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| **Team name:** | Viz Visionaries |
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| **Tutorial day and time:** |  |
| **Year and Semester:** | July 2023, Semester 7 |
| **Word count:** |  |

<https://cos30045-group8.netlify.app/>

**Project Process Book**

MIGRATION OF INDIA DATA VISUALISATION

**Title Page**

Includes:

• descriptive title (e.g., ‘Data Visualisation Project’ is not acceptable)

• link to Mercury hosted website (must be on title page)

• team name and student names and IDs

• tutorial day and time

• year and semester

• word count

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# **Introduction**

## **Background and Motivation**

Who will use, or be interested in, this visualisation (i.e., users)? What kind of tasks will they want to do? Why is it important?

The intended audience for our six data visualisations encompasses a diverse group, including individuals, policymakers, researchers, and organizations with a keen interest in comprehending the intricacies and ramifications of migration in India. This user base holds various roles and exhibits different interests, ranging from government officials and policymakers, researchers and analysts, and organisations to the general public.

For government officials and policymakers, our choropleth map and heatmap data visualisations, which delve into the unemployment rates in different states of India and the wage disparities between India and other countries, hold immense significance. These visualisations are crucial for making well-informed decisions and addressing socio-economic challenges. They provide a valuable tool for formulating and evaluating policies related to immigration and economic development.

Similarly, researchers and analysts, tasked with studying migration trends and their impact on socio-economic factors, find our sunburst chart data visualisation particularly useful. This visualisation, which represents the population of India each year, contributes to academic research, informs studies on population dynamics, and supports social analysis.

Furthermore, organizations such as Non-Governmental Organizations (NGOs) can harness the insights from our cluster-stacked bar chart, which focuses on the relationship between diseases and migration. This data visualisation helps organizations understand migration patterns, enabling targeted interventions and assistance programs and contribute to designing initiatives that address the specific needs of migrant populations and contribute to the promotion of social welfare.

For the general public, our Pie Chart data visualisation provides accessible insights into the causes, consequences, and trends of migration in India. It serves as an informative tool for understanding the reasons behind Indian migration.

The importance of our data visualisations spans various critical aspects of socio-economic dynamics in India. Firstly, the unemployment rate visualisation, empowers policymakers to make informed decisions about employment strategies and interventions, crucial for addressing socioeconomic disparities. Also, by addressing unemployment through targeted strategies informed by the unemployment rate visualisation, individuals are more likely to find stable employment opportunities within their home country. Secondly, the reason for migration visualisation, encompassing gender-specific data, aids in crafting policies tailored to the diverse needs of migrant populations, fostering social inclusion and integration. Additionally, understanding the specific reasons for migration enables policymakers to implement measures that directly address the root causes, creating a more conducive environment for people to stay. Thirdly, wage disparities across countries, presented in our visualisations, offer insights into global economic trends, enabling policymakers to make informed decisions on labour-related policies for sustainable development. Also, the economic planning facilitated by wage disparities and demographic insights further aids in creating opportunities, improving living standards, and reducing the allure of seeking employment abroad. Moreover, our visualisations on international migration from India and the impact on metropolitan areas provide essential data for understanding the scale and implications of global diaspora, guiding diplomatic and urban planning decisions. Additionally, the age-group analysis from the population visualisation aids in demographic planning, influencing policies related to education, healthcare, and workforce development. The visualisation of disease prevalence affecting migration provides invaluable information for public health planning, allowing targeted healthcare strategies to address the unique health needs of migrants, thus enhancing overall well-being. In summary, our data visualisations play a pivotal role in fostering informed decision-making, socio-economic inclusivity, and sustainable development in India thereby reducing the chances of people emigrating.

## **Visualisation Purpose**

What questions will the user be able to answer with your visualisation? List the possible benefits of the completed visualisation.

## **Project Schedule**

Make sure that you plan your work so that you can avoid a big rush right before the final project deadline. Write this in terms of weekly deadlines.

**Week 3**

**Activity**

1. Conducted research on migration information.
2. Filtered out several suitable countries for our project and discussed with team members to decide which one was more suitable.
3. Read the Project Process Book instructions.

**Deadline for this week: 9 September 2023**

**Week 4**

**Activity:**

1. Discuss and finalize the project title.
2. Identify and retrieve datasets from online sources.
3. Determining the titles for the charts.
4. Search for suitable charts corresponding to each dataset.
5. Participated in and contributed to Stand-Up 1 meeting in class.

