

# Data and Artificial Intelligence

## Cyber Shujaa Program

### Week 5 Assignment

### Assignment 5: Data Visualization using Tableau

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#### 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:

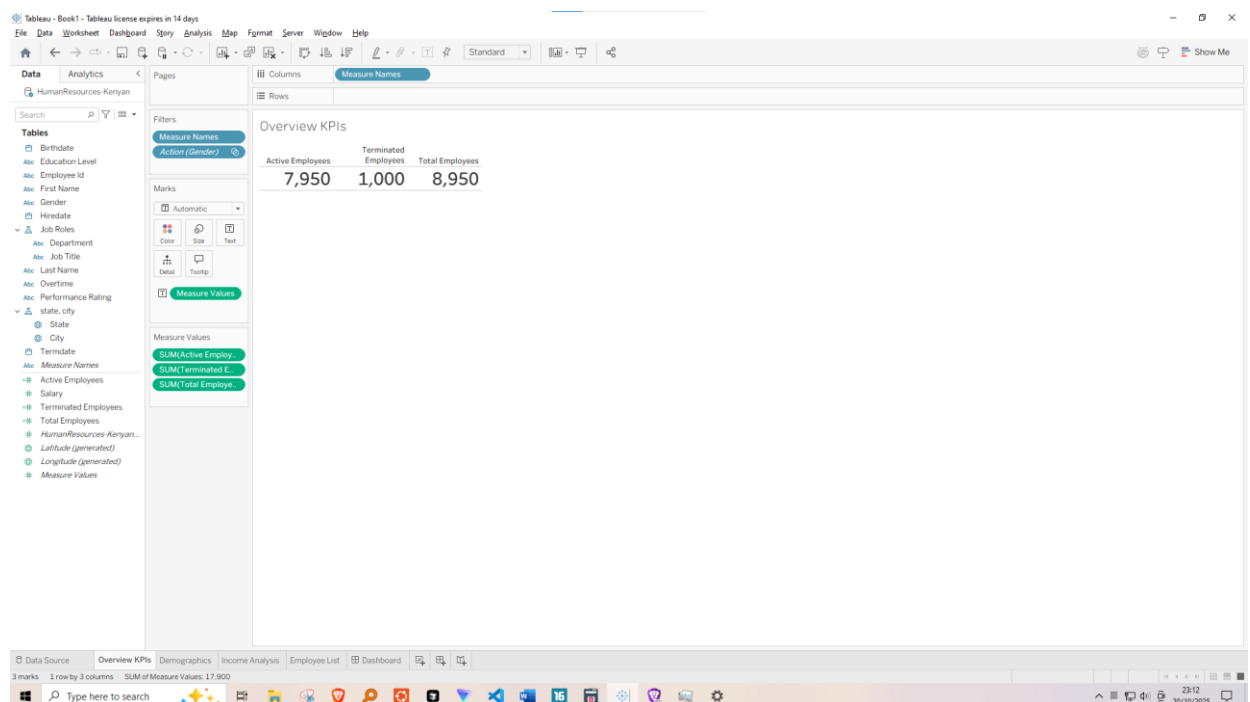
1. Practical application of data visualization principles using Tableau Public.
2. Load and transform a raw .csv dataset within the Tableau environment.
3. Create new calculated measures to derive key business metrics (e.g., Active vs. Terminated employees).
4. Build a series of distinct visualizations (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.

