Milestone 2

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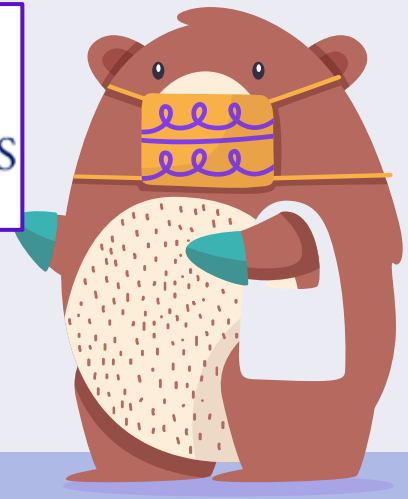
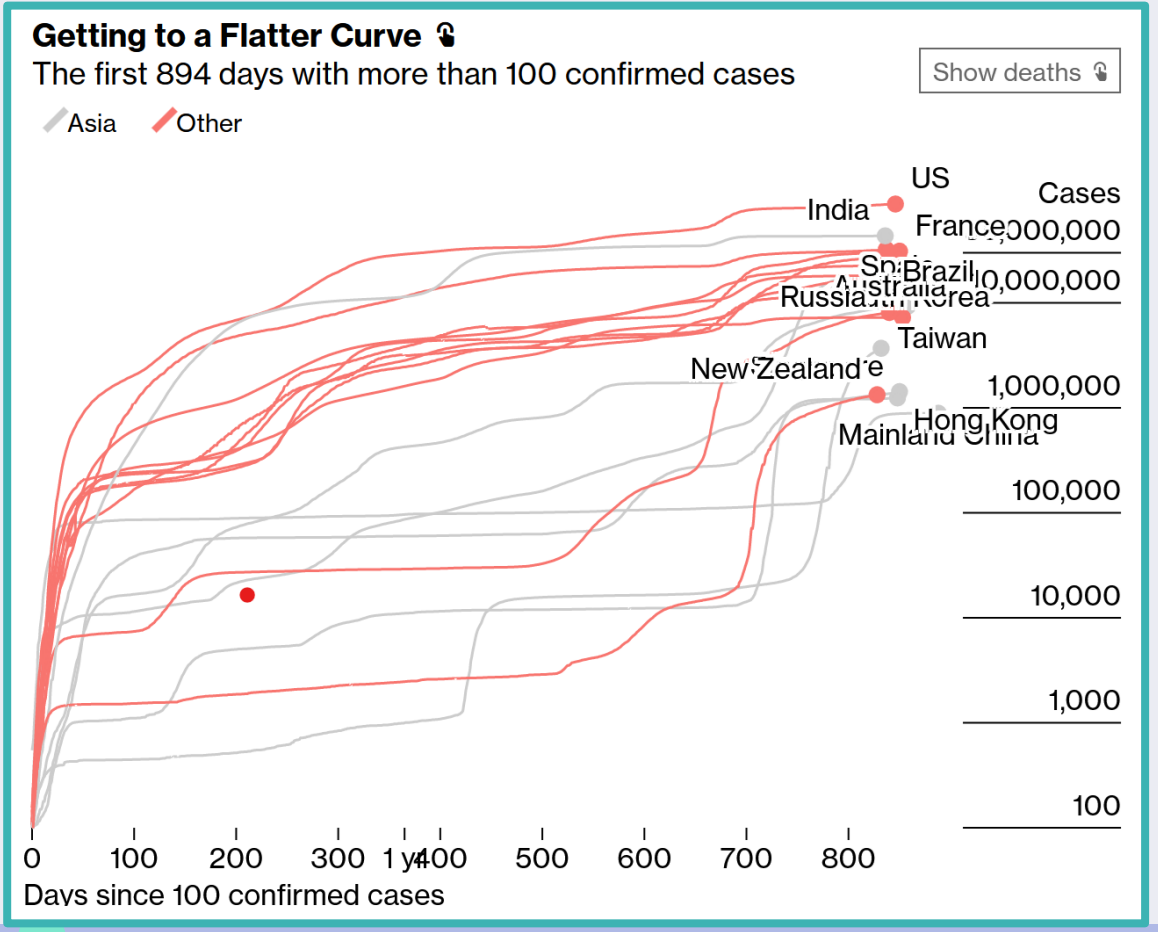
Visualisation Chosen



From: **John Hopkins University**



Graph Author (Source):

- Johns Hopkins University Center for Systems Science and Engineering.

About Graph:

- Multi-Line Graph of No. of COVID Cases from Day 0 to 800 After Reaching the 100th COVID Confirmed Case Mark (per Country).

- Days (X-Axis).
- No. of Cases (Y-Axis).

- Color of Lines:
  - **Grey** (for Asia Countries).
  - **Red** (for Non-Asia Countries).

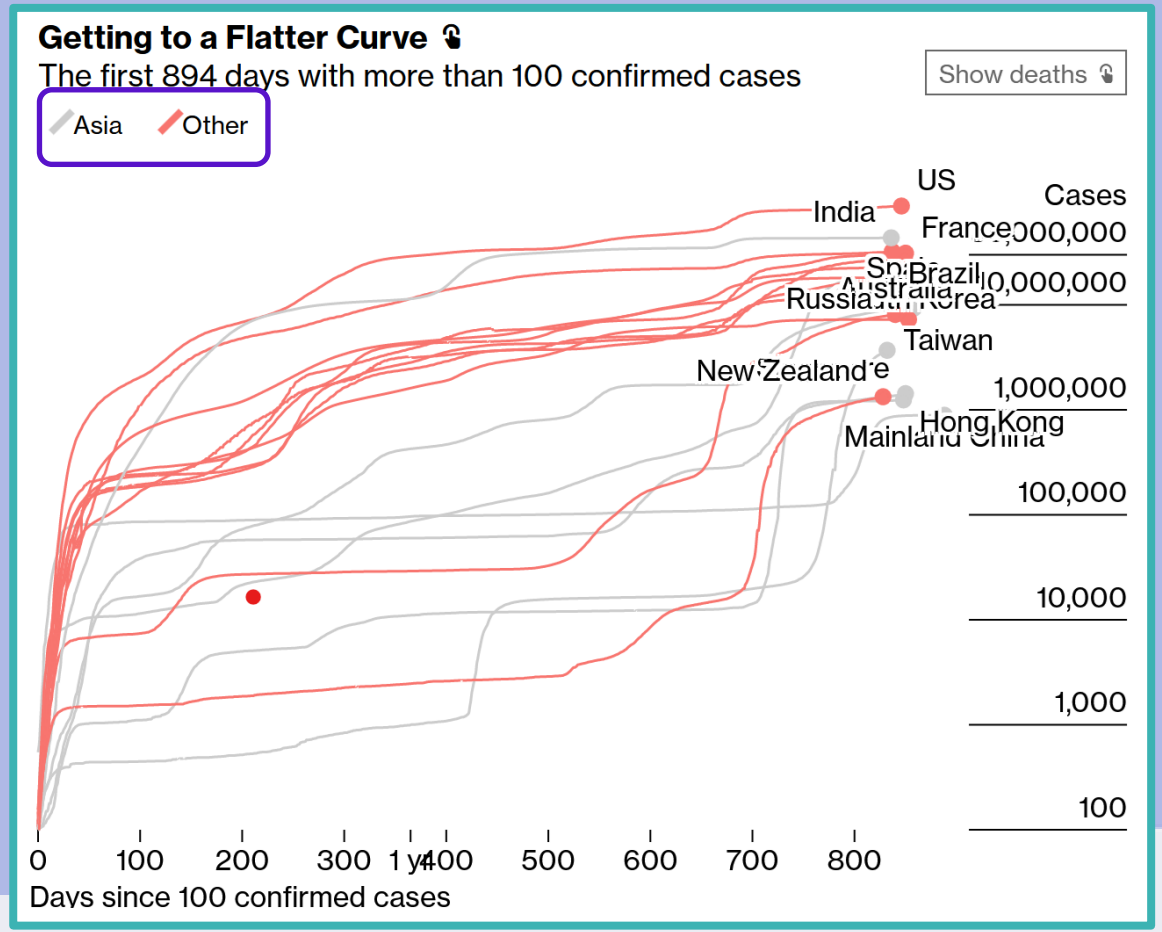
URL: *https://www.bloomberg.com/graphics/2020-coronavirus-cases-world-map/#voronoi-container*

