INFORMATION VISUALIZATION PROJECT REPORT

Case study: Human Development Index

(Link to the Website: https://rustagishubhi.github.io/Human-Development-Index/)

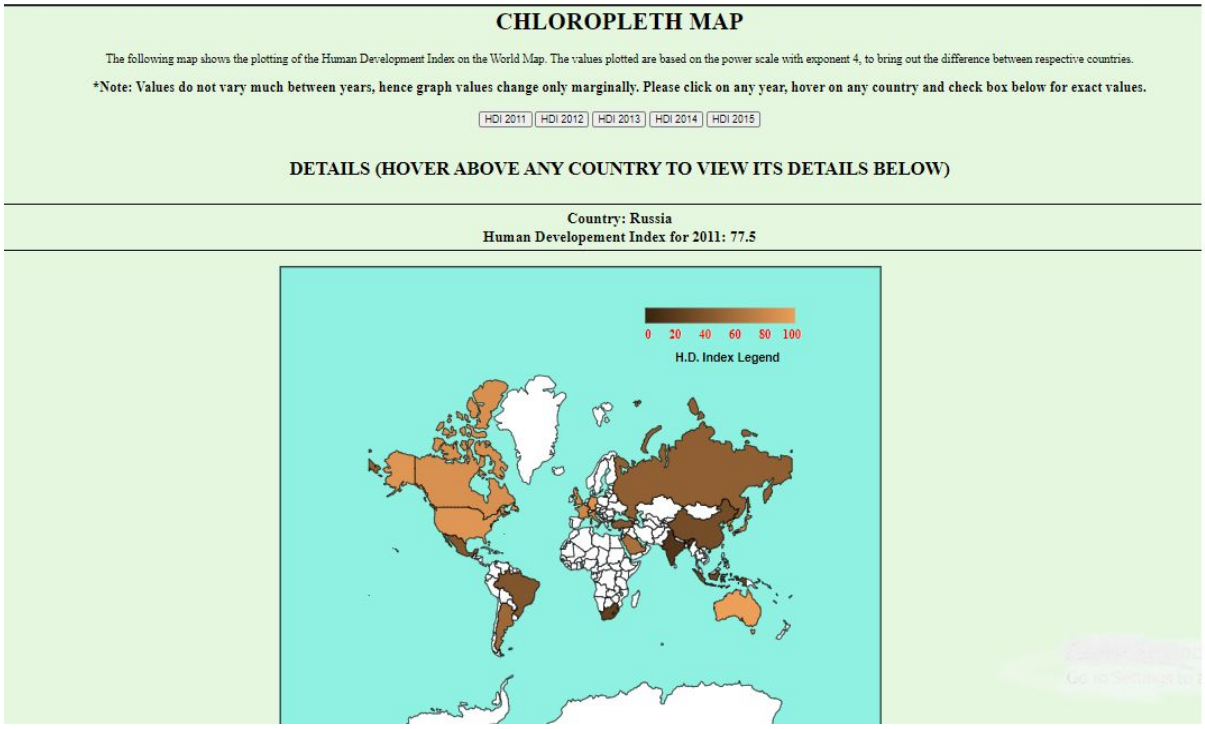
Prepared by

Arnab Sinha (17ucs034)

Shubhi Rustagi (17ucs158)

Dhruv Gupta (17ucs052)

CHOROPLETH MAP



Problem Statement: Distribution of Human Development Index across the World during different years from 2011 to 2015.

Why this Visualization: The visualization is an easy way to compare the human development index across the different geographical areas. The color, being the visual channel, helps in differentiating the regions with higher value of human development index from the lower ones for a particular year.