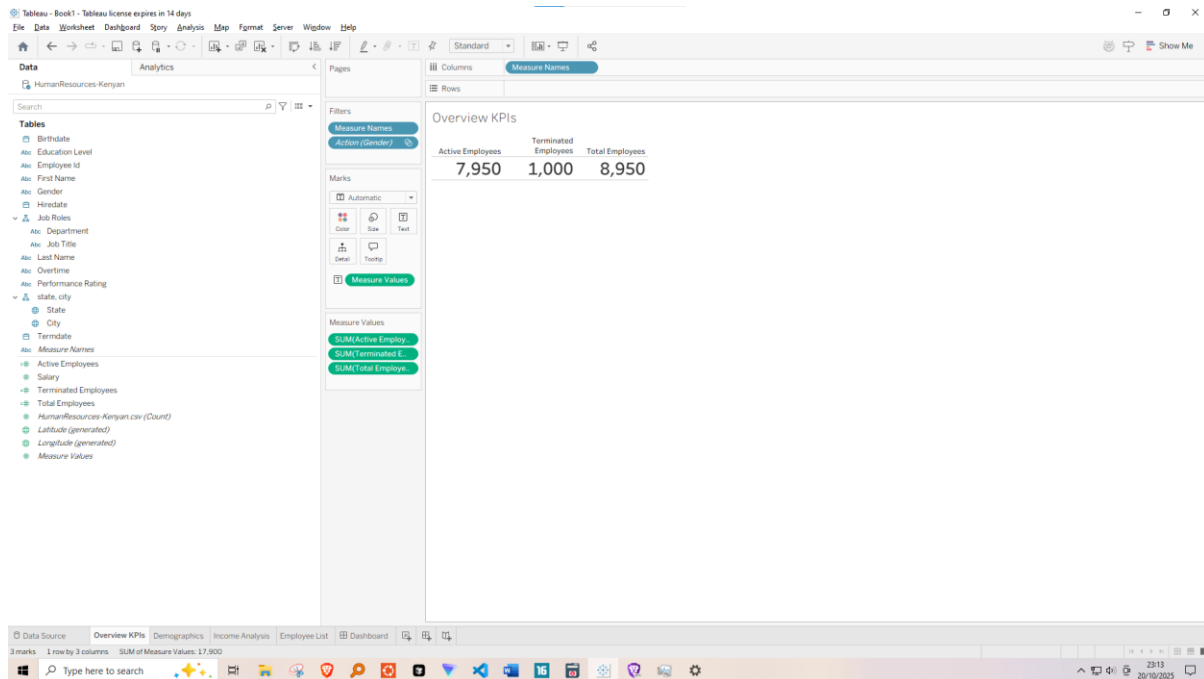


Data loaded and prepared in Tableau, with renamed fields and a new 'Job Roles' hierarchy.

### 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.

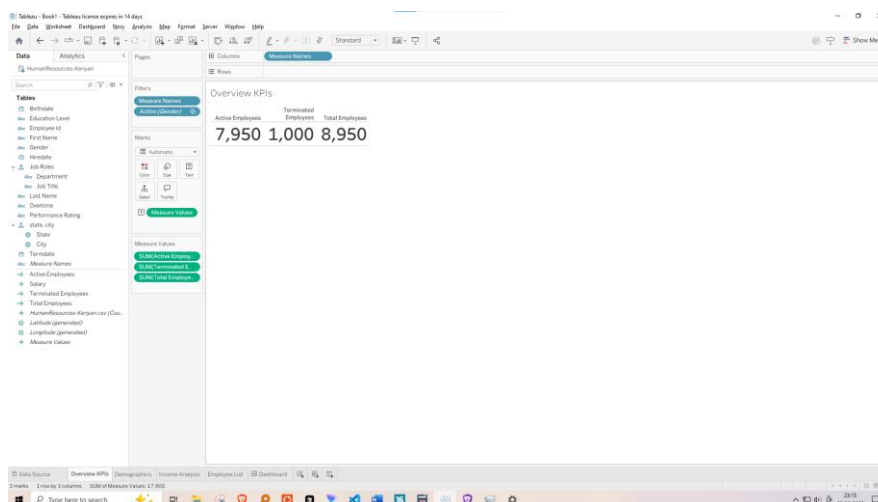
- **Total Employees: 1**
- **Active Employees: IF ISNULL([Termdate]) THEN 1 ELSE 0 END**
- **Terminated Employees: IF NOT ISNULL([Termdate]) THEN 1 ELSE 0 END**



