UNICEF DASH-SDMX

*Open source application to build configurable SDMX-enabled dashboards*

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The current situation

• There is huge demand for data visualization and the requests are increasing

• Data is changing fast, and deadlines are tight!

• Sometimes we just need to embed a simple chart in a page to support a “story”

• There could be no capacity to use PowerBI, Tableau… in some teams
The current situation (2)

- We have PowerBI, Tableau, R or other custom solutions which are difficult to reproduce dynamically and repeatedly.
- Is staff, time and capacity available to maintain the dashboards?
- The data is available in SDMX format and accessible using the APIs, can we take advantage of that?
- Can we get rid of intermediate formats and processing?
The need

• A solution that allows simple dashboards to be created quickly
• No need to deeply understand SDMX
• Fetch data from the APIs to avoid local copies
• Fast to configure and deploy
• Multi-Project/Tenant (we have several country and regional offices)
• Easy to embed in a public facing web page
The solution

• An application that connects data and charts
• The user defines the “slice” of data he wants to visualize and the type of chart/map.
• The application generates one or more widget
• Data is dynamically pulled from the SDMX registry
The application’s frontend: Title, Subsections and Cards

- Page title and sub-sections (if needed)
- Cards: they show a single value
- Components are arranged in rows, any component can be shown on any row or column
- The page can contain any number of elements
The application’s frontend: Map

• Can show a single year or play through a time series
The application’s frontend: Charts

- Shows a Bar or a line chart.
- It can be easily extended to handle additional chart types.
Embedding the dashboard in another page

- The dashboard can live independently or can be embedded in an existing page.

- In the example, the dashboard is embedded in data.unicef.org.
The application’s backend (needs refinement)

- The dashboard is configuration driven.
- The backend tool allows to create new projects and pages.
- Configuration files contain the SDMX data query and how to show the returned data (data query + chart type → Render).
The technology

• Based on well known, widely spread open-source tools and libraries
• Developed using Python and Pandas
• The visualization engine is based on Plotly-Dash (https://plotly.com/)
• Easily extensible to add more chart types (https://plotly.com/python/)
Next steps

• Json is quite easy to understand but we need a more user-friendly interface to configure the dashboard

• Consider SDMX annotations when rendering the blocks
Summary

• An easily extensible engine that “understands” SDMX and renders charts and maps
• Fast to define
• Low maintenance as data is pulled in real-time
• Can live as a stand-alone component or embedded in a “Hosting” page
• Based on well known technologies