Critique

(John Hopkins University)

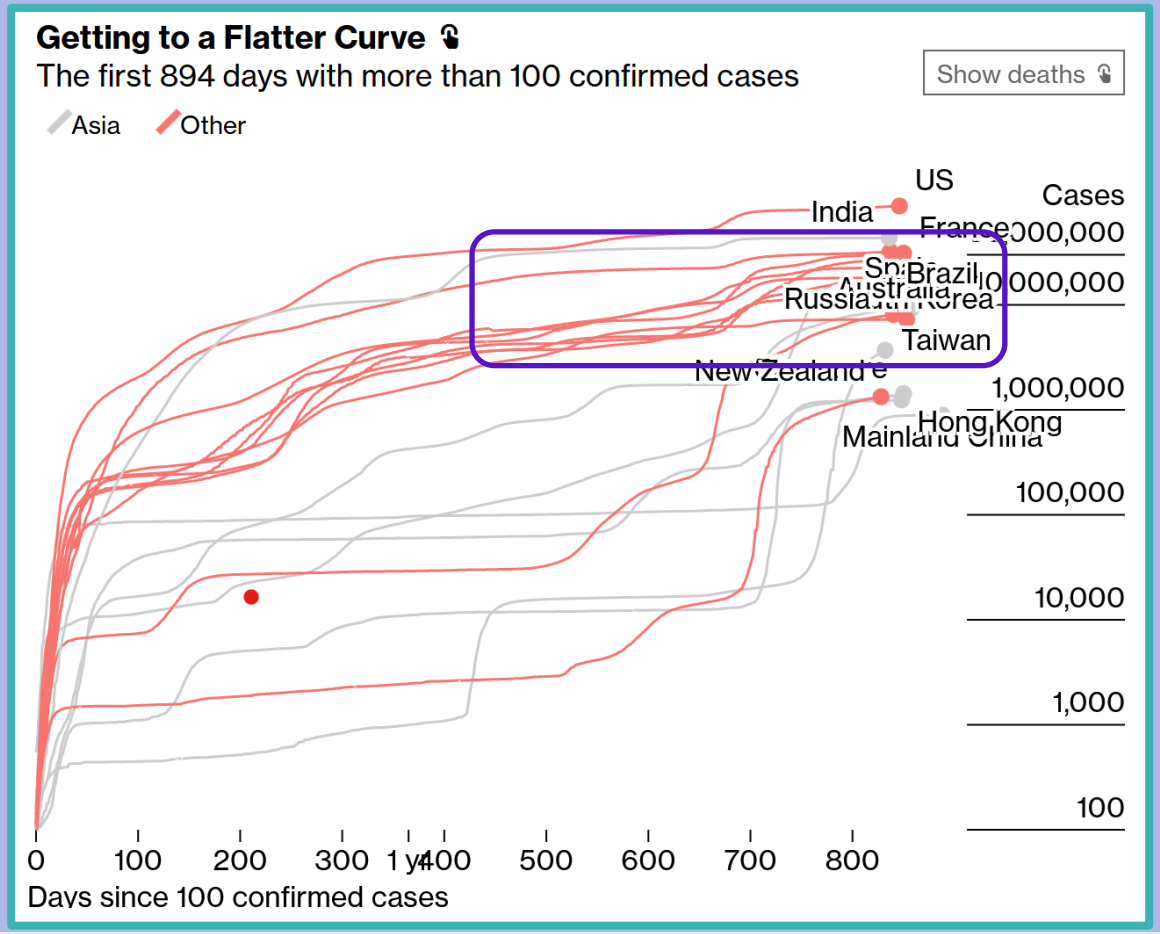
Data

- **The Author used Red (Color) for Non-Asian and Grey for 'Other' Non-Asian Countries within the Legend**



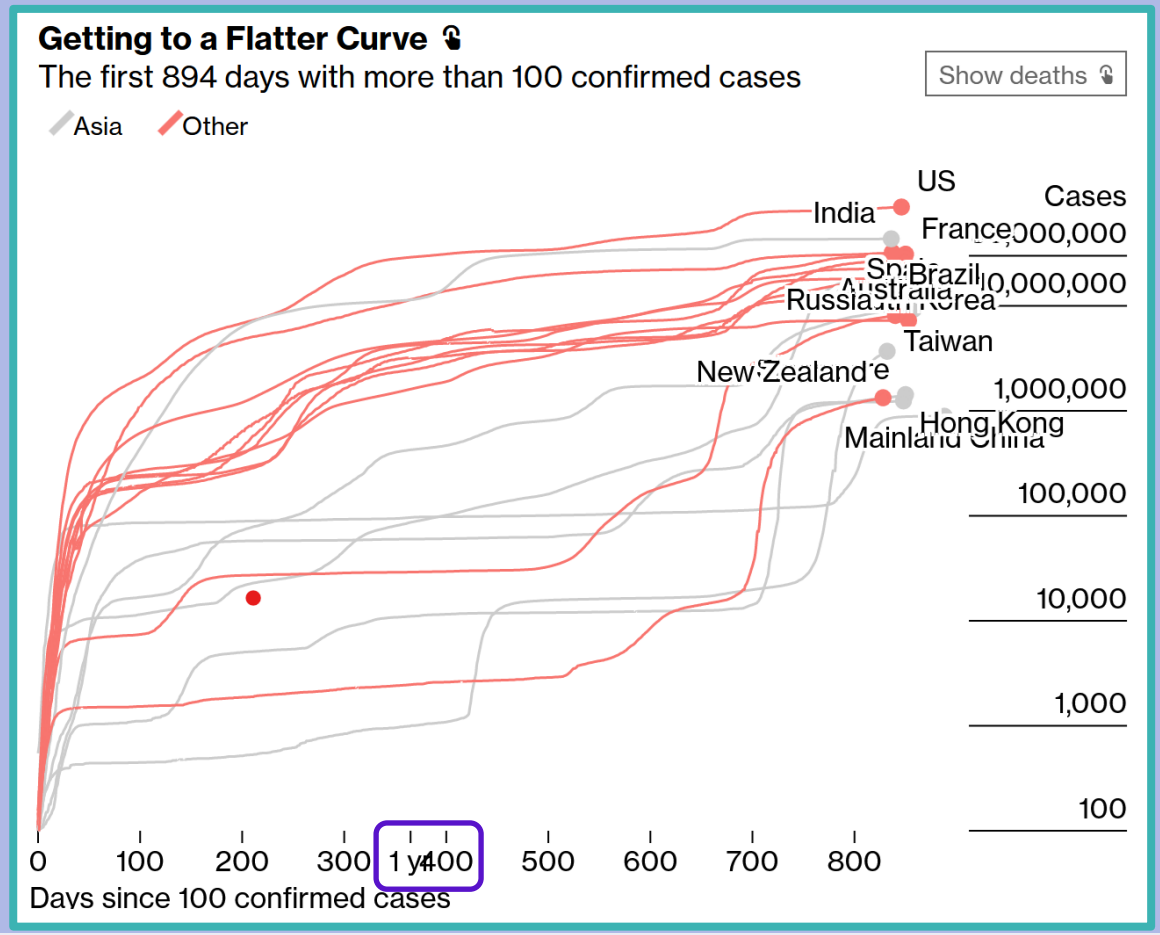
Idiom

- The Authors Wanted to Visually Compare Each Country's COVID Cases Against the Other Ones (Asia and Non-Asia/Others), <u>thus a **Multi-Line Graph was Used**</u>.
  - However, Due to the Unproportionate 'Cases' Scale, Some Countries nearing the 10,000,000 and 100,000,000 Marks, on a Given No. Of Days, Results in Noticeable Overlaps of Lines/Country-Labels that Could Cause Confusion to the Viewer(s) as to which of Those Represents which Country.