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

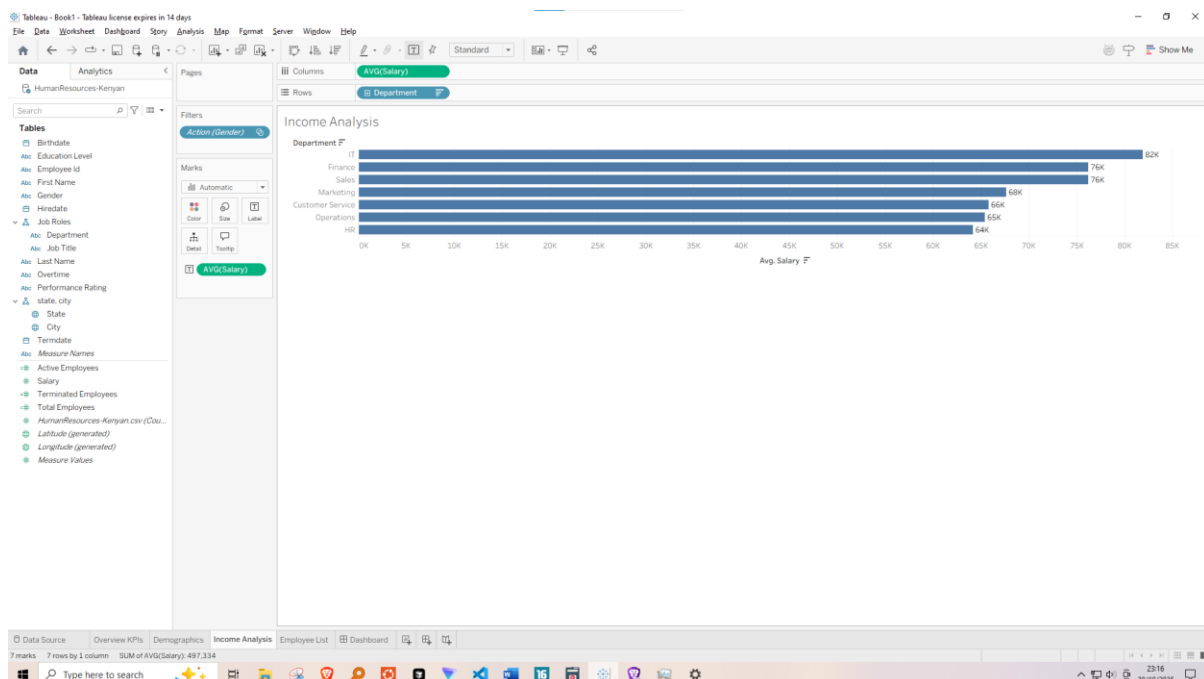
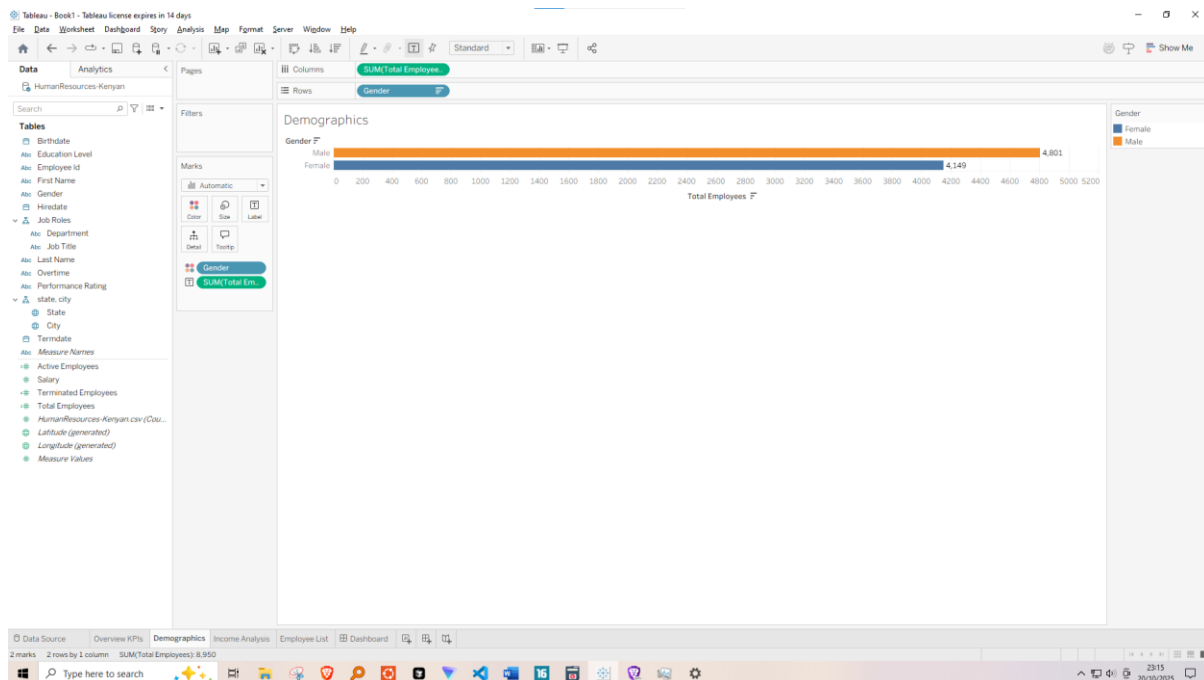
### 3. I then built four separate worksheets, each with a specific visualization.

