Data and Artificial Intelligence

Cyber Shujaa Program

Week 5 Assignment

Assignment 5: Data Visualization using Tableau

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Contents

Introduction

- For this week's assignment, the focus was on data visualization using Tableau, a powerful business intelligence tool. As a student in the Data and AI learning track, I was excited to apply my analytical skills to a new platform and create a professional-quality, interactive dashboard.
- This week's task was to build an end-to-end HR Analytics Dashboard for a fictional HR Manager. The project involved connecting to a dataset, performing data transformations, creating calculated fields, and building multiple visualizations.
- While I have experience with data concepts, this project was my first hands-on experience building a full dashboard in Tableau from start to finish, including publishing it to the Tableau Public cloud.
- The actual dataset I used for this project was HumanResources-Kenyan.csv, which contains employee information such as demographics, job roles, hire dates, and salaries.

Objectives

The key objectives for this assignment were to:

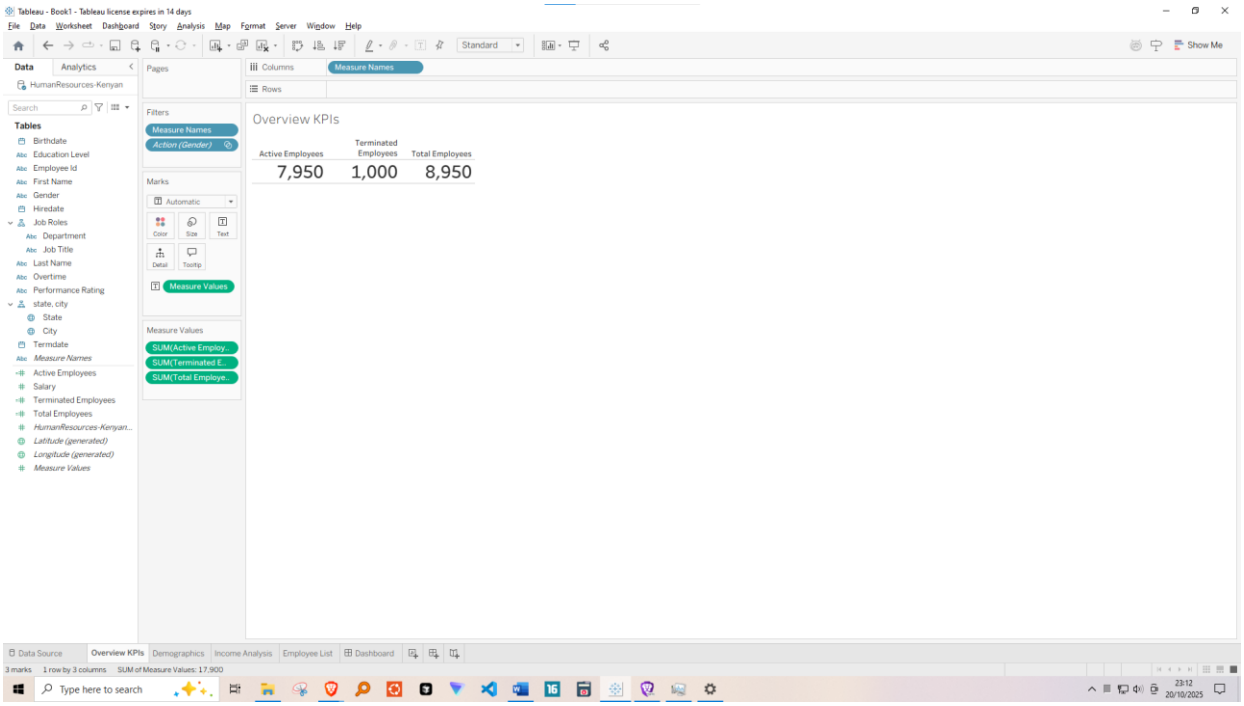
1. Practical application of data visualization principles using Tableau Public.
2. Load and transform a raw .csv dataset within the Tableau environment.
3. Create new calculated measures to derive key business metrics (e.g., Active vs. Terminated employees).
4. Build a series of distinct visualizations (KPI cards, bar charts, and a detailed table) on separate worksheets.
5. Combine all worksheets into a single, cohesive, and interactive dashboard.
6. Publish the final interactive dashboard to a public Tableau Public profile to create a shareable link.