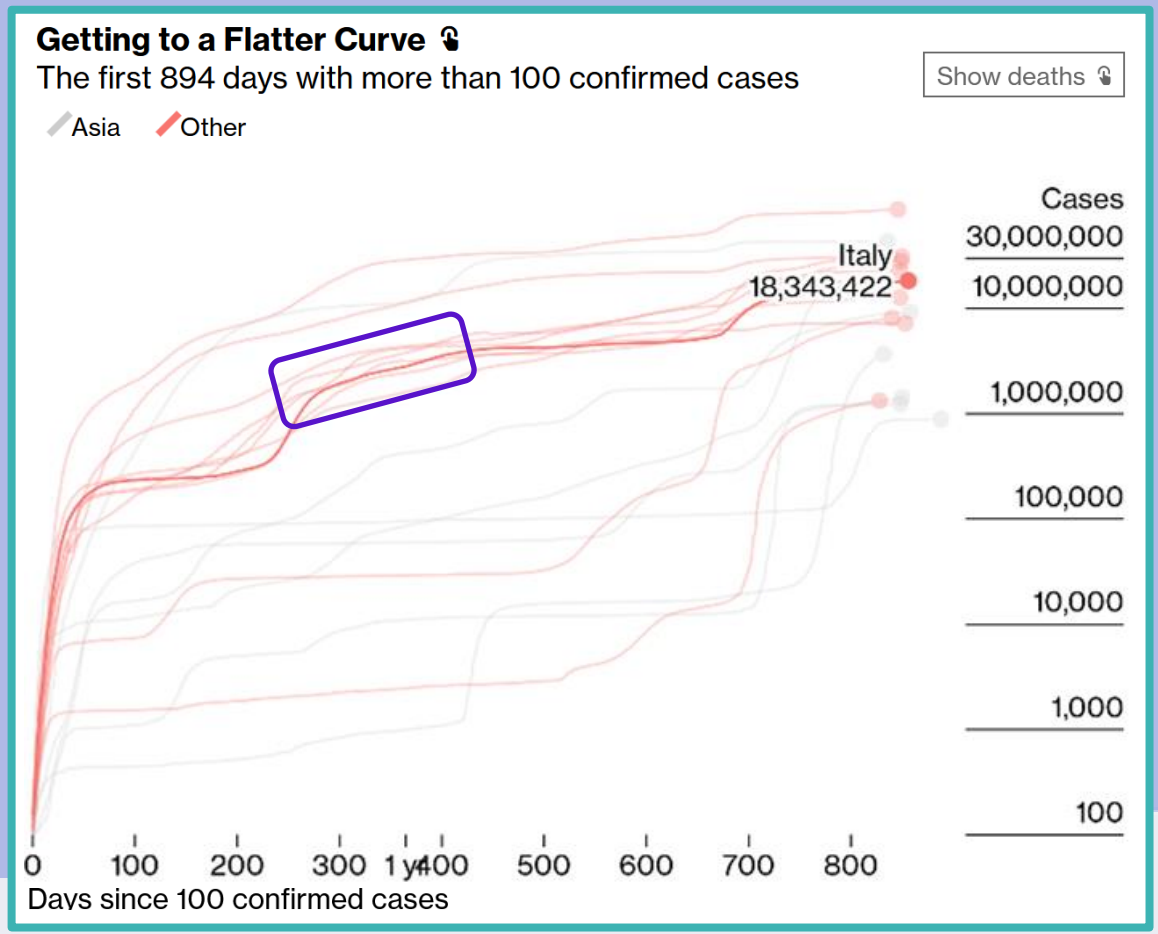
Idiom

- The Authors Wanted to Visually Compare Each Country's COVID Cases Against the Other Ones (Asia and Non-Asia/Others), thus a **Multi-Line Graph was Used**.
  - Also, the X-Axis' '1 yr' Mark is Overlapping the '400' Day Mark, Making it More Inconvenient to Review the Respective (Country) Line's Day Mark on the X-Axis.



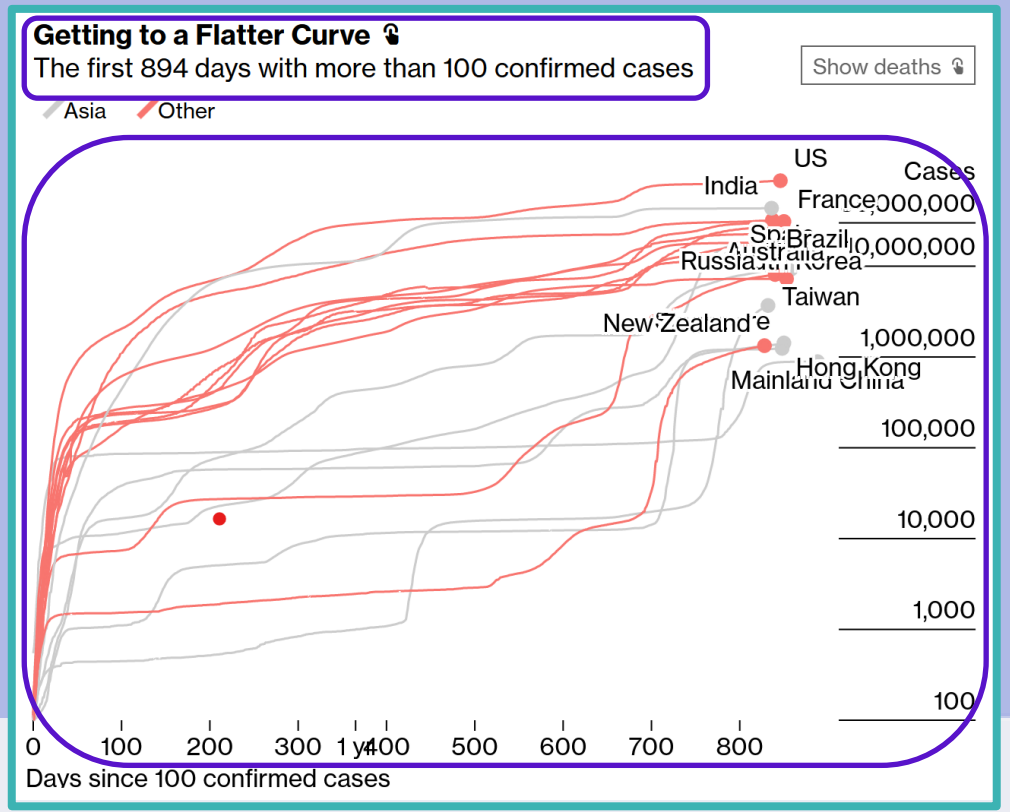
Task

- The Authors Have also Implemented a Mouse **Hover-Over Feature** to Highlight the preferred Country in which the Viewer would Like to Focus On.
  - Despite this, due to the Extreme Closeness Between the Overlapping of (Country) Lines, Users With Mobility/Varying Impairments (e.g. Hand Tremors, Larger Fingers) and/or Utilizes this Feature in Differing Environments (e.g. On Public Transportation, On Their Device Using One-Hand) Would Be Affected to a Large Extent.



Task

- The Authors Added a Main Title for the Graph as '**Getting to a Flatter Curve**' with a Sub-Title of 'The first 894 days with more than 100 confirmed cases'.
  - However, the Main Title had a slightly bigger Font Size and a Bold Text Style, it was assumed that it would be related to the Sub-Title and the Graph, which is not true in this instance, making it confusing to the Viewer.
  - Also, the Main Title is Not Descriptive Enough in conveying what was Meant by 'Getting to a Flatter Curve' with respect to the Graph.