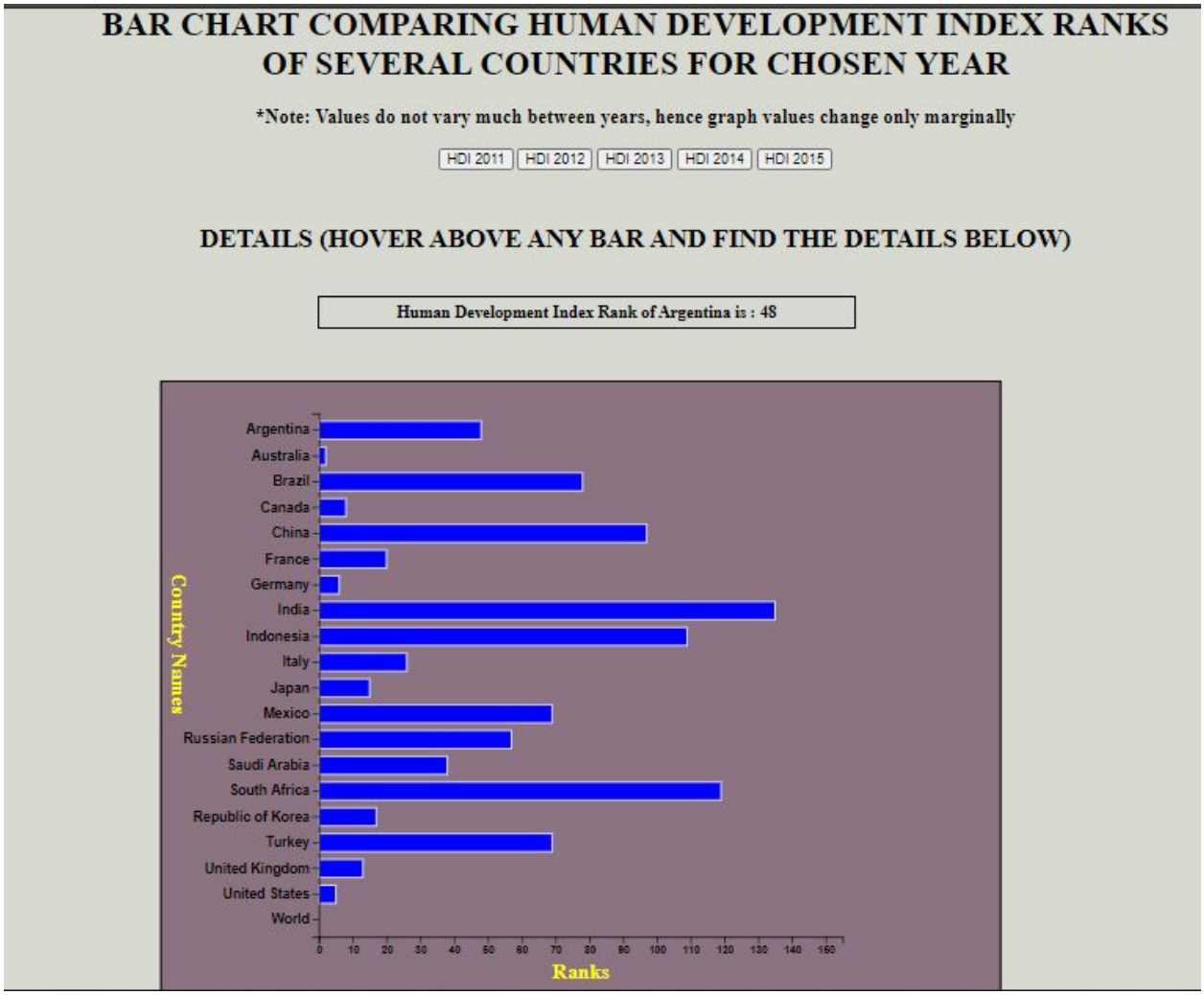
Strengths of the Visualization:

- Convenient to compare HDI of two or more countries simultaneously using the legend.
- Dynamic display of HDI values, on hovering above the country, provides accurate information.
- Multi Faceting the HDI values across years allows visualization across time in minimal space.

Weaknesses of the Visualization:

- HDI Values not provided for many countries, leading to a lot of sparse visualization.
- Since the values of a particular country do not change significantly across time, the change in color is not easily perceivable to the naked eye.

BAR CHART



Problem Statement: HDI Ranks of the different countries across different years.

