Data Visualization Project 1

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Tutorial: Tutorial 06

URL: [Click Here](https://public.tableau.com/views/Assignment1_16923354350820/AIGlobalIndexOverview?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link)

Number of words: 982 Words

**Domain**

AI Global Index (Kateryna Meleshenko, 2023)

The Global AI Index is the first index to benchmark nations on their level of investment, innovation, and implementation of artificial intelligence.

Before creating the visualisation, some of the idioms needed some pre-processing on the dataset. For example, a Sankey diagram needed to have a source ID and a target ID to know which node it linked to. I have also created a pivot table that just selects some of the indicators in wide format for some of my visualizations. My dataset does not need to be clean after checking each row, as it only contains 62 rows of country data. Other calculations can be done using the calculation field in Tableau. For example, the radar chart’s angle, ranking, etc.

**What**

The dataset that I collected is called the AI Global Index. The dataset contains the Global AI Index itself, seven indicators that have an impact on the Index across 62 countries, as well as general data about the nations (region, cluster, income category, and political regime). The author of the dataset is Kateryna Melesheko, who is a research and development engineer in Poland.

* Categorical
  + Region, political regime
* Ordered
  + Ordinal
    - Cluster, income group
  + Quantitative
    - Talent, Infrastructure, Operating Environment, Research, Development, Government Strategy, Commercial, Total Score

**Why and How**

Figure 1: (Entire Dashboard Visualization)

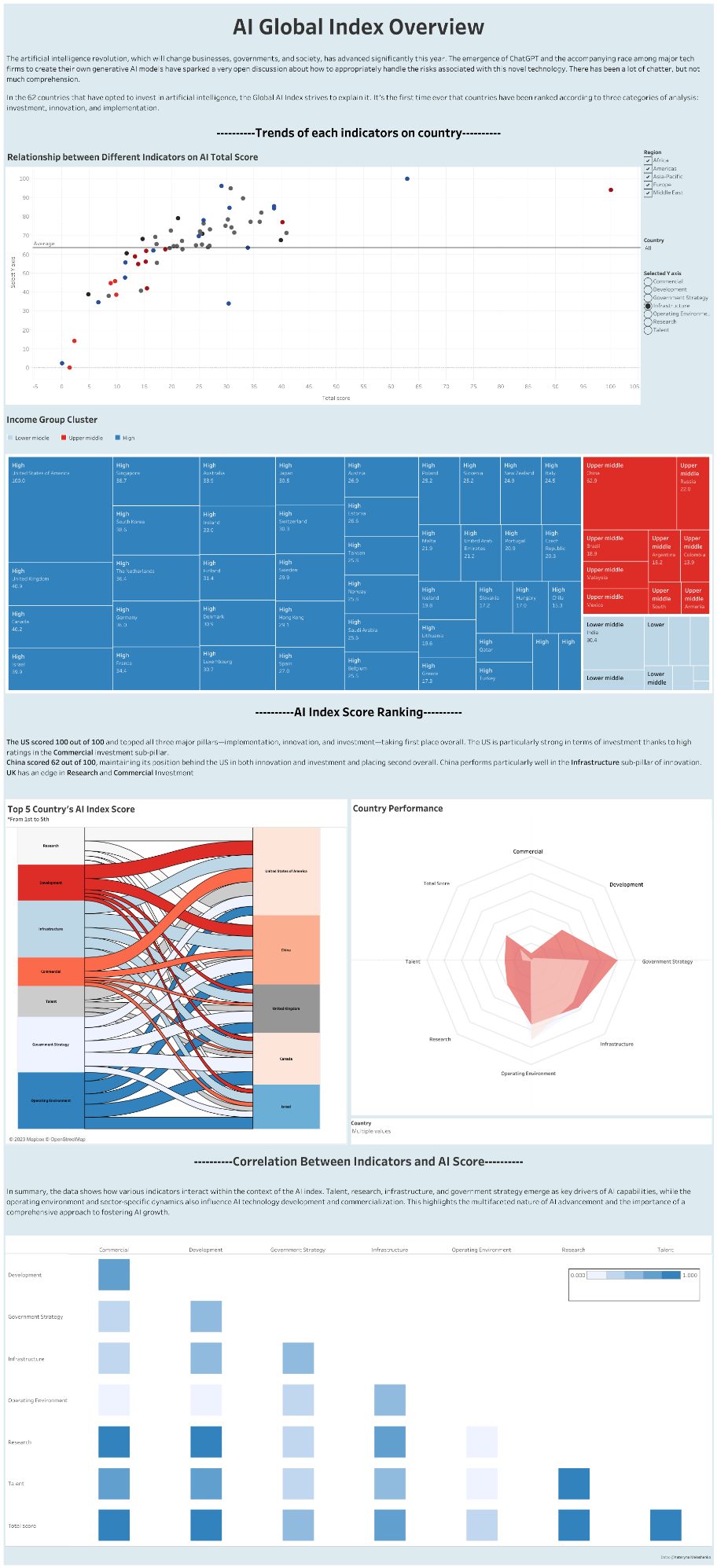
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Figure 2: Dynamic Y-axis dotted plot

**A screen shot of a graph

Description automatically generated**

* Why
  + A dotted plot can show the relationship between the selected indicator and the AI total score.
* How
  + Dots can show each country’s AI total score aligned with the selected indicators.
  + Colour hues represent different regions.
  + The dynamic y axis can let users select indicators that they want and show trends and relationships.