- **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.



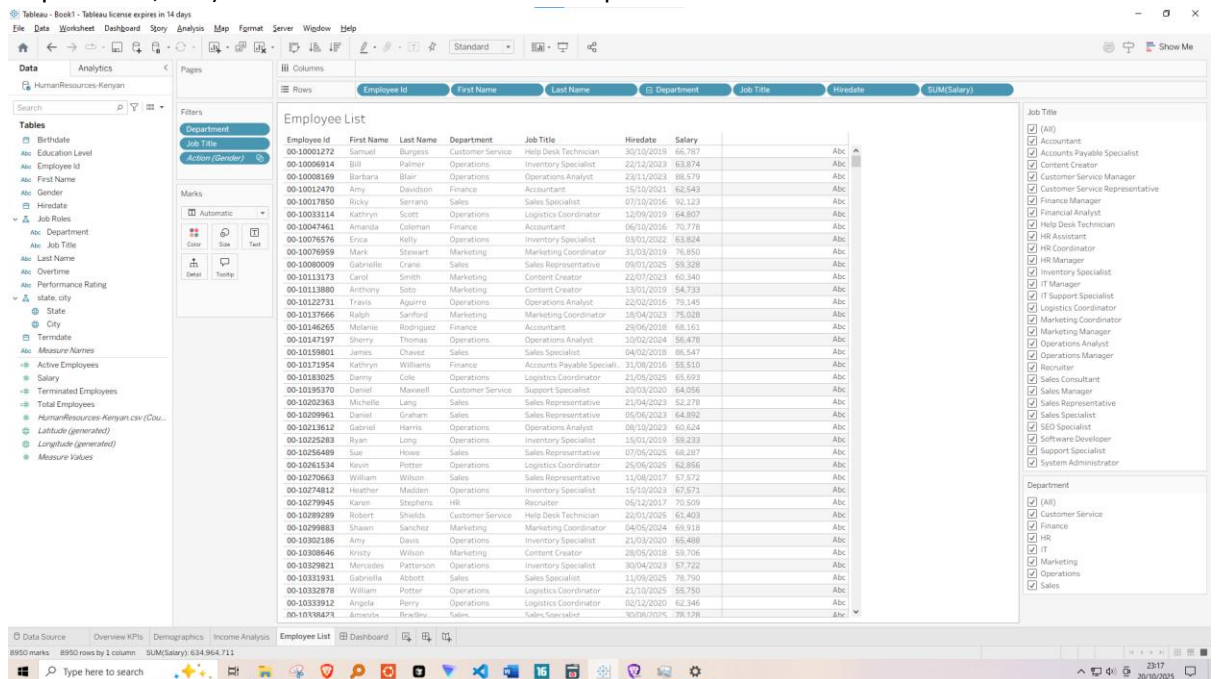
The 'Overview KPIs' worksheet displaying the main headcount metrics.