Tasks Completed

1. loading the dataset

This involved connecting to the text file and then moving to the worksheet view. Here, I performed initial transformations to make the data more user-friendly:

- **Renamed Fields:** Cleaned up field names like employee_id to Employee Id.
- **Created a Hierarchy:** Dragged Job Title onto Department to create a Job Roles hierarchy for easier drill-down.

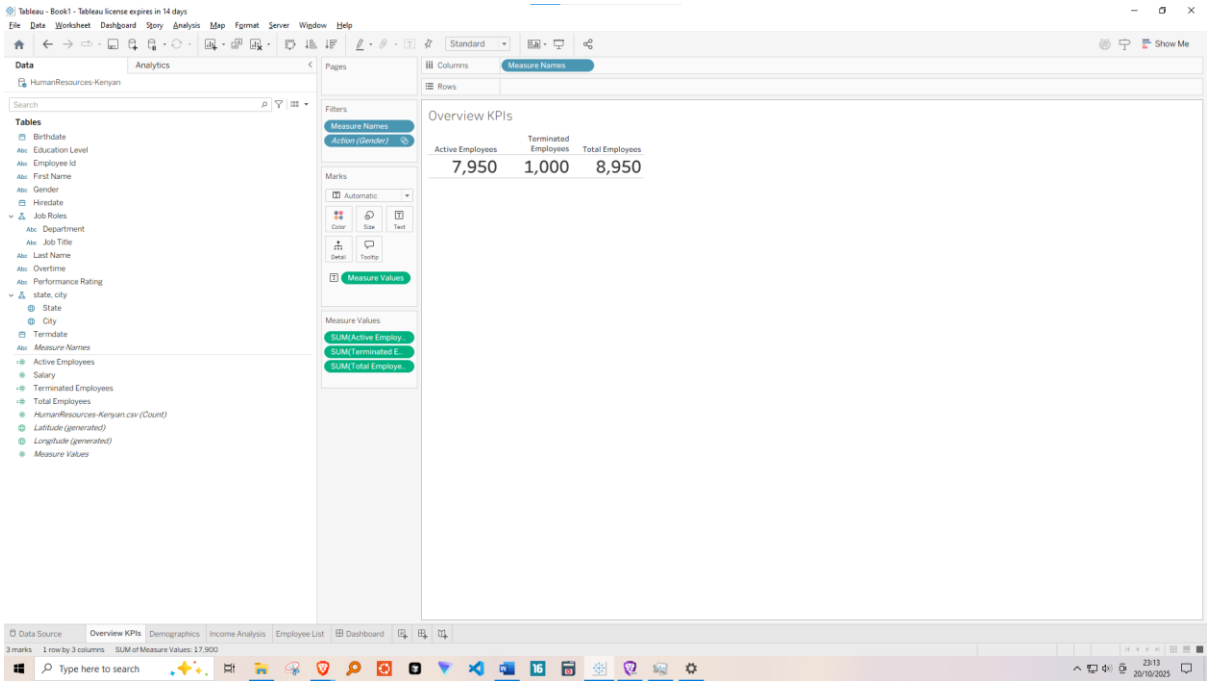


Data loaded and prepared in Tableau, with renamed fields and a new 'Job Roles' hierarchy.

2. Calculated Measures

The original dataset did not contain counts for active or terminated employees, so I created these using formulas. This is a critical step for providing high-level insights.