**Deadline for this week: 16 September 2023**

**Week 5**

**Activity:**

1. Research on Indian migration details to gain further insights and a deeper understanding of the various aspects of migration in India.
2. Research datasets that related to India.
3. Trying different research methods and sources to uncover diverse and valuable information that could contribute to the project's dataset collection.

**Deadline for this week: 23 September 2023**

**Week 6**

**Activity:**

1. Presented the datasets collected by each team member and discuss the which datasets are suitable for the project.
2. Identify the 6 datasets required for the project.
3. Renamed the dataset titles to enhance clarity and compatibility with the charts.

**Deadline for this week: 30 September 2023**

**Week 7**

**Activity:**

1. Determine and assign the types of charts for each dataset.
2. Generate 6 CSV files by extracting the essential data from the datasets we found.
3. Assign development responsibilities for each chart to every team member.

**Deadline for this week: 7 October 2023**

**Week 8**

**Activity:**

1. Research on the chart templates as references for development.
2. Create a new project in Figma to sketch the chart prototype: <https://www.figma.com/file/UWxd1ZE9F5eeS1g9glI1cY/Untitled?type=design&node-id=0%3A1&mode=design&t=lHaHPkCtoIW3EPjC-1>
3. Conduct research and commence the development of the charts.

**Deadline for this week: 14 October 2023**

**Week 9**

**Activity:**

1. Should filter out all necessary data and organize it into relevant CSV files.
2. Completed the development of at least one chart.
3. Should finish sketching the chart prototype in Figma.

**Deadline for this week: 21 October 2023**

**Week 10**

**Activity:**

1. Completed the development of at least one chart.
2. Identified and selected the cover page for the Project Process Book.
3. Participated in and contributed to Stand-Up 2 meeting in class.
4. Compiled a comprehensive list of all required features for each chart in point form within the Project Process Book.

**Deadline for this week: 28 October 2023**

**Week 11**

**Activity:**

1. Continued development on the remaining charts.
2. Completed the development of the landing page for the charts.
3. Progressed on the Project Process Book of the data source.

**Deadline for this week: 4 November 2023**

**Week 12**

**Activity:**

1. Completed the development of at least two charts.
2. Accomplished the task of finishing the design sketches through hand drawings.
3. Participated in and contributed to Stand-Up 3 meeting in class.

**Deadline for this week: 11 November 2023**

**Week 13**

**Activity:**

1. Should complete the development of the last two charts.
2. Should complete the addition of explanatory paragraphs to at least three charts, enhancing the understanding and context of the visualized data.
3. Complete the Project Process Book.

**Deadline for this week: 18 November 2023**

**Week 14**

**Activity:**

1. Check the Project Process Book to ensure accuracy and completeness.
2. Sumit the Project Process Book including all the necessary files.
3. Participated in and contributed to Stand-Up 4 meeting in class.

**Deadline for this week: 20 November 2023**

# **Data**

## **Data Source**

From where and how are you collecting your data? Provide a link to your data sources. What type of data set is it (e.g., table, network, field)? What are the attributes in your data set and what type of data are the values (i.e., categorial, ordinal, interval, ratio/quantitative)? Is there any data in the set that will not be included in your visualisation? Why?

NOTE: Make sure that the data can be used to answer the questions outlined in Section 1.2.

* + - 1. **Unemployment Rate:**

For this dataset we are choosing State and Unemployment\_Percentage\_in\_2022 for our dataset.

**State**: categorical data

**Unemployment\_Percentage\_in\_2022**: ratio data

<https://www.studyiq.com/articles/unemployment-rate-in-india/>

* + - 1. **Reason of migration:**

We are choosing the year, reason\_for\_migration, male, female and person for our dataset.

**reason\_for\_migration:** categorical data

**male:** ratio data

**female:** ratio data

**person:** ratio data

<https://pib.gov.in/PressReleasePage.aspx?PRID=1833854>

* + - 1. **Wages:**

We are choosing the year, country\_code, country\_name, monthly\_wages and hour\_wages for our dataset.

**Year**: ordinal data

**country\_code**: categorical data

**country\_name**: categorical data

**monthly\_wages**: ratio data

**hour\_wages**: ratio data

<https://www.nber.org/research/data/occupational-wages-around-world-oww-database>

* + - 1. **Disease leads to migration dataset:**

We are choosing the Disease\_Category, Female, Male, 40\_years\_above, 39\_years\_below and Prevalence\_among\_migrantsfor our dataset.

