**Summary of Metrics**

**Streaming**

**METRIC**

What is your metric? What does it measure?

The streaming metric examines the overlap and differences in services streaming services provided across different countries. For example, does Netflix offer show X in countries Y, Z, etc…? Ideally, we could measure this across different platforms, but it depends on the availability of the data.

One way to get around the availability of data is to collect our own. An ambitious – but I think feasible – scraping task would be to download VPN and set the country to say, the UK or Nigeria, and then write a script that crawls through Netflix or Hulu and creates a list of available content.

**BACKGROUND**

Why this metric? What do we need to understand to know why this metric was chosen?

Increasingly, the consumption of media online is brokered by a number of streaming services – whether it’s Spotify or Soundcloud for music or Netflix, Hulu, or Amazon Video for TV shows and movies. However, there is not a uniform or standard set of options that remain constant country-to-country. In fact, streaming services are highly respondent to local content restrictions, stemming from moral or ideological objections (i.e., censorship) or contractual obligations (i.e., copyright laws).

One important caveat is that we need to account for users who do not use streaming platforms at all because they are cost prohibitive. Since we are carrying out a global examination, we would expect to find lean countries or countries in the Global South to use these streaming services less. However, we should also account for the unequal distribution of streaming services in the United States as well. Should we take countries as a binary or discrete unit of analysis? For example, we could code each country on a 0-1 binary scale, or we could code countries on spectrum based on the percentage of active users.

**BASELINE ASSUMPTION**

What would we expect to see from this metric if the Internet were truly "flat" (ineroperable), i.e. national borders had no relevance matter?

In a flat world where national borders did not impact content available on the Internet, we would see a standard set of shows / tracks / movies / podcasts (insert relevant unit here) available across all countries.

**LINK TO DATA**

Link to the data in your Github repository or, if you haven't collected (all the) data yet, link to the source from which we expect to scrape it.

<https://www.finder.com/global-netflix-library-totals> (dataset)

<https://github.com/rbarreto/CLTC_InternetFragmentation> (scraper)

<https://docs.google.com/document/d/1_YtFRqnQKQLpUtFsdlsxGa7NnStPVIP6d3nKN9xO_wo/edit?usp=sharing> (notes and resources on this metric)

**IPv6 v. IPv4**

**METRIC**

What is your metric? What does it measure?

This metric looks at the adoption rates for IPv6 across different countries. We need to make sure to control for GDP / per country or some variable that gets at the resources available to a particular country, with the idea that countries with smaller budges wouldn’t be dedicating as much time to the transition into IPv6.

**BACKGROUND**

Why this metric? What do we need to understand to know why this metric was chosen?

There is currently a transition from IPv4 to IPv6, but that transition is moving very slowly. It is relevant for Internet fragmentation because there is limited functionality for IPv4 relative to IPv6.

This metric gives us a different layer of the Internet stack – while the streaming metric looks at the 5th content and transactions layer – the transition to IPv6 works at the network / IP layer.

Also, it’s worth to note that it is usually companies or institutions that are driving the change to IPv6.

**BASELINE ASSUMPTION**

What would we expect to see from this metric if the Internet were truly "flat" (ineroperable), i.e. national borders had no relevance matter?

In a truly flat world, IPv6 adoption would be equal across different countries. In a world where all nations are equally well off, IPv6 adoption would be complete. In a world where all nations are struggling economically, IPv6 adoption would be low or incomplete – but at the same level in each country.

**LINK TO DATA**

Link to the data in your Github repository or, if you haven't collected (all the) data yet, link to the source from which we expect to scrape it.

<https://github.com/rbarreto/CLTC_InternetFragmentation> (scraper)

<https://www.google.com/intl/en/ipv6/statistics.html> (dataset)

<https://www.google.com/intl/en/ipv6/statistics.html#tab=per-country-ipv6-adoption> (dataset)

<https://storage.googleapis.com/pub-tools-public-publication-data/pdf/36240.pdf>

(paper the data collection is based on)

<https://docs.google.com/document/d/1LBIkeVp7KpYTIh72OApUzGIexti38szAzLgSpLteYR8/edit?usp=sharing>

(notes and resources on this metric)

**(optional) IDEAS FOR PRODUCING INDICES**

Your "metric" right now is likely a list of countries, each with a number associated with it. If you have any ideas for how to "condense" these lists into a single number, please mention them.