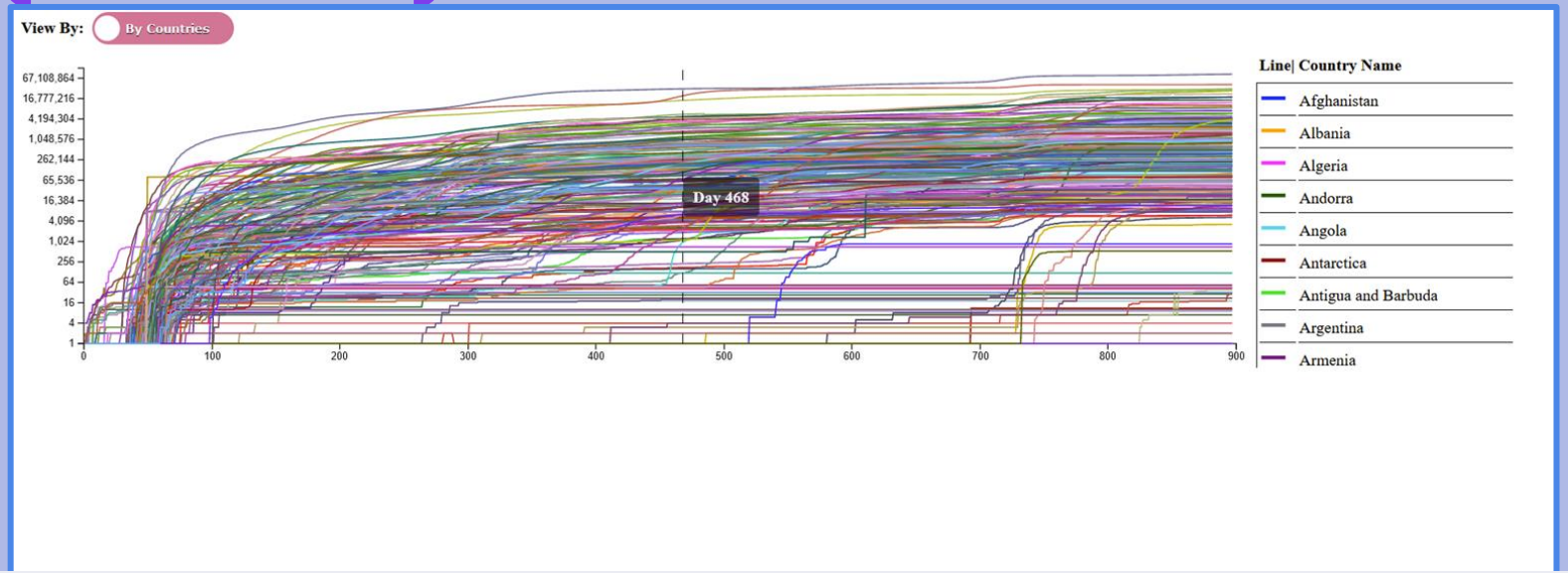


Solution (Sneek Peak)

Technology Stack:

- Vanilla D3 (version 7)
    - Multi-Line Graph Plots, Manipulation, Filtering, Selections, etc

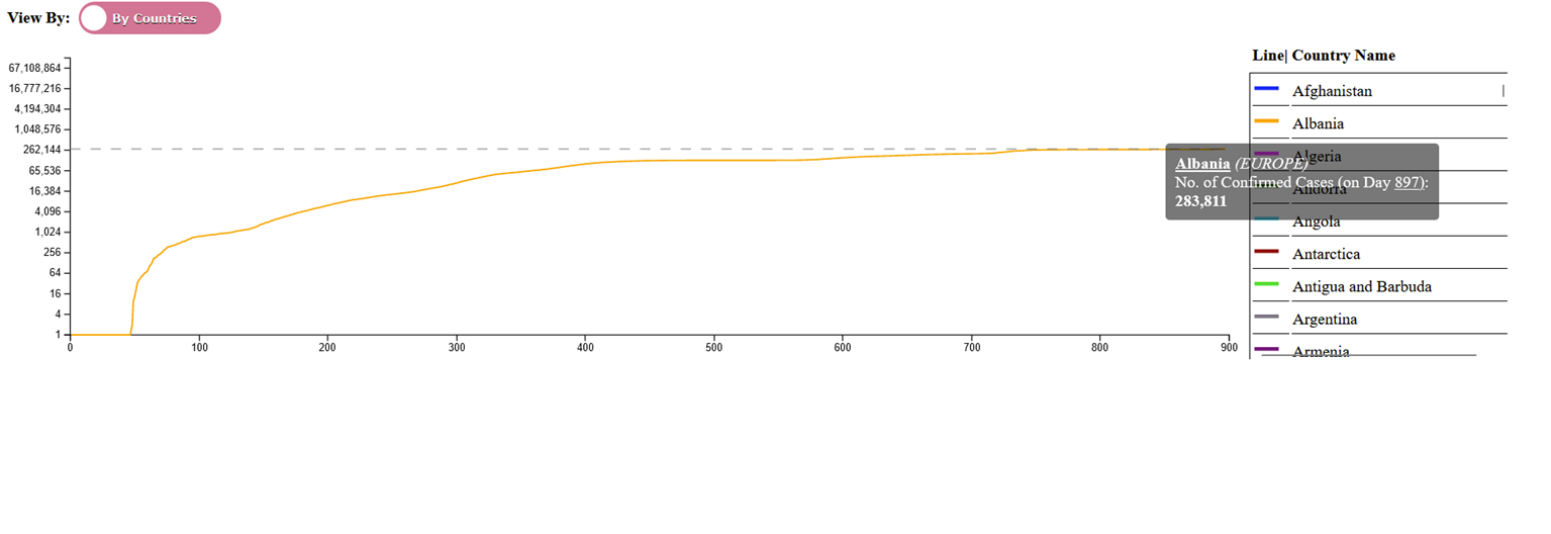
Solution (Functions)



Kept JHU's Forest Approach but:

- Showed all Countries with (**Coloured**) Lines, to show dissimilarity between countries in " View By: By Countries " Selection.
- With Log Scale
- Included Display of Day Number currently at on Hover Over of Line Chart

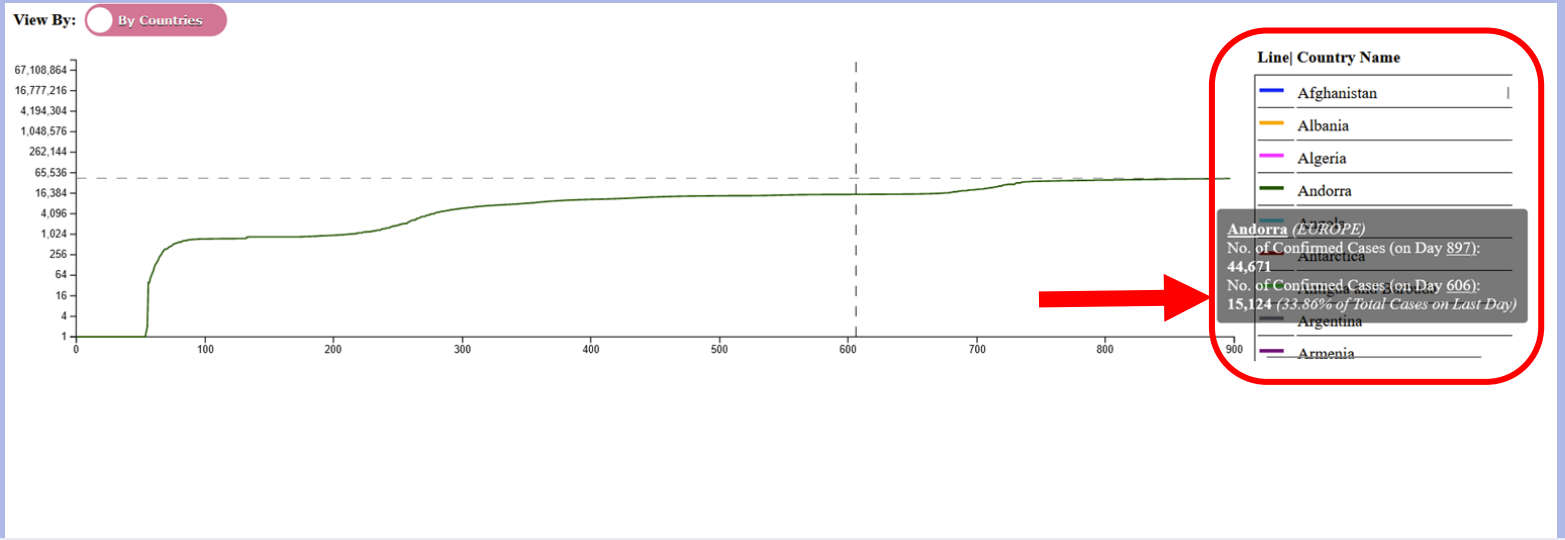
Solution



Kept JHU's Forest Approach but:

- Used a Tabular Legend (**Coloured Lines** Corresponding to Graph with **Country Names**)
- On Hovered-Over **Any** Country:
  - Included Display of Country's **Total Confirmed Cases** (at End Day 897)
  - **Region** it is in
  - **Selectively Isolate** the Country's Trending Cases (on Line Chart)
  - Showed the Maximum Cases (at End Day 897) via Dotted Line for Corresponding to Log Y Scale (Easier Viewing)