Figure 3: Income Group Tree map

A screenshot of a computer

Description automatically generated

* Why
  + To visualise the proportion of each income group based on AI Total Score and find whether that will influence AI Total Score
* How
  + Split into three big proportions, where each proportion shows the country that is in the category.
  + The size of each box represents the AI total score of the current country.
  + Colour hue to differentiate income groups

Figure 4:Sankey Diagram + Radar Chart

**A screenshot of a computer

Description automatically generated**

* Why
  + Sankey Diagram
    - To visualise the top 5 ranks of countries based on AI Index Score.
  + Radar Chart
  + To visualise the performance of each country based on the 7 indicators
* How
  + Sankey Diagram
    - Using colour hue to differentiate different indicators and countries
    - Using the width of the link to show the score of current indicators
  + Radar Chart
    - By using different angles to show different indicators
    - Colour hue to differentiate different countries
    - Option bar that lets users select the country they need

Figure 5: Correlation Heatmap

**A screenshot of a computer

Description automatically generated**

* Why:
  + By showing each indicator and the total AI score correlation, it can be found out which indicators have the most effect on the total AI score as well as which indicators match the most with other indicators.
* How:
  + Using colour hues to show the scale of the correlation value

Design

The design of the dashboard takes into consideration several key elements. The viewing path for users follows a left-to-right progression, guiding their attention seamlessly. The visual centre of focus is strategically positioned in Figure 2, which illustrates the relationship between different indicators on the AI Total Score. To maintain an uninterrupted experience, sight lines are kept to a minimum. The dashboard is thoughtfully aligned with an invisible frame, ensuring a cohesive presentation. It achieves equilibrium by harmonising a subtopic of idioms with corresponding visualisations; each container is symmetrically divided into halves, contributing to a sense of visual balance and organisation.

Colour

The colour scheme of the dashboard is carefully chosen to enhance the user experience. A light blue background is employed to symbolise the central theme of the topic, AI. The colours utilised throughout the design are thoughtfully contrasting, ensuring clarity and readability for all users, including those with colour blindness. This approach not only aligns with visual aesthetics but also emphasises accessibility and inclusivity in the presentation of information.

Figure-Ground

Graphical elements take precedence, drawing attention through careful emphasis. Charts are both vibrant and generously sized, capturing the viewer's focus effortlessly. Notably, when filtering or highlighting elements, the designated elements stand out distinctly, ensuring their prominence within the visual context. To establish a clear hierarchy of information, various elements such as tiles, subtitles, and text employ distinct typographies. This systematic differentiation aids users in comprehending the content's structure intuitively, reinforcing the effectiveness of the dashboard's communication.

Typography

Typography plays a vital role in the dashboard's visual identity. The choice of a sans-serif open font, specifically Tableau Bold, for the topic, text, and headers exudes a modern and approachable aura. To ensure a coherent visual hierarchy, a slightly thinner variant, Tableau Book, is applied to charts, maintaining a balanced and consistent look. The differentiation in font size effectively guides the reader's attention: the topic is notably larger, titles possess a slightly elevated size, and subtitles, though smaller, remain highly legible. Important text is set in bold, accentuated by a larger font size, thereby accentuating its significance. The design consciously avoids underlining, further contributing to a clean and sleek appearance that aligns with the contemporary aesthetics of the overall dashboard.

Storytelling

The dashboard employs a narrative approach to storytelling, guiding viewers through a well-organised sequence. Chart progression follows a logical left-to-right, top-to-bottom flow. Gestalt principles like proximity and closure are cleverly used for grouping and clarity. The entire design is tailored to convey a story: starting with an introduction to the AI index mechanism, moving on to the interplay between indicators and AI Total Score, presenting country rankings based on indicators, and culminating in a correlation heatmap depicting indicator-AI relationships. This cohesive structure weaves together visuals and text to offer a comprehensive and engaging narrative about the AI landscape.

**Reference** **List**

Kateryna Meleshenko. (2023). AI Global Index. Retrieved August 29, 2023,

from: <https://www.kaggle.com/datasets/katerynameleshenko/ai-index>