- **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.



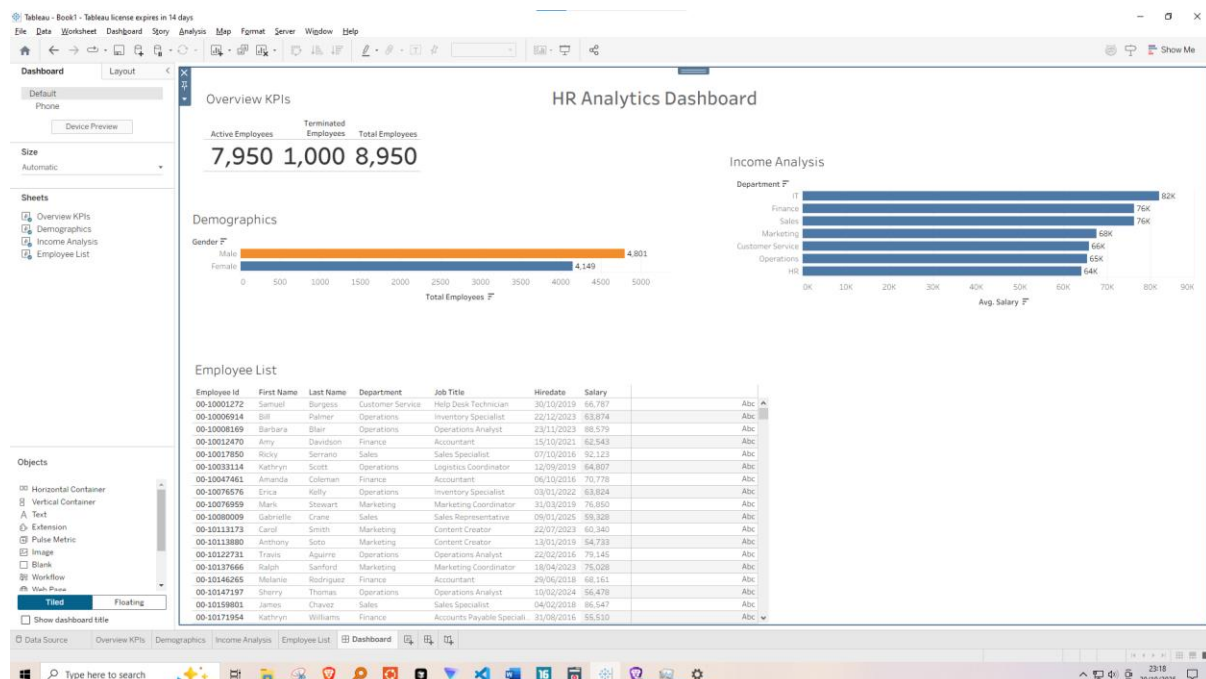
The screenshot shows the Tableau Desktop interface with the 'Employee List' table. The table has columns for Employee ID, First Name, Last Name, Department, Job Title, Hiredate, and Salary. The 'Department' and 'Job Title' fields are placed on the 'Columns' shelf, and the 'Hiredate' and 'SUM(Salary)' fields are placed on the 'Rows' shelf. The 'Department' and 'Job Title' fields are also placed on the 'Filters' shelf. The table is filtered by 'Department' and 'Job Title'.