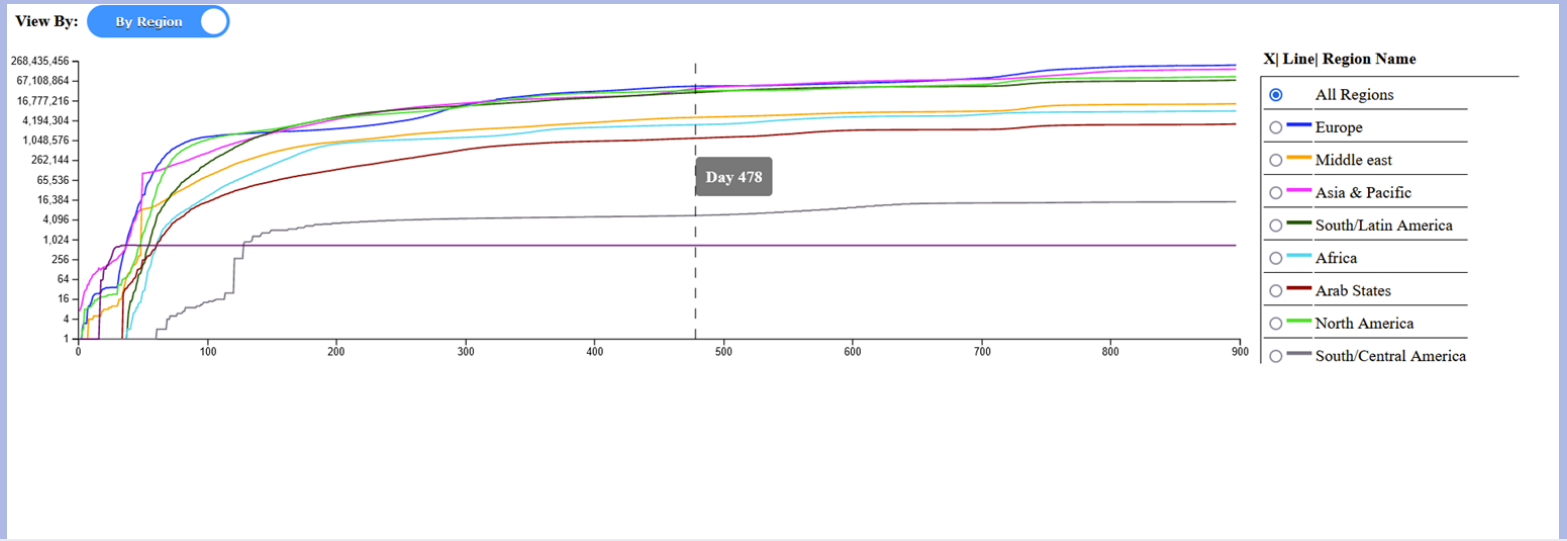
Solution



Kept JHU's Forest Approach but:

- On Selection on the Line Graph (**Plot** a Dotted-Line Day Marker)
    - On Hover-Over Any Country within the Legend, reveal Total Cases and % on End Day **PLUS** Cases to Selected Day

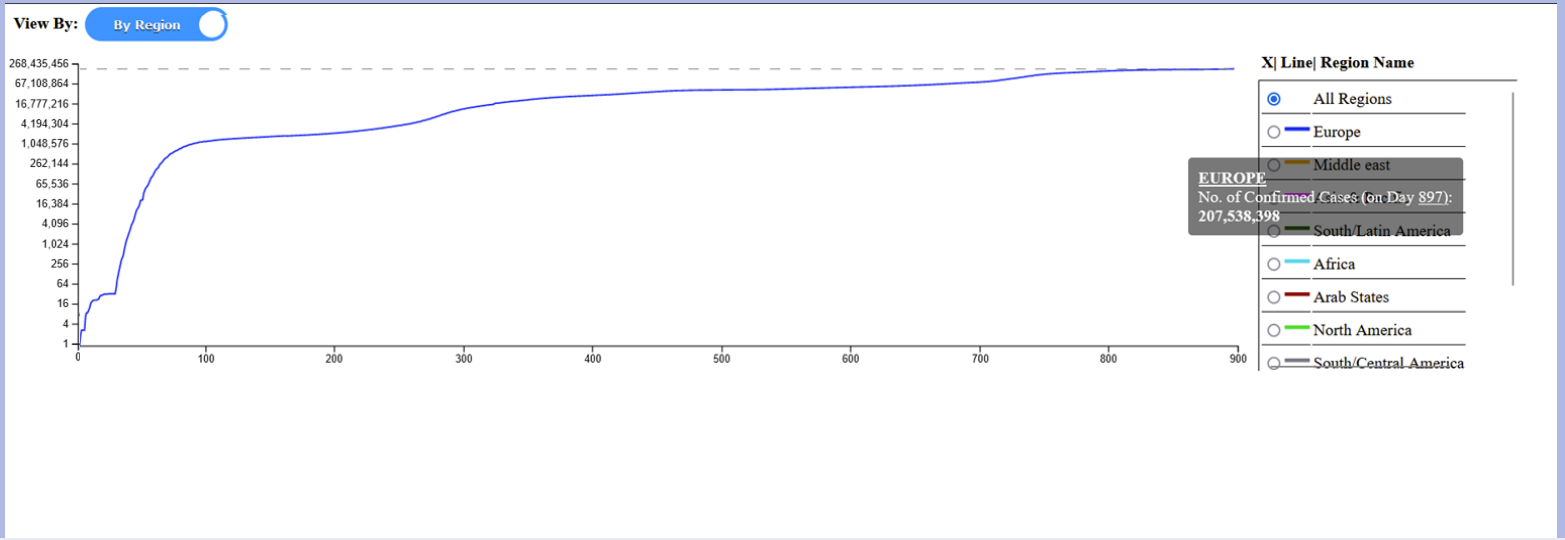
Solution



In Addition:

- On Switching to “ View By: By Region ” Selection:
  - Included Display of Day Number currently at on Hover Over of Line Chart

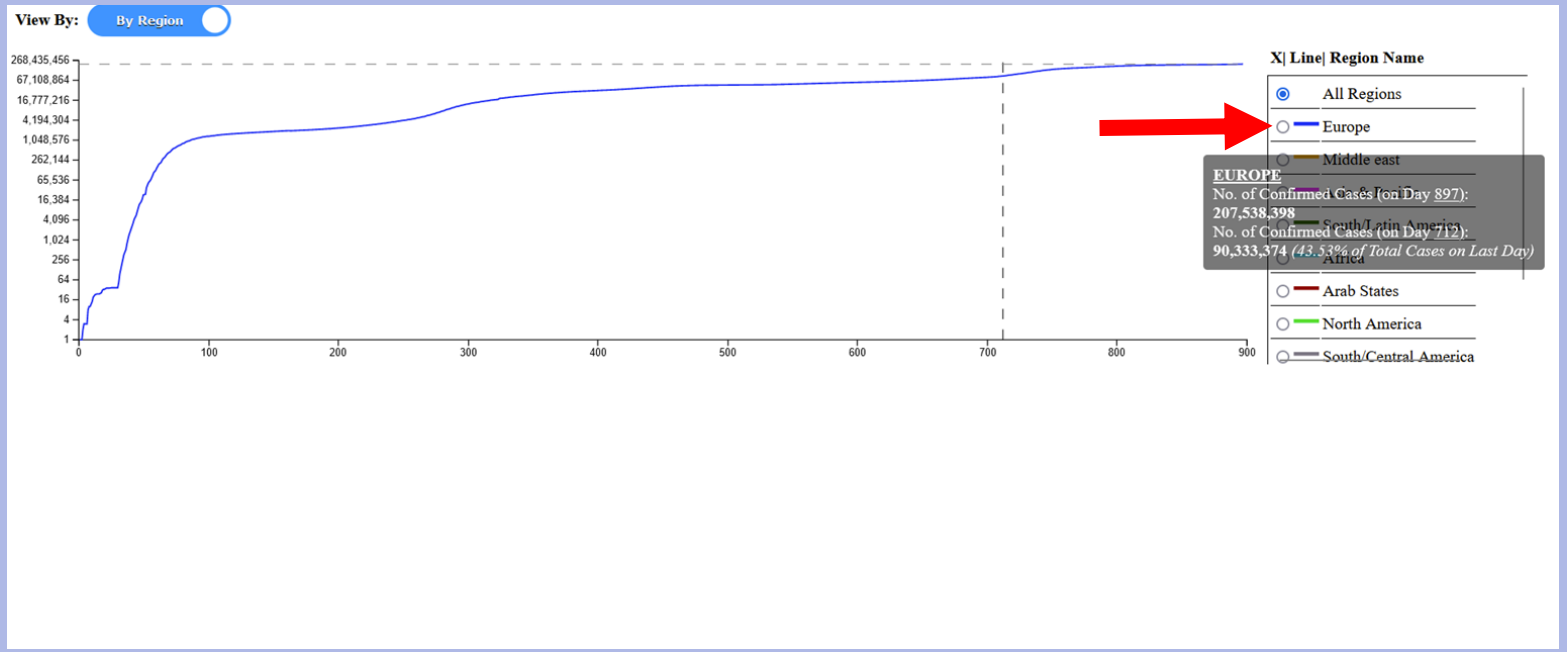
Solution



In Addition:

