



## Challenge 1

**Theme:** Fostering a Data-Driven, Innovative, and Collaborative Environment to Creatively Problem-Solve Societal Issues with Actionable Results.

**Topic:** Urbanization Trends in Kenya

Timeframe	1 week
Deadline	28th, September 2023 (1600 hrs EAT)
Software/Tools	Use any software/tools that you are comfortable with.

**Objective:** The objective of this challenge is to analyze open data sets in Kenya using real-world data. You are therefore to explore, visualize, and draw insights from the provided dataset to provide better insights to different stakeholders on how urbanization is impacting different aspects of Kenyan society. Participants should work in teams and are encouraged to utilize technologies such as big data, machine learning, and artificial Intelligence that train test, and evaluate multiple data sets to uncover innovative solutions.

**Dataset:** The 2023 Economic Survey (Link: [knbs.or.ke/data-tables/?cp=2](https://knbs.or.ke/data-tables/?cp=2)) by the Kenya National Bureau of Statistics (KNBS) contains data tables with various socio-economic and demographic indicators for different time periods in Kenya. It includes information such as:

- Population growth rates in urban and rural areas.
- GDP per capita for urban and rural areas.
- Infrastructure development (e.g., access to clean water, and electricity) in urban and rural areas.

- Education and literacy rates in urban and rural areas.
- Healthcare access and disease prevalence in urban and rural areas.
- Employment opportunities and unemployment rates in urban and rural areas.

**\*\*\*Note:** You are allowed to use any other data source apart from the one provided to enrich and achieve your analysis goals, provided it captures the above key details.

## Task

- **Data Exploration:** Start by exploring the data tables and ensuring that your selected datasets are clean and ready for analysis. You can check for any inconsistencies and understand the data's structure. Note down any issues with the datasets, as that will be part of the evaluation criteria.
- **Visualize Urbanization Trends:** Create visualizations (e.g., line charts, bar graphs, heatmaps, and dashboards) to showcase the trends in urbanization over time. How has the urban population grown in comparison to rural areas? Are there any noticeable patterns or anomalies?
- **Impact on Socio-economic Indicators:** Analyze how urbanization has affected socio-economic indicators such as GDP per capita, education, and healthcare access. Are there correlations between urbanization rates and these indicators? Please describe.
- **Regional Differences:** Investigate regional variations in urbanization rates and their impact. Are some regions urbanizing faster than others? How do these differences affect local communities? Please compare more than one city. You are encouraged to use additional data as you will.
- **Challenges and Opportunities:** Identify challenges and opportunities associated with urbanization in Kenya. What are the potential benefits of urbanization, and what issues should policymakers address?

## Submission of Task

Submit a link to your solutions here: <https://forms.gle/ef3AEgf95eFkRTWP8>

Ensure you list and describe the tools and datasets used as part of this challenge. Also, ensure you explain the reason behind the different exploration steps

undertaken to finish this challenge.

## Evaluation Criteria

All submitted solutions will be evaluated based on the following criteria:

- **Data Handling:** How well you identified and described the cleaning processes that should have been done on the data.
- **Data Visualization:** The quality and clarity of visualizations used to present trends and insights.
- **Insights:** The depth and significance of insights drawn from the data.
- **Regional Analysis:** How effectively you analyzed regional variations in urbanization.
- **Impact Analysis:** The depth of understanding of how urbanization affects socio-economic indicators.
- **Creativity and communication:** How well your visualizations tell the story in the data.

## Partner Organizations