Employee ID	First Name	Last Name	Department	Job Title	Hiredate	Salary
00-10001272	Samuel	Burgess	Customer Service	Help Desk Technician	30/10/2019	66,787
00-10006914	Bill	Palmer	Operations	Inventory Specialist	22/12/2023	63,874
00-10008169	Barbara	Blair	Operations	Operations Analyst	23/11/2023	88,579
00-10012470	Amy	Davidson	Finance	Accountant	15/10/2021	62,543
00-10017850	Ricky	Serrano	Sales	Sales Specialist	07/10/2016	92,123
00-10033114	Kathryn	Scott	Operations	Logistics Coordinator	12/09/2019	64,807
00-10047461	Amanda	Coleman	Finance	Accountant	06/10/2016	70,778
00-10076576	Erica	Kelly	Operations	Inventory Specialist	03/01/2022	63,824
00-10076959	Mark	Stewart	Marketing	Marketing Coordinator	31/03/2019	76,050
00-10080009	Gabrielle	Crane	Sales	Sales Representative	09/01/2025	59,328
00-10113173	Carol	Smith	Marketing	Content Creator	22/07/2023	60,340
00-10113880	Anthony	Soto	Marketing	Content Creator	13/01/2019	54,733
00-10122731	Travis	Aguiar	Operations	Operations Analyst	22/02/2016	79,145
00-10137666	Ralph	Sanford	Marketing	Marketing Coordinator	18/04/2023	75,028
00-10146265	Melanie	Rodriguez	Finance	Accountant	29/06/2018	68,161
00-10147197	Sherry	Thomas	Operations	Operations Analyst	10/02/2024	56,478
00-10159801	James	Chavez	Sales	Sales Specialist	04/02/2018	86,547
00-10171954	Kathryn	Williams	Finance	Accounts Payable Specialist	31/08/2016	55,510
00-10183025	Danny	Cole	Operations	Logistics Coordinator	21/05/2025	65,693
00-10195170	Daniel	Mawell	Customer Service	Support Specialist	20/03/2020	64,956
00-10022963	Michelle	Long	Sales	Sales Representative	21/04/2023	62,178
00-10099961	Daniel	Graham	Sales	Sales Representative	05/06/2023	64,892
00-10213612	Gabriel	Harris	Operations	Operations Analyst	08/10/2023	60,624
00-10225283	Ryan	Long	Operations	Inventory Specialist	15/01/2019	59,233
00-10256409	Sue	Hewes	Sales	Sales Representative	07/06/2025	68,287
00-10261534	Kevin	Potter	Operations	Logistics Coordinator	25/06/2025	62,856
00-10270663	William	Wilson	Sales	Sales Representative	11/08/2017	57,572
00-10274812	Heather	Madden	Operations	Inventory Specialist	15/10/2023	67,573
00-10279945	Karen	Stephens	HR	Recruiter	05/12/2017	70,509
00-10293209	Robert	Shields	Customer Service	Help Desk Technician	21/01/2025	85,403
00-10299983	Shawn	Sanchez	Marketing	Marketing Coordinator	04/05/2024	69,918
00-10302186	Amy	Davis	Operations	Inventory Specialist	21/03/2020	65,488
00-10308446	Kristy	Wilson	Marketing	Content Creator	28/05/2018	59,706
00-10329621	Marcella	Partnerson	Operations	Content Creator	30/04/2023	57,722
00-10331931	Gabrielle	Adams	Sales	Sales Specialist	11/09/2025	79,790
00-10332878	William	Potter	Operations	Logistics Coordinator	21/12/2025	55,750
00-10333912	Angela	Perry	Operations	Logistics Coordinator	02/12/2020	62,346
00-10364471	James	Rowley	Sales	Sales Specialist	30/08/2015	78,136

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](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.