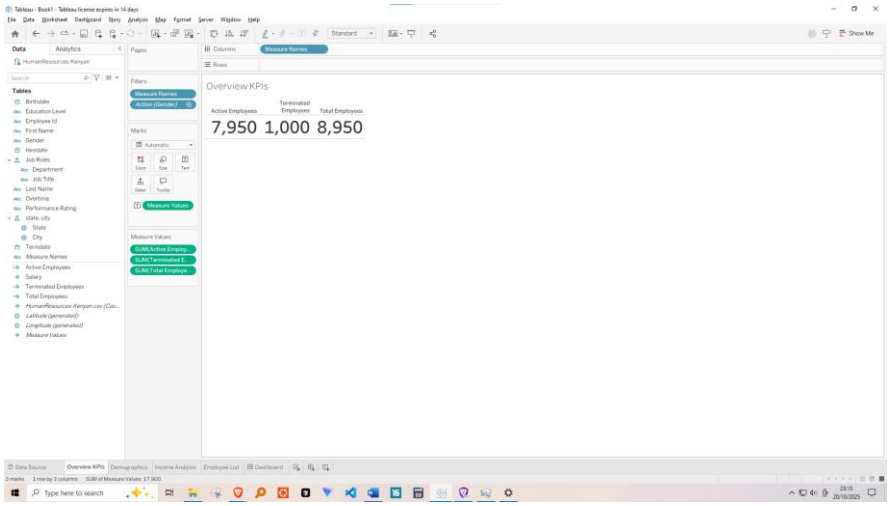
- **Total Employees:** 1
- **Active Employees:** IF ISNULL([Termdate]) THEN 1 ELSE 0 END
- **Terminated Employees:** IF NOT ISNULL([Termdate]) THEN 1 ELSE 0 END



The three new calculated measures created for the dashboard's KPIs.

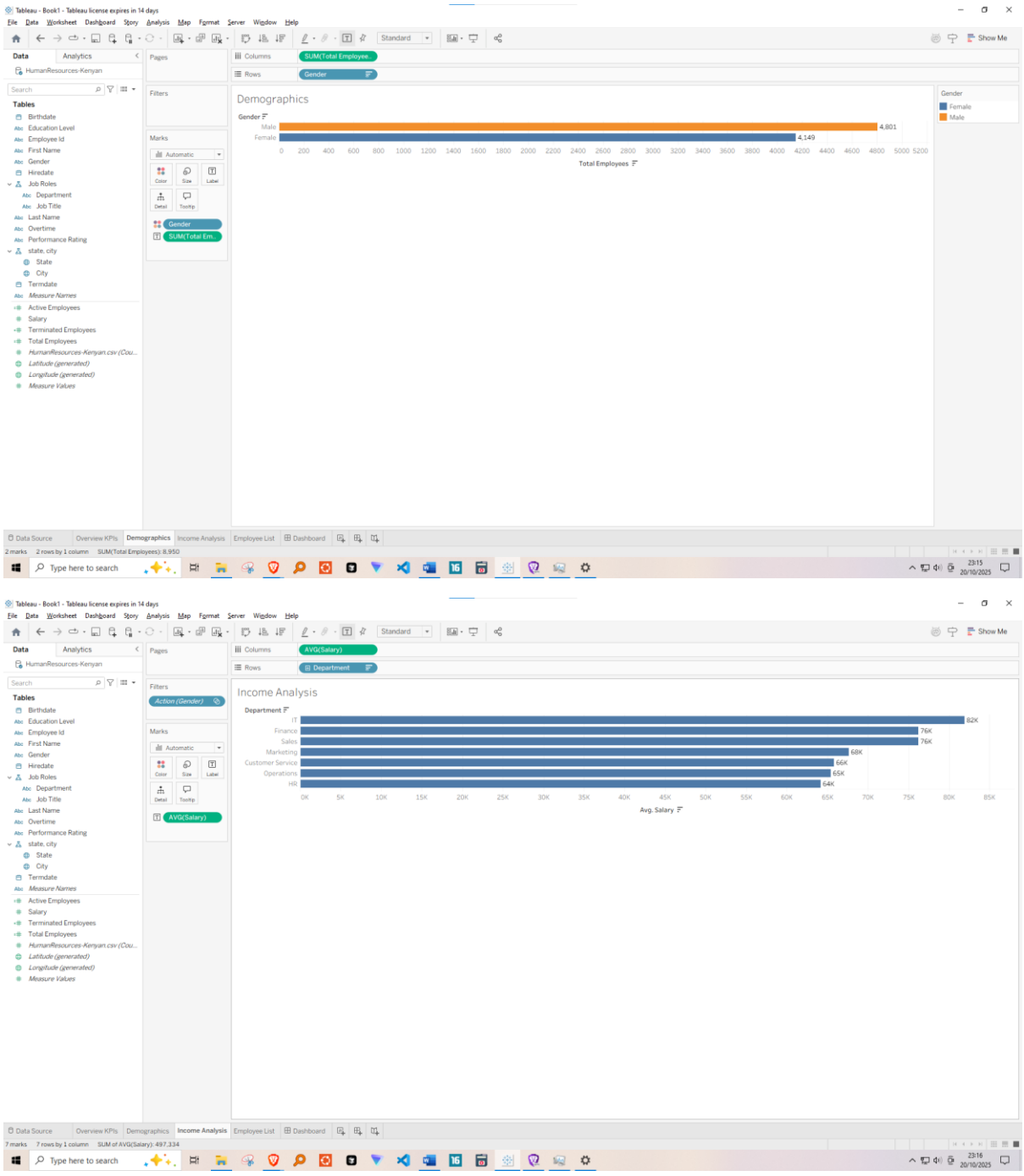
3. I then built four separate worksheets, each with a specific visualization.