So far in the process of creating an index, it seems that we have completed phase 1 of item selection. We have a number of items with different properties. We haven’t yet examined the empirical relationships among items in our set, but I expect that these items will be relatively unrelated, since they are measuring very different facets. Index scoring will be largely dependent on how we are measuring the different items – what are their units, for example? It may be useful to create a table with the items, a brief description, and an example measurement for a particular country. To validate the index, we could use factor analysis to understand the structure of how variables relate to one another and to see if there are any variables that do not fit with our framework.

There are two really great papers that give a rundown of how metrics are created:

1. [Guides for the Selection and Construction of Social Scales and Indexes](https://methods.sagepub.com/book/handbook-of-research-design-social-measurement/n60.xml)

This piece mainly provides further readings and big picture summaries of different ways of aggregating data and turning them into different types of indices. The authors contend that “the available scale should be used if it has qualities of validity, reliability, and utility (in that order).” They emphasize that there will be drawbacks among the different techniques and designers understand these trade-offs.

1. [How to Construct an Index for Research](file:///Users/renatabarreto/Desktop/1.%09https:/www.thoughtco.com/index-for-research-3026543)
   1. Item Selection
   2. Examine Empirical Relationships
   3. Index Scoring
   4. Index Validation
2. [Methodology of Indices of Social Development](http://www.indsocdev.org/resources/Methodology%20of%20the%20Social%20Development%20Indices_%20jan11.pdf)
   1. Selection
      1. The designer must decide whether to concentrate on one or two key variables, or adopt a more comprehensive approach using data from a wide range of indicators of varying data quality
      2. For the III project, we have determined to go with the latter approach; we have many different types of data from many different sources
      3. This decision is informed by the latent variable that we are trying to measure, which covers a number of countries and can be constructed in different ways
         1. There is no clear set of criteria to determine which approach is more advisable, but the ‘fuzzier’ the concept and the weaker the available data, the more likely only a large pool of indicators can accurately capture the construct in question
            1. This is exactly where we fit
   2. Weights
      1. The assignment of weights to indicators in order to produce the final index
         1. The use of equal weights among items
            1. Each item of data used by an index is averaged in order to produce a final score (rare)
            2. See: basic capabilities index, e-government index, failed states index
         2. Theoretically categorized weights
            1. More commonly, researchers categorize indicators into theoretically derived subcomponents

Potential issue: clusters could overlap and reflect in a high statistical correlation between the two measures

* + - * 1. See: HDI, Gender Empowerment Measure, Doing Business Index, Environmental Sustainability Index, Economic Freedom Index
      1. Schematic weights
         1. Appropriate weighting scheme

PCA – principle component analysis assigns factor loadings based on whether a subsequent indicator shares a common actor with another variable in the dataset

Regression – appropriate when a highly valid and reliable measure of the latent variable exists, but only for a restricted subset of countries

Not a direct measure

No solution in cases where data may be missing for specific countries

Solutions

Case wise deletion: drop any country for which complete data does not exist

Indicator deletion: dropping variables which are incomplete for the full set of countries

These options decrease the sample size

Impute missing values (markov chain monte carlo simulation) 🡪 used more in academic settings than by international organizations

Problems: imputation is unreliable in cases where appropriate estimation models cannot be determined from available variables

Legitimacy is questioned in nations that are rated on a given dimension of a country performance based on data is that estimated instead of actual

Use only existing data in the estimation of the index, but supplement this with an estimated margin of error, based inter alia on the number of missing items

Advantages: allows scores to be estimated for a maximal number of countries and can use a broader range of indicators to triangulate indices for nebulous constructs

* + - * 1. See: EIU Quality of Life Index
      1. Variable weights
         1. See: Worldwide Governance Indicators, Corruptions Perceptions Index
  1. Evaluating metrics
     1. Identify outlier indicators
     2. Assess the degree to which indicators reflect a single underlying dimension
     3. Identify redundancies or assign weights among the indicator set
     4. Confirmatory factor analysis, cluster analysis, calculations of statistical leverage and influence