Why this Visualization: The HDI Ranks are quantitative and the country names are categorical. The bar chart is a suitable representation for quantitative+categorical data. The visualization is faceted across the years.

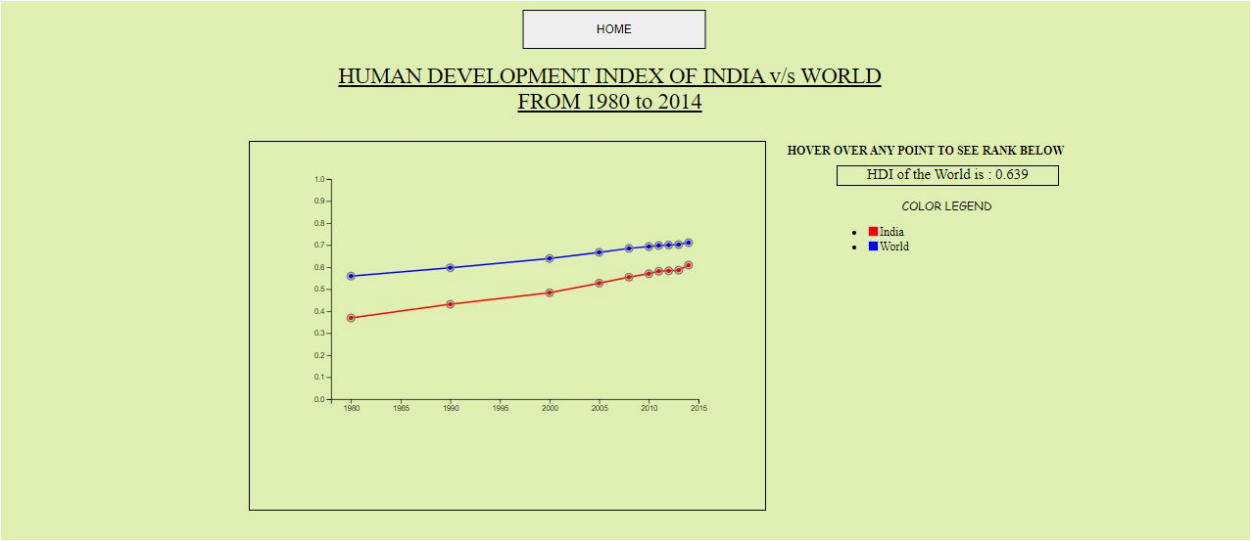
Strengths of the Visualization:

- Simultaneous comparison of ranks of several countries
- Dynamic display of ranks, on hovering above any bar, provides accurate information.
- Bar graphs plotted across 5 years in minimal area.

Weaknesses of the Visualization:

- Absence of grid lines makes it difficult to find reference lines.
- Order of the countries may provide misinformation about any visible pattern.
- Since HDI ranks do not change significantly across years, the change in overall structure of the bar graph is not easy to gauge.

LINE CHART 1



Problem Statement: Comparison of HDI of India with that of the World over the years 1980-2014.

Why this Visualization: The line chart represents the relationship between time and HDI. In this visualization, the lines are plotted for India and the World. Therefore, it also compares the values of the HDI over time from 1980 to 2014.