- **Overview KPIs**: I created a text-based view to show the most important numbers at a glance. I used Measure Values and filtered by Measure Names to display the three calculated fields created in the previous step.



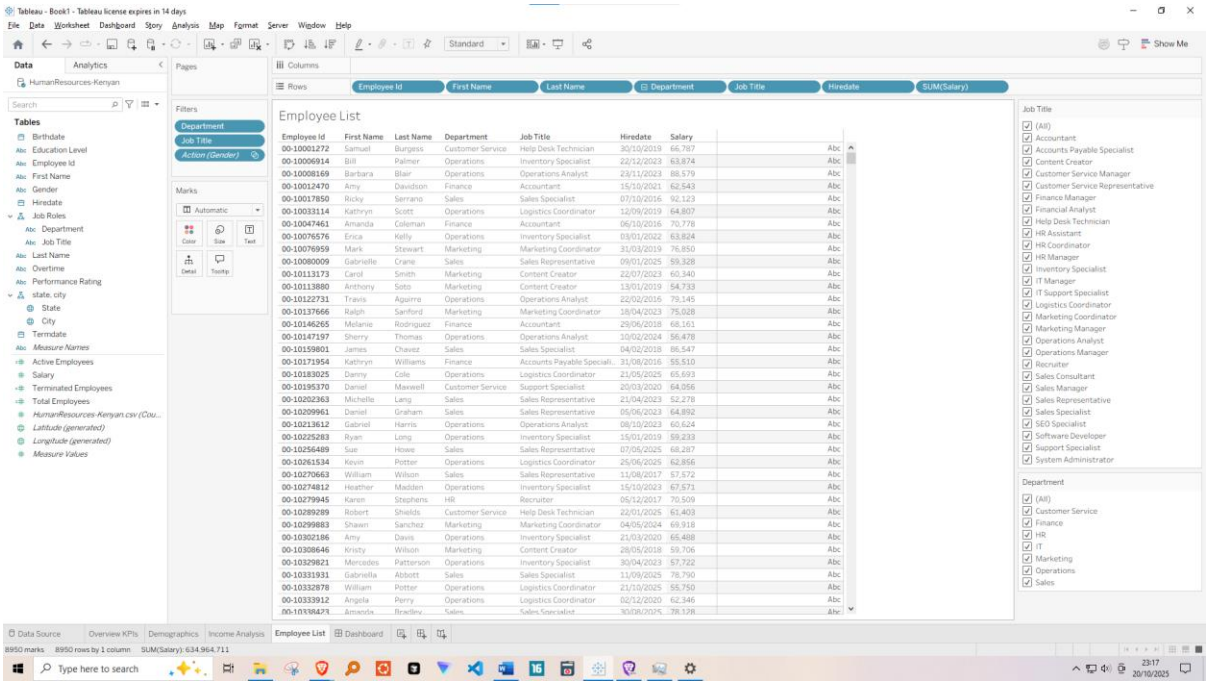
The 'Overview KPIs' worksheet displaying the main headcount metrics.

- **Demographics & Income Analysis:** I created two separate bar charts. The first visualizes the employee count by **Gender**. The second shows the **Average Salary** by **Department**, which required changing the measure from SUM to AVG and formatting the labels as currency.



Bar charts created for Demographics (by Gender) and Income Analysis (Average Salary by Department).

