Submarine Cables and the Economy

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Datasets Used

Cable_data_final.json

https://github.com/telegeography/www.submarinecablemap.com

Taken directly from the github repository by Huawei marine networks. The data is used to map out the undersea fiber optic cables. We also added the cost variable that is taken from https://www.telegeography.com/ this variable is added in by hand since the cable ids and naming is slightly different between the two dataset

Internet-users.json

http://www.internetworldstats.com/list2.htm

I copied and pasted the data from the webpage into excel by hand. The data is used to create the different shades of opacity shown in the world map.

World-topo-min.json

https://github.com/mbostock/topojson/tree/master/examples

World map json file taken from github directly and is used to create the world map and the zoomed in map of Africa.

All of the data in csv format is converted to json format using

http://www.csvjson.com/csv2json

Gdps.json

http://data.worldbank.org/indicator/NY.GDP.PCAP.CD

The GDP per capita was taken from this website and used in our data set as a graph for every country. When the user clicks on a country, the countries specific GDP is graphed on the popup window with the cables showing up that connect to that country. This data is GDP per capita starting from 1989 to 2014 for every country that has available data.

Landing_points.json

https://github.com/telegeography/www.submarinecablemap.com

Taken directly from the github repository by Huawei marine networks. The data is used to find the landing points of each cable. The landing points are used when the cable is clicked and it gives information on city and country information and the lat lon of the country

Features of the Website

- Country
  - Click
    - Map will zoom into the country selected to be able to show the details of the cables and country better
    - Cables will be resized according to the zoom scale factor
    - Drop down graph will show up
  - Hover
    - Tool tip will show up with country name and GDP per capita growth
  - Opacity
    - Shows the GDP per capita % change from 1989 to 2014 we used a linear scale to show the opacity
- Cable
  - Click
    - Map will zoom into the cable selected to be able to show the details of the cables and country better
    - Cables will be resized according to the scale factor

        - Map will zoom into the cable selected to be able to show the details of the cables and country better
        - Cables will be resized according to the scale factor
        - Landing points of the cable will show up
        - Drop down graph will show up with cable name and cable cost
    - Hover
        - Tool tip will show up
        - Cables will be bolded
    - Color
        - Shows when cables are built orange before 2010 purple after 2010
- Landing Points
    - Will show up when cables are being clicked on
    - When hover over will show landing point city name and country name
- Tool Tip
    - Gives basic information of the country hovered over or cable that is being hovered over on
- Drop Down Graph
    - Includes an “X” button on the top left corner to zoom out
    - Scales used
        - X axis
            - Linear scale of year from 1989 to 2020
        - Y axis
            - Linear scale of GDP per capita from lowest GDP to highest GDP
    - When country clicked
        - Shows the GDP per capita of the country selected from 1990 to 2014
        - Shows all the cables that are connected to the country according to when they are built. Cable will not show up if there is no rfs(ready for service) date.
    - When cable clicked
        - Shows the GDP per capita of the countries that are being connected by cable
        - Selected cable will show up
    - When cable hovered
        - List of cables will show up that are being built within the year
- White Space
    - When clicked will reset map and zoom out

The Story

We wanted to further expand on a previous project that explored the submarine cable maps of the world. After analyzing the cable map, we decided to see how this information and data could possibly influence individual countries. Looking at country GDP’s per capita we explored certain patterns and trends that related to the layout of the cable maps. What we found is laid out in our website and available for anyone to explore and draw their own assumptions.

To aid the user, we first start off with explaining what a submarine cable is.

What are Submarine Cables?

A submarine communications cable is a cable laid on the sea bed between land-based stations to carry telecommunication signals across stretches of ocean. Many of these cables were established in the early 90's and are used extensively around the world for internet and data communication. These cables greatly impact the overall internet usage of a country.

We then transition into our next data set and what we are trying to link the cables to. We offer a quick explanation of GDP per capita and what it is we are trying to relate.

What is GDP per capita?

GDP is a monetary measure of the value of all final goods and services produced in a period, and it is arguably the most famous indicator of economic activity of a country.

GDP is a monetary measure of the value of all final goods and services produced in a period, and it is arguably the most famous indicator of economic activity of a country. When we divide a GDP by the population of a country, we get GDP per capita, which is then an indicator for the average amount that a person makes.

OK, so how do these relate to each other?

We believed that there should be a correlation between the construction of these cables, and an improvement in not only the country's total economic growth, but growth on a personal basis. Our thought process was that having the internet should have positive effects on education and productivity, and thus lead to an increase in GDP per capita, especially in countries that are just beginning to ramp up development.

Things we noticed

Purely from the country coloring, we can see that South America and Asia seem to be having very rapid growth. Europe and Africa also seem to have sections with fast growing GDP per capita. Focusing on the purple lines (recently created or planned cables), we see a few being constructed around South America, many around the Mediterranean and Arabian seas, and a multitude being constructed in East Asia. Therefore, there does seem to be a pattern, but it is by no means a perfect correlation. The fact that we used percentage growth also makes it harder for established countries to have growth that competes with 3rd world countries as well.

We did notice a trend, in which the construction of submarine cables seems to be a leading indicator of economic growth for many of the developing countries. We also suspect that companies will target countries that are growing and show economic growth potential to build these cables. That would make sense, as investing in infrastructure, such as submarine cables, should lead to future growth.