**Disease\_Category:** categorical data

**Female:** ratio data

**Male:** ratio data

**40\_years\_above:** categorical data

**39\_years\_below:** categorical data

**Prevalence among migrants:** ratio data

<https://www.researchgate.net/publication/319659904_Determinants_of_internal_migrant_health_and_the_healthy_migrant_effect_in_South_India_A_mixed_methods_study>

* + - 1. **Migration from India to other countries**

We are choosing the year, Metropolitan\_Area, Immigrant\_Population\_from\_India, and Percentage\_of\_Metro\_Area Population for our dataset.

**Metropolitan\_Area:** categorical data

**Immigrant\_Population\_from\_India:**  ratio data

**Percentage\_of\_Metro\_Area Population:** ratio data

<https://www.migrationpolicy.org/article/indian-immigrants-united-states>

* + - 1. **Population:**

We are choosing the year, Age-Group and Value for our dataset.

**Year**: data ordinal

**Age**\_**Group**: Categorical data

**Value**: Raio data

<https://population.un.org/wpp/Download/Standard/Population/>

## **Data Processing**

Do you expect to do substantial data cleanup? What quantities do you plan to derive from your data? How will data processing be implemented? Will you be deriving any variables?

Describe clean up process that was implemented. Explanation and calculation of derived variables (if used).

# **Requirements**

## **Must-Have Features**

These are features without which you would consider your project to be a failure. Were you able to deliver all the promised features? If not, explain why.

**Heatmap Chart: Monthly wages between few countries**

**Idea:**

* Mouse over show the tooltip
* Have the color legend show the wages range
* Few countries button that allow to filter out their details in table form

**Choropleth map: Unemployment Rate of India**

**Ideas:**

* Allow to zoom when clicking any states in map and zoom manually such as scroll up and down or double click.
* Can be filter the data using search bar or button
* After filter will also display the filtered statss in map.
* Have a color legend to show the range.
* After filter will display to table to show more clear data.
* Mouse over in the states will show the tooltip.
* Have click on function and display the tooltip function and fill the clicked state.

**Sunburst chart: Population of India**

**Ideas:**

* Have click on function on the year
* After click the year or age will show the result in center
* Mouse over to show to tooltip.

**Pie Chart: Reason of India people migrate**

**Ideas:**

* Have mouse over to show the tooltip
* Have 2 filter button for show the male and female migration reason.

**Clustered stacked bar chart**

**Ideas:**

* Mouse over will show the tooltip.
* Have color legend to display the categories.

**Bubble chart:**

**Ideas:**

* Mouse over will show the tooltip.
* Filter function.
* Have color legend to display the range.
* Search bar to filter the different number of bubbles.

## **Optional Features**

Those features which you consider would be nice to have, but not critical. Were you able to deliver any of these extra features?

# **Visualisation Design**

How will you display your data? Provide some general ideas that you have for the visualisation design. Include sketches of your design. Include at lease 2-3 alternative ideas for your visualisation. Describe and justify your choice of visual encoding and idioms. Show the evolution of your design. How has it progressed? Justify the visualisation idioms you have chosen to represent your data.

Description (including screen shots) and explanation of final design.

[NOTE 1: You are encouraged to provide your own structure to this section (i.e., section headings etc).

NOTE 2: You MUST show evidence of iterative design (i.e., sketches of alternative and preliminary designs). ]

Include screenshots of final design.

**Figma link:** <https://www.figma.com/file/UWxd1ZE9F5eeS1g9glI1cY/Untitled?type=design&node-id=0%3A1&mode=design&t=S168Q81o0eQTJVIU-1>

**Draft of preliminary designs**

**Heatmap Chart: Monthly wages between few countries**

A paper with a chart and a graph

Description automatically generated with medium confidence

**Choropleth map: Unemployment Rate of India**

A white board with a black and white drawing

Description automatically generated with medium confidence

**Sunburst chart: Population of India**

A diagram of a sunburst chart

Description automatically generated

**Pie Chart: Reason of India people migrate**

A graph on a piece of paper

Description automatically generated

**Clustered stacked bar chart**

A graph of bar graph and bar graph

Description automatically generated

**Bubble chart:**

A drawing of circles and lines

Description automatically generated

# **Validation [optional - Bonus Points]**

Test your visualisation with users and report the results.

# **Conclusion**

Provide a summary of the project and what you learnt from doing it.

# **References**

References consulted (blogs, books, academic papers, discussion/help forums - for both design and programming)