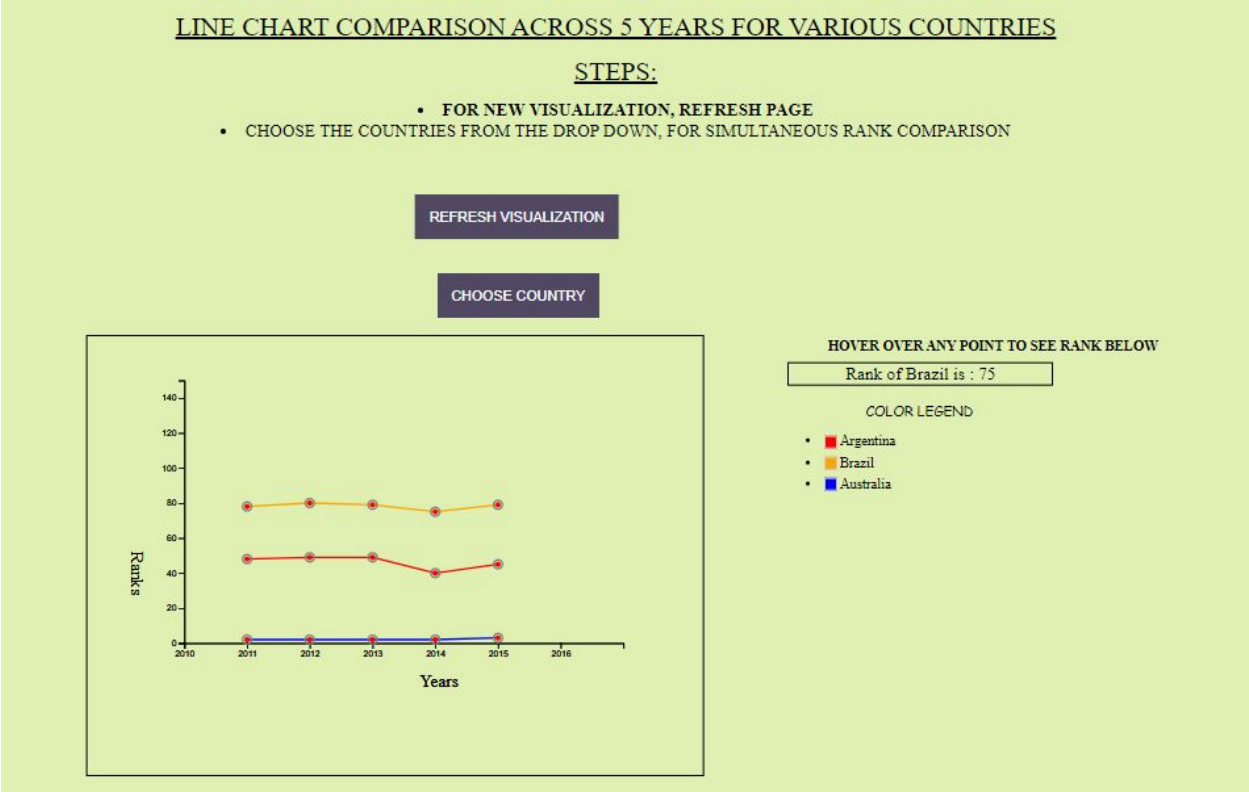
Strengths of the Visualization:

- Convenient to compare the HDI of India with the World.
- Convenient to learn about the change in the HDI of India and the World over time.

Weaknesses of the Visualization:

- The time here is discrete(for years only) and not continuous but the lines might give a wrong impression.

LINE CHART 2



Problem Statement: Comparison of HDI Ranks of various countries from 2011 to 2014.

Why this Visualization: Line charts are an efficient way of imparting information between time (here, years) and quantitative values (here, HDI Rank of country). Multiple line charts, in addition, save space and also help in comparison of two different entities.

Strengths of the Visualization:

- Dynamic addition of countries along with color coding of the respective lines makes it easier to compare required countries.
- As the mouse hovers on any plotted point, the respective value corresponding to that country, in that year, is shown next to the line chart.

Weaknesses of the Visualization:

- Too many countries, if plotted at once, will make it difficult to identify any particular line and make further comparisons.

FURTHER POSSIBLE IMPROVISATIONS

- More number of features could have been explored via other plots like pie charts and scatter plots.
- We attempted to plot a grouped bar chart but were unable to reproduce a neat visualization. Further work could be done to achieve it.
- The visualizations can be improved to be more interactive, for instance, zooming options can be added.
- Bootstrap framework can be used for improving the styling of the webpages.

RESOURCES

1. Lecture Notes
2. Coursera Specialization: Information Visualization
3. https://data.gov.in/
4. https://d3js.org/
5. https://www.w3schools.com/
6. https://stackoverflow.com/