- On Hovered-Over **Any** Region:
  - Included Display of Region's **Total Confirmed Cases** (at End Day 897)
  - **Selectively Isolate** the Region's Trending Cases (on Line Chart)
  - Showed the Maximum Cases (at End Day 897) via Dotted Line for Corresponding to Log Y Scale (Easier Viewing)

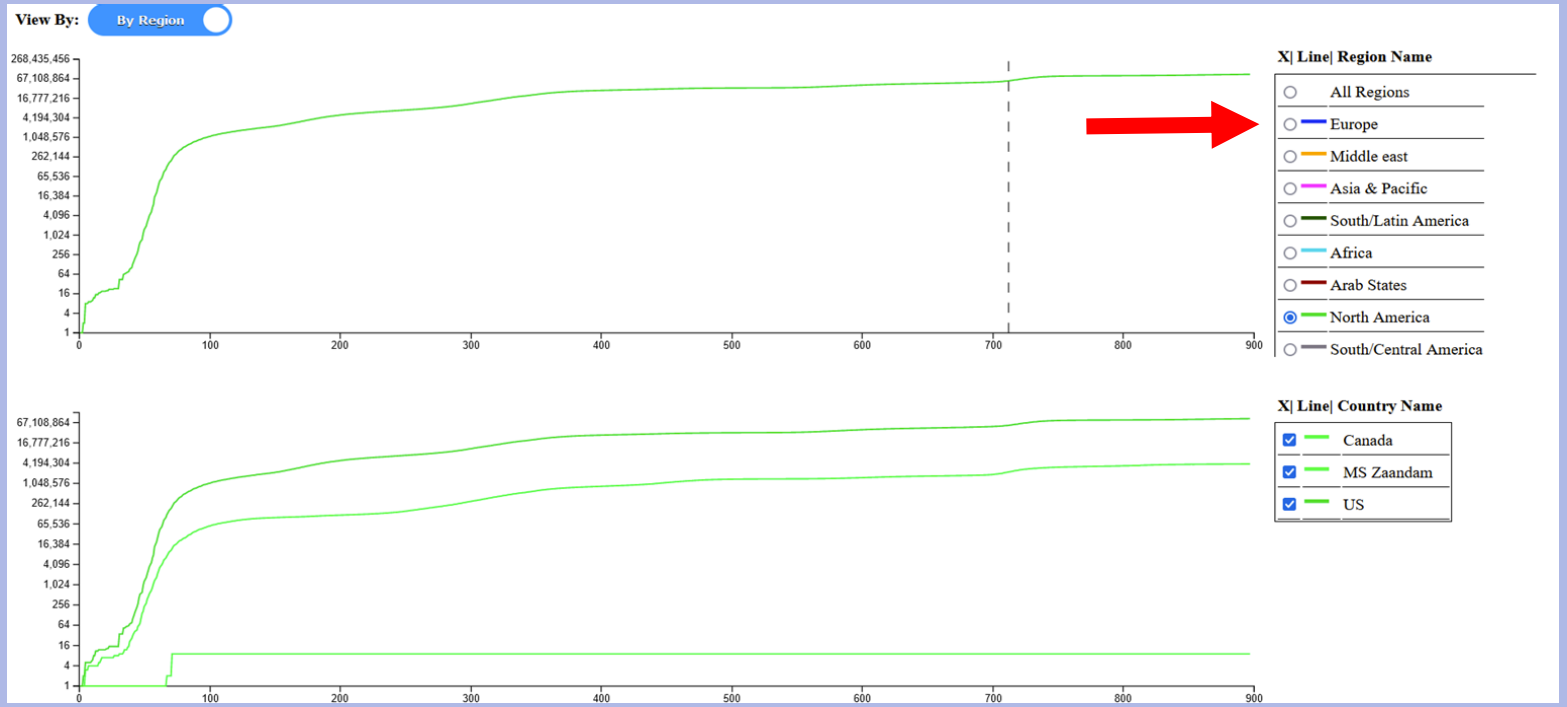
Solution



In Addition:

- Selection on Any Day within the Lower Line Graph (**Plot** a Dotted-Line Day Marker)
  - On Hover-Over Any Country within the Legend, reveal Total Cases and % on End Day **PLUS** Cases to Selected Day

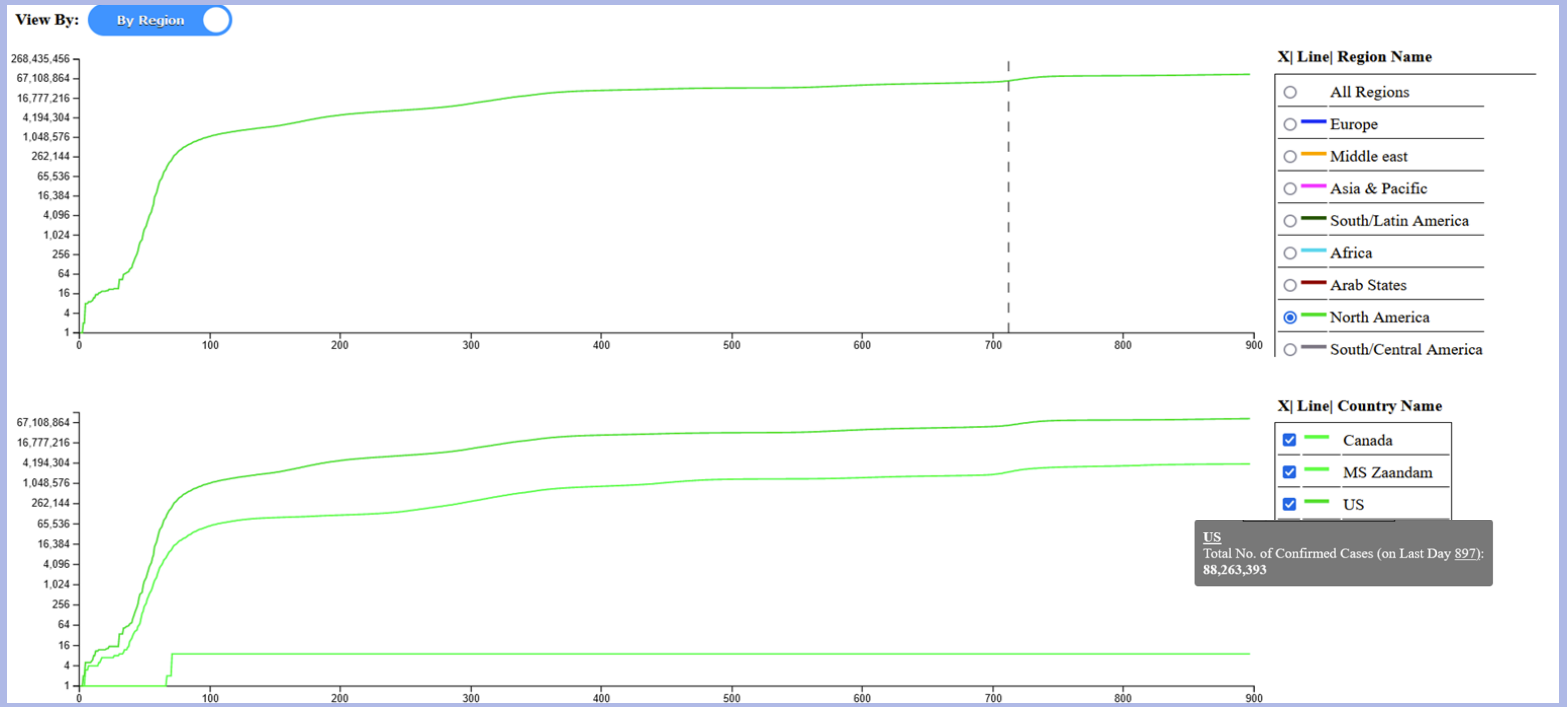
Solution



In Addition:

- Selection of **Any** Region:
  - Lower Chart appears, containing all Countries (with varying Brightness based on Case Nos.) in Selected Region

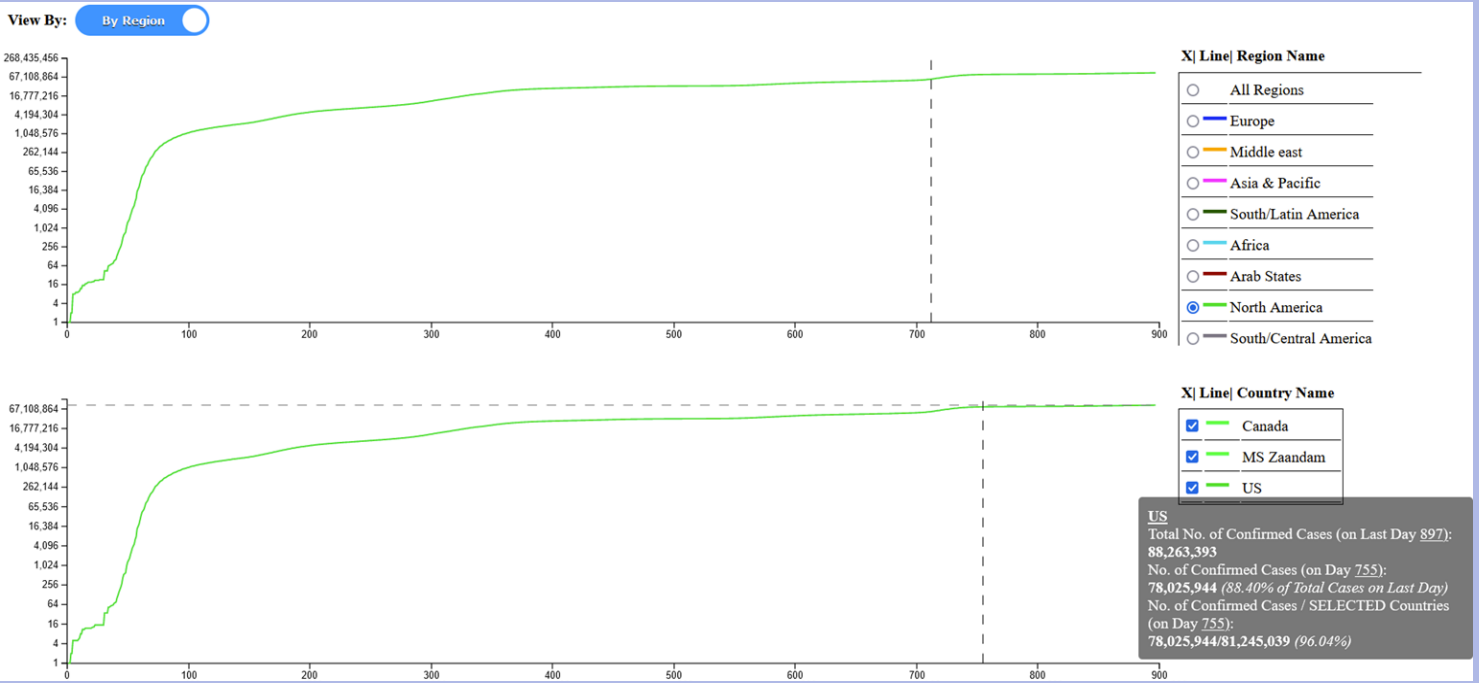
Solution



In Addition:

- Selection of **Any** Region:
  - Lower Chart appears, containing all Countries (with varying Brightness based on Case Nos.) in Selected Region

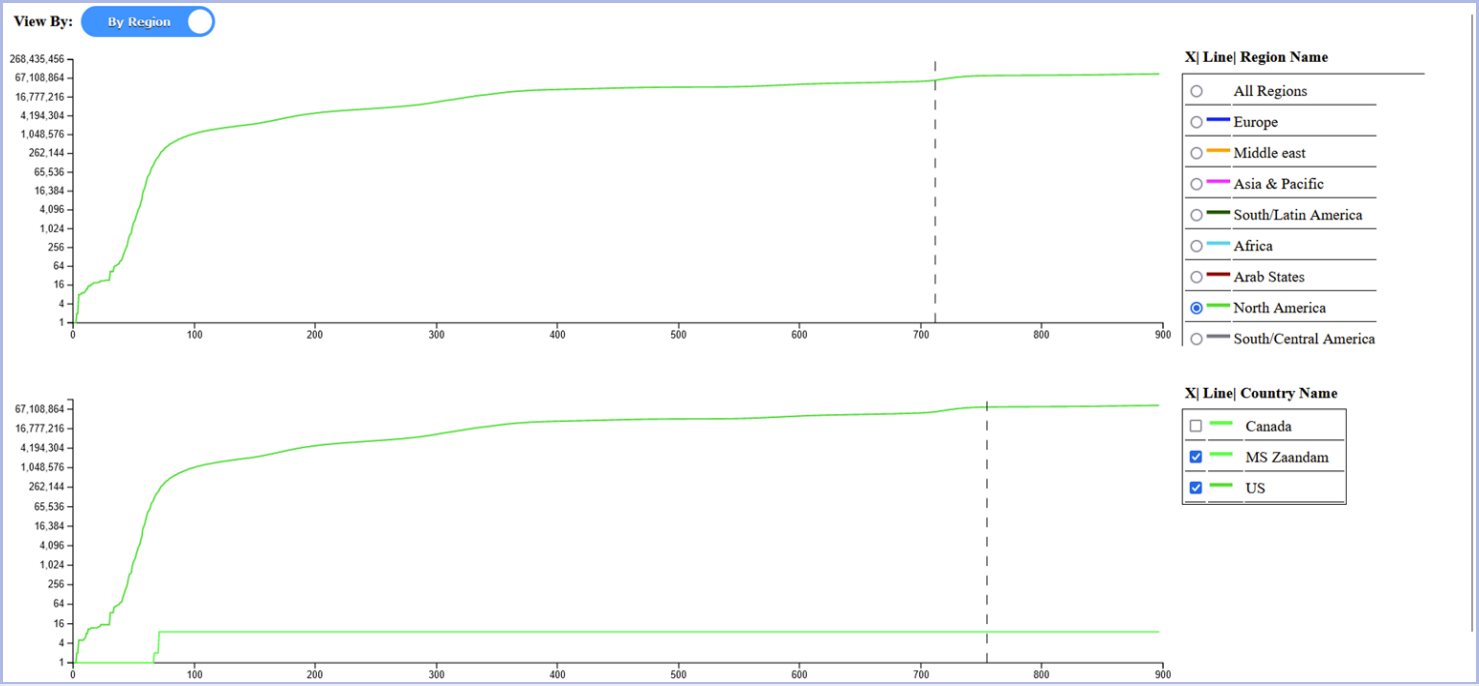
Solution



In Addition:

- On Selection of **Any** Day within the Lower Line Graph:
- On Selection on Any Day within the Lower Line Graph (**Plot** a Dotted-Line Day Marker)
    - On Hover-Over Any Country within the Lower Legend, reveal Total Cases and % on End Day **PLUS** Cases to

