

Final Project Presentation

- What is your concrete research question that your solution should answer? Why is it important?

Research Question: What migration flows did exist in the last 3 decades? The pattern of global financial flows in the past years: Which countries did receive remittances and in which countries more money has been paid? What is the linkage between the two phenomena?

Important because: Understand the interdependencies and linkages to create efficient measures

→ Achieve target 10.c.: remittance cost reduction also when keeping in mind, climate change will increase nature hazards → functional system for remittance transaction
→ increased resilience (identify endangered regions and what roles remittances play so far in their economies)

Another aspect: underline the need of reliable data in this domain

- Who is your specific audience, and why?

Actors that can help reduce remittance costs:

- a) Due to anti-money laundering regulations regulatory burdens increased. Banks closed relationships with money transfer operators. This increased costs through formal channels ...

→ information for executives in banking sector (when interested in contributing to the SDG), not yet sensitized for this problem and to inform about the global patterns and dependencies → idea of a first “briefing”

- b) This question was discussed at WEF in 2016. Answer from a dude working in money transfer business:

→ policy makers have an important role: give an overview before a government market intervention

Implication for design: The audience wants to learn something, therefore we implemented specific information to give an overview. One can expect the audience to know general knowledge as for example shortcuts (indicated in information tab), orientation on a global map, etc. This presupposition allowed us to take some design decisions.

- What data did you use, and why? What is the quality of the data and its source?

Data provided: by World Bank/Our World in Data/UN / KNOMAD (mostly **estimated**)

Quality: is discussed in Web Page: nature of the phenomenon makes it difficult to provide exact and reliable data → page as a call for action to provide better data

Date: older *migration* data than *remittance* data as *A* precedes *B*

Geometry: from Esri

- What functionalities does your interface offer, for what, and WHY exactly?

General interactions:

Direct manipulations

- a) 2 map tabs
- b) Radio buttons to change datasets → consistency
- c) Sliders and "textfields" to manipulate chosen dataset → consistency
- d) Expand button in chart

Feedback: radio buttons and map tabs give feedback with visual variable colorhue

Migration Map:

after cartographic cube: the map demands high interaction, exploration task, 3D when tilted (spatial dimension, thematic dimension)

→ therefore decided to drop temporal dimension

→ to provide a simple complement to the dense information of the map we added a graph

Remittance Map: interaction with spatial dimension, temporal dimension, hover for pop-ups, zoom (restricted!)

- How is the map/animation/graph designed, and why?

General:

Visual salience: decided to use dark base map (only country names and borders: enough information) to emphasize the migration flows (stand out visually)

Hierarchical organization: top = concise title, right = user interaction/customizations, in the map = legend are implemented here, as they serve the interpretation of this "container"

Migration : focus is on arcs showing data on interval scale

→ choropleth: normalized data visualized with visual variables hue (diverging colorscheme, dark to keep background simple), 3 classes to keep cognitive load low, manual breaks around 0

→ flows: absolute data with visual variables position, colorhue and value (sequential colourscheme, colourhue corresponding to the thematic variables of choropleth, varying by hue and value → it wasn't possible to only change hue for the emigration, the contrast would have been too low), classification scheme: quantiles – easy to interpret, no "gaps"

Graph : design is simple to serve as an orientation to better understand the flows, visual variable (consistency) colorhue matching to migration

Remittance : visual variables size, colorhue and position

General Map Design Decisions

→ Map Projection: Web Mercator – distorts size which is not very important in our thematic. Therefore, we decided to provide the user with something familiar (=Web Mercator Projection) in this arc-jungle ;)

→ Map Marginalia / Labeling: Popups, Marginalia: no north arrow as the direction is not important for the thematic map and by default it is oriented to north – so our audience should understand it, scale: information not important for the thematic map, authors are already mentioned in the web page → excluded

→ *Information* Button and *Data* Button: to get more information for interested people, therefore the text is packed in a textbox that can be eliminated

- What did you plan to implement in your solution, but had to adapt due to technical or other restriction? Where and why did you have to stick to simplified solutions?

Start: idea of showing remittance flows > no bilateral matrix exists

Arcs : visualize degree of migration with width and value

Base Map: is too dark → solution: outline of countries

Remittance: technical problem set **minPixelSize** of the Markerlayer vs “nodata” appear in the same size as 0 → Trade-off: decided to delete all geometries with one missing entry but we have no “nodata”-symbol that can be misleading,

maxPixelSize: when zooming out, the symbols overlap, setting a maximum size would distort data (range between 0 and 80'000Mio \$) → decided to set a maximum zoom level

Remittance 2020: a lot of missing data → thought about excluding them

- What is the answer to your research question: What did you actually discover in your data? What is the data pattern, and how important is it?

Overall: Migration is a global phenomenon of high importance. It has consequences that can be observed for instance in the remittance. Countries can be roughly categorized in sending/receiving countries. In summary, focused on 1 country : Nepal, that is highly relying on remittance (24% of GDP) → when looking at migration, relations can be drawn. Nevertheless, remittance and migration can not be compared directly due to a general and a bilateral dataset.