the modules, as shown in the table below:

Module	Number of respondent countries
Infant and Young Child Feeding	98
Micronutrient Powders	65
Severe Acute Malnutrition	83

- Exploratory Data Analysis

The joint malnutrition estimates dataset is very clean and straightforward to use. It has data from many years and the two main arrangements I did were to use only the last year of data when I wanted to map each country and to calculate aggregated percentages because the data only gives the percentage of children with malnutrition and the total number of children per country.

The exploratory data for NutriDash is a source I've been working since I started the internship in UNICEF. The data cleaning and validation processes followed the same general criteria for every module's questionnaire. Data were verified to identify inconsistencies, duplications and gaps. It also included homologation of units and categories and validation of all passes between questions. In some cases, updates and corrections from countries after the data collection period ended were included.

- Design Evolution

From the beginning of the project I had a clear idea of the maps and graphs I wanted to use with data from NutriDash. It was when I finished that section, and based on the comments from the first project idea that I thought I couldn't say how the solution was being implemented if I did not speak about the problem. Then I decided to use the malnutrition estimates and start the project by addressing the problem.

- Implementation: Give some idea about the intent and functionality of the interactive visualizations you used in the final output.

As I mentioned before, the structure of the project is to give an overview of the malnutrition situation and then give some examples of how different interventions have been implemented for prevention and treatment of severe acute malnutrition.

In my original idea, I thought I'll be making an HTML Markdown file or an R presentation. However, when we were given the option for a webpage I decided to use it since it didn't seem too complicated. Overall the implementation decisions where regarding what type of graphs to use. At the beginning, I did the whole overview section with ggplot but decided to change it because I was not using other tools such as text or networking. I did most of the project with plotly and leaflet.

- Evaluation: What did you learn about the data by using your visualizations? How did you answer your questions?

I learned a great deal of many things. I'm aware that considering the class experience and knowledge about R my work is probably too simple and not up to the standards of others in terms of complexity and use of other tools. However, I improved infinitely my knowledge and confidence with R (I only used it very basic before and didn't know much about it). Another thing I learned and put in practice was my creativity and analytical skills to draw interactive graphs. In many cases I didn't have the time or knowledge to make the exact graph I would want to but at least now I know how to approach it and take many hours and tutorials to make it happen. Probably the most important lesson from the project is that we may have a lot of data but the big challenge is to be able to use it to prove an argument. In this case, its impressive the amount of work needed to use data to assess nutrition programs around the world. Is not only important to know how to make fancy graphs but also to look for quality in the sources of information we have and support the existence of these.

- Next Steps: How well does your visualization work, and how could you further improve it? Which things could you not do because of limitations of data, technical difficulties, time constraints etc.

It worked to the extent where I could put in interactive graphs and maps and even create a webpage! To me, it works perfectly!

The next step is to incorporate data from previous years in terms of nutrition program coverage and performance in order to analyze trends. This could take a long time since the same cleaning process needs to be done before merging datasets. The biggest challenge is to make sure comparison is done correctly because every year the questionnaire undergoes a series of revisions and changes in some parts.

Originally I considered using maps from Mexico and try to do more interactive visualizations but I didn't have enough time to go this way. I decided to do a simple report and focus on the global situation with more convincing and strong arguments about the situation and how it is being addressed. Therefore, another way to improve it is by incorporating country profiles in a shiny app that allows to select and show data from a specific country.