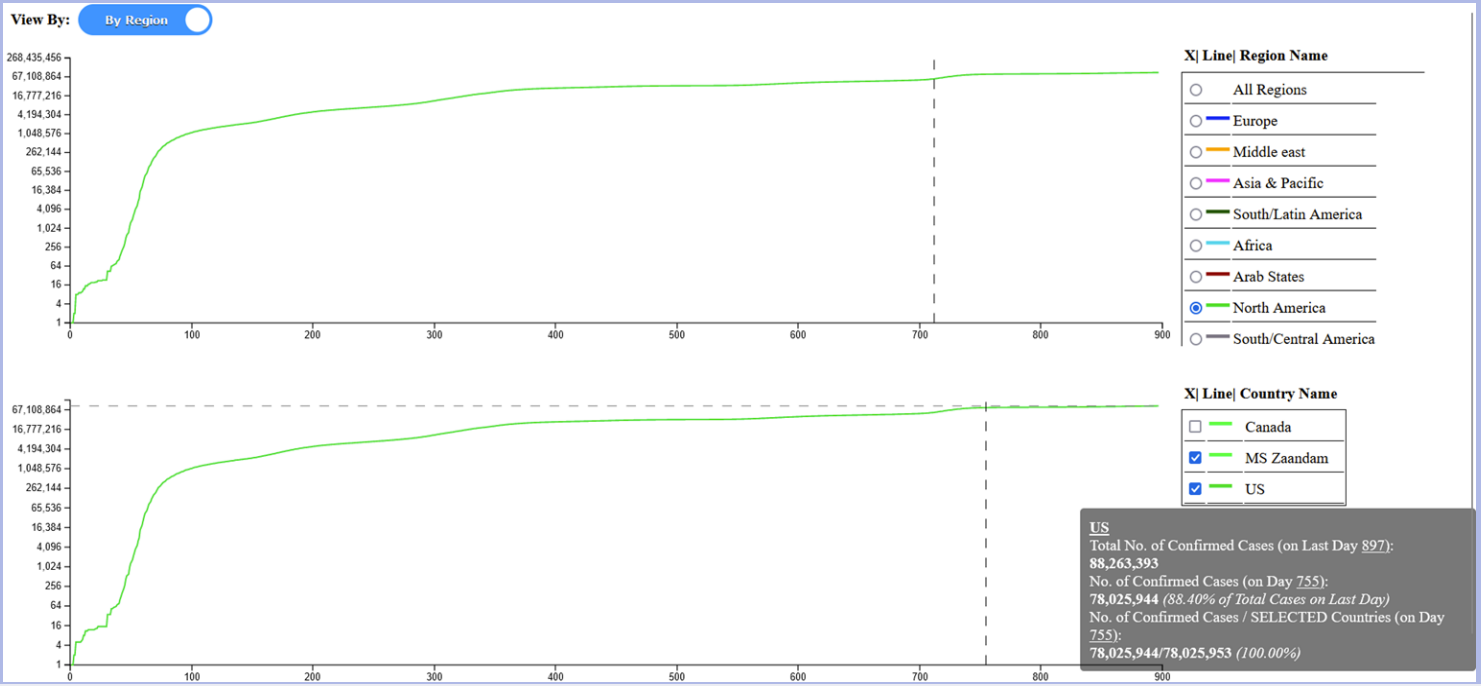
Solution



In Addition:

- On De-Selecting A Country in the Lower Line Chart, the Graph Updates

Solution

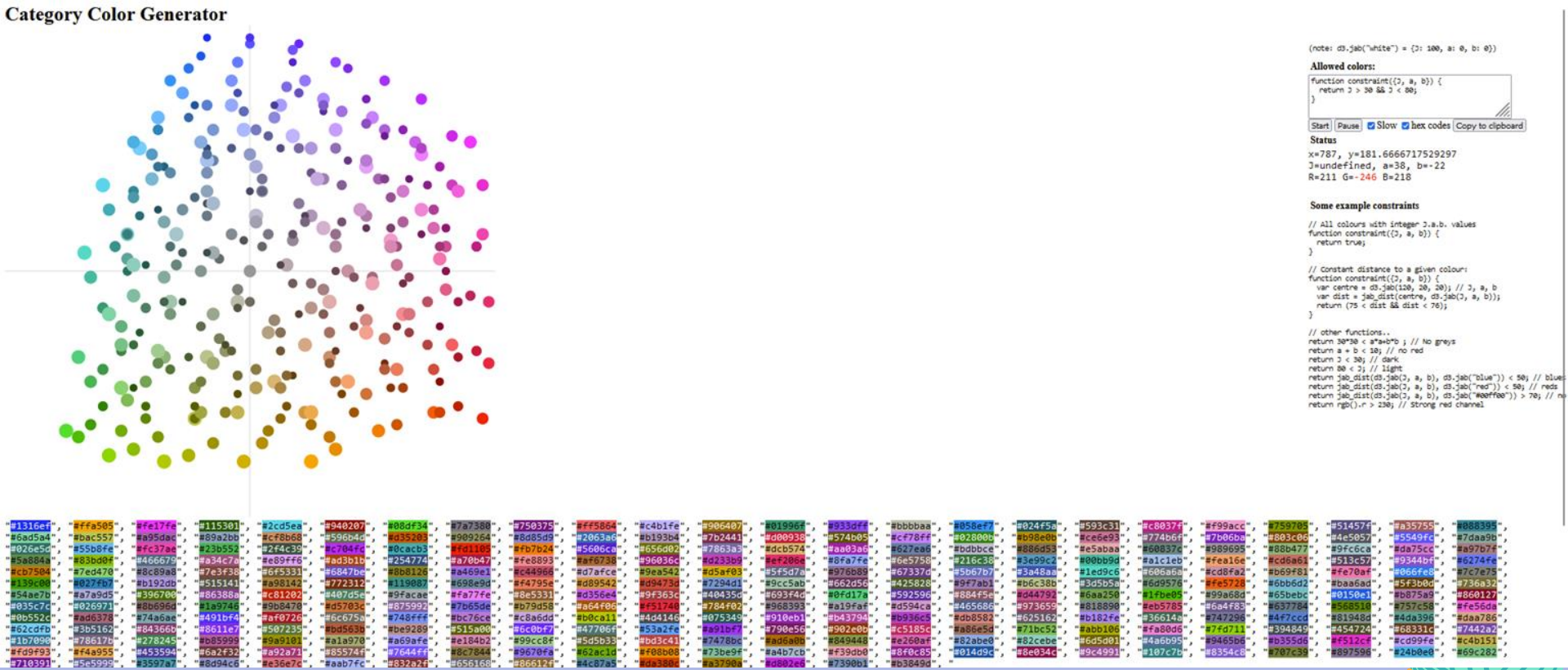


In Addition:

- On Hovering Over Any *Selected* Country, the Cases and % for the Selected Day is Shown.

Solution (Color Scale)

- Chose a Color Generator Repository via Git Pages:
  - Found Colors with a Range of Not too Dark to Not too Light
  - Color Samples are obtained via the **CIECAM02-UCS Color Space** so that Perceptually Different Colours are Equally Spaced.
    - The Git-Hosted Sampler Always chooses the Next Colour to be as far as Possible from all the Previously Sampled Colours (I.e. No Color Overlaps).

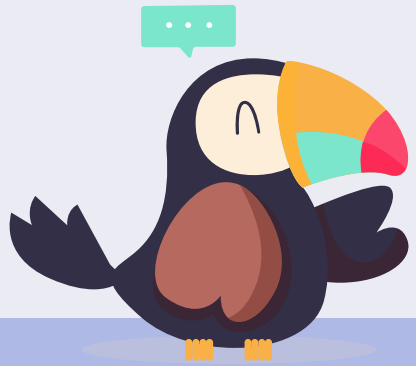


CIECAM02-UCS Color Space Git Pages: http://jnnnnn.github.io/category-colors-constrained.html

Solution (Improvements Needed)

- Due to Much Data Manipulation and Data Processing
  (I.e. Switching From “By Region” to “By Countries”, and Vice Versa),
  Waiting/Loading Time per Switch Lasts for Approx. 5 seconds before Graph Loads.
  - Discovered (Nearing Submission) about **Web Workers** (I.e. Multi-Threading) via JavaScript that could allow such Heavy Data Processing to run in the background.
  - This, could also allow Loading Page (Animated GIF Image Format, Apart From Internet Bandwidth) to Function as per Normal, without CPU Overheads.

Thank you



Stay Safe!