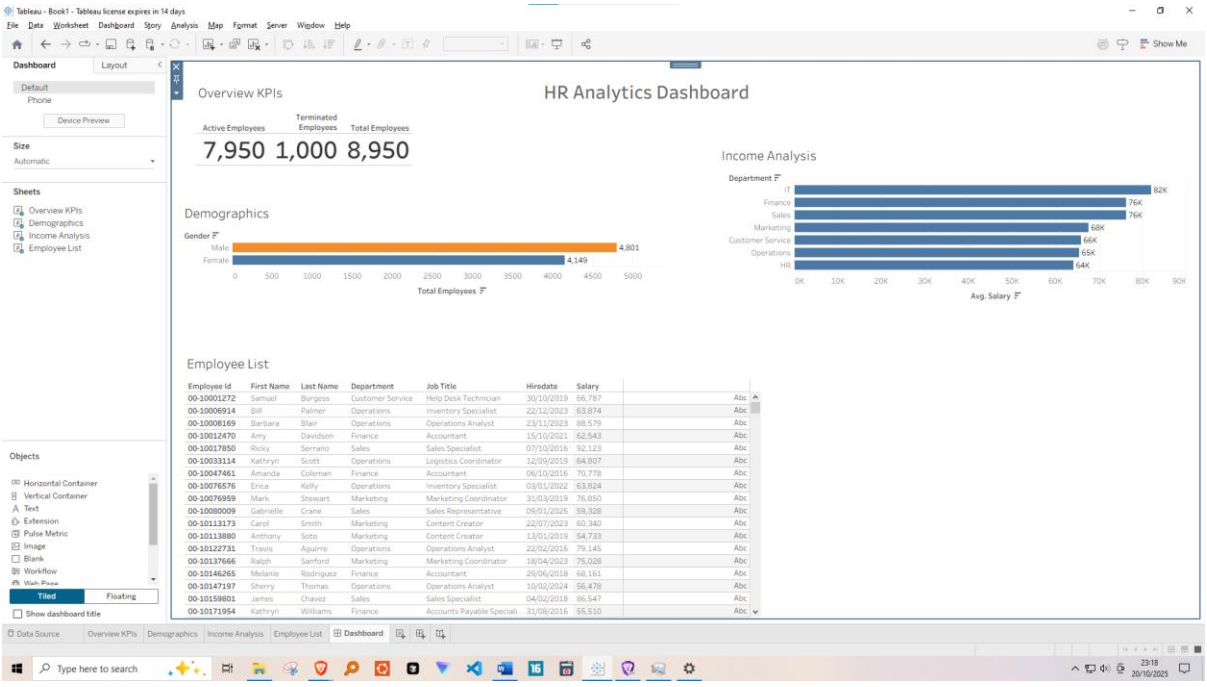
- **Employee List**: I created a detailed text table to meet the requirement for an in-depth, filterable list of employees. I dragged the required dimensions (like Employee ID, Name, Department, etc.) to the Rows shelf and added Department and Job Title as filters.



The detailed 'Employee List' in a table format with interactive filters.

4. Visualizing the Dashboard

I created a new dashboard, set its size to **Automatic**, and arranged the four worksheets to create a logical layout. The "Use as Filter" action was enabled on the Demographics and Income Analysis charts so that clicking a bar on either chart would filter the Employee List at the bottom.



The final assembled HR Analytics Dashboard, with all visualizations arranged and interactivity enabled.

5. Adding Advanced Features and Final Touches

To enhance interactivity, I implemented a custom tooltip. When a user hovers over a KPI card, a line chart appears, showing the week-by-week trend for that metric, split by Business and Luxury hotel types. I also applied formatting, such as adding data bars to the main table for easier visual comparison and customizing colors to create a professional look and feel.

Link to Tableau Dashboard:
https://drive.google.com/drive/folders/10Y5kRb5ivDMipJ5rnPObtKa_5Q0NK3zT?usp=drive_link

Conclusion

This project was an excellent introduction to the end-to-end workflow in Tableau. I gained a strong practical understanding of connecting to data, creating calculations, building different chart types, and assembling them into a functional and interactive dashboard.
I was able to successfully build a tool that directly meets the HR Manager's needs for both high-level summaries and detailed, filterable data. The final published dashboard serves as a powerful example of how data visualization can turn a simple spreadsheet into an insightful decision-making tool. I look forward to applying these skills to more complex datasets and building out my portfolio on Tableau Public.